



CartoVista

USER GUIDE

CartoVista Publisher 4

cartovista.com

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CartoVista Publisher Help Content



Version: **4.1.1**

Last Update: **May 6, 2016**

Welcome to the CartoVista Publisher User Guide.

This documentation is designed to answer all of your questions about using the CartoVista Publisher.

NOTE: This version of the Publisher is compatible with version **4.1.1** or higher of the CartoVista Flash Viewer. To see which version of the CartoVista viewer you have, click on the CartoVista logo at located on the bottom-right of the map.

Getting started with the CartoVista Publisher...

To get more information to the CartoVista solution and its capabilities, please refer to the CartoVista documentation.



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Getting Support for CartoVista

Contacting Technical Support

If you encounter problems working with the CartoVista Publisher, our technical support experts can help. Technical support includes referrals to documentation, assistance with error messages and suggestions for causes of error messages.

Technical Support is available in North America Monday - Friday from 8:00am - 4:00pm EST, excluding holidays. Please remember to include your serial number or contract number when contacting technical support.

Phone (toll free in North America): 1.866.772.2660

Phone: 819.772.2000

Fax: 819.772.2001

Email: support@cartovista.com



About CartoVista

CartoVista makes it possible to create detailed analyses and optimized communications by putting that data on a map. With innovative solutions, CartoVista solves business problems and enables communication in a wide range of industries.

The company's head office is located at:
37 St-Joseph Boulevard, 2nd floor
Gatineau (Québec)
J8Y 3V8
Canada

For more information on our products and professional services, please visit our website: www.cartovista.com.



Credits

Open Source Geospatial Foundation (OSGeo)

The CartoVista Publisher has been developed with open source technologies provided by the Open Source Geospatial Foundation. CartoVista is proud to contribute to the OSGeo by funding some of the recent [MapServer](#) enhancements.

The [Open Source Geospatial Foundation](#) or OSGeo is a not-for-profit organization whose mission is to support and promote the collaborative development of open geospatial technologies and data. The foundation provides financial, organizational and legal support to the broader open source geospatial community. It also serves as an independent legal entity to which community members can contribute code, funding and other resources, secure in the knowledge that their contributions will be maintained for public benefit. OSGeo also serves as an outreach and advocacy organization for the open source geospatial community, and provides a common forum and shared infrastructure for improving cross-project collaboration.



OSGeo License

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Credits

Major funding for development of *MapServer* has been provided by NASA through cooperative agreements with the University of Minnesota, Department of Forest Resources. Additional enhancements have been made by the State of Minnesota, Department of Natural Resources and the Land Management Information Center.

- MapServer and MapScript have been developed by Stephen Lime.
- Raster access module has been developed by Pete Olson and Stephen Lime.
- PHP/MapScript module was developed by [DM Solutions](#) and is maintained by [MapGears](#).
- Portions copyright (c) 1998 State of Minnesota, Land Management Information Center.



Introduction

This chapter will introduce you to the CartoVista Publisher.

Overview

- [Key Features](#)
- [CartoVista Architecture](#)
- [User Interface](#)
- [Dockable Windows](#)
- [Drag & Drop](#)

Getting started

- [System Requirements](#)
- [Supported GIS Formats](#)
- [Supported Data Formats](#)
- [License Management and Activation](#)



CartoVista Publisher 3 versus CartoVista Publisher 4

The **CartoVista Publisher** is a Microsoft Windows desktop application that allows a user to create, maintain and deploy all the maps & data used with a CartoVista deployment.

CartoVista Publisher 4 is the next version in the evolution of the support of CartoVista. The publisher has been expanded to support the new features that are now available in CartoVista 4. Additionally, some user work flows and dialog layouts have been modified, as new features are added and old workflows are improved.

With the large number of new features in CartoVista 4, along with an improved architecture and new types of map layers, CartoVista Publisher 4 has been designed to support only CartoVista 3. If you need to continue supporting CartoVista 3 deployments, you must continue to use the CartoVista Publisher 3.

All the existing files, whether they be data files, map files, saved maps etc., will seamlessly migrate to CartoVista Publisher 4. The publisher can also be installed along side of the CartoVista Publisher 3. (Please use a different directory!) However once migrated, the files cannot be safely used with the CartoVista Publisher 3. Please ensure that you have backups of any files you will migrate in case you need to use them at some future time with CartoVista Publisher 3.



Overview

CartoVista Publisher is a Microsoft Windows desktop application designed to support the deployment of a CartoVista Solution. It provides a single application with a consistent style, interface and tools to allow a user to create and maintain all the maps and data used with a CartoVista deployment.

This chapter will introduce you to some of the basic concepts and benefits of the CartoVista Publisher:

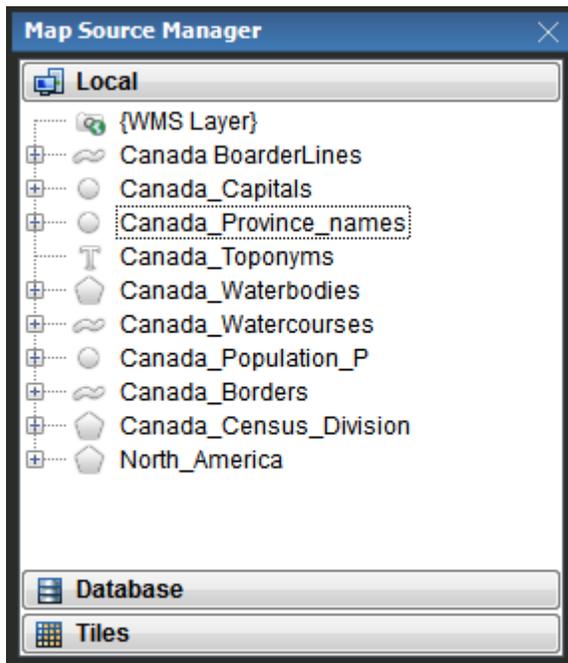
- [Key Features](#)
- [CartoVista Architecture](#)
- [User Interface](#)
- [Dockable Windows](#)
- [Drag & Drop](#)



Key Features

The CartoVista Publisher simplifies the management and creation of map and data files for your CartoVista projects. The publisher has a number of manager dialogs that centralize the tasks associated with map files, data files and styles.

Map Source Manager



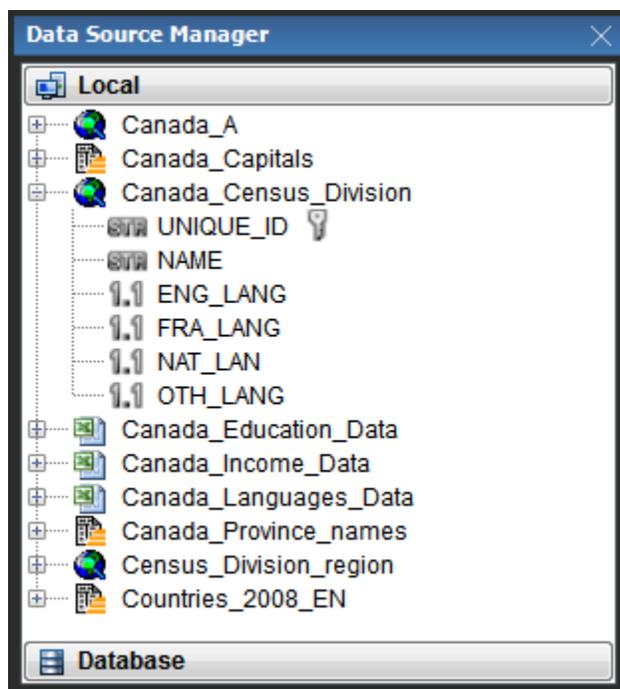
The Map Source Manager is used to manage a library of GIS data files for use in all your projects. This manager provides a single source for all your GIS data, no matter where they are located on your computer's hard drive or network.

By centralizing the management of your map files and their style settings, you can rapidly create maps without having to re-find map files every time, or re-apply style settings. The map source manager also allows one source file to be present in multiple times. Each time it appears (with a different name) it can have a different set of default styles. This reduces data storage, as one source map file, for example a street network file can be referenced with multiple display styles for different zoom levels.

The Map Source Manager is organized into three sections to help you organize your map files. The top section contains local / flat file map files. These are GIS source files such as ESRI's .SHP files, or MapInfo's .TAB files. The second section contains

any spatial databases you may have connected to. These are database systems such as Oracle, MSSQL or PostgreSQL that support spatial data storage. Finally, the third section contains tile sources you may have connected to. These include tile providers such as Open Street Map and Bing Maps to name just two, but may also include custom tile sets that you have created yourself using the [Publisher's Tile module](#).

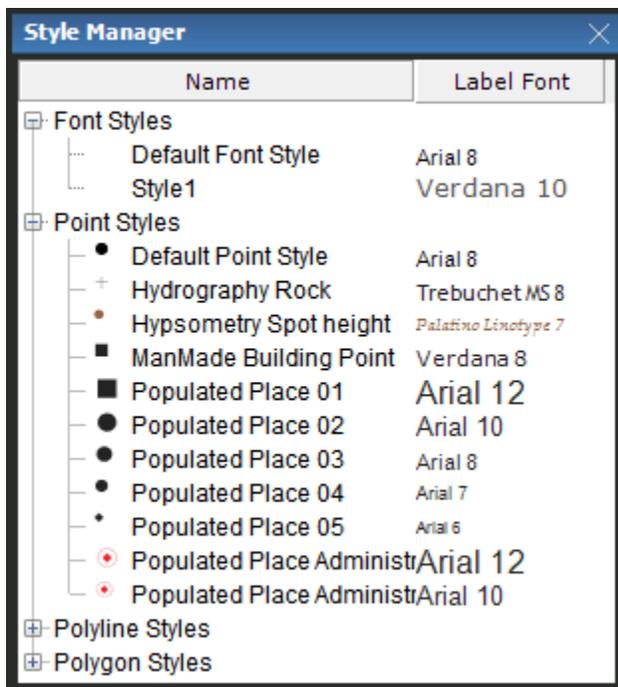
Data Source Manager



The Data Source Manager is used to manage a library of indicator data files for use in all your projects. This manager provides a single source for all your indicator data, no matter where they are located on your computer's hard drive or network.

The Data Source Manager is organized into two sections to help you organize your data files. The top section contains local data files. These are files such as .CSV, Microsoft Excel, or even ESRI's .SHP files and MapInfo's .TAB files. The second section contains any databases you may have connected to. These are database systems such as Oracle, MSSQL or PostgreSQL.

Style Manager

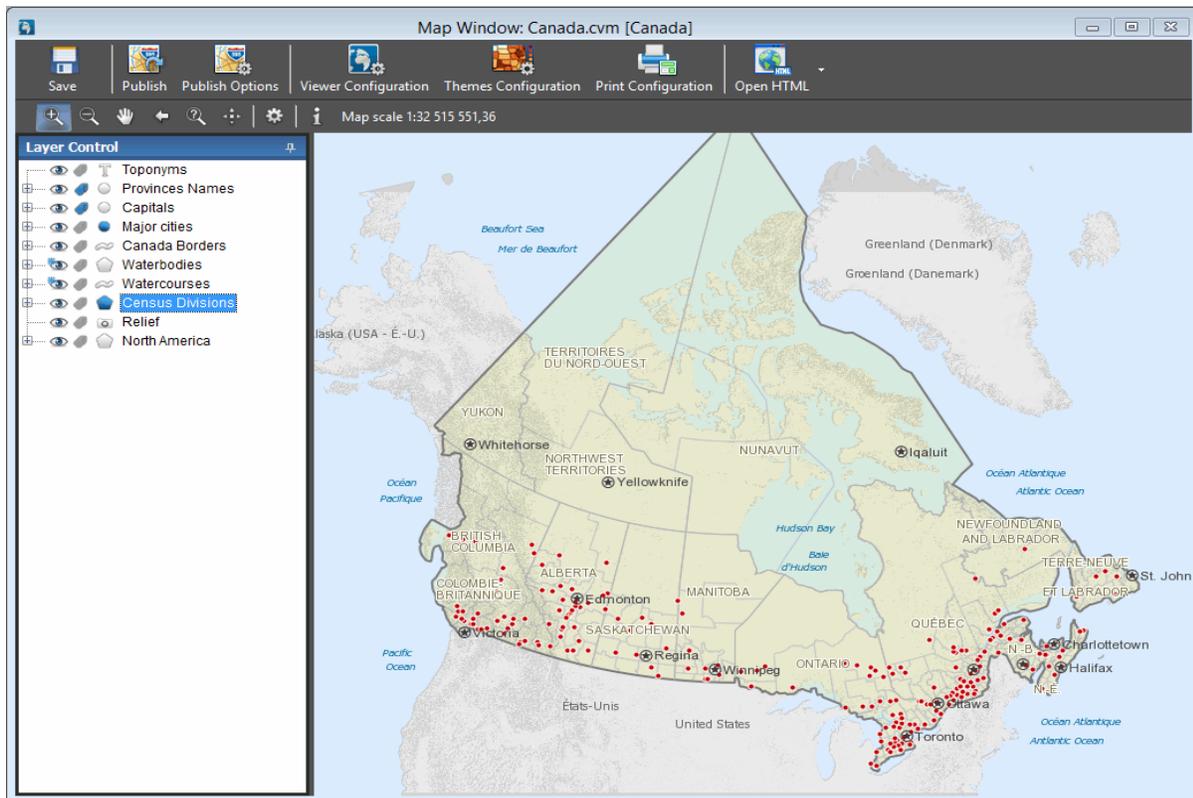


The Style Manager is used to manage predefined style settings that can be applied to map files. By managing the styles centrally, a consistent set of visual styles can be used with all maps produced by the CartoVista Publisher.

A CartoVista style encompasses two distinct elements of how to display a geographic object from a map file. First, a style defines the general appearance of the geographic object. Second, a style defines the font name, size, color and effect of the label that can appear with the geographic object. Each type of geographic object (Point, Label, Polyline and Polygon) has specific style settings that apply to it. If a map file does not have any styles associated with it, a default global style is applied.

Map Windows

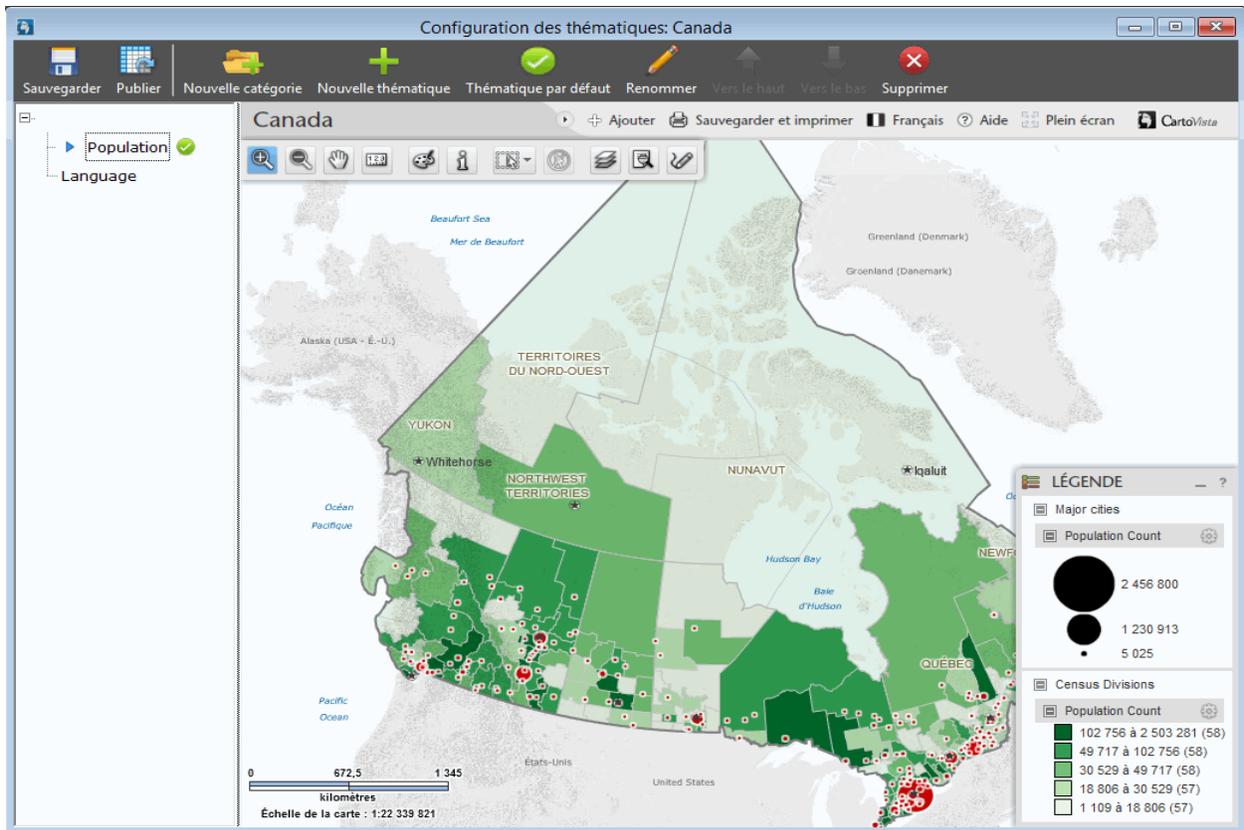
A Map Window is used to design a map for publishing. The user can add or remove layers comprised of map files and set various properties until the desired map is achieved.



A Map Window also allows you to specify the map's thematic layers and their unique identifiers as well as setting the various properties for each layer.

Theme Configuration Window

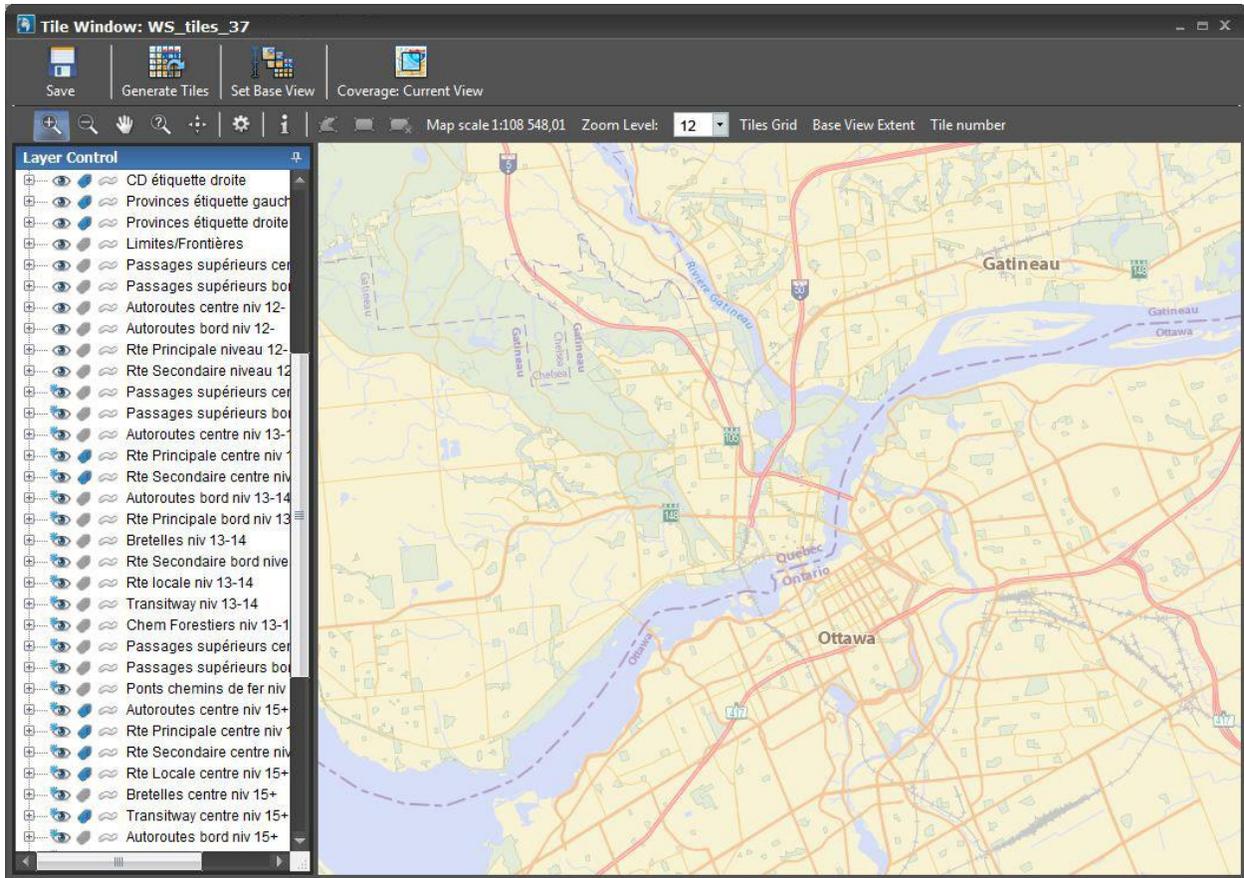
A Theme Configuration window allows you to setup the default theme sets that are associated with a Map Window. After first publishing both the Map and the Data, the Theme Configuration Window uses the CartoVista Viewer to let the user save the theme sets directly from setting them up in the CartoVista Viewer.



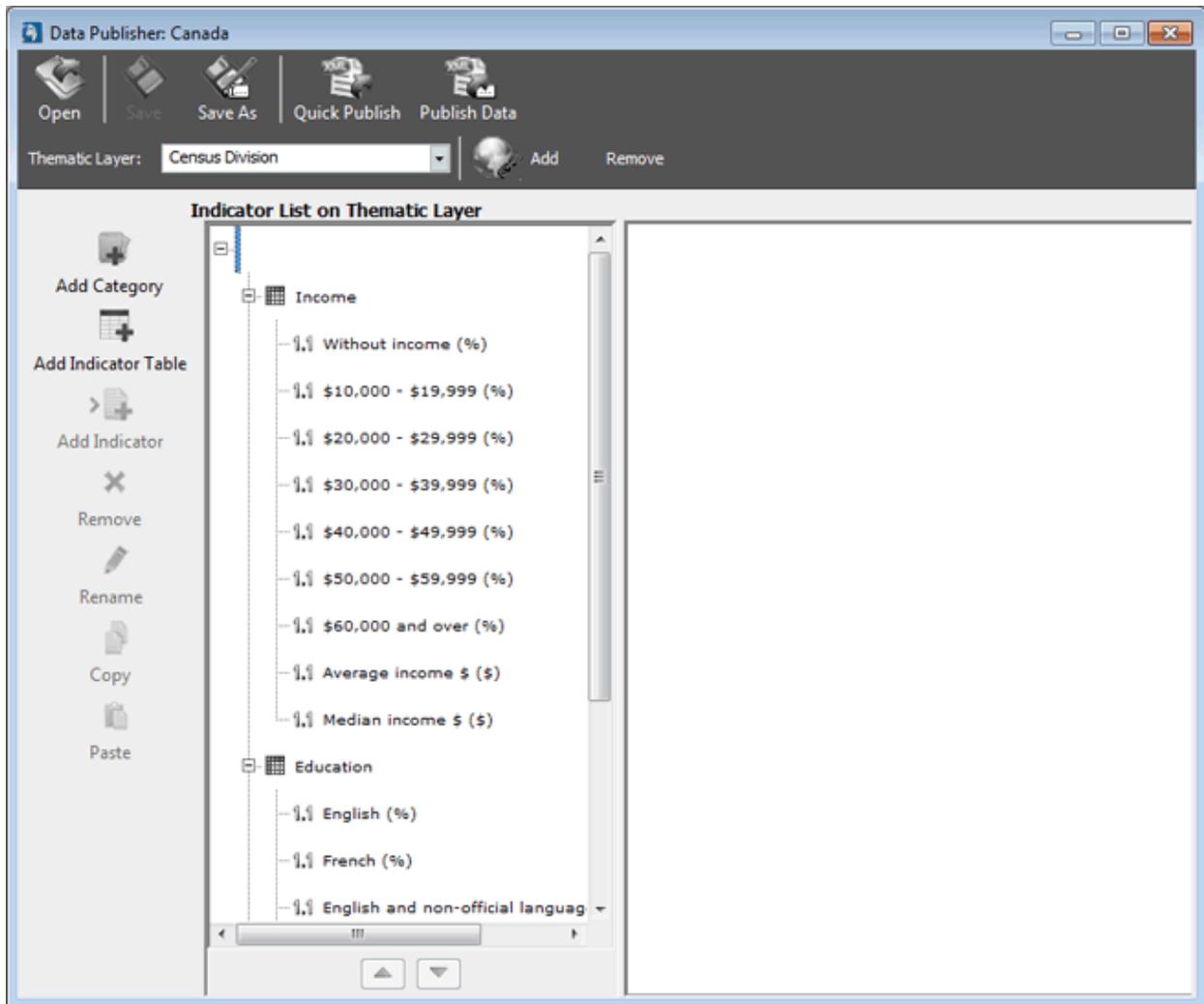
Tile Windows

A Tile Window is used to design a map for creating tiles. The user can add or remove layers comprised of map files and set various properties until the desired map is achieved. Once the desired map is complete, tiles will be created from the map at the zoom levels and area defined.

These windows are only available when the Tile Module has been purchased with CartoVista Publisher.



Data Publisher Window



A Data Publisher is used to generate the XML data files that support the thematic layers of a CartoVista map. It works with data you have in various formats such as Microsoft Excel or delimited ASCII.

You can include up to 20 different indicators in a single indicator table XML file. Multiple indicator table files can be associated with a CartoVista map, giving full flexibility to deploy all the data, in an organized and categorized fashion.

Data Browsers Windows

A Data Browser is used to look at the attribute data associated with a Map File or Data File.

Data File Table: Canada_Income_Data

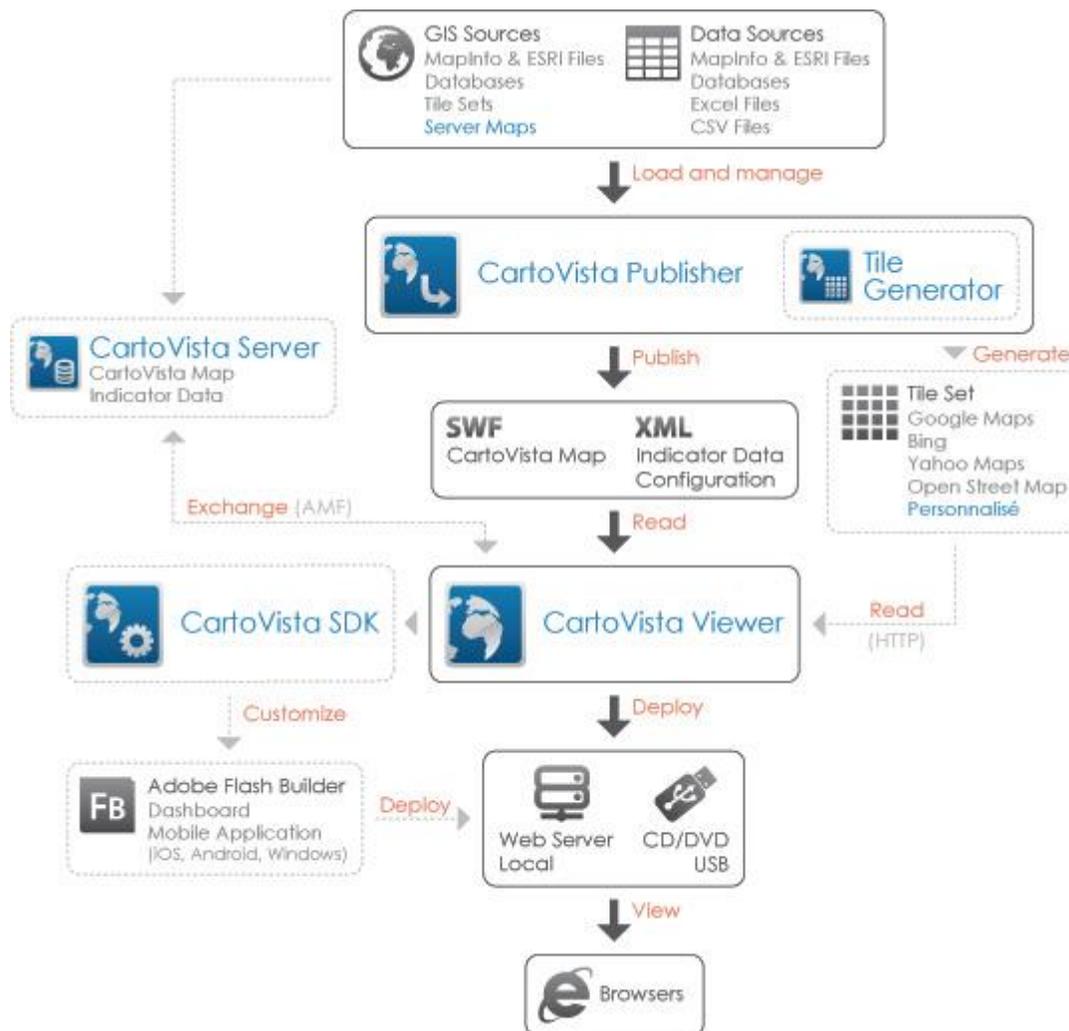
	UNIQUE ID	Census Division	Without income (%)	\$10,000 - \$19,999 (%)	\$20,000 - \$29,999 (%)	\$30,000 - \$39,999 (%)	\$40,000 - \$49,999 (%)
1	1001	Division No. 1	5.43	23.28	15.06	12.13	7.23
2	1002	Division No. 2	6.99	28.8	16.79	9.88	5.18
3	1003	Division No. 3	7.55	32.04	14.94	8.18	4.82
4	1004	Division No. 4	7.58	31.19	15.69	9.12	4.8
5	1005	Division No. 5	5.22	26.63	16.06	11.6	6.23
6	1006	Division No. 6	6.35	25.74	14.78	11.98	6
7	1007	Division No. 7	5.54	32.76	15.83	9.01	5.26
8	1008	Division No. 8	6.75	32.64	16.74	10.22	3.84
9	1009	Division No. 9	5.54	33.02	18.84	10.59	4.56
10	1010	Division No. ...	5.55	20.78	12.49	10.57	6.26
11	1011	Division No. ...	8.91	21.73	15.32	10.31	5.57
12	1101	Kings	2.89	27.22	19.42	15.01	6.87
13	1102	Queens	3.29	22.57	16.99	14.19	8.68

289 rows

CartoVista Architecture

The CartoVista Publisher is a Microsoft Windows (XP, Vista, Windows 7 & 8) desktop application that is designed to support all aspects of publishing a CartoVista solution. Each module of the publisher integrates into the application, providing one seamless program to create, manage and deploy a complete CartoVista mapping solution.

CartoVista has a flexible architecture that makes data publishing and management very simple. Individual parts of the solution can be updated through the use of the CartoVista Publisher without affecting the other parts of the solution.



CartoVista Publisher (Desktop Application)

The CartoVista Publisher is the supporting application for managing and creating all the map and data files for a CartoVista solution. It uses a variety of GIS data files and data variable files to create the CartoVista maps and *indicator* data files needed.

CartoVista Maps (Flash)

CartoVista maps are optimized *vector* graphics in highly compressed *Flash* files. All map layers are integrated in a single document, with the ability to organize maps into hierarchies of hyperlinked Flash files.

Indicator Data (XML)

CartoVista indicator tables use *XML* to store the data. Data that can be grouped together is stored in a single XML *file* as a simple tabular format of rows and columns. Multiple indicator tables can be linked to a CartoVista map to provide extreme flexibility in data display.

CartoVista Flash Viewer (Flash)

The CartoVista Flash Viewer is the Flash executable for the map engine. To implement a CartoVista solution, all that is required is to load an *HTML* file or activate a Flash Viewer. Once the CartoVista Flash Viewer starts, it loads the configured CartoVista maps and indicator data.

The CartoVista Flash Viewer can be deployed on the web (*Intranet* / *Internet*) or even locally on a CDROM, USB stick or another media.

CartoVista Server

The CartoVista server is an optional Microsoft Windows Server component that enables the support of server layers in CartoVista applications. Server-based layers offer a maximum of flexibility in terms of GIS map content and deployment because they have no limitations in terms of the number of objects. The CartoVista server component includes support for common raster and GIS data formats such as GeoTIFF, ESRI Shapes and MapInfo tables for example. Server layers can be setup with advanced cartographic styles and can be rendered in vector or raster format in the CartoVista engine. For more information on the CartoVista server component, please refer to the CartoVista server documentation.

CartoVista SDK

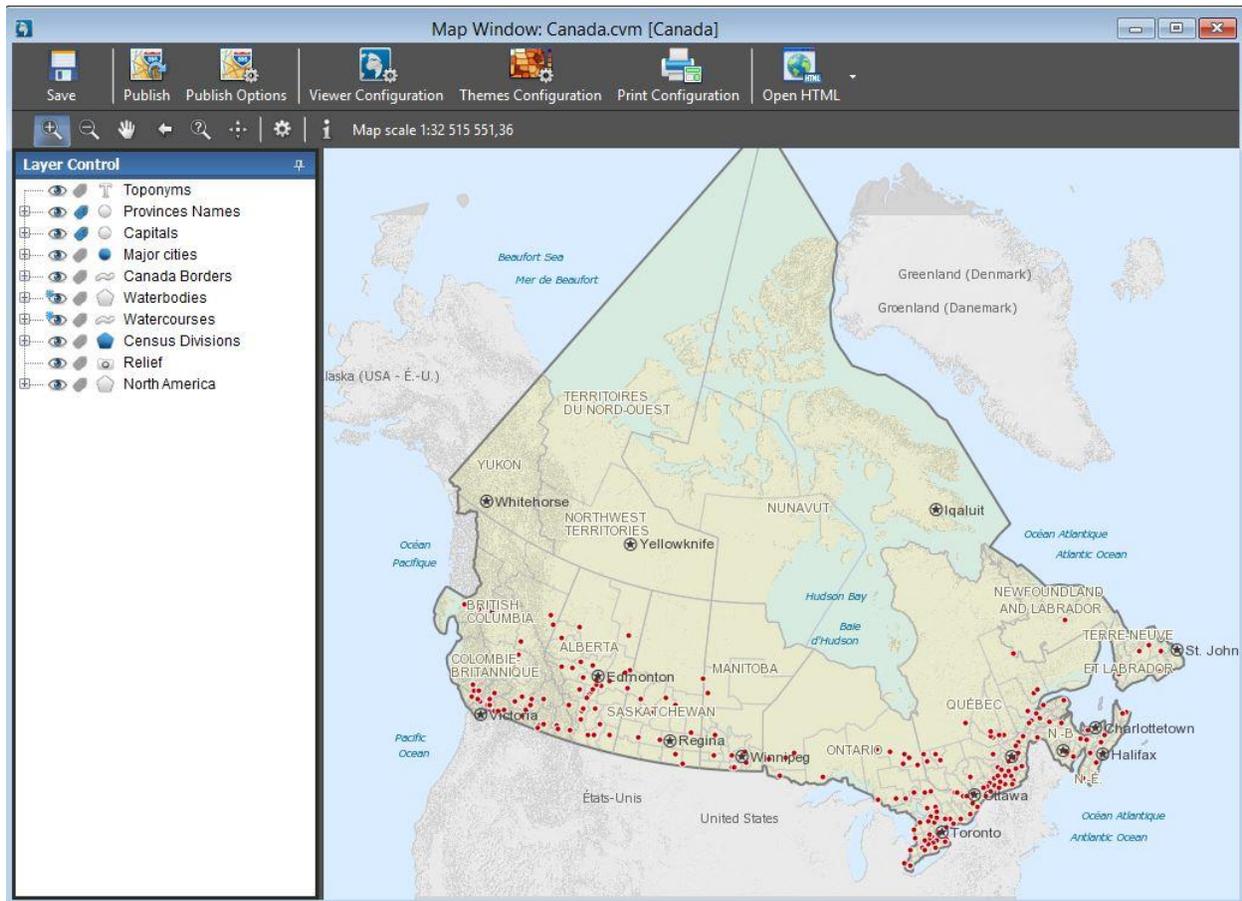
The CartoVista Software Development Kit is an Application Programming Interface (*API*) consisting of a set of functions that allow developers to extend and customize the CartoVista solution. The SDK can be used in *Adobe Flex* and Javascript (HTML) to change the user interface or add additional functionality. For example, a developer may choose to embed CartoVista in a Flex application with surrounding

information windows and graphics that react to the map *selection*. They could also create a drop down menu that allow accessing predefined thematic maps.

The CartoVista SDK also includes a mobile component that allows developing multi-format CartoVista applications (Apple, Android and Blackberry) on smartphones and tablets.



User Interface

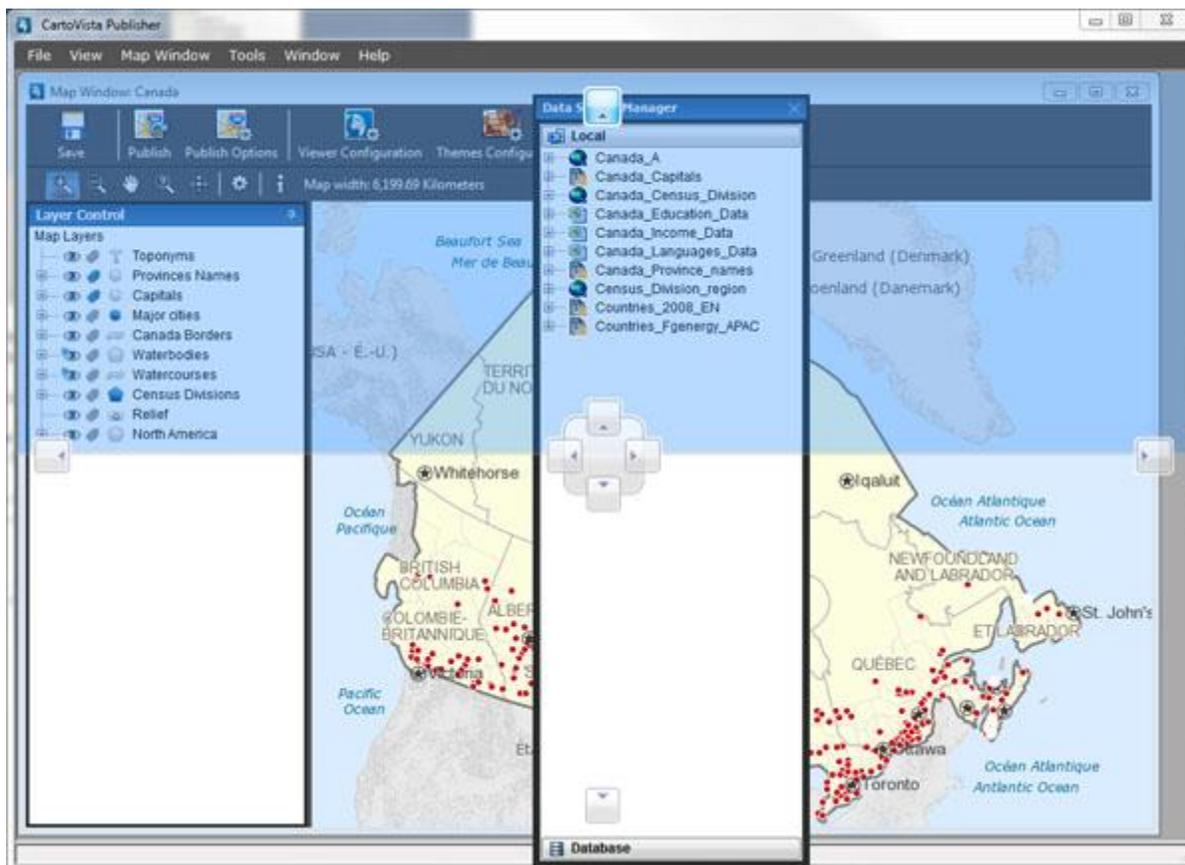


The CartoVista Publisher is a powerful application with many different operations that are closely linked together. Throughout the program, there is a variety of windows and dialogs that allow the user to create the required output files, whether they are a CartoVista map or a set of data for use with a map.

All of the windows that are used with CartoVista Publisher reside within the main application. This is termed a *Multiple Document Interface* application. Multiple windows can be open, switched between and arranged for easy viewing simultaneously. Each window will have its own controls, and may activate menu items in the main program menu bar.



Dockable Windows



Much of CartoVista Publisher's power comes from its ability to manage a variety of data. From GIS files, to style settings to coordinate system properties, these managers provide you the tools to create your customized maps and data.

All Manager dialogs are "dockable". This means that they can be connected to the sides of the CartoVista Publisher application. This allows them to remain visible and attainable at all times.

It is also possible to "unpin" the dialogs, which allows them to disappear into the side of the application leaving just their name on the side of the main application window. When you hover your mouse over the dialog's name however, the dialog reappears.

Manager dialogs can also be organized beside or on top of one another, or even behind each other in a tab-like style. These arrangements give you the flexibility to create exactly the layout you prefer with the dialogs, so that they are available

when you need them. The placement and arrangement of these dialogs is stored when you exit the application so that the next time you run CartoVista Publisher, the dialogs will be in the same location.



Drag & Drop

Drag & Drop is a common tool in Microsoft Windows applications. It allows you to click on an application piece, and by dragging it over to another application piece, affect a change or event to occur.

In the CartoVista Publisher, many of the application pieces that are maintained by the Manager dialogs are enabled with Drag & Drop. Styles can be moved onto map files or map layers, quickly updating the appropriate style. Map files can be dragged onto the map window to instantly add the layer to the map window. Layers and styles from a Map Window can be dragged to other Map Windows or back to the Map Source Manager.

Special notes throughout the documentation will indicate what items are draggable, and what items they can be dragged onto.



What's New with the Publisher CartoVista

This chapter introduces you to the new functionality of the CartoVista Publisher 3.0, 3.1, 3.5, 3.7, 3.8, 4.0 and 4.1

CartoVista 4.1 - Publisher

- [New Theme Set Categories](#)
- [Check for Updates](#)
- [New Graduated Polygon Patterns](#)
- [New HTML Output Packaging](#)
- [New Metadata Field](#)
- [New CloudVista Tile Providers Capability](#)
- [Handling of out of Range Values](#)
- [Increased Stroke Width Capability](#)
- [New Confirmation Dialogs](#)
- [Select and Unselect all Attributes](#)
- [Print Configuration New Image Management System](#)
- [The Option to Add a Next View and a Previous View Tool to the CartoVista Viewer](#)
- [Improved Interaction with Windows](#)
- [New Publisher to Viewer Warning Icon](#)

CartoVista 4.0 - Publisher

- [Enhancement of thematic analysis configurations](#)
- [Print Configuration Dialog](#)
- [Server Layer Management - Creating a server map](#)
- [Server Layer - Enhanced tools for using server maps](#)
- [Tile Generator - Performance enhancements](#)
- [New Tile Providers](#)
- [User Interface Enhancements](#)
- [New user interface styles](#)
- [Labeling option - Character Spread](#)
- [Vertical Mapper Grid Support](#)
- [Enhancements to the tile providers](#)
- [Other enhancements and new features](#)

CartoVista 3.8

- [Blend Modes used inside the Publisher](#)
- [Layer Effects \(Inner Glow, Outer Glow and Drop Shadow\)](#)

- [Multiple Tile Providers in One Layer](#)
- [Interactivity Feature Attributes & Data Display User Interface Update](#)
- [User Specified Tile Providers](#)
- [Other New Features / Enhancements](#)

CartoVista 3.7

- [Tile Publisher](#)
- [Point Style Enhancements](#)
- [Expanded Database Connectivity](#)
- [Style & Manager Dialogs Redesigned](#)
- [Viewer License Support](#)

CartoVista 3.5

- [Data Publisher Enhancements](#)
- [Map File Filters](#)
- [Setting Viewer Themes](#)

CartoVista 3.1

- [Multiple Map Windows](#)
- [Data Publisher Enhancements](#)

CartoVista 3.0

- [Raster Tile Layers](#)
- [Map Layer Interactivity](#)
- [Map Viewer Configuration Dialog](#)
- [Data Publisher Enhancements](#)

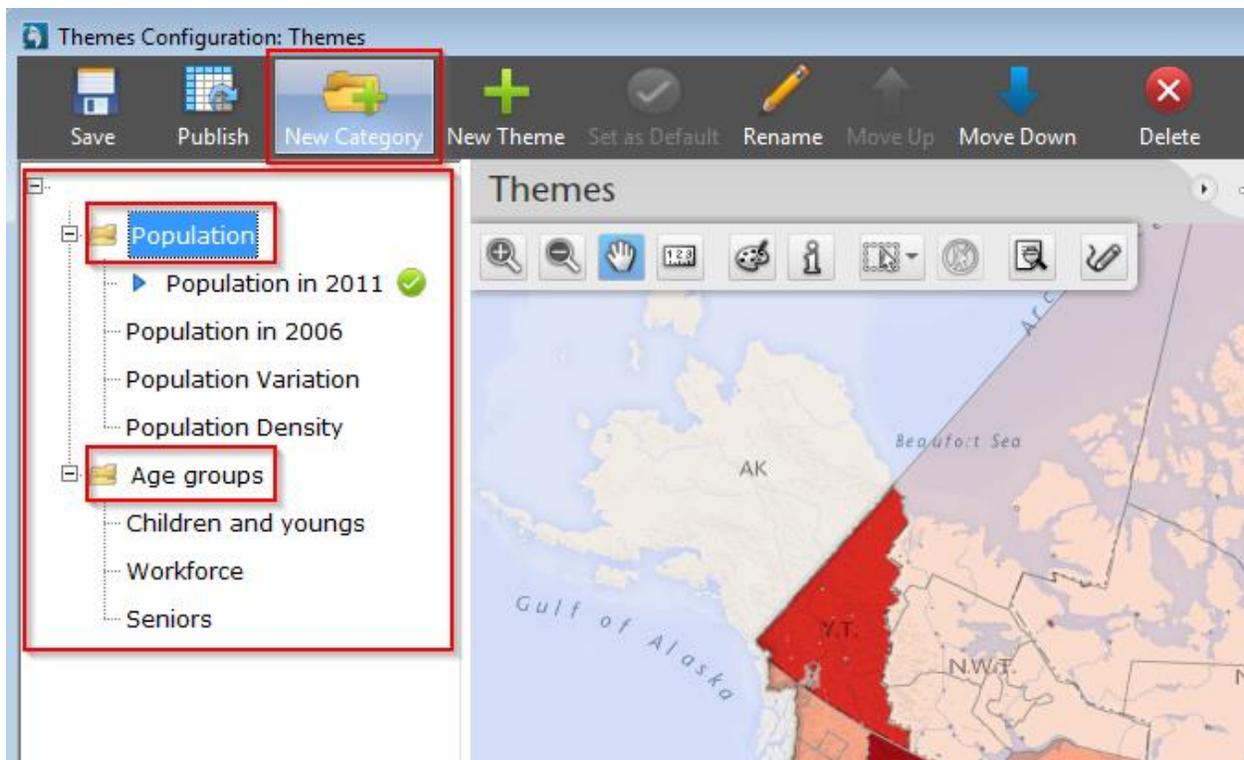
Version 4.1**What's new in the CartoVista Publisher 4.1 ?*****New Theme Set Categories***

The creation of Theme Set Categories is now possible.

This new feature adds the capability to publish an unlimited number of themes and to present them in an organized and intuitive manner to your end user.

A new category can be added by;

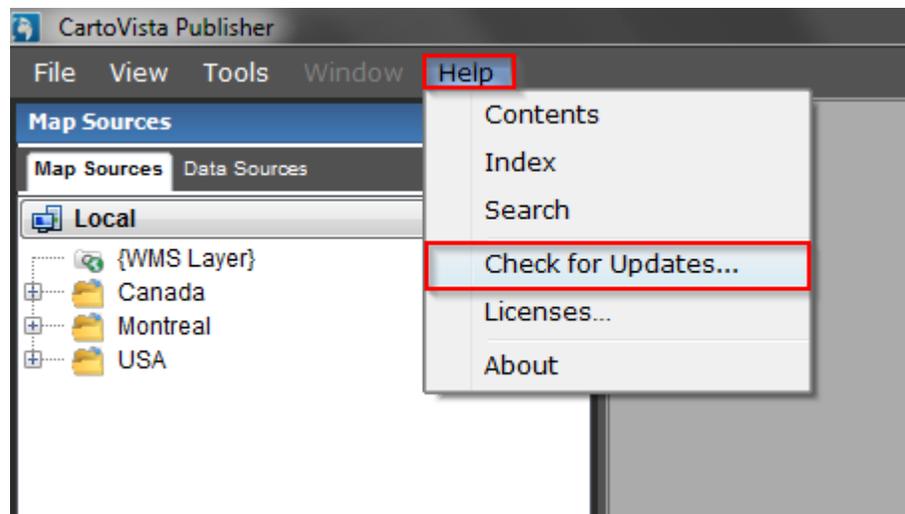
1. Right clicking on an existing category and selecting the "Add Category..." button
2. Using the "New Category" button provided in the menu bar.



Check for Updates

You can now check for and download available updates directly from within the CartoVista Publisher using the new “Check for Updates...” dialog available through the Help menu.

This new patch system will, simplify the process of getting the latest version of the Publisher, provide information on the status of your current version, and inform you on the content of an available new version prior to downloading.

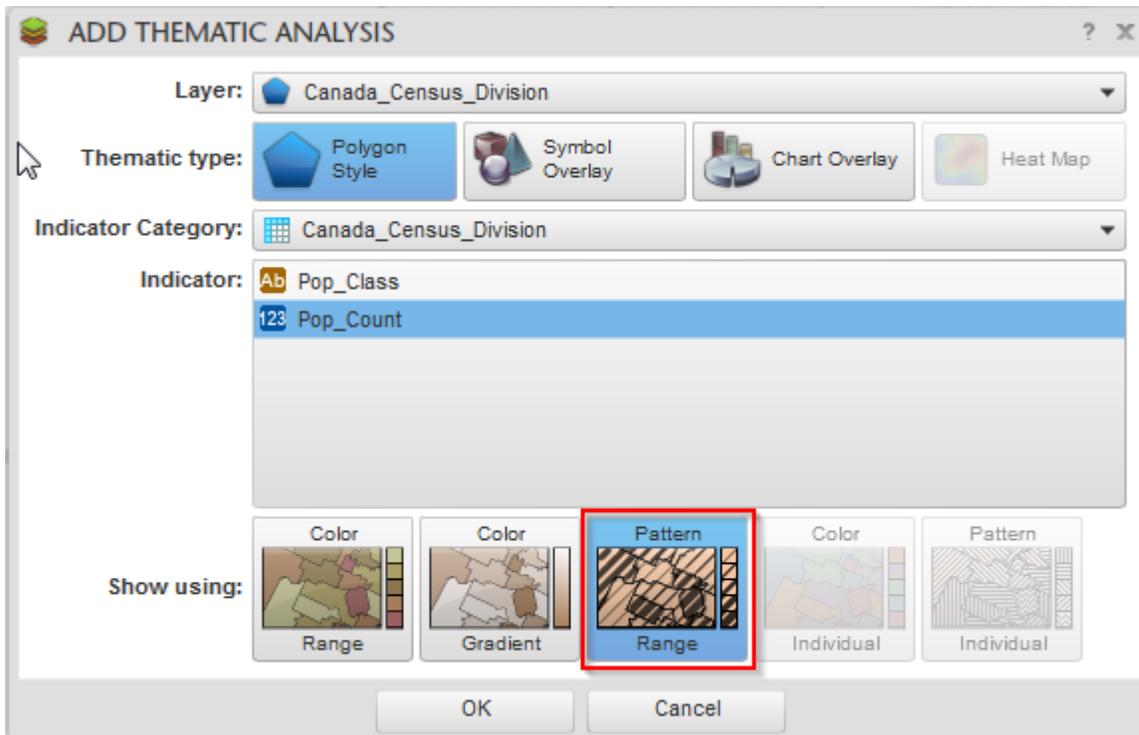
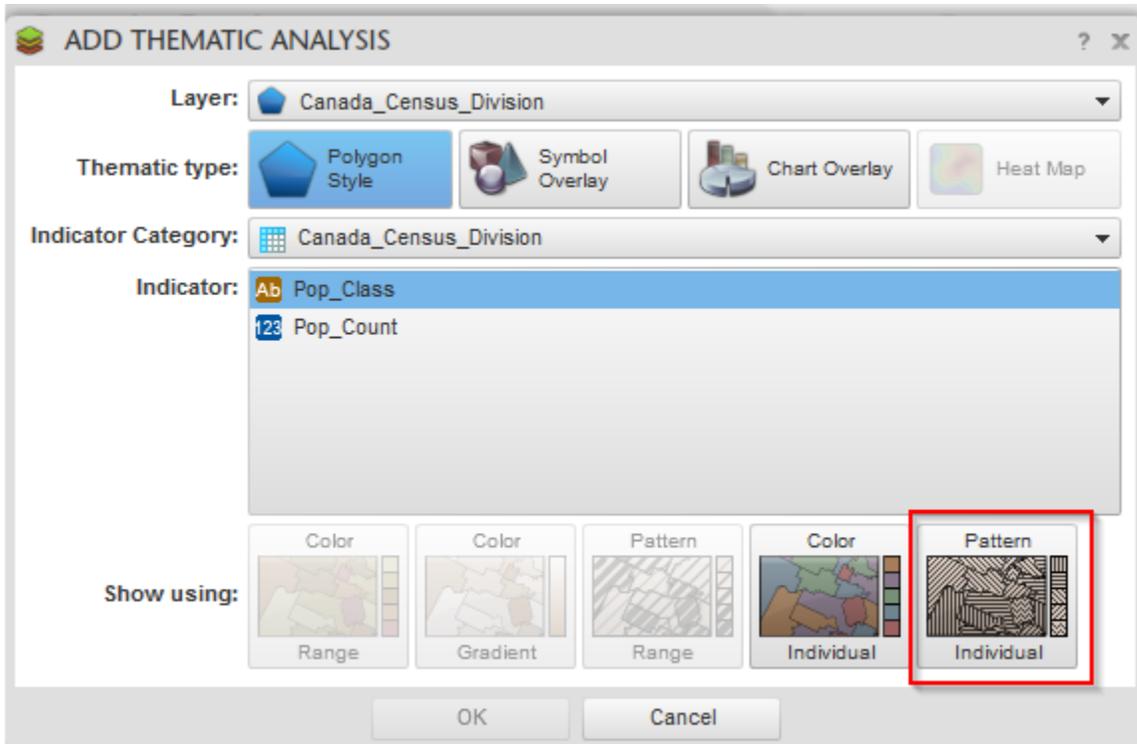


New Graduated Polygon Patterns

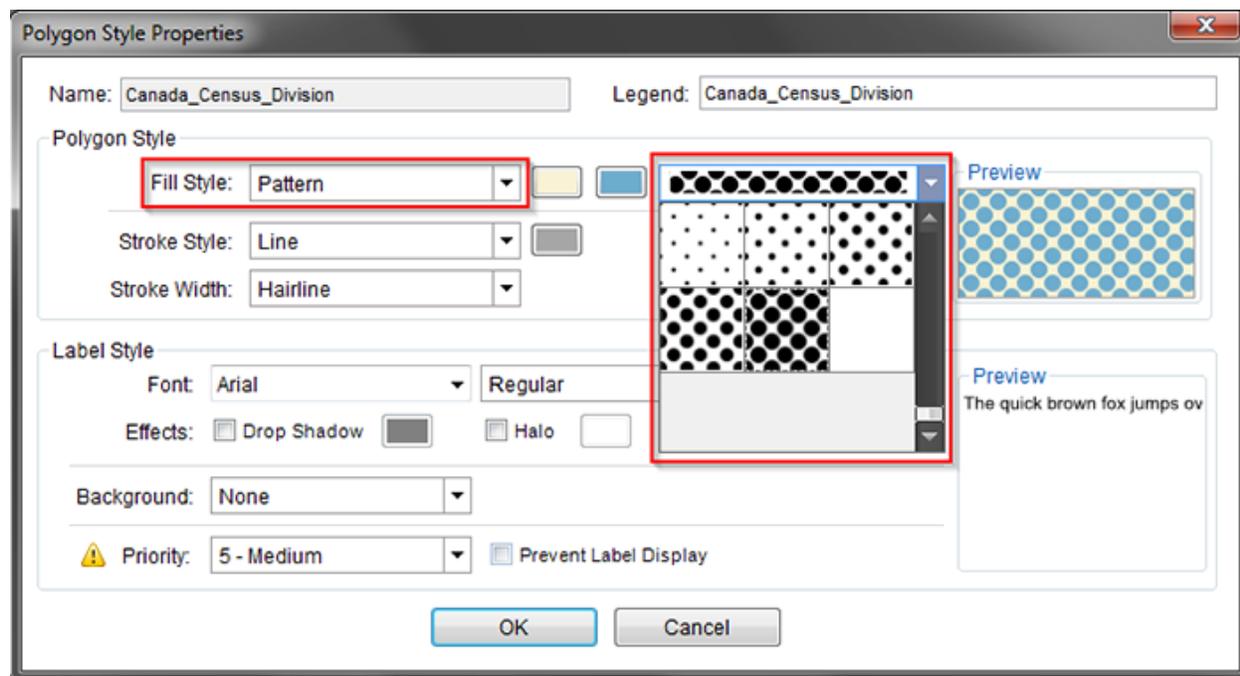
5 new graduated polygon patterns sets have been added to fill polygons: **Dots**, **Double Diagonal Hatch**, **Hatch 135 degree**, **Hatch 45 degree**, **Spaced Hatch 45 degree**. Each new pattern set contains 5 graduated variations.

These new graduated polygon patterns have been integrated within the Thematic Analysis creation process.

When a new Thematic Analysis is added, to a polygon layer, Graduated polygon patterns can be applied to individual values or range values depending on the indicator type selected. This increases the capabilities to view multiple indicators together in the same map within the CartoVista Viewer.



Furthermore, these new graduated polygon patterns have been added to the polygon fill palette, providing additional mapping design options to increase Polygon data display possibilities.

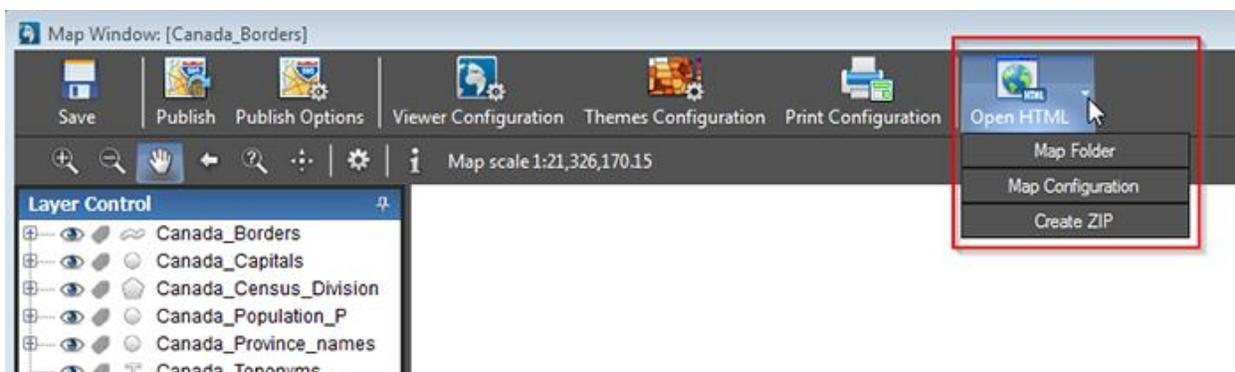


New HTML Output Packaging

In the Map Window, the Open HTML button now has an option to package your HTML output to a zip file (Create Zip).

The new HTML Output packaging will simplify moving your publication from your working environment to your dedicated server.

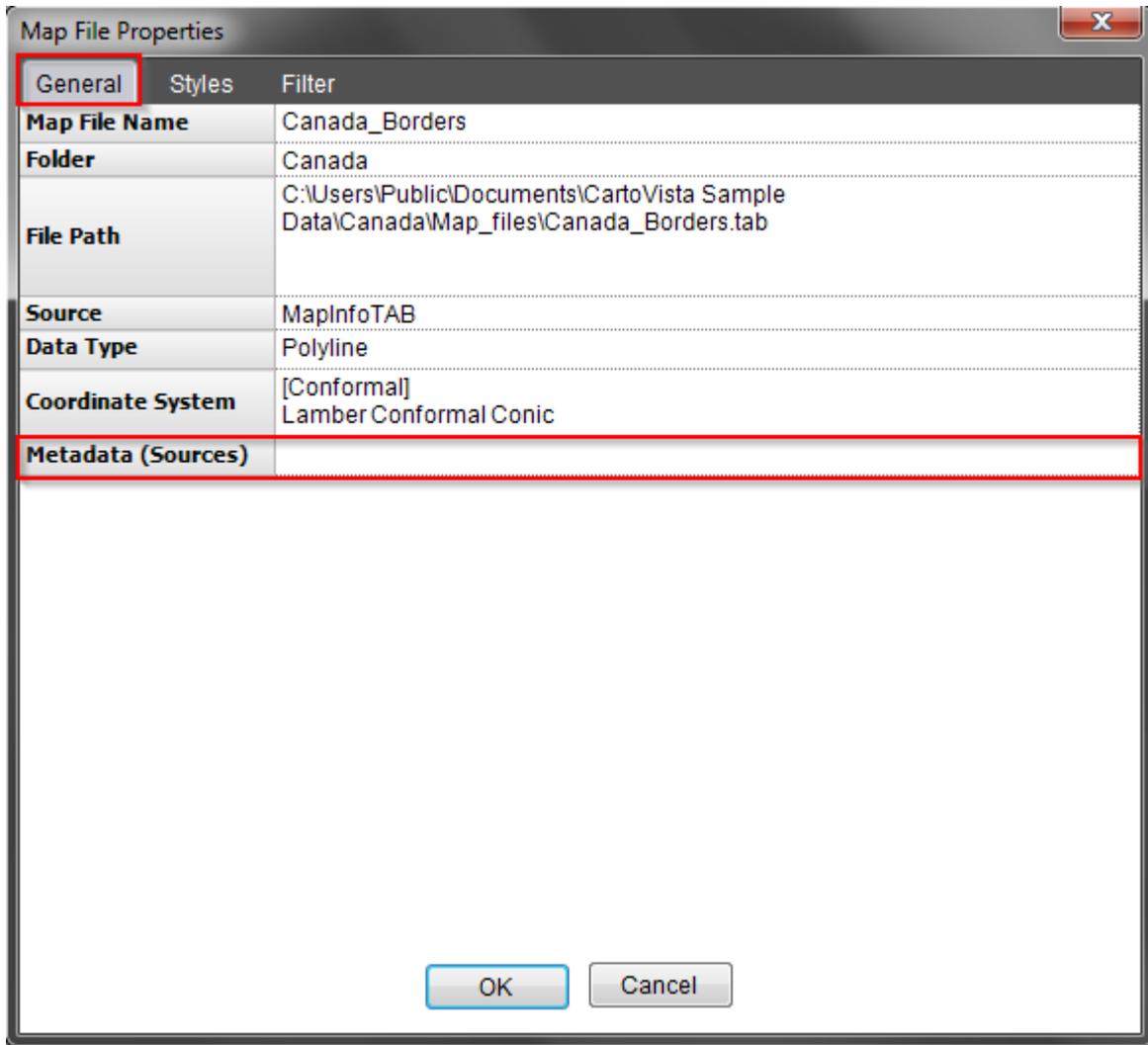
Furthermore, an option to open the map folder where the associated published .html files resides and an option to open the published map's configuration file have been added to the OpenHTML button.



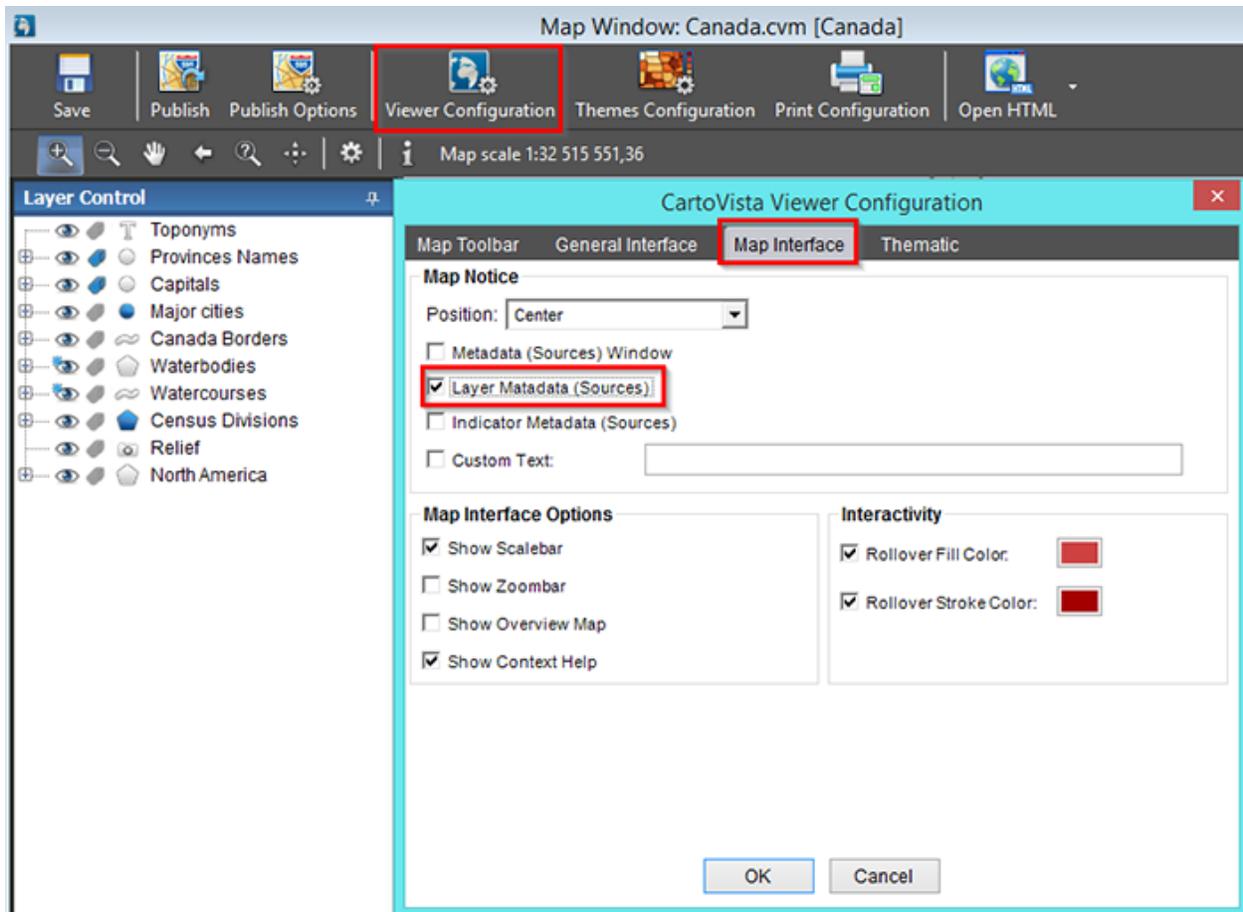
New Metadata Field

It is now possible to add Metadata to individual layers in the Map File Property dialog at the Map Source level or in the Layer Properties Dialog from the Layer Properties dialog at the Publishing window level.

A link to a web page, text content or other information that is required to pass along to CartoVista Viewer users regarding layer data sources can now be easily included in your publication.



Metadata text added to a Map File or a Map Layer can be displayed in the CartoVista Viewer. To achieve this, a Layer Metadata check box was added in the CartoVista Viewer Configuration > Map Interface Tab: Map Notices area.

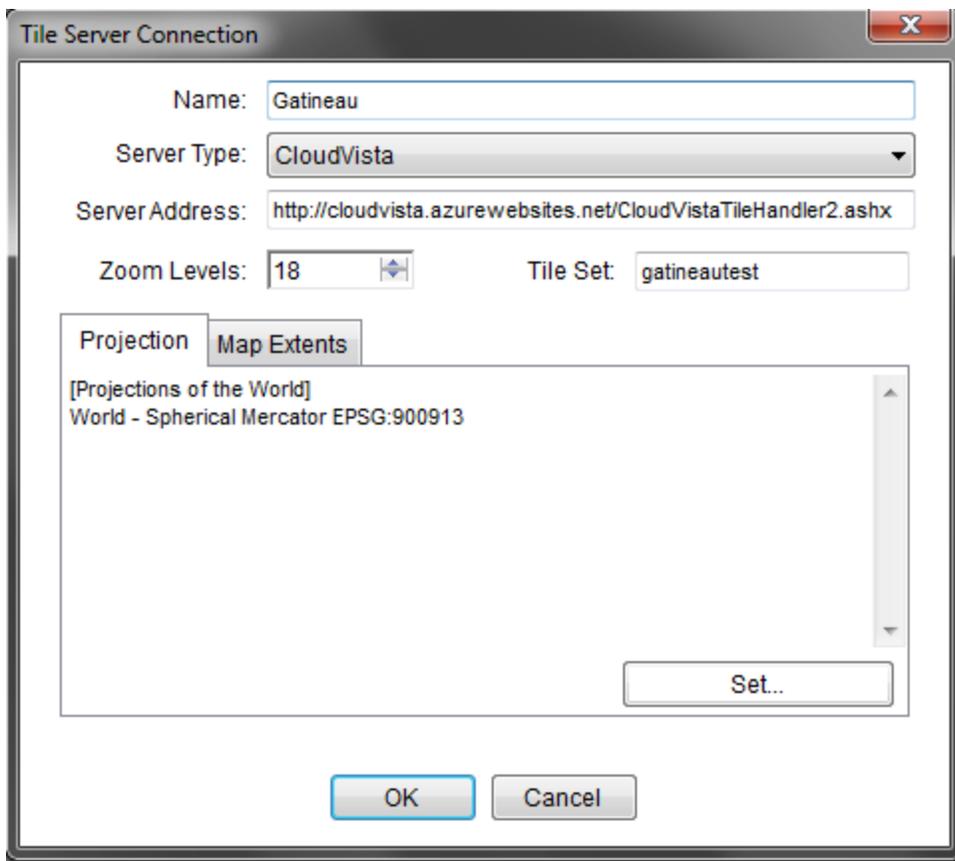


New CloudVista Tile Providers Capability

Cloud hosted CloudVista map tiles can now be included in your publication via the Tile Server Connection dialog.

This new capability of CartoVista leverages the benefits of Cloud Storage.



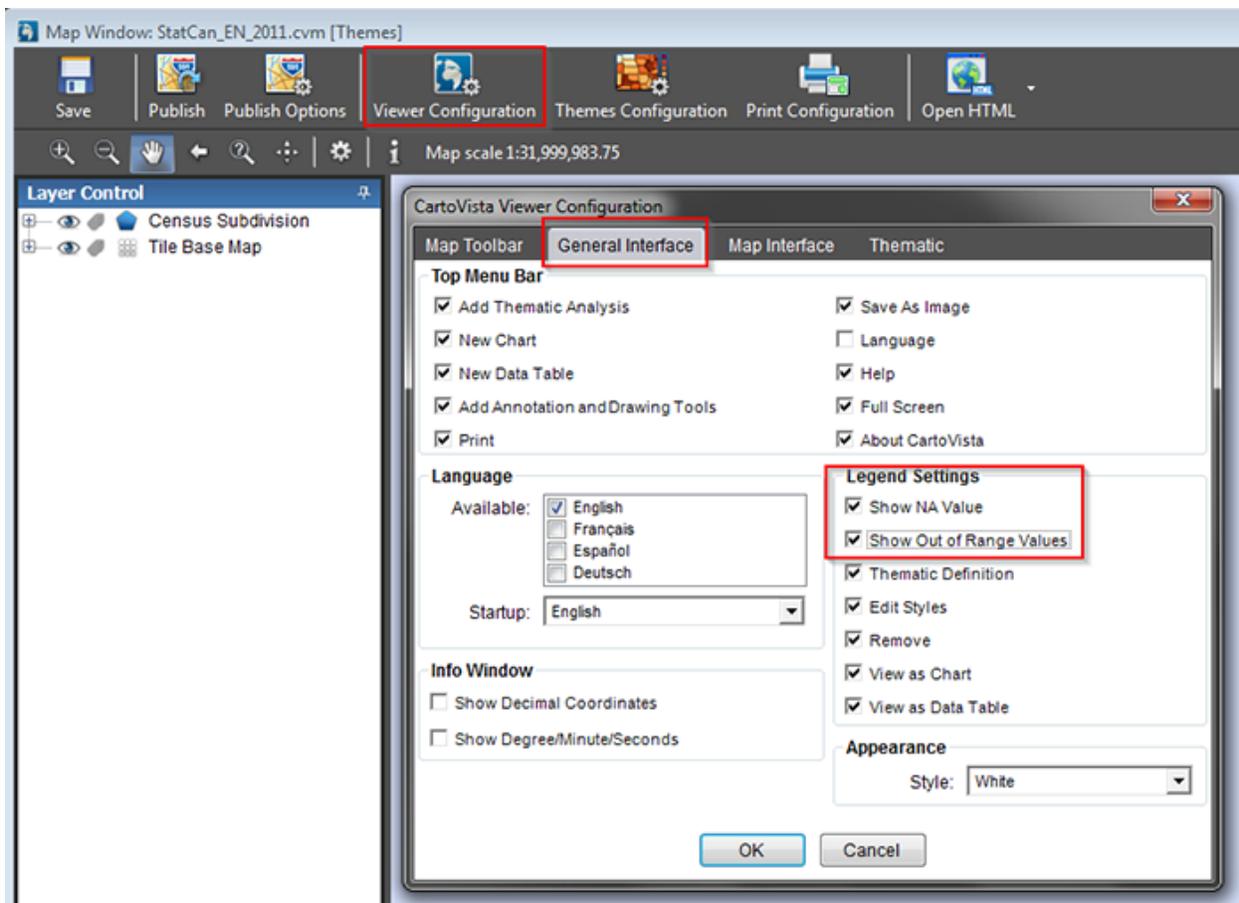


Handling of out of Range Values

The ability to show out of range values in the CartoVista Viewer Legend has been added following user demand. Out of range values apply to theme sets with thematic analyses by range. If this feature is set and there are values in the data outside of the default ranges a new item called "out of ranges" with the feature count will be displayed in the CartoVista Viewer's legend box.

To set this new feature a "Show out of Range Values" checkbox was added to the "Viewer Configuration > General Interface Tab".

Furthermore, to improve usability, the "Show NA Value" and "Show Out of Range Values" options have been regrouped into the Legend Setting group.



Increased Stroke Width Capability

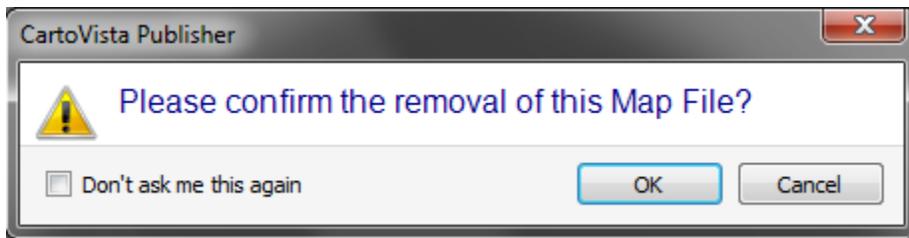
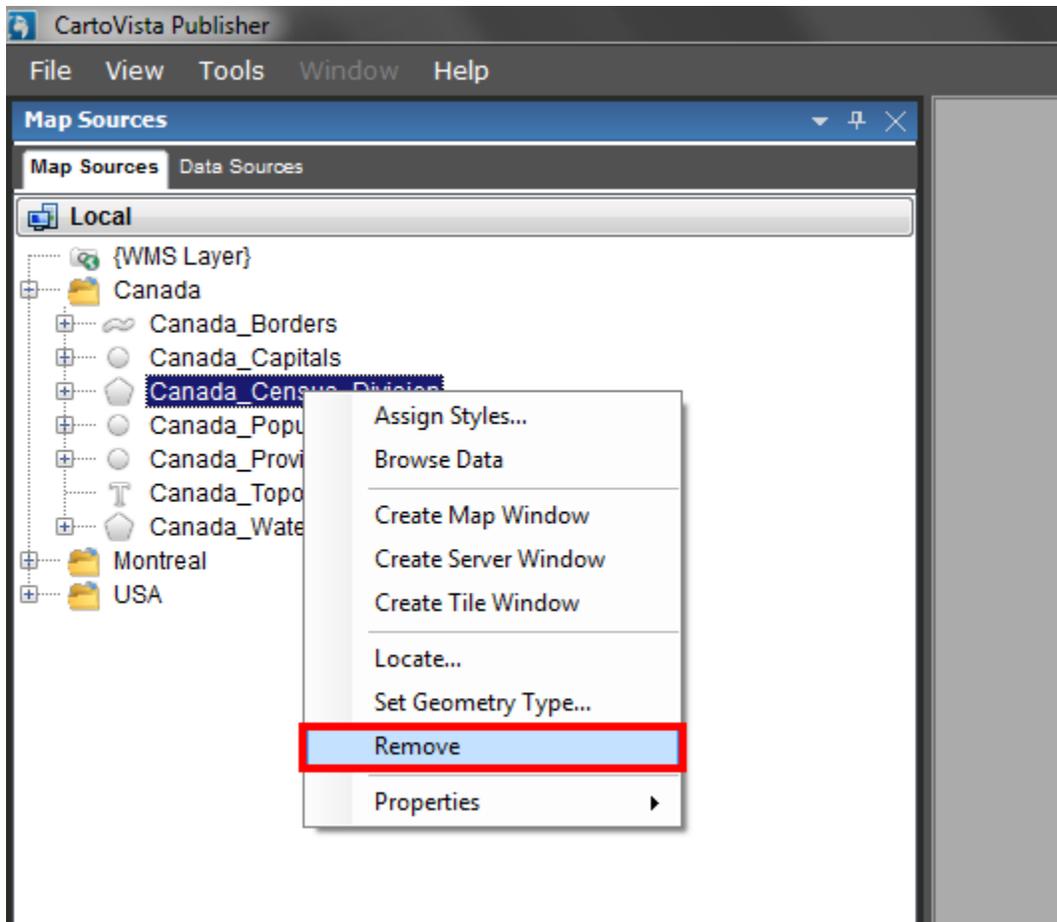
Stroke width properties can be set from 1 to 25 pixels. Previously, maximum stroke width was limited to 10 pixels.

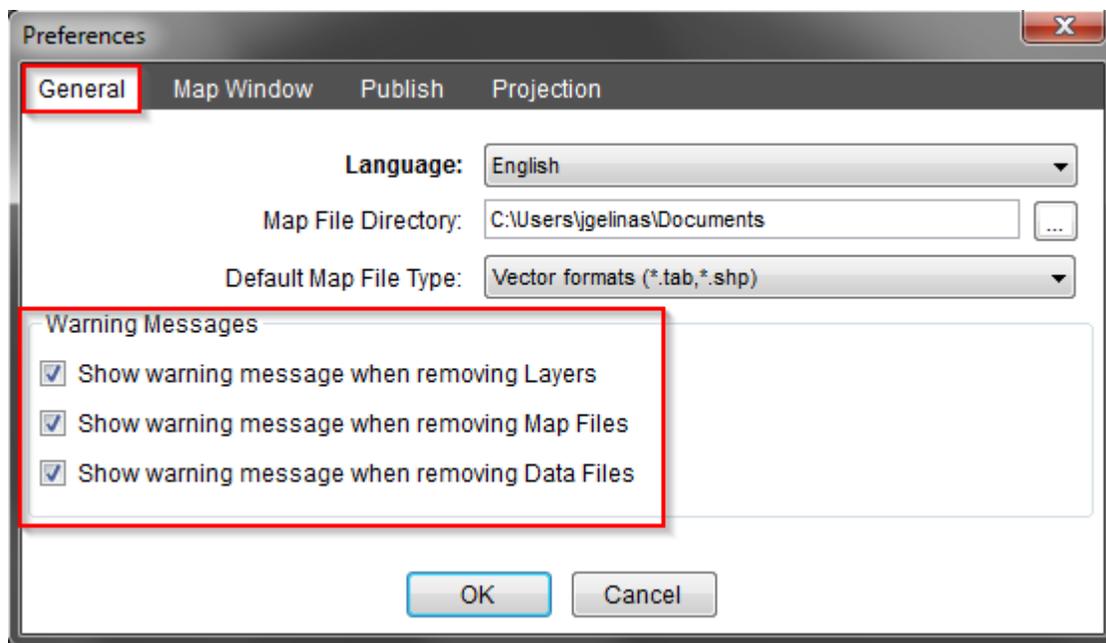
This user requirement enhances the already powerful Cartographic design tools included in the CartoVista Publisher.

New Confirmation Dialogs

A confirmation dialog box is now launched when you remove a Layer from the Layer Control, a Map File from the Map Source Manager or a Data File from the Data File Manager. A "Do not ask me again" option is available within the dialogue to turn off the use of the launched dialog. These new confirmation dialogs can be managed using the Tool > Preference > General Options Tab. 3 check boxes have been added so you can turn on/off the warning dialogs.

This new feature was based on user requirement to prevent adversely removing linked files.

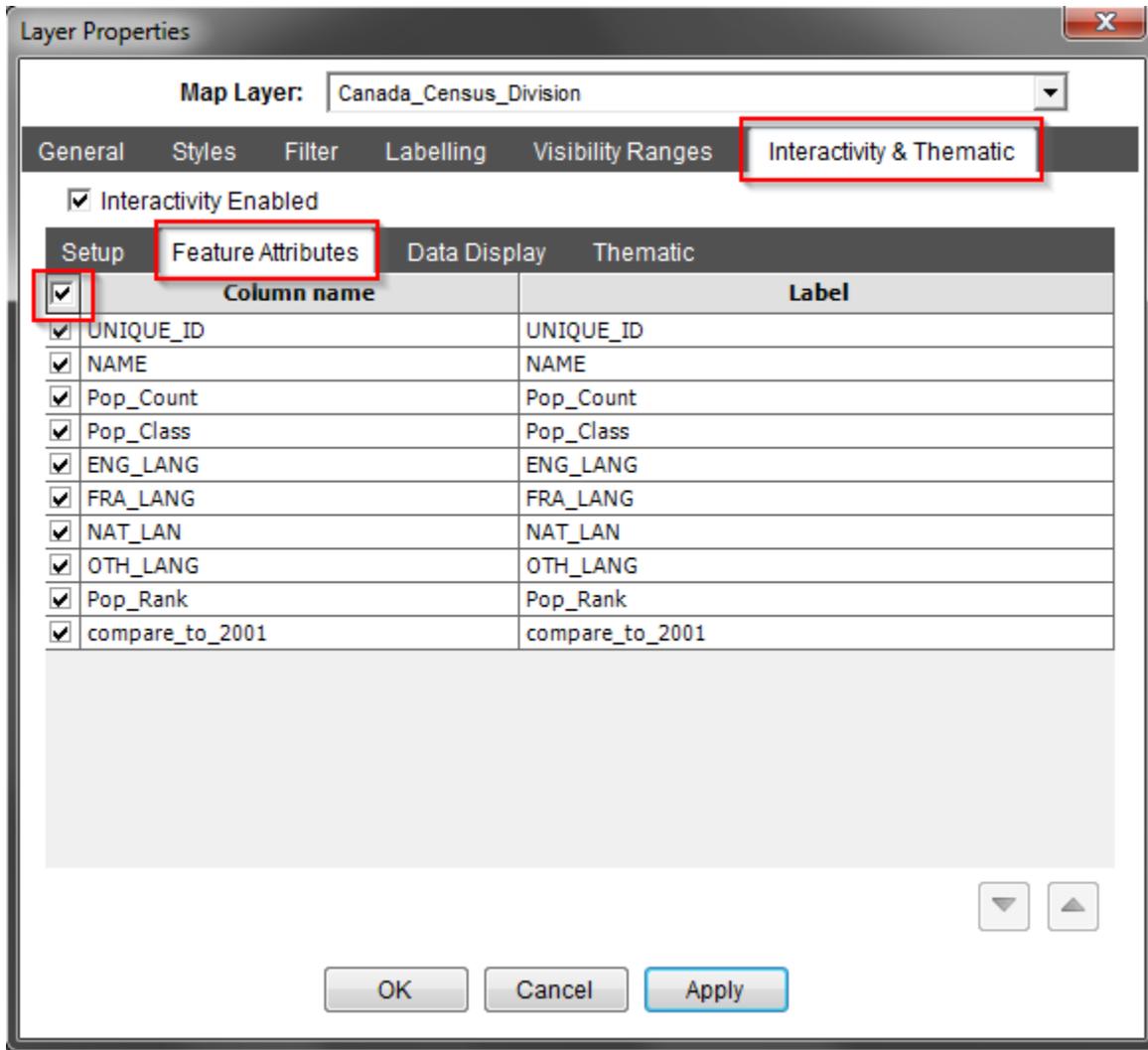


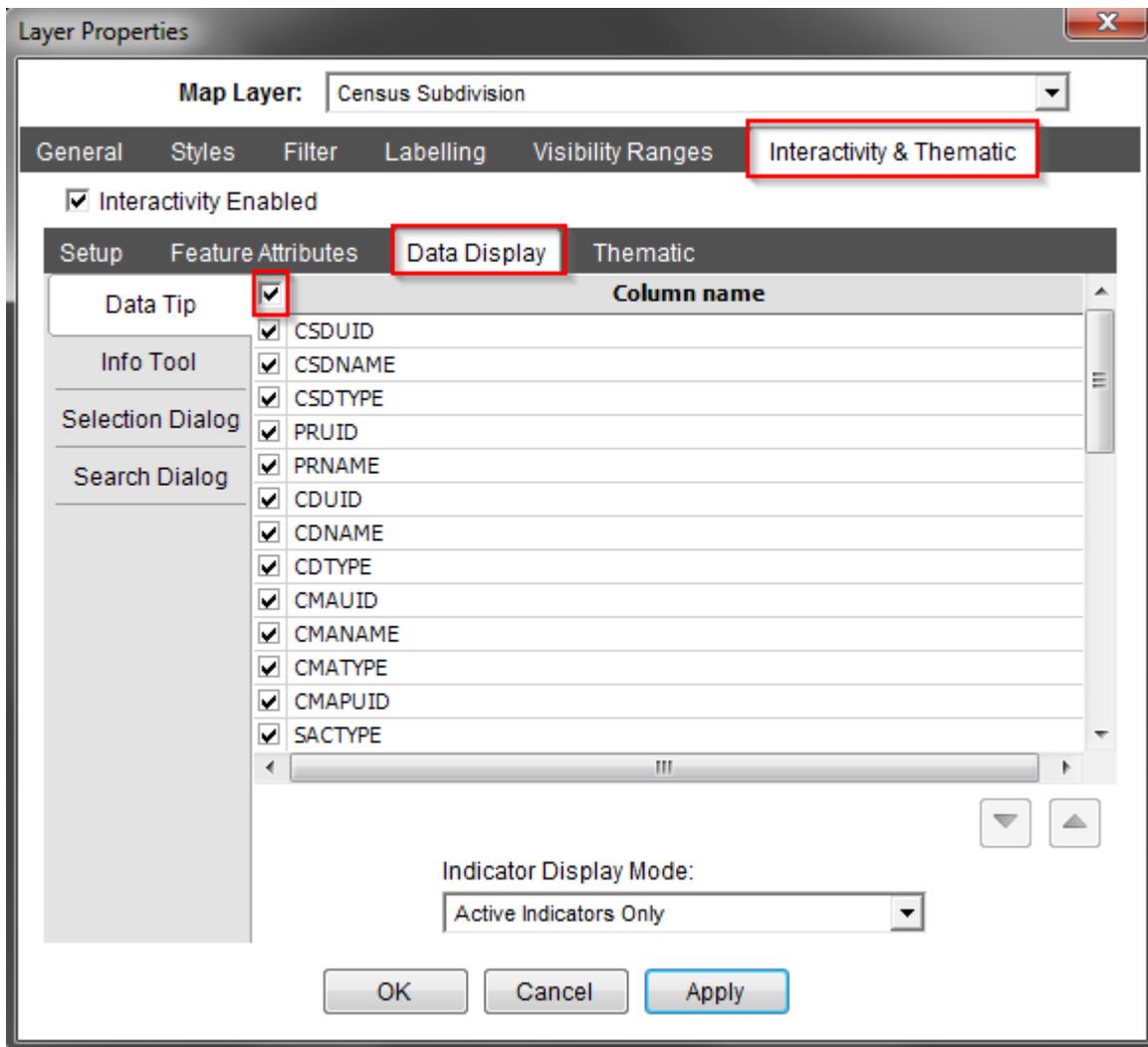


Select and Unselect all Attributes

A Check/Uncheck ALL checkbox was added to the Attribute grids. You can now select or unselect all columns (that are not setup for use) within the Layer Properties > Interactivity & Thematic > Feature Attribute and Data Display Tab.

This new check box enhances the efficiency of selecting and de-selecting attributes.





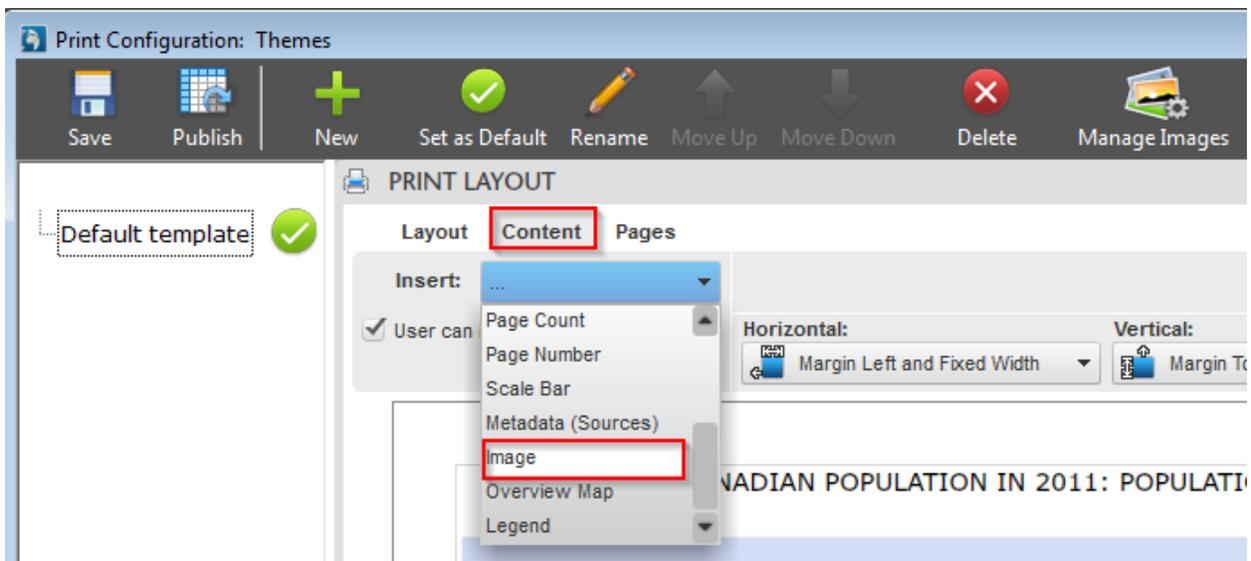
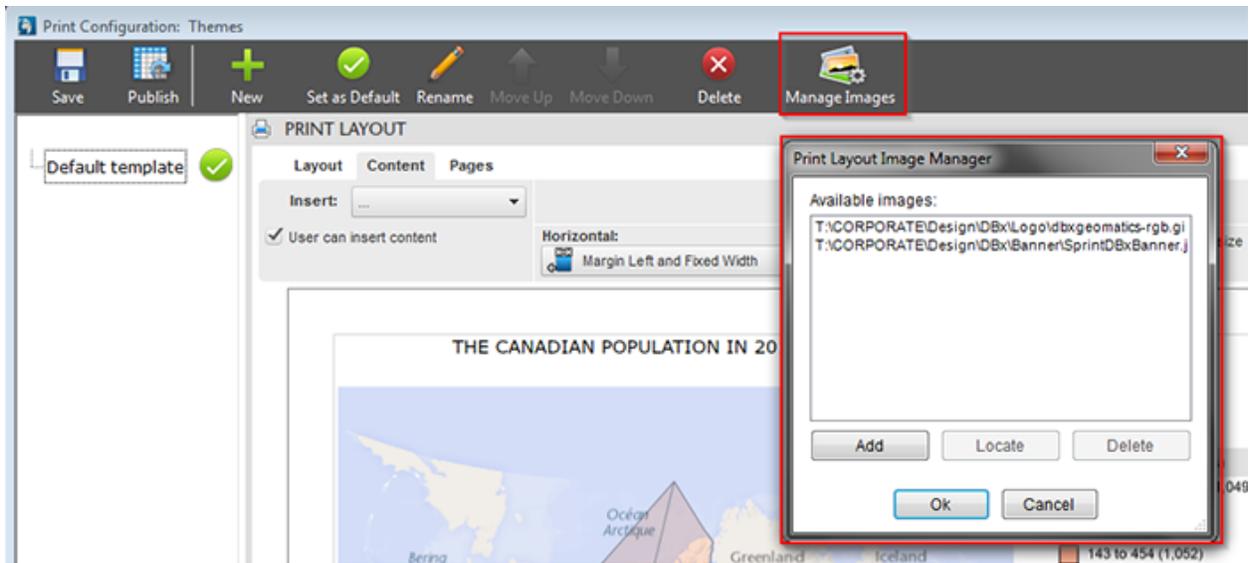
Print Configuration New Image Management System

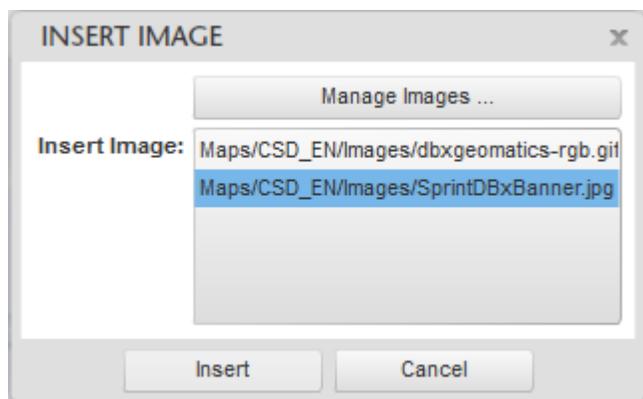
An image management system has been added to the Print Configuration window.

You can add numerous images links in the image management system (e.g. Logos, photos). Stored image links can easily be retrieved and the associated image inserted as a Content Item in a Print Layout.

This new feature increases the efficiency of preparing predefining print templates within the CartoVista Publisher before publishing to the CartoVista Viewer.

CartoVista Publisher Documentation

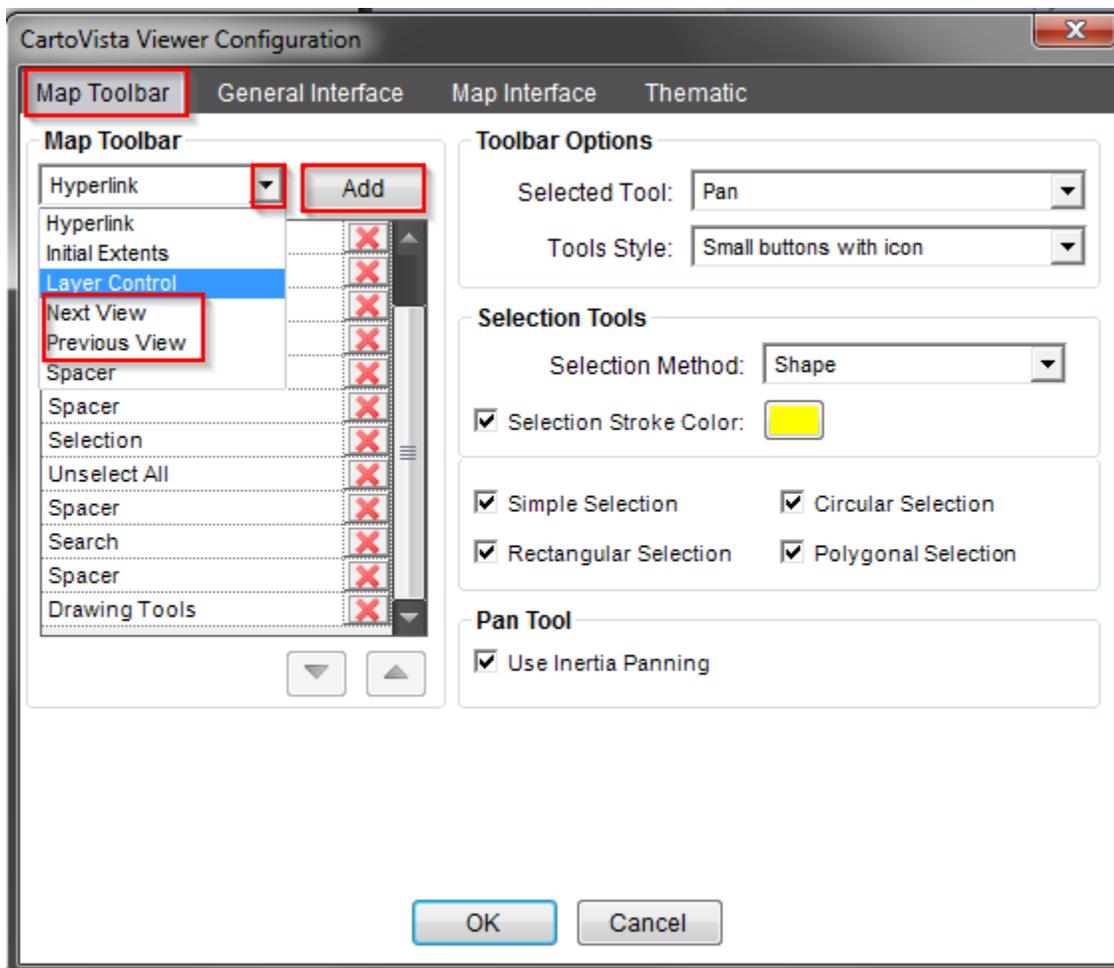




New Option to Add a Next View and a Previous View Tool to the CartoVista Viewer

You can now add Next and Previous View tools in the CartoVista Viewer Configuration > Map Toolbar Tab.

This new feature allows more design flexibility. Next and Previous View tools ultimately increase map navigation efficiency in the CartoVista Viewer.



Improved Interaction with Windows

New Map Files that are dragged from your Windows Explorer and dropped into the CartoVista Publisher Map Source Manager folder will automatically be added to that folder.

You can now use the delete key to remove selected Map Files or Map File folders (within the current (parent) level) from the Map Source Manager.

You can also use the delete key to remove selected Map Layers from the Layer Control.

These new features enhance the interaction with the desktop.

New Publisher to Viewer Warning Icon

Warning Icons  are now shown where the use of a feature in the CartoVista Publisher does not perform the same way as in the published version in the CartoVista viewer. You can rollover the icon to obtain information related to the warning.

Numerous other minor improvements were done by the CartoVista Development Team to improve your CartoVista Publisher experience.

Version 4.0



What's new in CartoVista 4.0 ?

What's new in the CartoVista 4.0 Publisher?

Enhancement of thematic analysis configurations

The CartoVista 4.0 Publisher includes new possibilities to manage the thematic analysis configurations by specifying custom content for the legend. This menu is accessible from the Themes Configuration Dialog, after creating themsets.

Average Total Income (\$)

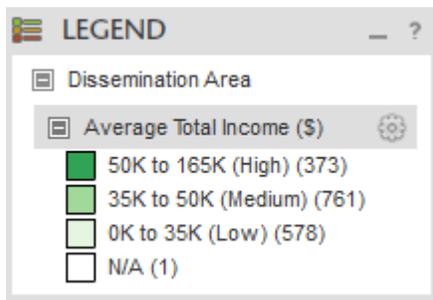
Number of ranges:

Range calculation method:

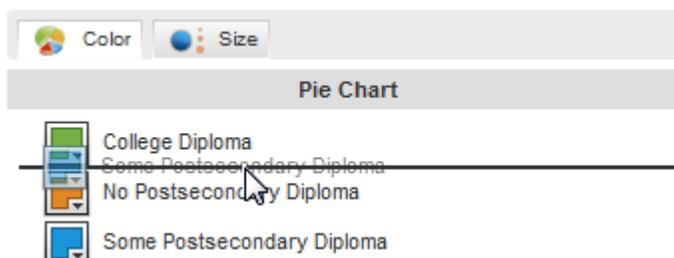
Color palette:

Reverse colors Custom Legend

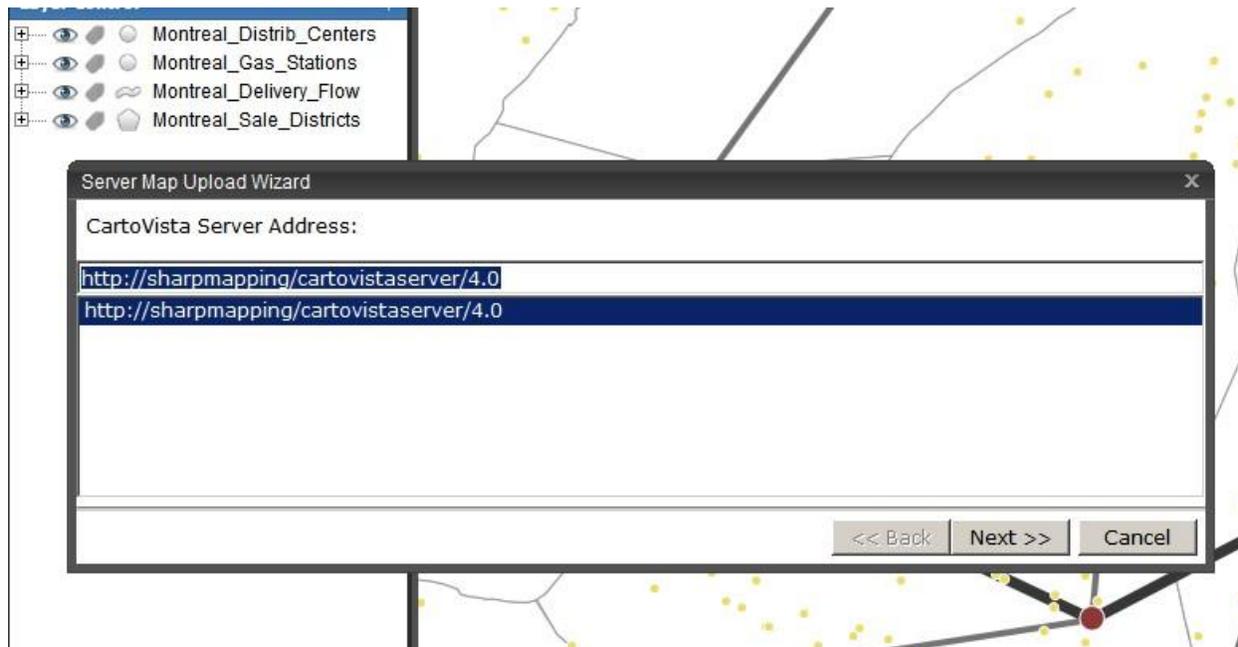
	50000	to	165000	50K to 165K (High)
	35000	to	50000	35K to 50K (Medium)
	0	to	35000	0K to 35K (Low)



For themes by unique values, it is also possible to reorder items using drag and drop.



Server Layer Management - Creating a server map



CartoVista 4.0 allows data administrators to easily create and update their server maps. The map files used in a server map can easily be sent to the server a user friendly wizard. When you are updating a server map GIS data, the publisher only transfers the files that have changed.

Print Configuration Dialog

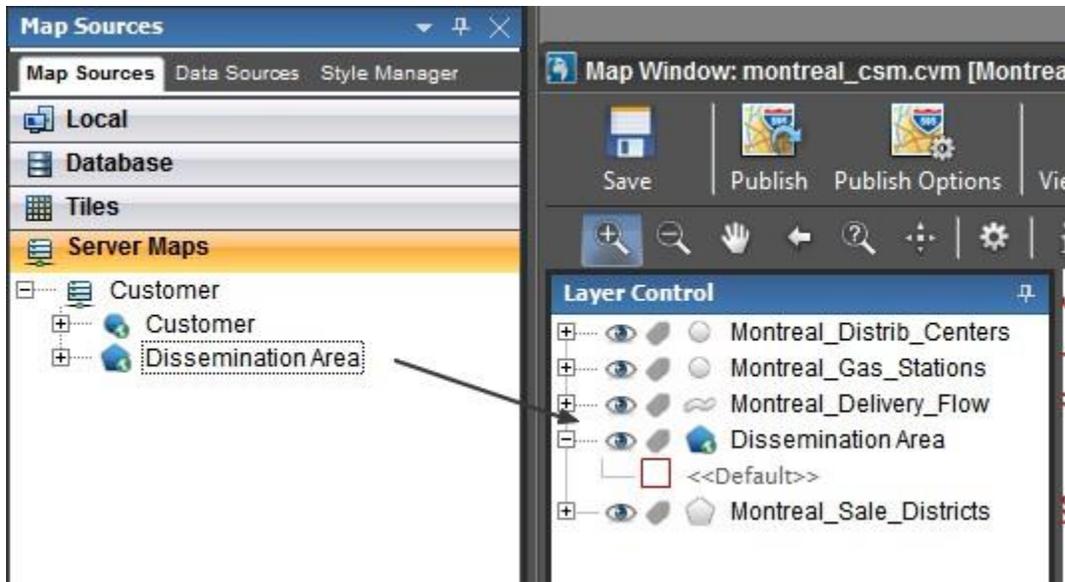
A new Print Configuration dialog is now available in the map window. It allows preparing print layout templates. Those templates are then available in the CartoVista application, as described in the New print layout management tools section.

The purpose of this dialog is to let the administrator define the content of the templates, and the level of flexibility available to the user to modify them: paper size, inserting additional content, removing some of the template items, or moving them around, etc. The administrator can also decide to lock everything. In this case, the only option available to the user in the CartoVista application is to use one of the available templates.

Alternatively, the administrator can decide to let the CartoVista application user creates its own template directly in the CartoVista Viewer.

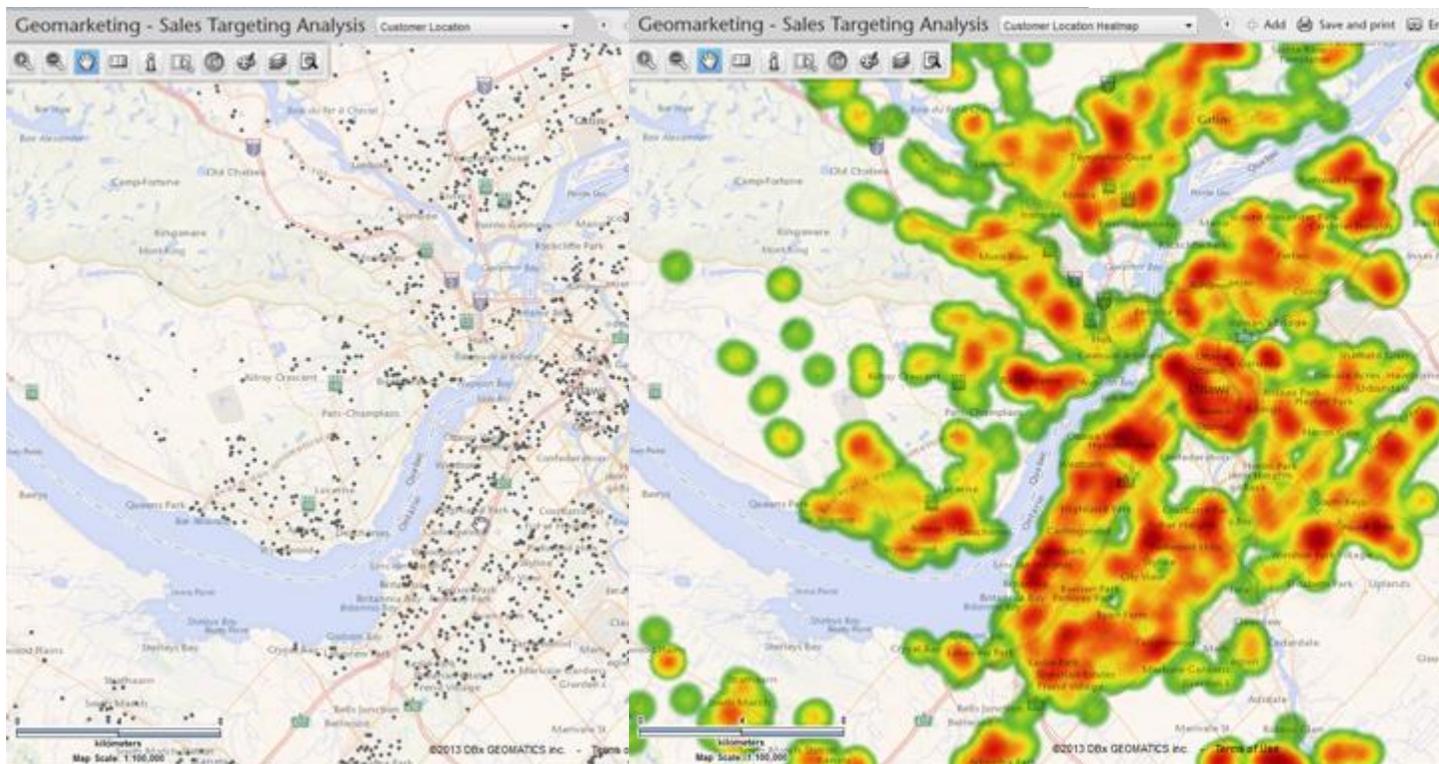
Server Layer - Enhanced tools for using server maps

To use a server map in a CartoVista map, all that is required is to drag and drop the layer in the desired map.



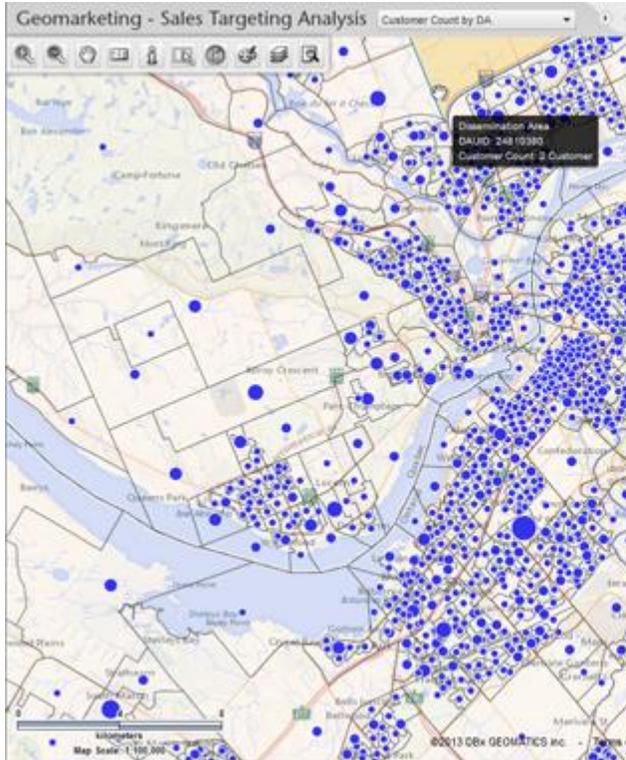
Server map samples

The integration of server layers in the publisher greatly simplifies the process of publishing different types of interactive map, no matter what the data size is.

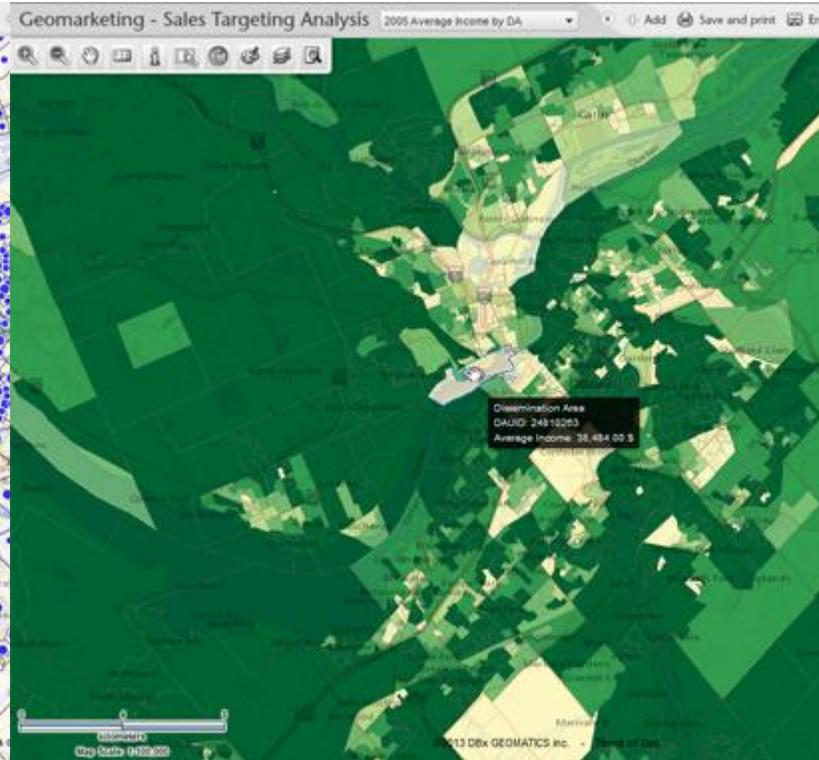


Display of more than 75,000 points

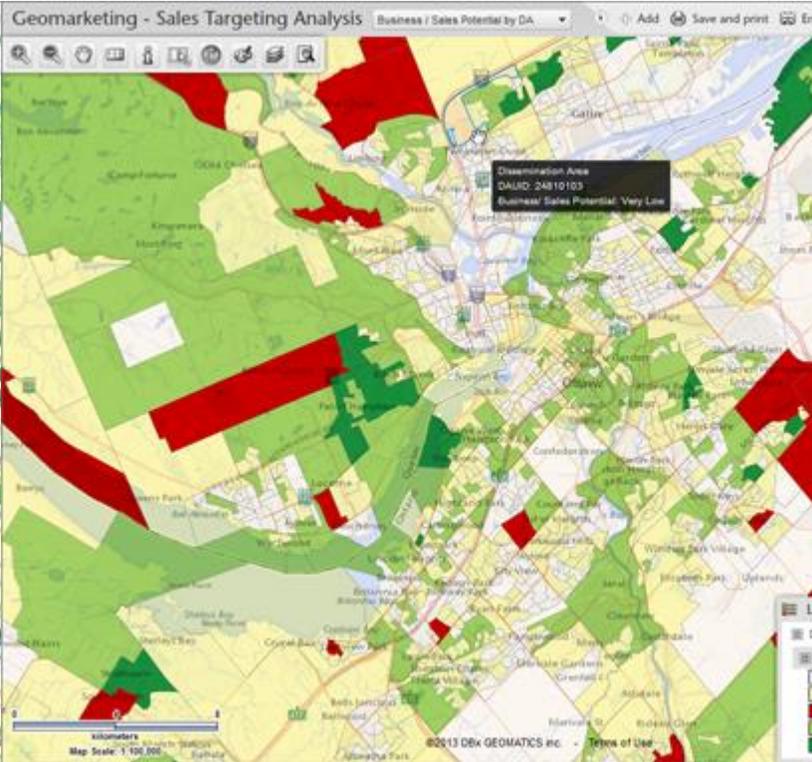
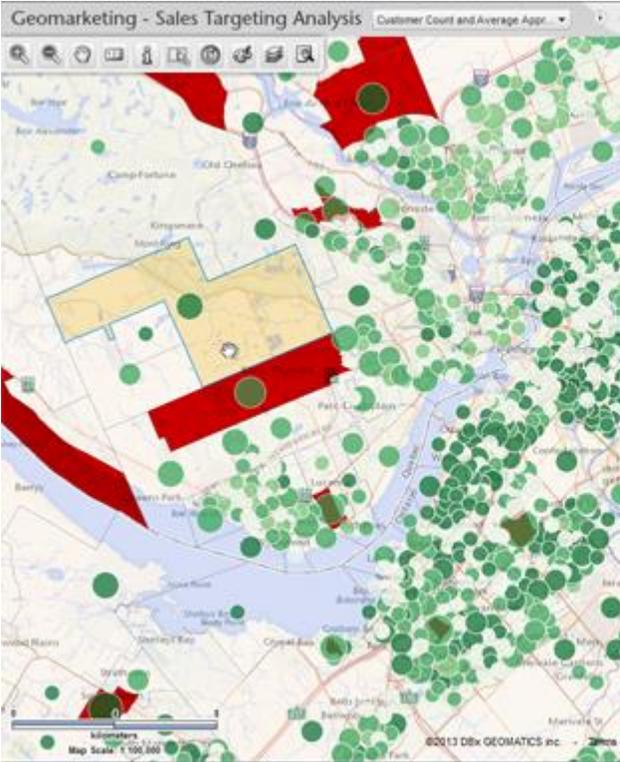
Display of more than 75,000 points -
Heatmap View



Display using Graduated Symbols
(Dissemination Areas)



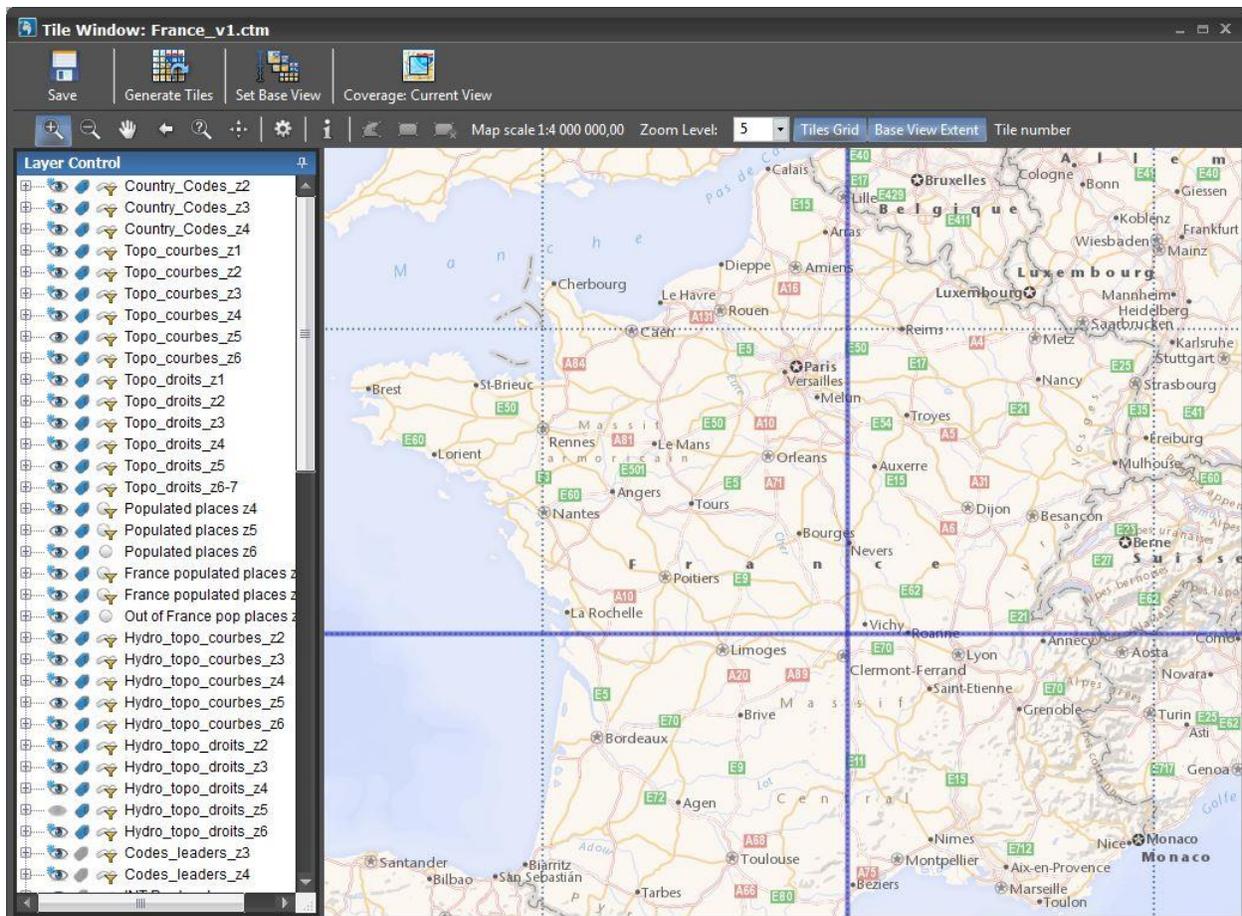
Display of Demographics (Dissemination
Areas)



Target Areas Classification and Graduated Symbols

Business Potential Classification

Tile Generator - Performance enhancements



The performance of the tile generation module has been enhanced significantly. In particular, working with map layers that include advanced graphic effects (inner glow, outer glow, blend mode, drop shadow, etc.) has been fully optimized.

New Tile Providers

New tiles providers are available in CartoVista to offer new cartographic base map options for your projects.

- CloudVista Tiles
- OpenStreetMap German Style
- OpenStreetMap Black and White
- Thunderforest OpenCycleMap
- Thunderforest Transport
- Thunderforest Landscape
- MapQuest OSM
- Esri DeLorme WorldMap
- Esri OceanBasemap
- Esri National Geographic WorldMap

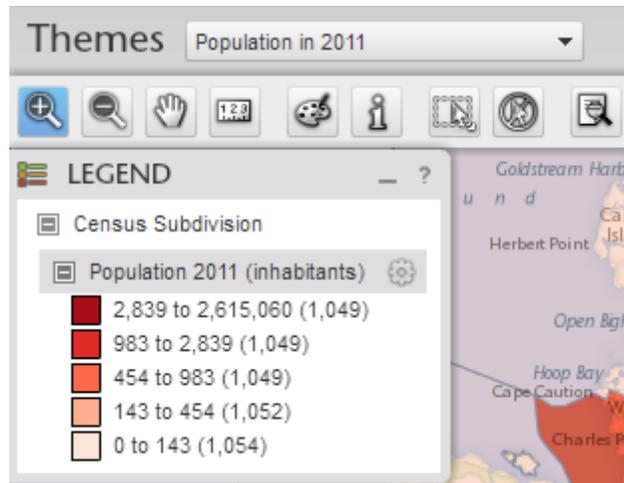
User Interface Enhancements

The Viewer Configuration dialog has been updated with a new presentation to integrate all of the new options. The Attribute tab in layer properties for attributes, info tool, data tip and search have been updated so that they are easier to work with when setting up the interactivity options of your layers.

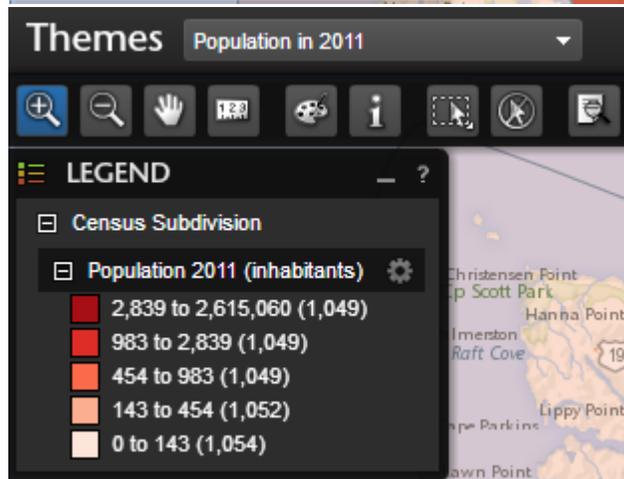
New user interface styles

A new option in the publisher allows to select the interface style to use for the graphic user interface of the viewer.

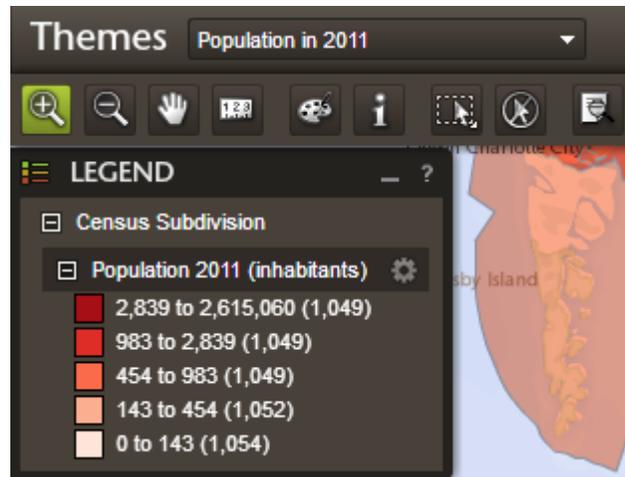
White



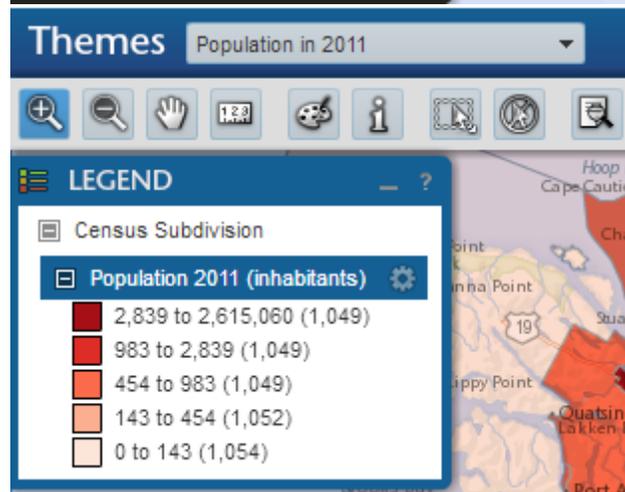
Black



Earth



Blue



Labeling option - Character Spread

This new option available as an advanced labeling property allows great cartographic rendering of linear features. When activated, the associated label text is spread along the path of the line feature.

This option is available only for tile layers and server maps.



Sample Labeling with Character
Spread Disabled

Sample Labeling with Character
Spread - Enabled

Vertical Mapper Grid Support

Vertical Mapper numeric and classified grids can now be used as raster layers in CartoVista.

Enhancements to the tile providers

The tile providers tab in layer properties allows configuring some of the options for tile layers such as the list of providers and the order they appear for the tile base map.

The tile provider for IGN (Institut Géographique National –Géoportail in France) properties have been enhanced with several new options.

A new generic World Mercator Tile provider has been added to connect to new tile providers.

Other enhancements and new features

- Duplicate layer: A new function is available in the layer menu (right click) to duplicate a layer. Right click & copy property values in Map file properties dialog
- Redraw window: Users can now use the Control-D keys to redraw their map window

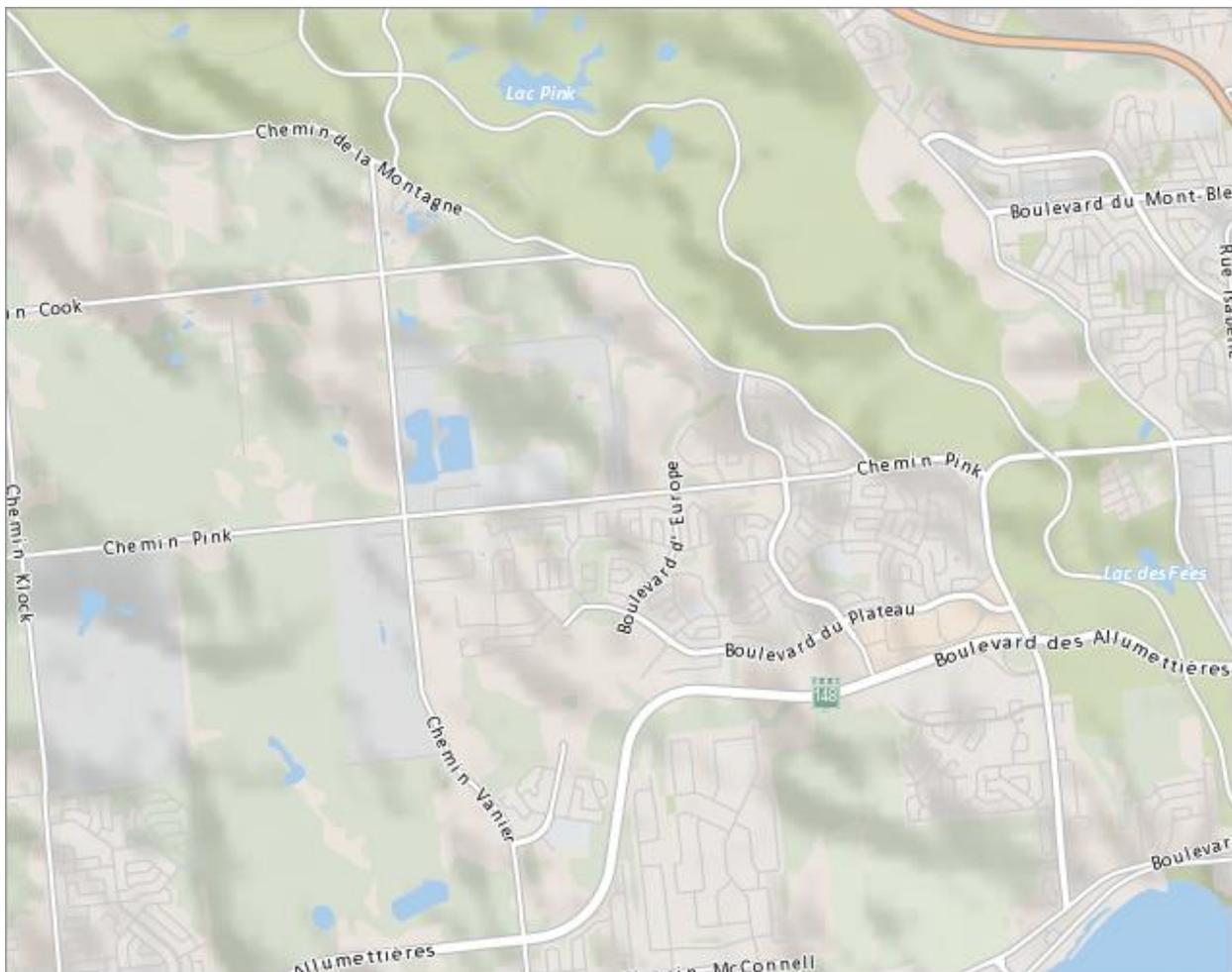
Version 3.8



Blend Modes used inside the Publisher

Blend modes were always available for creating effects between two layers in the CartoVista Viewer. Now it is possible to see the effects inside of the Publisher as well.

One example of when blend modes can be useful is in a tile map window. It allows to create advanced map layer compositing with a shaded relief (e.g. using the multiply blend mode).



Sample Multiply Blend Mode on Shaded Relief Layer

Additional information about the blend mode is available in the Layer section of the Layer Properties.



Layer Effects (Inner Glow, Outer Glow and Drop Shadow)



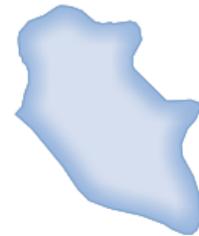
No Effect



Drop Shadow



Outer Glow

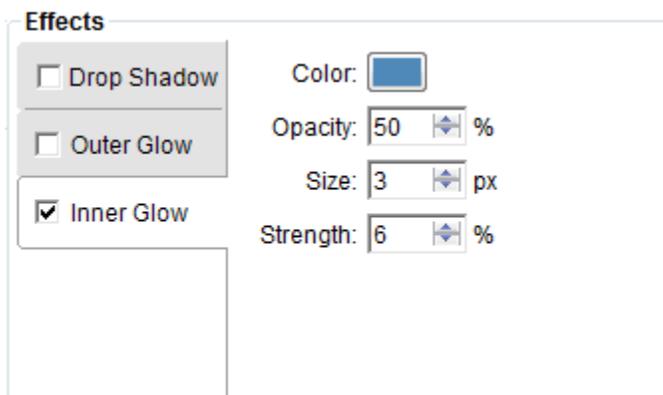


Inner Glow

New graphic effects have been added to enhance the cartographic rendering of Polygon and Polyline layers.

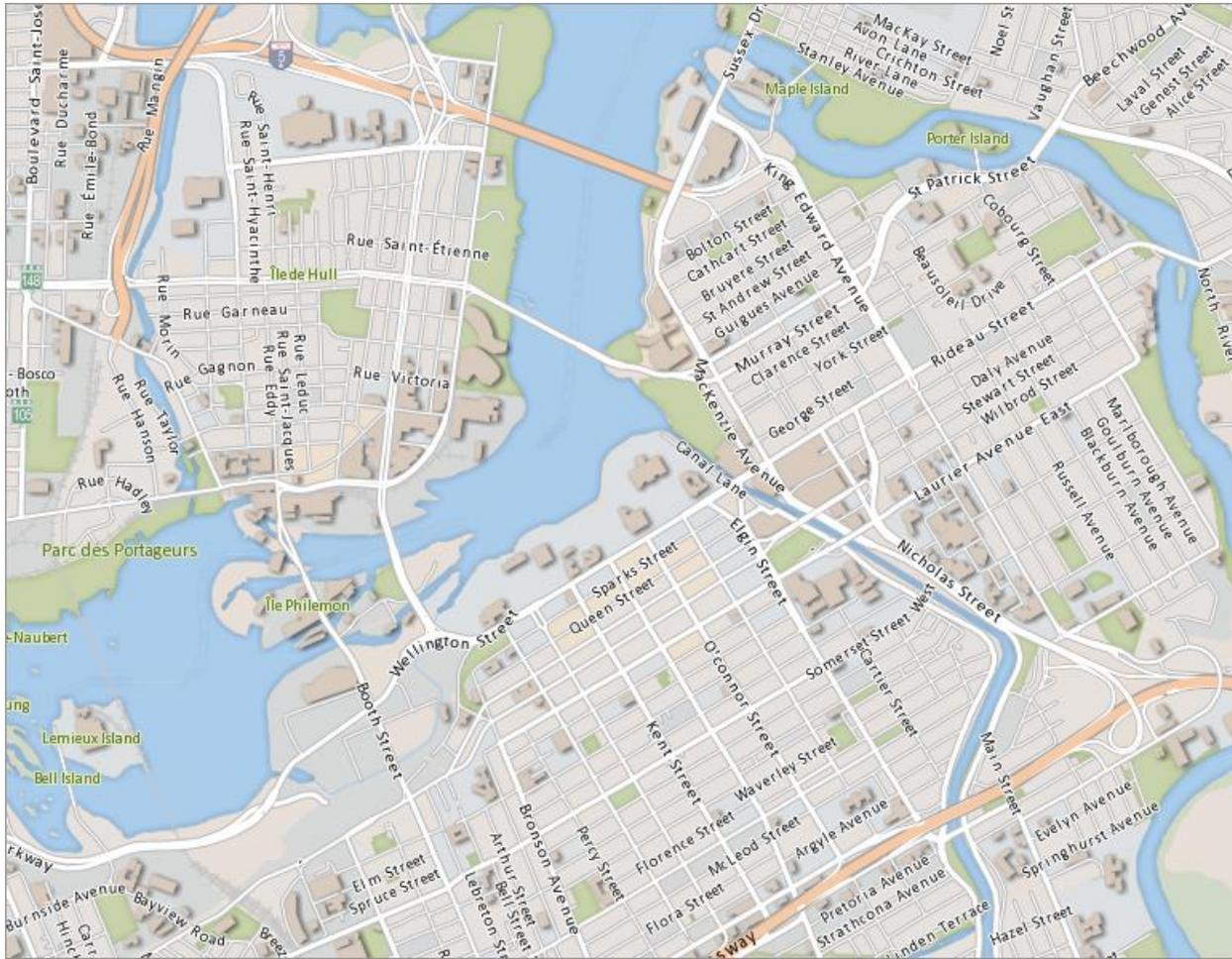
Inner Glow, Outer Glow and Drop Shadow effects can be used to create original layer outputs with precise control on the glow and shadow rendering.

NOTE: These options are only available for tile map windows. Version 4.0 will support layer effects in normal map windows.



Each effect option includes several parameters to control its appearance on the layer such as:

- Color
- Opacity
- Size
- Strength



Sample filters: Inner glow on hydrography and parks, drop shadow on buildings

Additional information about the layer effects is available in the [Tile Window Layer Glow Effects](#) section.



Multiple Tile Providers in One Layer



Having a Tile Provider as a base layer sometimes requires the ability to toggle between several different tile providers. An example would be to allow the user to switch between an aerial view to a road based view.

It is now possible to have only one Tile Provider layer in your map, but still give the user a choice of multiple tile providers to display. This simplifies the layer control for the end user, and reduces the number of layers that are required to give the user options for Tile Providers.

Additional information about the tile providers is available in the [Adding Tile Layers to a Map](#) section.



Interactivity Feature Attributes & Data Display User Interface Update

Setup	Feature Attributes	Data Display	Thematics
Data Tip		Column name	
Info Tool	<input type="checkbox"/>	UNIQUE_ID	
Selection Dialog	<input checked="" type="checkbox"/>	NAME	
Search Dialog	<input type="checkbox"/>	Pop_Count	
	<input type="checkbox"/>	Pop_Class	
	<input type="checkbox"/>	ENG_LANG	
	<input type="checkbox"/>	FRA_LANG	
	<input type="checkbox"/>	NAT_LAN	
	<input type="checkbox"/>	OTH_LANG	
	<input type="checkbox"/>	Pop_Rank	
	<input type="checkbox"/>	compare_to_2001	

The user interface to select Feature Attributes and assign Data Display options, such as Data Tips, Info Results, Selection columns and Searchable columns has been updated to make the interface easier to use.

Additional information about the Attributes and Data Display is available in the [Interactivity and Thematics Tab](#) section of the Layer Properties.

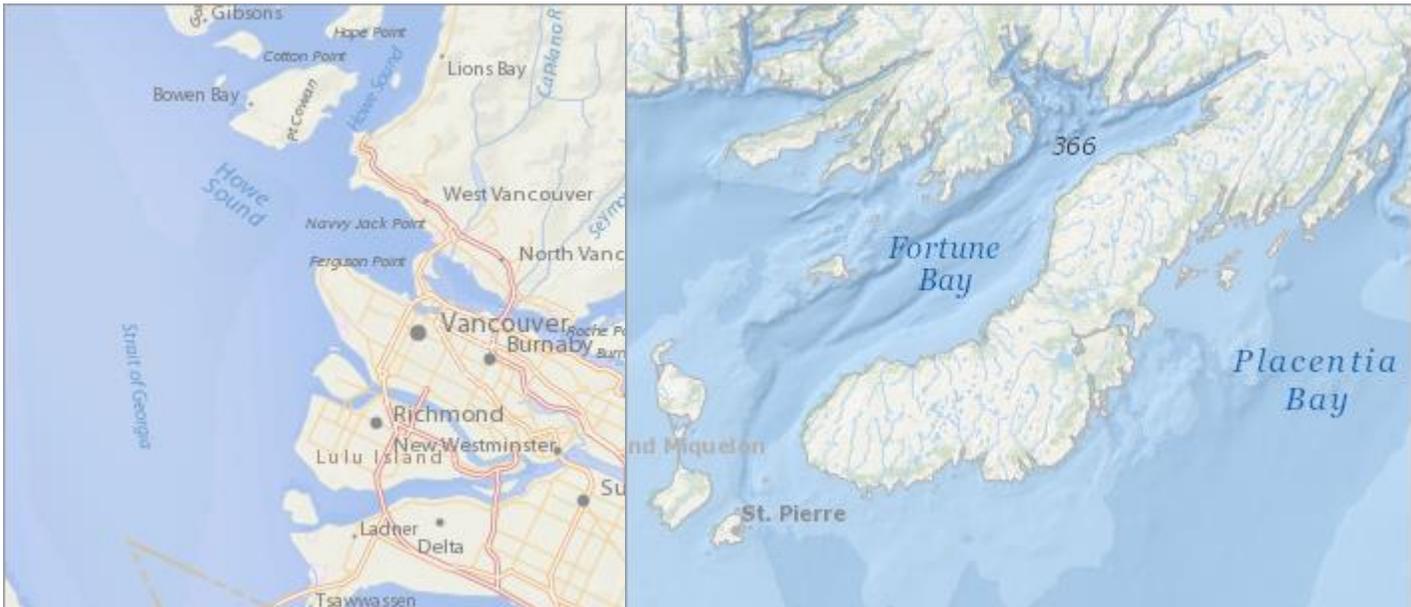


User Specified Tile Providers

The number of tile providers that can be added by a user has been greatly enhanced with version 3.8.

There are now four types of common tile providers that can be added by the user:

- CartoVista Tile Provider from CartoVista
- ESRI ArcGIS World Mercator
- IGN Geoportal 3
- Tile Cache



CartoVista – North America Tiles – Lambert Conformal Conic

ESRI – ArcGIS Online – Ocean Basemap Tiles – Mercator



IGN GeoPortail Version 3 Tiles – France - Tile Cache Tiles – Mercator – Vmap Level
Mercator 0

Additional information about the new tile providers is available in the [Adding a Tile Provider](#) section of the Managing Your Map Files chapter.



Other New Features / Enhancements

Packaging Maps

The concept of map packaging is new in CartoVista 3.8 to help manage and facilitate data transfers.

Packaging maps allows you to collect all the source data files, fonts, images, etc. that are needed for a Map Window into a single .ZIP file. This allows you to transfer the map between different users or computers, and ensure all the relevant data has been included.

Additional information is available in the [Packaging Maps](#) section.

Point Symbol Style Rotation from Column

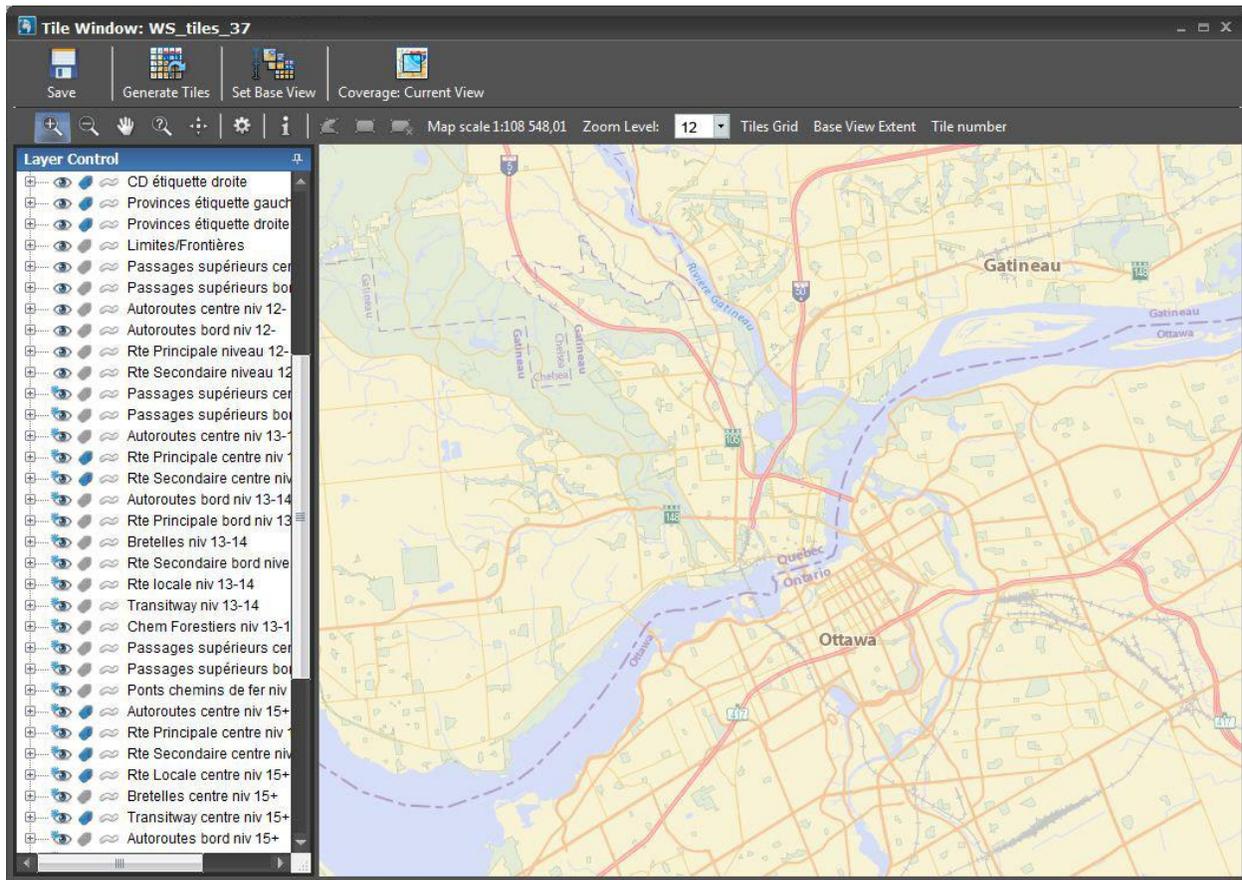
Point Symbols can now be rotated based on the values found in a specific column of the data set.

Additional information is available in the Symbol Rotation Column (Point) section.

Folders in Local Map Source Manager

In order to assist in organizing Map Files within the Map Source Manager, you can now create folders for Map Files within the Local section of the Map Source Manager. This will allow you to easily group your map files, as well as create new maps from all the files within a folder quickly.

Additional information is available in the Local Map Files Folders section.

Version 3.7**Tile Publisher**

The new Tile Publishing Module allows you to create your own tiled base map, using your GIS data.

A new type of map window, the Tile Map, has been added to the CartoVista Publisher to build the cartographic content for tile base maps. Additional parameters and extended object and labelling styles are available to create very high quality and customized outputs.

Tile Base Maps can be created to match the World Mercator Projection (EPSG:3857) compatible with Google Maps, Microsoft Bing Maps, Yahoo Maps, Open Street Map and others. Tile Base Maps can also be created in any other coordinate system to match your specific needs.

The tile creation process is fast, allowing generating about 30 tiles (images) per second on a normal workstation. Detailed zoom level control allows you to create

CartoVista Publisher Documentation

only the desired zoom levels necessary. Tiles images will be created locally or on a network location in a structure that is optimized for data access.

Once the tile base map is created, it can easily be added to the list of available tile providers to quickly integrate into a CartoVista map output.

For more information on this module, see [Creating & Publishing Tiled Base Maps](#).

NOTE: The Tile Publisher Module is an Add-In to the standard CartoVista Publisher. It requires the purchase of an additional license in addition to the license for the Publisher.



Point Style Enhancements

The cartographic capabilities to render points has been greatly enhanced with version 3.7.

There are now two possible ways to style points. It is now possible to style a point by using bitmap images, as well as using a TrueType font.

The new Image Point Style offer the capabilities to construct your own symbols from existing images in GIF or PNG format. Since these images support transparency, you have the flexibility to setup custom styles with great looking effects very easily.

Image Point Style allows you to specific up to three different bitmaps, one for the fill, one for the outline, and finally one for the rollover effect (e.g. changing color).

For more information on how you can define point styles, see [Point Layer Styles](#).



Expanded Database Connectivity

Geospatial Relational Database Management System (RDBMS) Support

The CartoVista Publisher 3.7 includes full support for some of most common relational database management systems on the market.

Map layers can be easily created from corporate GIS databases and published in a CartoVista SWF map.

The following Geospatial databases are now supported in this release:

- Oracle Spatial 10g or later
- PostgreSQL (PostGIS) Version 8 or later.
- Microsoft SQL Server 2008 - Spatial

It is also possible to connect Data Files directly to Oracle and PostgreSQL databases (in addition to the already existing Microsoft SQL Server).



Style & Manager Dialogs Redesigned

The Style Editor dialogs have been streamlined to provide a simpler, cleaner interface to choose from the numerous style options that CartoVista offers for points, lines and polygon features.

The Map File Manager and Data File Manager have now become the Map Source Manager and Data Source Manager with the addition of a separate panel to display Map/Data files that are connected to databases. The Map Source Manager also separates the Tile Providers into a third panel, making it easier to find exactly the Map/Data file that you're looking for.

For more information, see [The Map Source Manager](#) and the [Data Source Manager](#).



Viewer License Support

Starting with CartoVista 3.7, as part of a CartoVista deployment, the Viewer Component requires all CartoVista Maps to contain a license key.

Support to enter your license key has been added into the Publish Options Dialog (see [Publishing a Map](#)).

NOTE: Without the key, a "Demo/Evaluation" watermark will be displayed by the Viewer.

For information on how to get a license key, contact CartoVista support/sales by email at: support@cartovista.com

Version 3.5



Data Publisher Enhancements

CartoVista Publisher 3.5 has the following enhancements to the Data Publisher:

- In order to publish your data, the indicator's source data file no longer needs to be in the Data File Manager after the indicator is created. This makes it much easier to transfer maps to another CVP user.
- You can now "locate" an Indicator's data file if the source data file has been moved or is missing.
- The maximum number of indicators can now be set as a global preference to values from 1 to 1000.
- Keyboard shortcuts for deleting, copying and pasting have been enabled



Map File Filters

Map File filters allow you to select a subset of the features in a Map File for display and publishing. This lets you have one source GIS data file and open it several times in the Map File Manager with different filters to expose only specific subsets of the source data file.

Filtering is done by evaluating an expression on one (or more) attribute columns of the Map File. There are currently three methods of filtering available:

1. Simple – a single attribute column is compared to a specific value
2. RegEx – a single attribute column is compared to a Regular Expression
3. Expression – One or more attribute columns are compared to values and if necessary combined using AND, OR and NOT operators.

For more information on Filtering see the chapter on [Filtering Map File Data](#).



Setting Viewer Themes

To assist in configuring the published CartoVista map, the Preview button in the Map Window has been renamed “Themes Configuration”. A Theme is the particular combination of any Thematic Analysis displayed, along with the specific settings for how to display it, such as the number of ranges, colors etc.

The [Themes Configuration Window](#) allows you to interact with your published Map, and setup one or more themes for the Map. One of these themes will be set as the default theme to load on startup.

For more information on these and other enhancements to the Themes Configuration Window, see the Chapter on Themes Configuration.

Version 3.1



Multiple Map Windows

The CartoVista Publisher now supports having multiple Map Windows open at the same time. You can open additional map windows in any of the normal ways you can open a Map Window.

NOTE: Do not open the same CVM file multiple times, or you may end up overwriting changes from one window with another window.



Data Publisher Enhancements

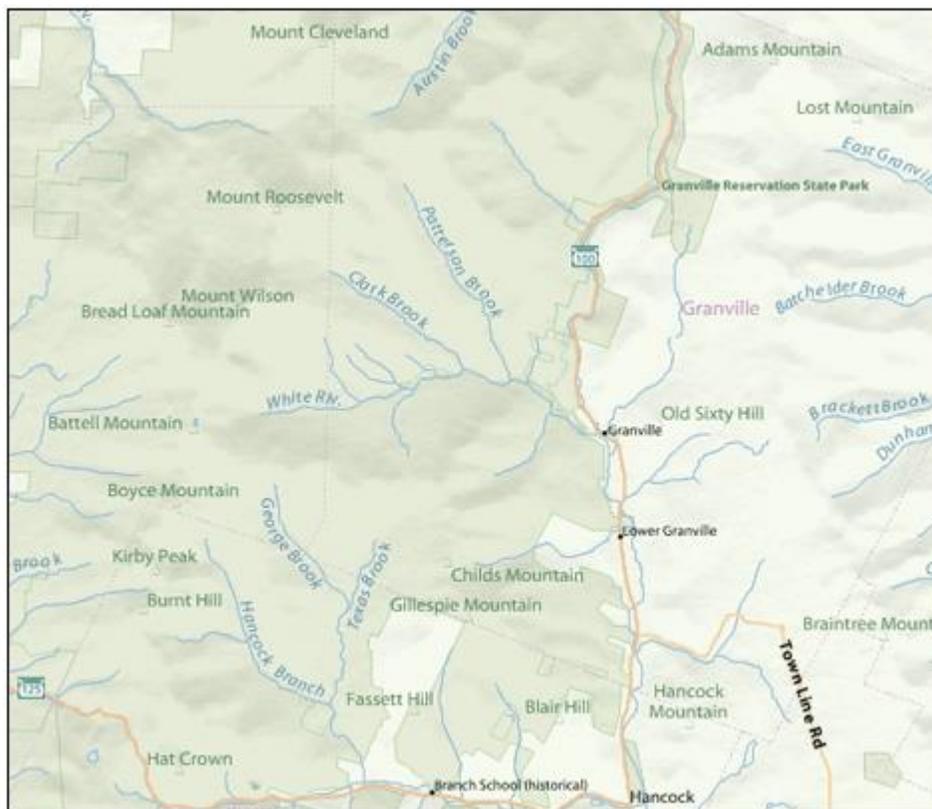
CartoVista Publisher 3.1 has the following changes to the data publisher:

- Unique IDs are now only unique within a Thematic Layer
- An indicator has an “ignore null value” property (True/False) that causes it to skip
- An alert dialog will be displayed if an Indicator cannot be located in your Data File Manager. This allows you to locate any missing Data Files needed to publish all the data.
- The Data View that’s linked to a Map Window is now automatically saved with the .CVM of the map window. This means you don’t have to give someone both a .CVM and .CVD when you want to pass your map to another person.
- You can still save a Data View that’s linked with a Map Window to a .CVD so you can re-use it in other maps.

Version 3.0



Raster Tile Layers



CartoVista 3 introduces a new type of map layer: the Raster Tile Layer. Raster tile layers provide a way to break up a large raster image into smaller pieces, and send only the pieces needed to display the current view. Many popular online mapping engines, such as Google and Bing deliver the maps to the browser as a series of tiles.

By enabling the use of raster tiles, CartoVista 3 allows a multitude of layers to be packaged as raster images. By varying the content of the tiles at different scales, appropriate levels of detail can be displayed depending on the scale.

While the potential interactivity of a vector layer is lost when it becomes part of a raster layer, the benefit of being able to display much more information as a background raster is enormous. Raster tile layers open up the ability to have highly detailed map backgrounds, while still retaining the extremely interactive vector layers that contain your data for thematic mapping.

For more information on how the CartoVista Publisher 3.0 incorporates Raster Tile Layers, see Chapter on [Raster Tile Layers](#) in Mapping Concepts.



Map Layer Interactivity

CartoVista's great strength is the interaction that is available between the end user and the map. CartoVista 3 adds new flexibility to this interaction, and the CartoVista Publisher 3.0 has expanded the Layer Properties to allow these interactions to be extensively customized.

The Layer Properties dialog has been changed to a more traditional Tab layout, to provide more room for the all-new Interactivity & Thematics tab. This tab allows you to work with the new features for interactive layers that include:

- Unique Identifier is always on for interactive layers. If you don't have a unique ID column available, CartoVista Publisher 3.0 can auto-generate a unique id for each row.
- Attributes from the Map File can now be included in the map. Each attribute is based on a column in the Map File and will be present for each feature in the map. The name of the attribute can be set individually.
- Attributes in a map can be used to provide data for the new Info Tool, or to provide information for the Data Tip which appears on mouse over of an interactive feature
- Multiple columns can be configured as search columns, giving end users more options in finding locations within the map

For more information on these and other enhancements to the Map Layer Interactivity Tab, see Chapter on Interactivity Settings in [Layer Properties](#).



Map Viewer Configuration Dialog

With all the new options for interactivity in CartoVista 3, the CartoVista Publisher 3.0 has completely redone the dialog that lets you set up the CartoVista 3 environment. More options to adjust the look and feel of the map are now available to be set directly from the publisher.

For more information on the new properties in the Map Viewer Configuration Dialog, see the chapter on the [Viewer Configuration Dialog](#).



Data Publisher Enhancements

Publishing data to support CartoVista maps is an important part of the Publisher. CartoVista Publisher 3.0 has incorporated a number of changes to the Data Publisher to make publishing data easier and more intuitive. These changes include:

- Multiple Data Publisher dialogs can now be opened at the same time
- A new wizard has been added to assist in adding indicators to publish
- Data Publishers associated with a Map Window are now closely linked, even knowing what thematic layers are available

For more information on these and other enhancements to the Data Publisher, see Chapter on [Publishing a Map](#).



Getting Started

This section will help you get started with the CartoVista Publisher program.

- [System Requirements](#)
- [Supported GIS Formats](#)
- [Supported Data Formats](#)
- [Installation](#)
- [Licence Management and Activation](#)
- [Updates](#)



System Requirements

Operating Systems

- Microsoft Windows XP
- Microsoft Windows Vista
- Microsoft Windows 7
- Microsoft Windows 8

Minimum System Requirements

- 70 MB free hard disk space

Supported GIS formats and GeoSpatial databases

Vector Data

- [MapInfo](#) Tables (Native)
- ESRI Shape Files
- ESRI Personal GeoDatabase (.MDB)
- Microsoft SQLServer 2008 Spatial
- Oracle Spatial Version 10g or Later.
- PostgreSQL/PostGIS Version 8 or later.

Raster Data

- Tagged Image [File](#) Format (. [TIFF](#), GEOTIFF)
- Windows Bitmap Format (. [BMP](#))
- Portable Network Graphics (. [PNG](#))
- Graphics Interchange Format (.GIF)
- Joint Photographic Expert Group Format (. [JPEG](#))
- Joint Photographic Expert Group 2000 Format (.JPEG2000)
- Enhanced Compression Wavelet (. [ECW](#))
- MrSID (. [SID](#))

Supported Data Formats and Databases

- MapInfo Tables (Native)
- ESRI Shape Files
- Microsoft Excel Spreadsheets
- Comma Separated Values (.CSV) Files

- Microsoft Access Database (.MDB)
- Microsoft SQLServer Version 2008 or later
- Oracle Version 10g or later
- PostgreSQL Version 8 or later



Installation

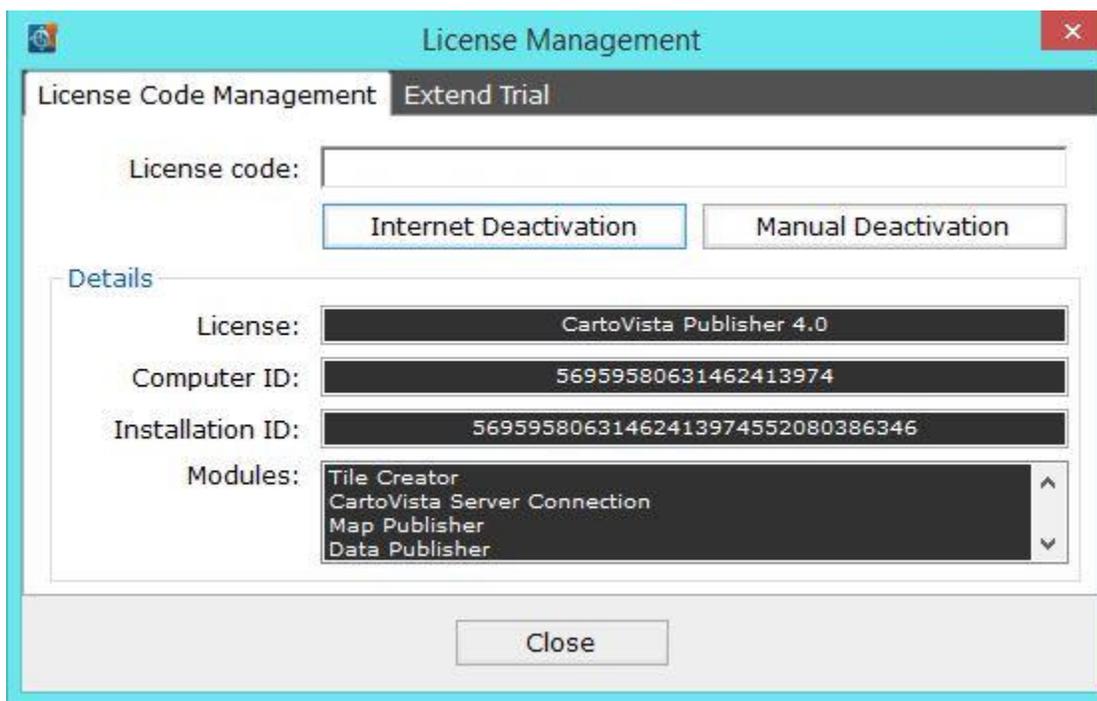
Once you downloaded the CartoVista Publisher Installation file, decompress the zip file and run the executable. Follow the step by step wizard to install the CartoVista Publisher on your computer.



License Management and Activation

License Management

The CartoVista Publisher includes a License Manager that allows the user to manage the software license.



The License field displays information about the current license. Some of the common values that can be displayed include:

- Your trial license has XX days left.
- The trial period has expired.
- CartoVista Publisher 4.x (*indicates that a full license is installed*)
- There is no active license.

The Computer ID field displays a unique identifier for your computer. Please include this in any correspondence about licenses with CartoVista.

The Installation ID displays a unique code that identifies your computer and the license status. Please include this in any correspondence about licenses with CartoVista.

The Modules field displays the list of licensed modules. Some modules include:

- Map Publisher
- Data Publisher
- Tile Creator
- CartoVista Server Connection

Other modules may be listed depending on the configuration purchased by the end user.

Activating a Trial Version

By default, the CartoVista Publisher installs with a 30-day trial license. To activate a full purchased license, the end user will have to do an Internet Activation.

YOUR COMPUTER MUST BE CONNECTED TO THE INTERNET FOR THIS TO WORK.

Enter the supplied license code in the License Code text box and click the “Activate” button. A dialog containing the end-user license for CartoVista Publisher will be shown, and the user will be required to confirm acceptance of the license. The user must purchase a license of the CartoVista Publisher before activating the license key.



Click the “I ACCEPT THE TERMS IN THE LICENSE AGREEMENT” checkbox and then click OK.

The License Manager will attempt to connect to the CartoVista license server and activate the license. On a successful activation, the following message will be displayed:



The buttons will change to display Internet Deactivation and Manual Deactivation.

The License field should now display “CartoVista Publisher x.x”.

If you are unable to activate the license (for example, a firewall prevents connection to the CartoVista license server), follow the instructions for a Manual Activation.

Moving a License to Another Computer

Once you have activated a license, it is not possible to activate another license for CartoVista Publisher on the computer. The "Activate" button will change to a "Deactivate" button.

You can use the Deactivation option to remove the license from this computer to install it on another computer.

YOUR COMPUTER MUST BE CONNECTED TO THE INTERNET FOR THIS TO WORK.

Simply enter your license code and click Deactivate. Then install the CartoVista Publisher on the other computer, and activate that license code. Once you have deactivated the license, the button changes back to an "Internet Activation" button, ready for you to activate a license again.

Manual License Activation

Sometimes it is not possible to connect to the CartoVista license server with the Internet Activation option. In those circumstances, CartoVista can provide you with another code to activate the license without using the internet.

Contact CartoVista and provide the Computer ID and License ID values. Use the copy/paste functions to copy these two values into an email and send it to support@cartovista.com. CartoVista will use these values to generate a manual activation license. This license will be emailed back to you. Enter this key in the License Code box and click on the Manual Activation button.

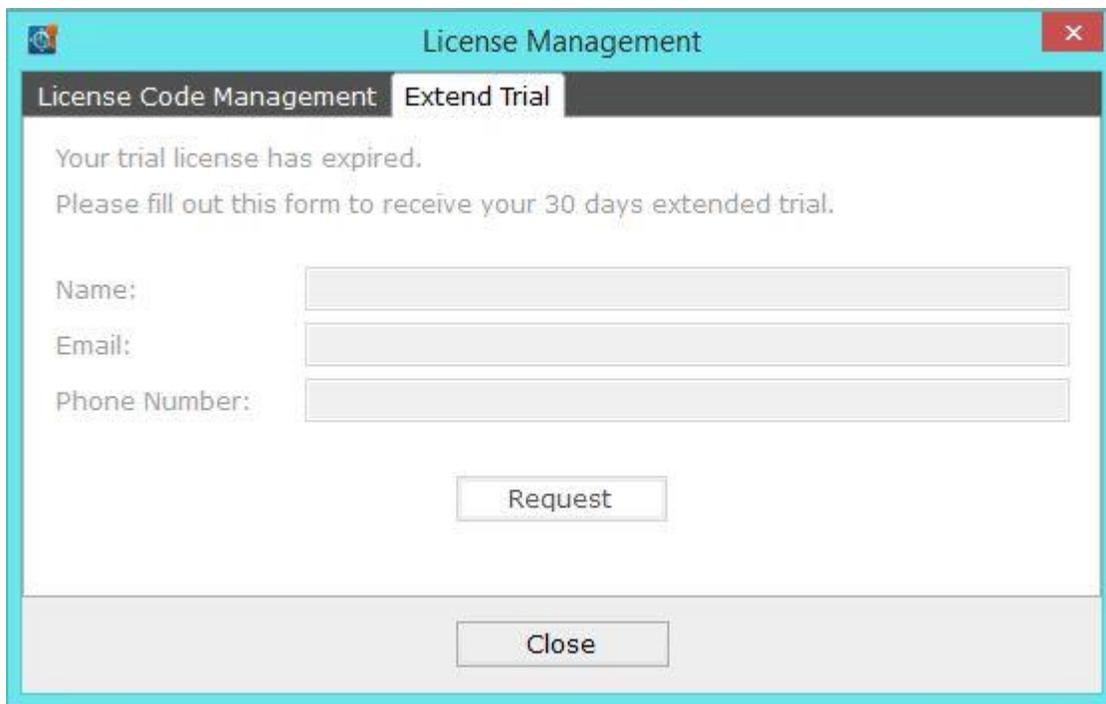
If you need to transfer your license to another computer, you can also do a "Manual Deactivation". This will give you a code that you will need to send to CartoVista at support@cartovista.com. This will enable CartoVista to release the license installation on your computer and allow you to install it on another computer.

Extending Your 30-Day Trial License

It is possible to extend your 30-day trial license. This option is only available when a trial license has expired. This tab will be disabled when it is not possible to extend the trial.

YOUR COMPUTER MUST BE CONNECTED TO THE INTERNET FOR THIS TO WORK.

Select the "Extend Trial" tab. Enter your name, email address and phone number then click the "Request" button.



The screenshot shows a window titled "License Management" with a red close button in the top right corner. The window has two tabs: "License Code Management" and "Extend Trial", with the latter being the active tab. The main content area contains the following text and form elements:

Your trial license has expired.
Please fill out this form to receive your 30 days extended trial.

Name:

Email:

Phone Number:

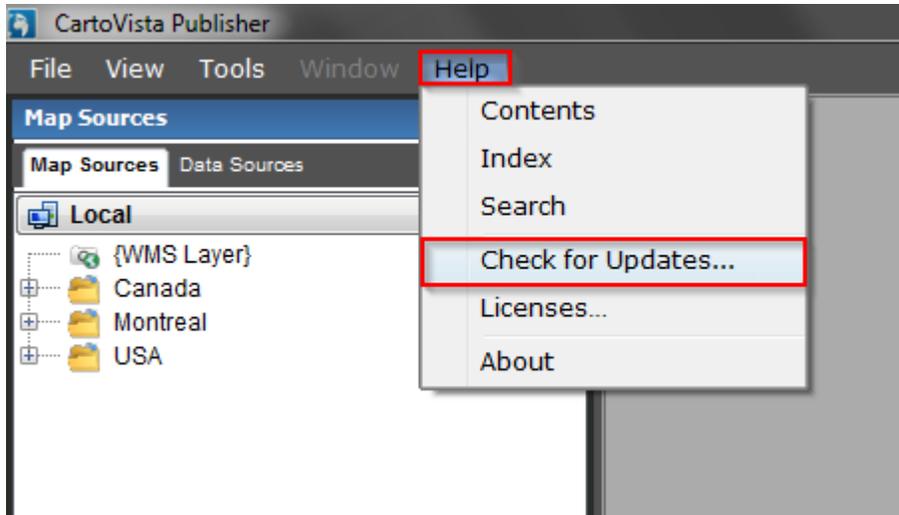
The License Manager will attempt to connect to the CartoVista license server and extend your trial license for another 30 days. You may only extend the trial license once per computer.

If you are unable to connect to the CartoVista license server, or there is a problem extending the trial, you will be prompted to send an email to CartoVista. If you select "Yes", your default email program will launch, and a pre-populated email will be created that includes the Computer ID and Installation ID values, and phone number. Send this to support@cartovista.com.



Updates

You can now check for and download available updates directly from within the CartoVista Publisher using the new “Check for Updates...” dialog available through the Help menu.



This new patch system will simplify the process of getting the latest version of the Publisher. It also provides information on the status of your current version, and inform you on the content of an available new version prior to downloading.

Those updates are available as long as your maintenance contracts are active.



Mapping Concepts

This chapter is an introduction to basic mapping concepts and how they are implemented. An understanding of these concepts will aid in creating visually appealing and effective maps for use in CartoVista.

This chapter will present the following concepts:

Layers

- [Type of Layers](#)
- [Raster Tile Layers](#)

Features

- [Type of Features](#)
- [Coordinate Systems and Projections](#)
- [Styles](#)
- [Labelling](#)
- [Zoom Layering](#)
- [Thematic Mapping](#)
- [Attributes](#)



Maps

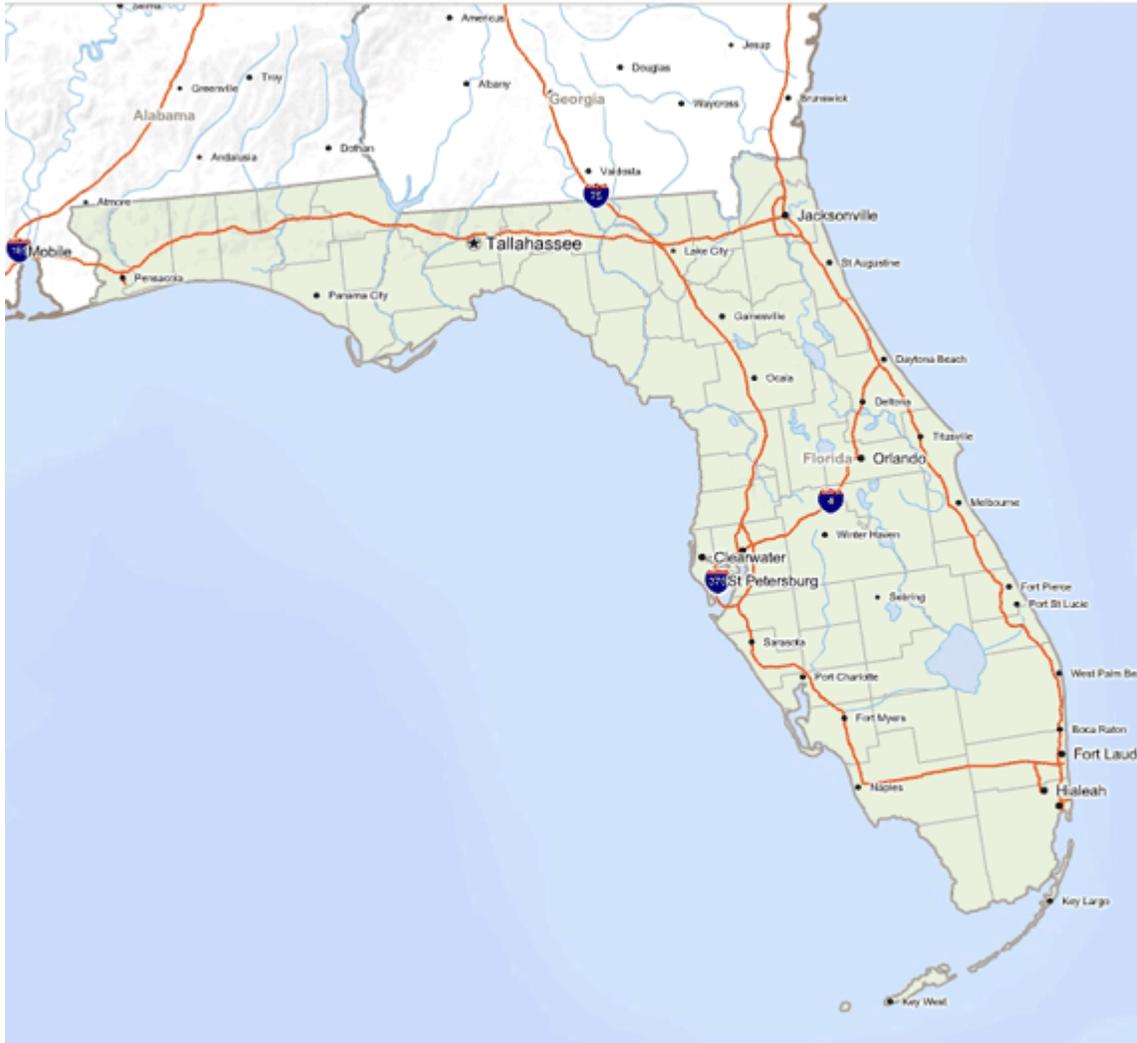
A map is a graphical representation of a geographic area. Different types of maps can be created with the CartoVista Publisher.

Base Map

A **base map** graphically represents physically visible elements within a geographic area. Layers in a base map are used to provide a cartographic context for viewing data (e.g. roads, cities, rivers, etc.). For example, a map showing roads, lakes, rivers, streams and terrain would be considered a base map.

Sample Base Map

Florida - Counties - Click here to select an indicator
USA > Florida

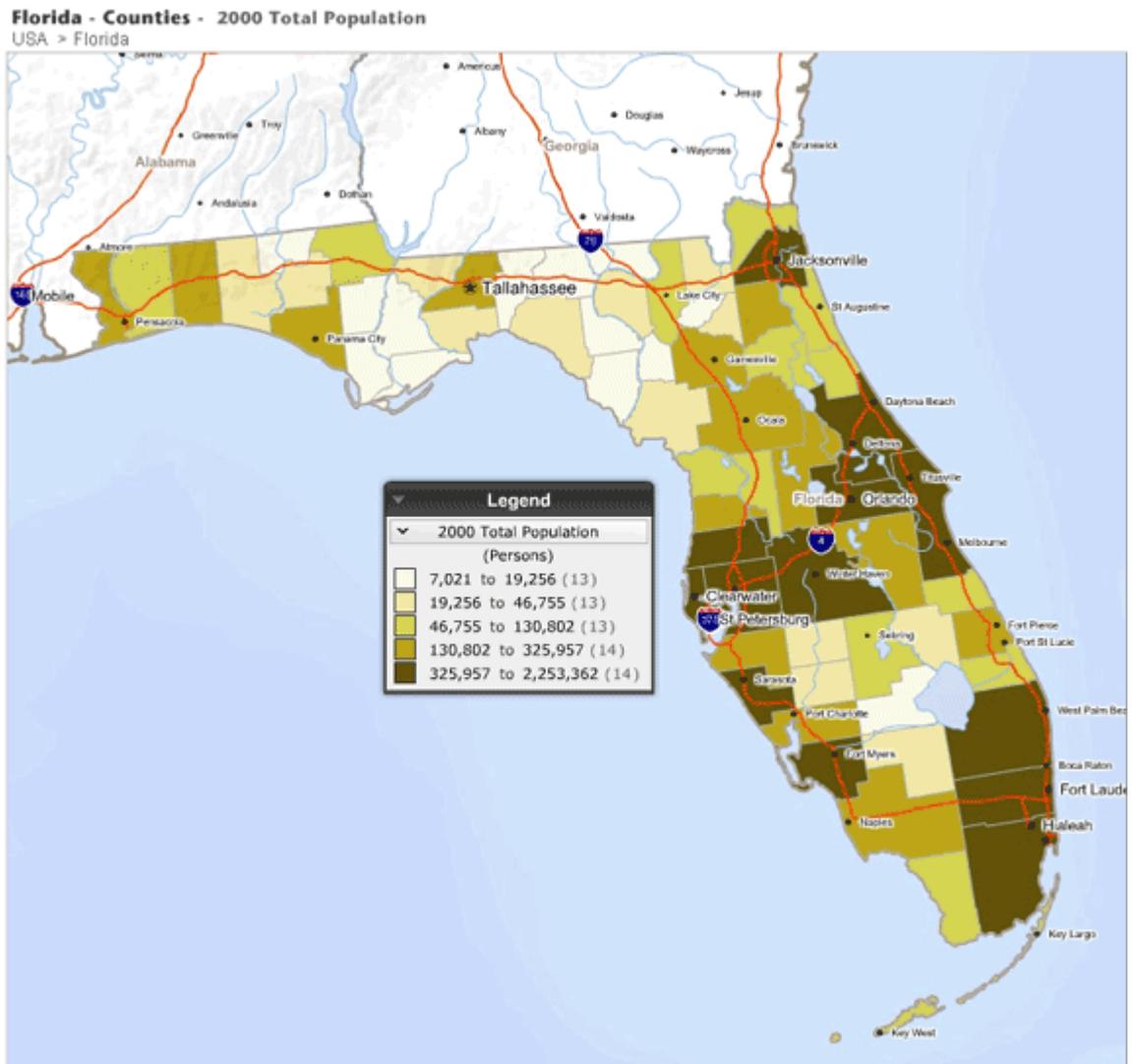


Thematic Map

A **thematic map** is a map that displays the spatial distribution of an attribute that relates to a single topic, theme, or subject of discourse. Thematic maps use a variety of graphic styles (e.g., colors, symbols) to better illustrate the underlying indicator data. Thematic maps are very useful to display geographical concepts such as density, distribution, relative magnitudes, gradients, spatial relationships and movements. A [thematic map](#) graphically represents a relationship between observable occurrences found within a geographic area.

For example, a map showing crime occurrences at specific locations would be considered a [thematic map](#). Normally thematic map information is overlaid onto base map information to provide a location context for the theme displayed.

Sample Thematic Map



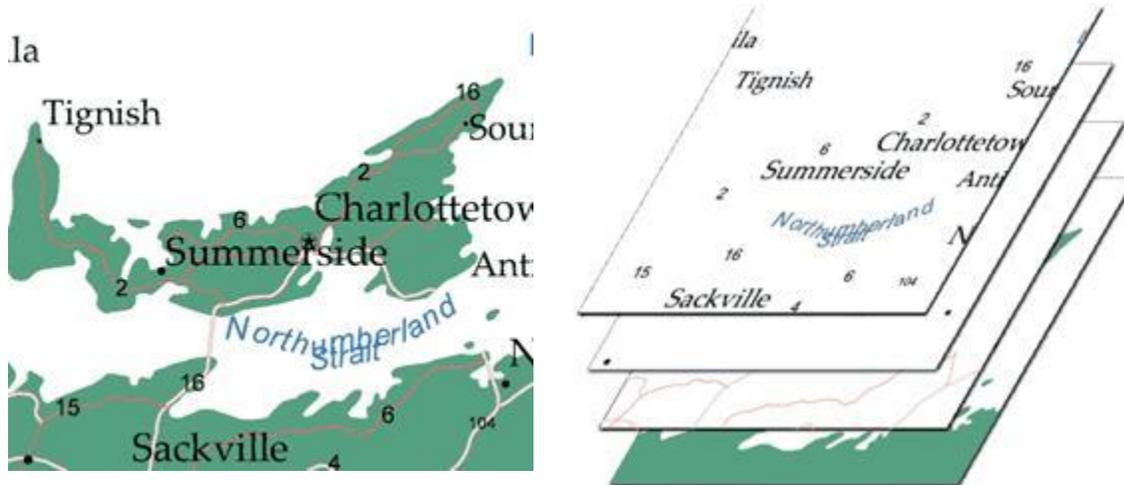


Layers

Definition

A **layer** is a logical group of one or many map features (text, points, polylines, polygons or images). For example a layer can contain polygons depicting the vegetation within a geographic area. A layer can only contain one type of geographic feature.

The specific combination of layers makes up a map. Features in a layer will generally obscure features in the layers below. In order to provide the most visibility to features, image layers are usually placed at the bottom of the layer stack. Image layers are usually followed by polygon, polyline and point layers. Text layers are usually at the top of the layer pile. Applying transparency to layers can assist in making obscured features visible.



Types of Layers

A layer can be classified according to the type of feature it contains. Various settings applied to layers sometime depend on the layer type. As an example, setting unique identifiers for interactivity would normally be only applicable to vector layers.

Vector Layers

A layer consisting of text, points, polylines or polygons is called vector layer. Features in vector layers are defined by a series of geographic coordinates. As

vector layers are expressed mathematically in real world units, they are independent of the screen resolution.

Raster Layers

A layer consisting of an image is called a raster layer. Raster layers are made of pixels and have a fixed resolution.



Raster Image Layer: Digital
Elevation Data

Type of Raster Layers

There are three ways that the raster images are generally made available.

Files

Raster layers are most commonly based on a single raster image that is stored as a file. The raster layer may have an accompanying “world file” that details the geographic location, scale and rotation of the image.

Web Map Service (WMS) Layer

A Web Map Server (WMS) is an online server, referenced by an URL, that provides georeferenced raster map images over the internet. These map images are generated on request by the map server using data from a GIS database. The raster image generated can be blended together from multiple map layers (of any type of feature) to create a single raster image. The specific layers used to generate the image, along with the location and scale are determined when the request is made to the map server and are based on what data is available to the map server. The map server generates the map image requested and returns it over the internet. A WMS layer may be able to query the map server for attribute data.

The specification for WMS was developed and first published by the Open Geospatial Consortium in 1999. For more information on Web Map Server, see the OGC WMS 1.1.1 specification documentation.

Tile Server

A tile server is an online server, referenced by an URL, that contains a raster image that covers a place on the earth. The raster image is broken down into small regularly sized and spaced regions called tiles, organized in a row/column grid fashion. Assembled together the tiles form the complete visual representation of the entire area of coverage. For more information, see section [Raster Tile Layers](#).



Raster Tile Layers

The Benefits of Raster Tile Layers for Web Mapping

Leverage Existing Maps

Raster tile layers provide a way to break up a large raster image into smaller pieces, and send only the pieces needed to display the current view.

Tiled-map deployments are a very popular method to develop mapping functionality on the web. This approach is used by many sites such as Google Maps, Yahoo and Microsoft Bing to provide rich and simple map background for web applications. The CartoVista Viewer has the capabilities to leverage those existing maps and simplify your web deployments.

By enabling the use of raster tiles, you can allow a multitude of layers to be packaged as raster images. By varying the content of the tiles at different scales, appropriate levels of detail can be displayed depending on the scale.

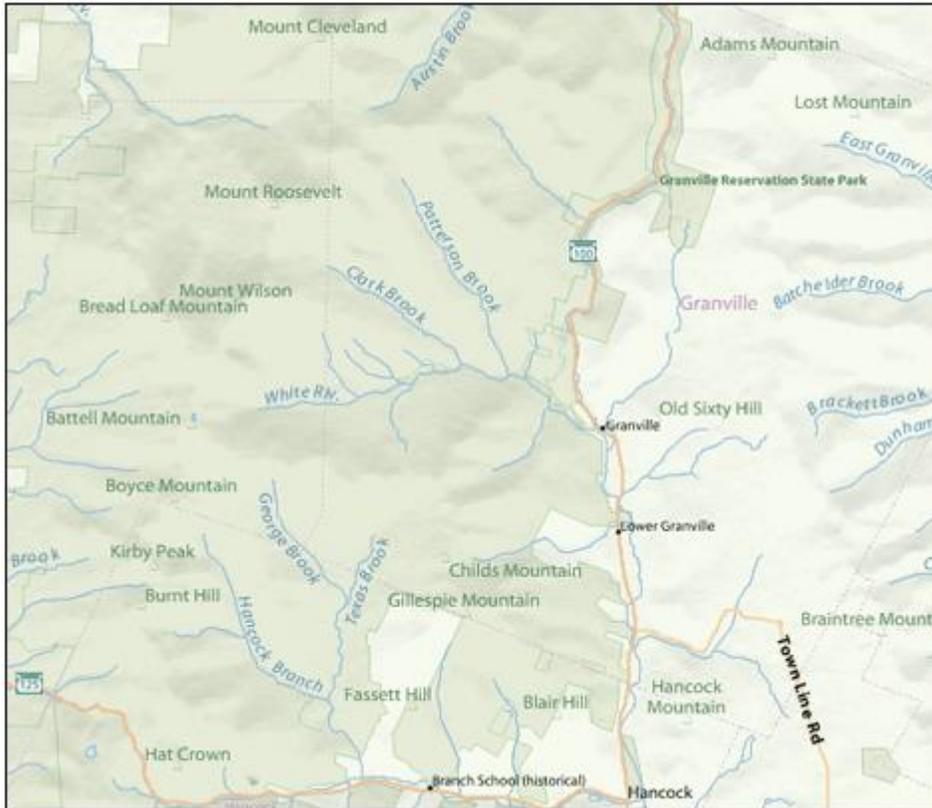
The following tile map providers are available:

- Google Maps
- Bing Maps
- Yahoo Maps
- OpenStreetMap
- Blue Marble
- Cloud Made
- ArcGIS Server Tile Cache
- Zoomify
- CartoVista Custom Tile Base map

Unlimited Amount of Details

Map tiles are divided into several geographic levels (scales), displaying both general views and details on demand. Tiles can provide unlimited zooming from a world view to a detailed street map.

Tiling systems allows including many tile layers in a map. Tile layers can be scale dependant and also blended together as a single layer. In this case, the end user can select the current provider displayed from the layer control.



High quality tile layer with advanced labeling

Seamless Map Navigation

The map layer being composed of pre-generated tile images, the interface reacts very quickly when zooming and panning. When navigating with the mouse and re-centering the map, the surrounding map tiles are already loaded in memory which enables smooth panning.

Screen Resolution Independence

The tile system interface dynamically adjusts based on the space and display resolution available on the end user browser screen. When the browser window size is modified, the tiled map is adjusted accordingly.

Multiple Tile Map Background

Tile layers often offer the capabilities of changing a tile layer provider from the interface (in the layer control). For example, the end user can switch to an aerial view or satellite view. When switching from one provider view to another, the change is optimized to avoid having to reload vector overlay(s) in the map, if present.



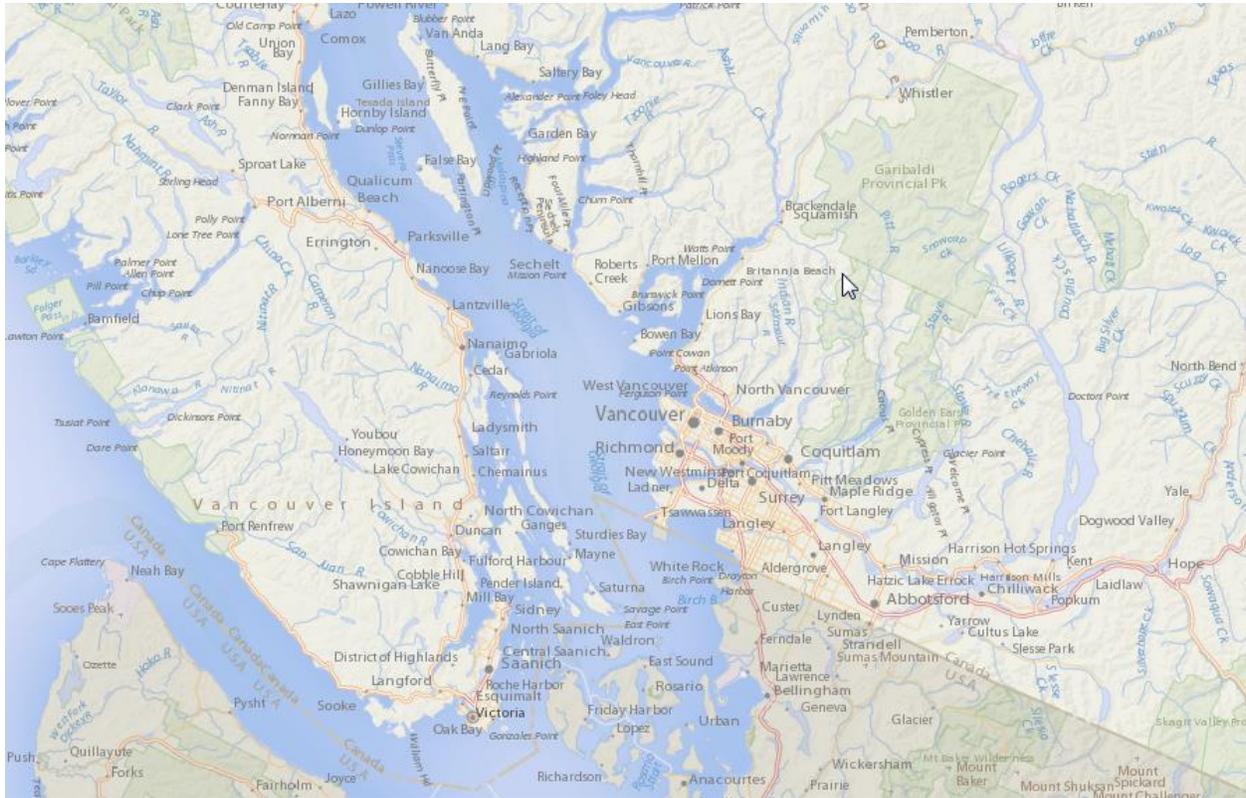
High quality tile layer with aerial imagery

Low Server Resources Consumption

When comparing with a traditional mapping server that generated an image on every map click, a tiled map background drastically reduces the use of the server resources. Since the web server only sends existing map images, the application uses a minimum of resources, optimizing the availability of the server for other processes.

Overlay of Layers of Interest

Tiling also allows overlaying one or more vector layers of interest on top of the map tiles. It is simple to overlay a vector layer (ex: points of interest) on top of the map and define the required interactivity and thematic analysis options.



CartoVista - North America Tiles Sample - Vancouver, B.C, Canada

While the potential interactivity of a vector layer is lost when it becomes part of a raster layer, the benefit of being able to display much more information as a background raster is enormous. Raster tile layers open up the ability to have highly detailed map backgrounds, while still retaining the extremely interactive vector layers that contain your data for thematic mapping.



Features

Type of Features

Points, polylines, polygons, text and image features are used to make up a map. Features are stored into map files. Usually, a map file contains only one type of feature.

Points

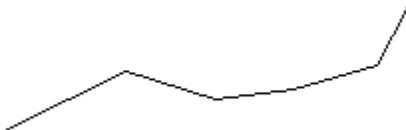


Points are map objects defined by a single x,y coordinate pair. Each point object is represented by a symbol style (e.g. circle, square, triangle, etc.).

Points have no length or area but simply define the coordinate location of the feature (survey monuments, wells, mountain peaks, building permits, and traffic incidents are represented as points in a map). Note that the appropriateness of points to represent features in a map is determined by the scale (zoom level). At a small scale (low zoom level) cities can be represented by a point feature whereas at a large scale (high zoom level) cities are better represented by a polygon feature.

Polylines (or lines)

Any line defined by two or more points. Polylines have a linear extent but no area. For example, road centerlines, stream centerlines, sewer lines, and utility mains are represented as polylines in a map. A single polyline feature can be constructed from multiple parts.



Polygons (or Regions)

A polygon is a closed area defined by joining three or more points. A single polygon object can be constructed from multiple parts or even contain a hole within the

polygon and islands within the hole. For example, property parcels, census tracts, and soils are represented as polygons in a map.



Text

Texts are fixed annotations that are used to identify data elements on the map. Texts (annotations) are created for a specific map scale and view. While texts are static map features, [labels](#) are created and updated dynamically as the map scale and center changes.

Rideau River

Raster Images

In computer graphics, a raster graphics image, digital image, or bitmap, is a data structure representing a generally rectangular grid of pixels, or points of color, viewable via a computer monitor, paper, or other display medium. Images format areas and other map features as cells of a grid matrix; the fineness of the grid or the size of the cells in the grid matrix determines how accurately original map features are represented. Raster images are commonly stored in image files with varying formats. Bitmap is technically characterized by the width and height of the image in pixels and by the number of bits per pixel (a color depth, which determines the number of colors it can represent). In mapping, raster images are used for special layers such as Aerial photography, relief, etc.

Sample Raster Image: Satellite Imagery



Sample Raster Image: Digital Elevation Model (DEM)

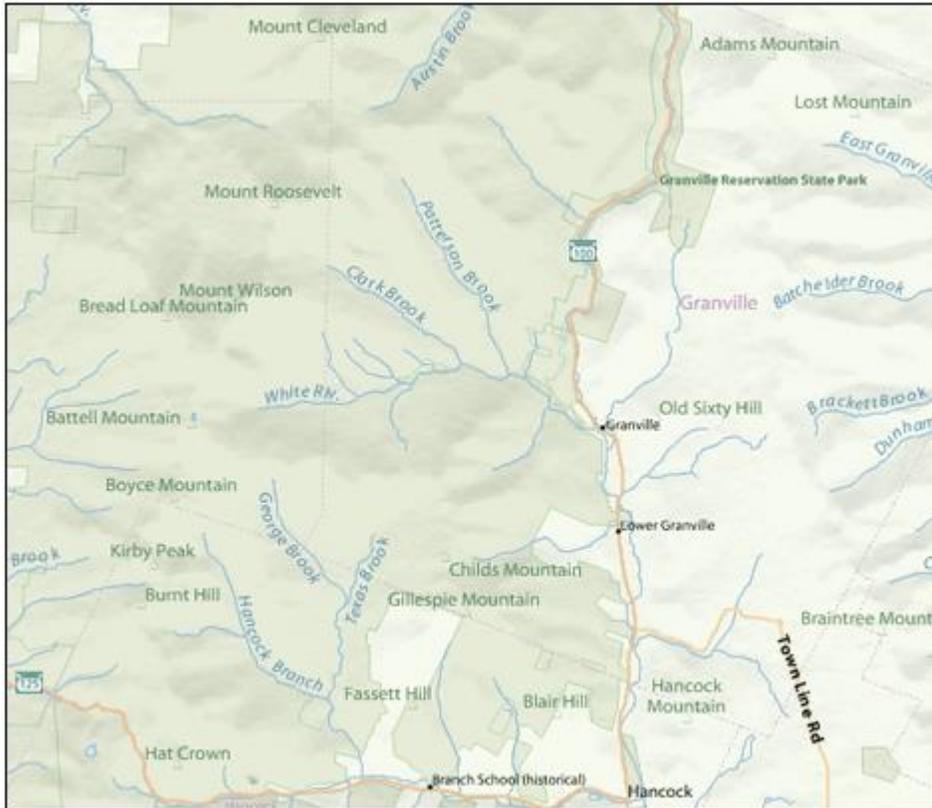


Sample Raster Image: Aerial Photography



Tile Servers

A tile server is an online server, referenced by an URL, that contains a raster image that covers a place on the earth. The raster image is broken down into small regularly sized and spaced regions called tiles, organized in a row/column grid fashion. Assembled together the tiles form the complete visual representation of the entire area of coverage.

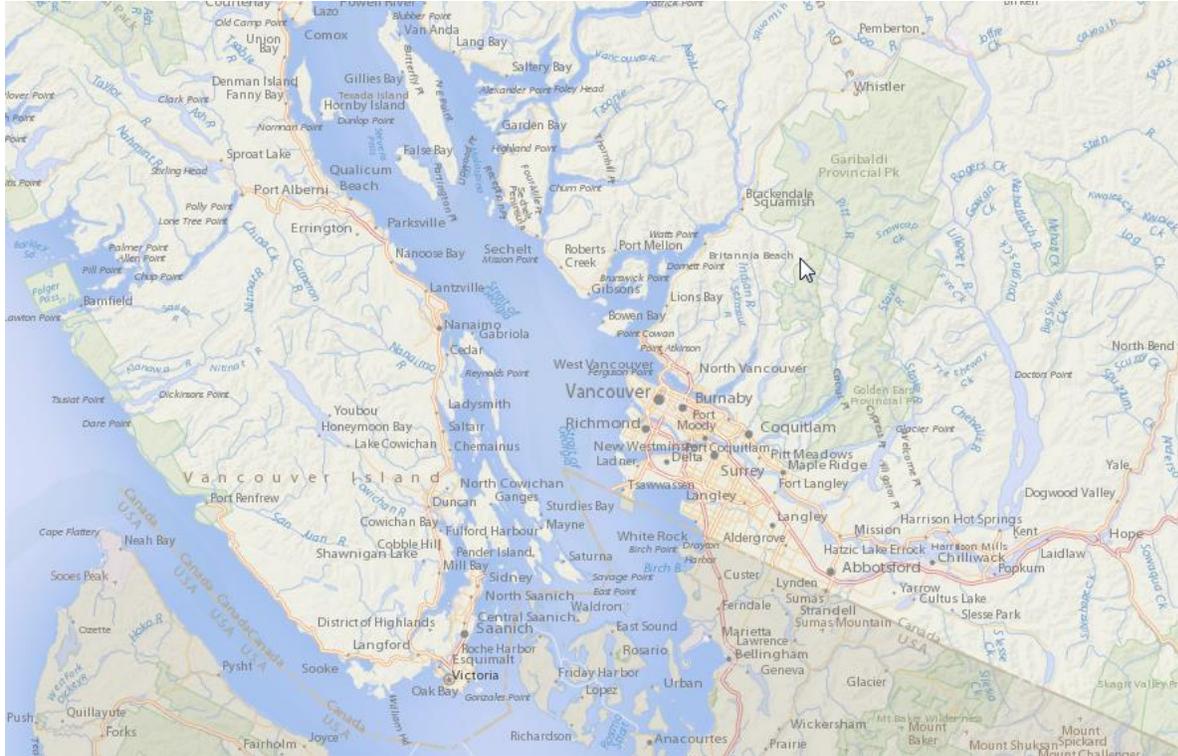


The use of tile servers for online map deployment is very popular and is used by other web sites such as Google Maps, Yahoo and Microsoft Bing for example. Tile servers usually serve as base maps, and depict data that does not change very often. They are meant to be used as backdrop images.

The raster image used in a tile server can be blended together from multiple map layers (of any type of feature) to create a single raster layer. Tile server layers do not have attribute data.

There are usually several levels of tiles for each tile server; each level fixed to a different scale, all covering the same place on the earth. The level (and hence the scale) determines the number of tiles (number of rows and columns). Small-scale (e.g., 1:10,000,000) tile sets may only contain a handful of tiles. Large-scale tile sets (e.g., 1:10,000) may contain millions of tiles.

CartoVista Publisher Documentation



As you zoom in or out, the level of tiles used may change. As you pan around the map, the specific tiles that are needed for the current view will change. The program you are using to view the tiles handles requesting individual tiles and assembling the final image.

When comparing with a traditional mapping server that generated an image on every map click, a tile server drastically reduces the use of the server resources. Since the tile server only points to existing images, a minimum of resources are required to send the map to the viewer, optimizing the availability of the server for other processes.

Some important properties of a Tile Server are:

- URL
- Bounding Box
- Tile size
- Projection
- # of levels available



Coordinate Systems and Projections

Definition

A **coordinate system** is a reference system used to represent the locations of geographic features within a common geographic area.

Each coordinate system is defined by:

- Its measurement method which is either geographic (in which spherical coordinates are measured from the earth's center) or planimetric (in which the earth's coordinates are projected onto a two-dimensional planar surface);
- Unit of measurement (typically feet or meters for projected coordinate systems or decimal degrees for latitude-longitude);
- The definition of the map projection for projected coordinate systems;
- Other measurement system properties such as a datum, and projection parameters like one or more standard parallels, a central meridian, and possible shifts in the x- and y-directions depending on the particular projection.

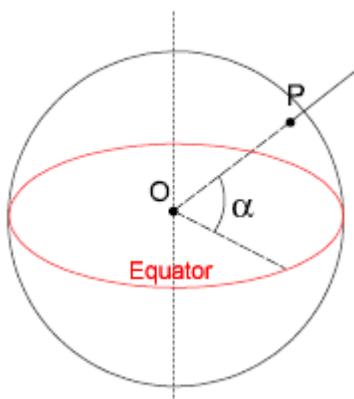
Types of Coordinate Systems

There are two common types of coordinate systems used in GIS:

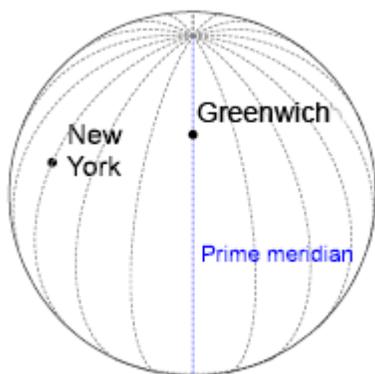
- A global or **spherical** coordinate system such as latitude-longitude. These are often referred to as geographic coordinate systems;
- A projected coordinate system based on a map projection such as transverse Mercator, Albers Equal Area, or Robinson, all of which (along with numerous other map projection models) provide various mathematical formulas to project coordinates from of the earth's spherical surface onto a two-dimensional Cartesian coordinate plane. Projected coordinate systems are sometimes referred to as **map projections**.

Spherical Coordinate System

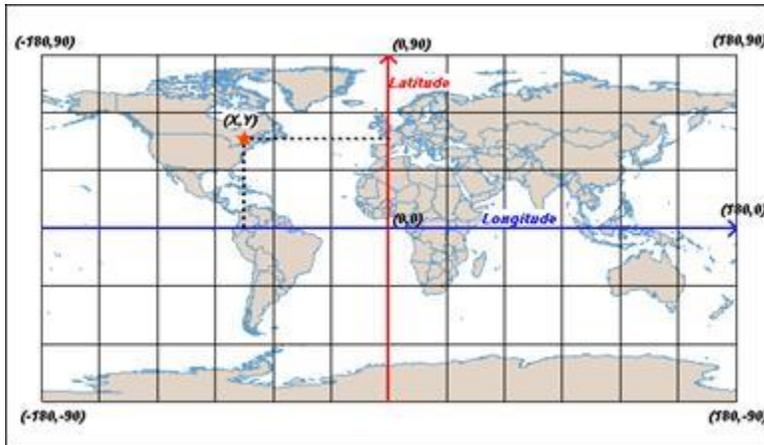
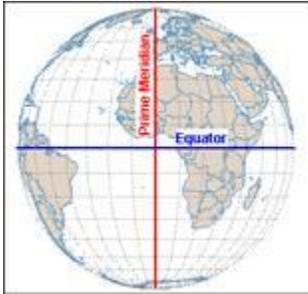
Latitude and longitude are **angles** that uniquely define points on a sphere. Together, the angles comprise a coordinate scheme that can locate or identify geographic **positions** on the surface of planets such as the earth.



Latitude is defined with respect to an **equatorial reference plane**. This plane passes through the center O of the sphere, and also contains the great circle representing the equator. The latitude of a point P on the surface is defined as the angle that a straight line, passing through both P and O , subtends with respect to the equatorial plane. If P is above the reference plane, the latitude is positive (or northerly); if P is below the reference plane, the latitude is negative (or southerly).



Longitude is defined in terms of meridians, which are half-circles running from pole to pole. A reference meridian, called the **prime meridian**, is selected, and this forms the reference by which longitudes are defined. On the earth, the prime meridian passes through Greenwich, England; for this reason it is also called the Greenwich meridian. The longitude of a point P on the surface is defined as the angle that the plane containing the meridian passing through P subtends with respect to the plane containing the prime meridian. If P is to the east of the prime meridian, the longitude is positive; if P is to the west of the prime meridian, the longitude is negative.



On a plan representation (the sphere projected), the origin (0,0) is defined as the intersection between the Equator and the Prime Meridian (Greenwich Meridian).

The X positive values are on the East of the Prime Meridian, the Y positive values are on the North of the Equator. The X coordinate is in the range [-180;180] and the Y coordinate is in the range [-90;90].

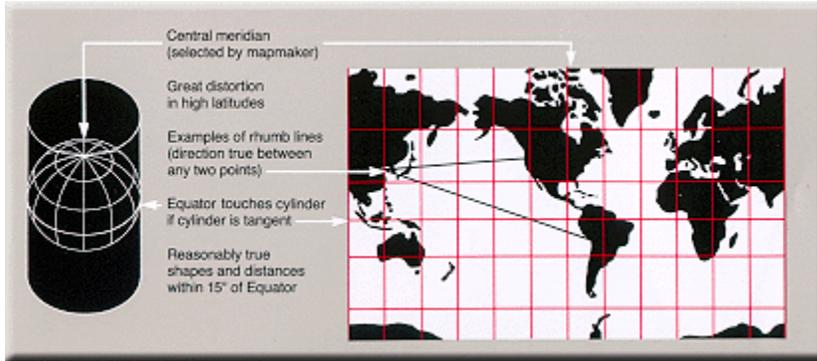
Map Projections

A **map projection** is a system of mathematical equations used in cartography to represent the curved surface of the earth on a plane. A projection can retain accuracy in either distance and direction or area, but never both.

Main projections: Cylindrical, Azimuthal and Conic

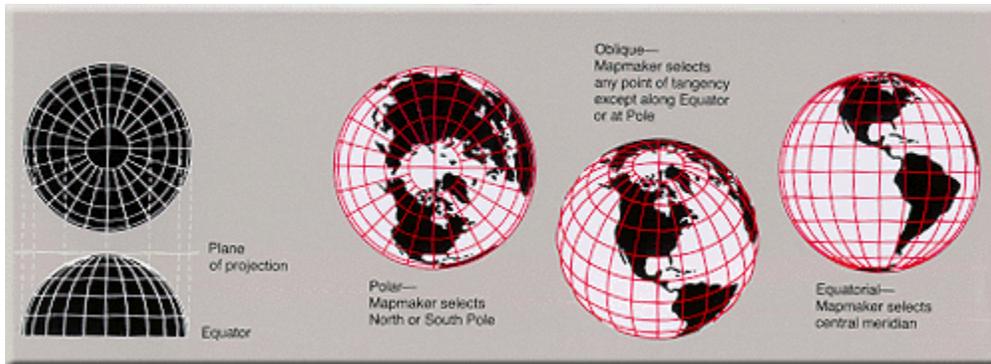
Projections can be grouped by the general approach used to map spherical coordinates onto a plane. The three main groups of projections are Cylindrical, Azimuthal and Conic. Specific examples from these groups would be Lambert Conformal Conic, Azimuthal Equal Area and Mercator.

Cylindrical



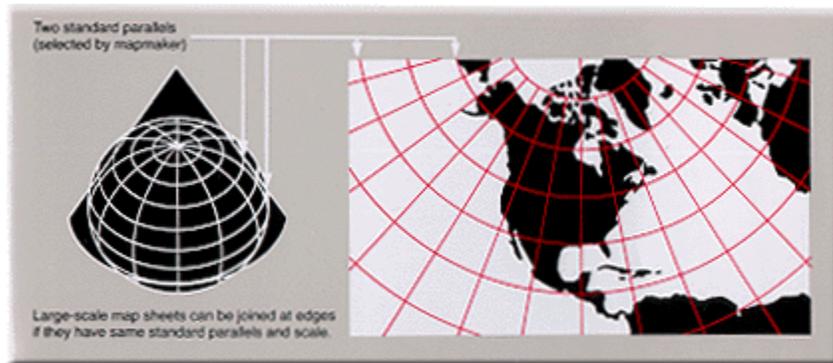
Source: USGS

Azimuthal



Source: USGS

Conic



Source: USGS



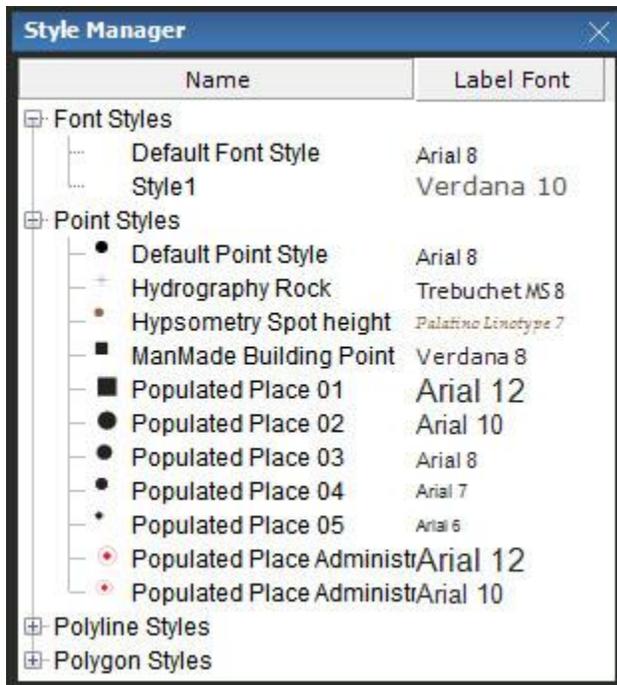
Styles

Styles are a collection of predefined ways of representing map features. Width, pattern and color are common style attributes that are associated to polyline features. Outline width, outline color and fill color are styles applied to polygon features. Point features can be defined using symbol, color and size. Finally, text features can be differentiated using font, color and size styles.

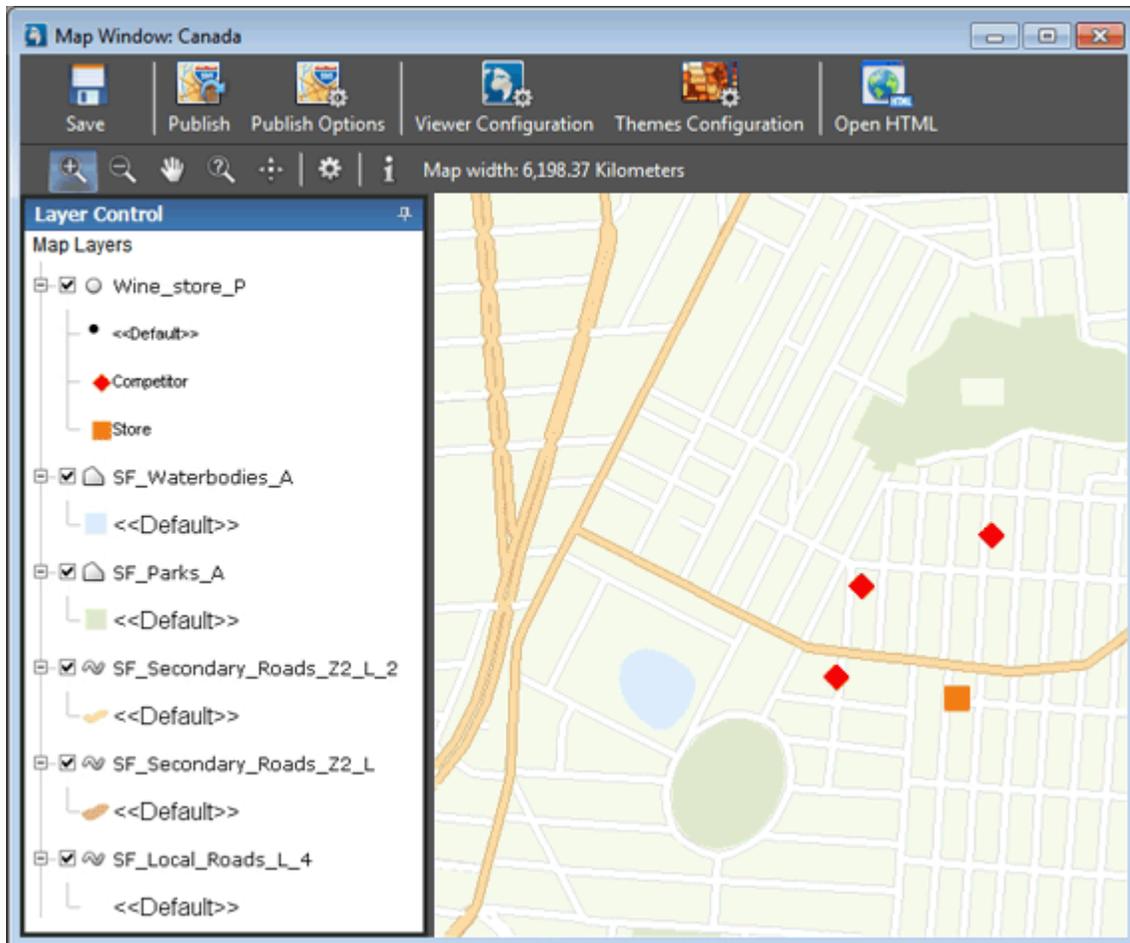
Applying styles to your map features allows you to follow a mapping standard and helps promote consistency in your organization's maps. Map communication is more effective when using familiar styles that enable people to easily explore, understand, and analyze a map.

CartoVista comes with a default styles template. Styles within this template can be easily applied to map features using the Style Manager. The Style Manager also allows removing and altering existing styles. New styles can also be added.

CartoVista Style Manager Window



CartoVista styles as applied to polylines, polygons and points features in a map.



For more information on styles, see the CartoVista Publisher [Style Manager](#).



Labelling

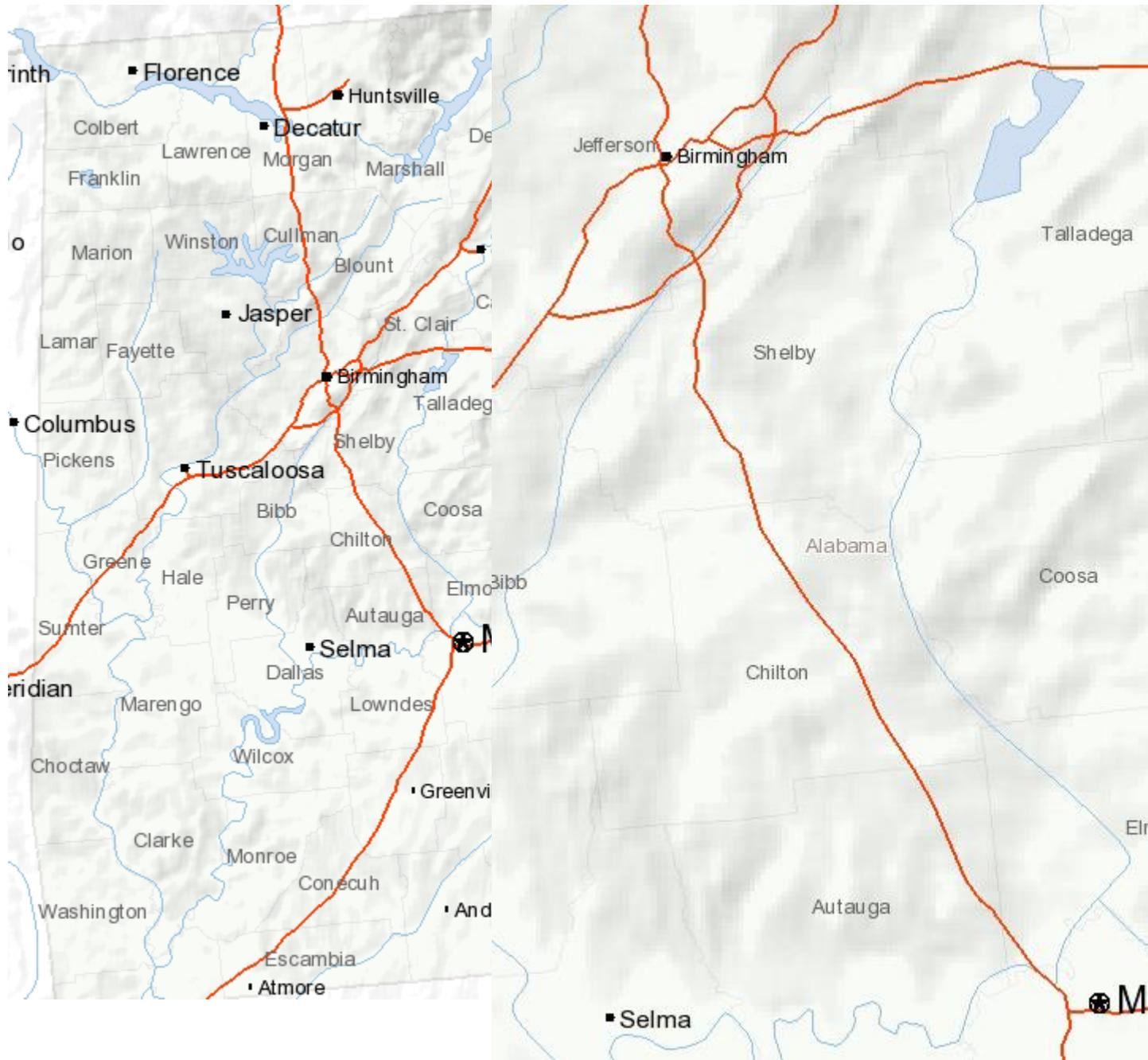
Labelling is an easy way to add descriptive text to features on your map.

CartoVista includes two methods to label your maps: you can either use dynamic labelling or fixed annotations (layers of text).

Dynamic Labelling

In the CartoVista Viewer by default, map labels are dynamically placed. The label placement changes as you navigate within a map. When the SWF is created, each layer has an associated label column and style. The label text itself is then based on the map feature attribute information. The dynamic label is created on-the-fly by the Flash engine when the map loads. CartoVista has a sophisticated labelling engine that detects and prevents text overlaps.

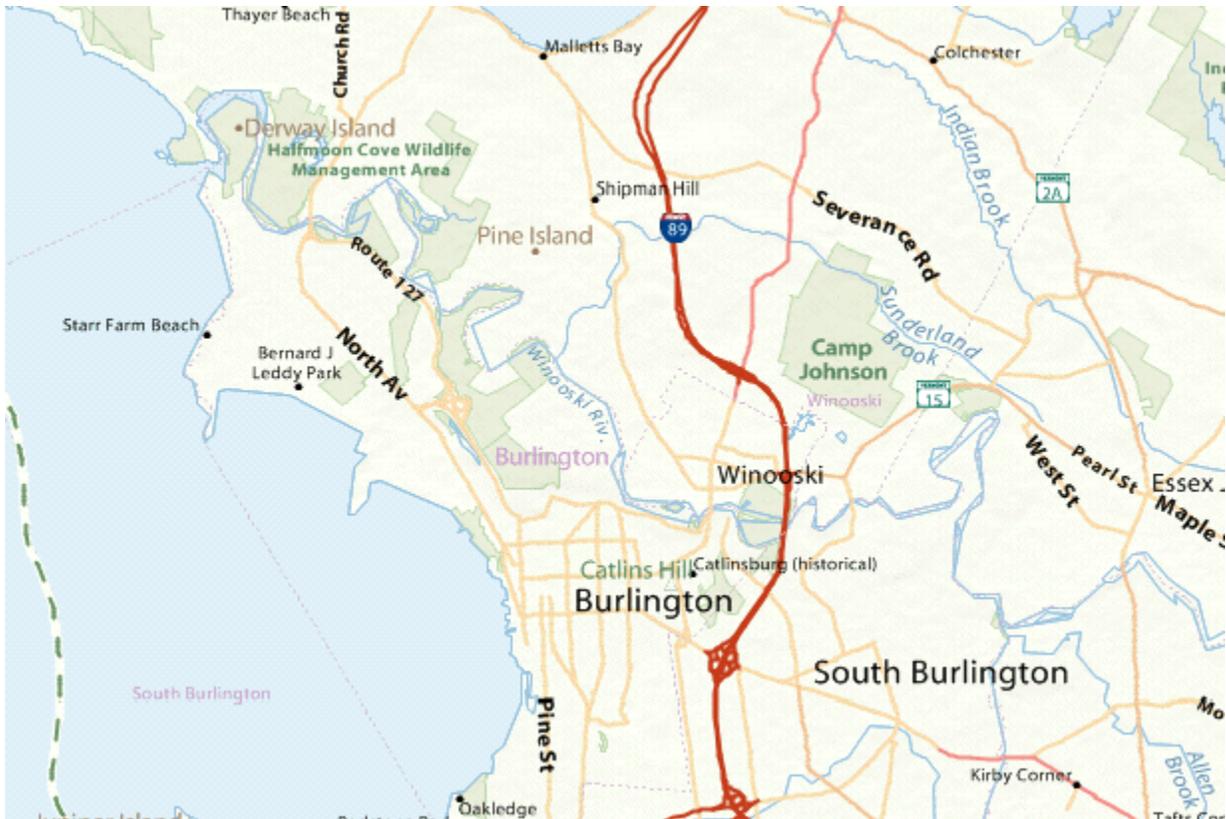
Dynamic Labelling Sample Map with 2 views (zoom in)



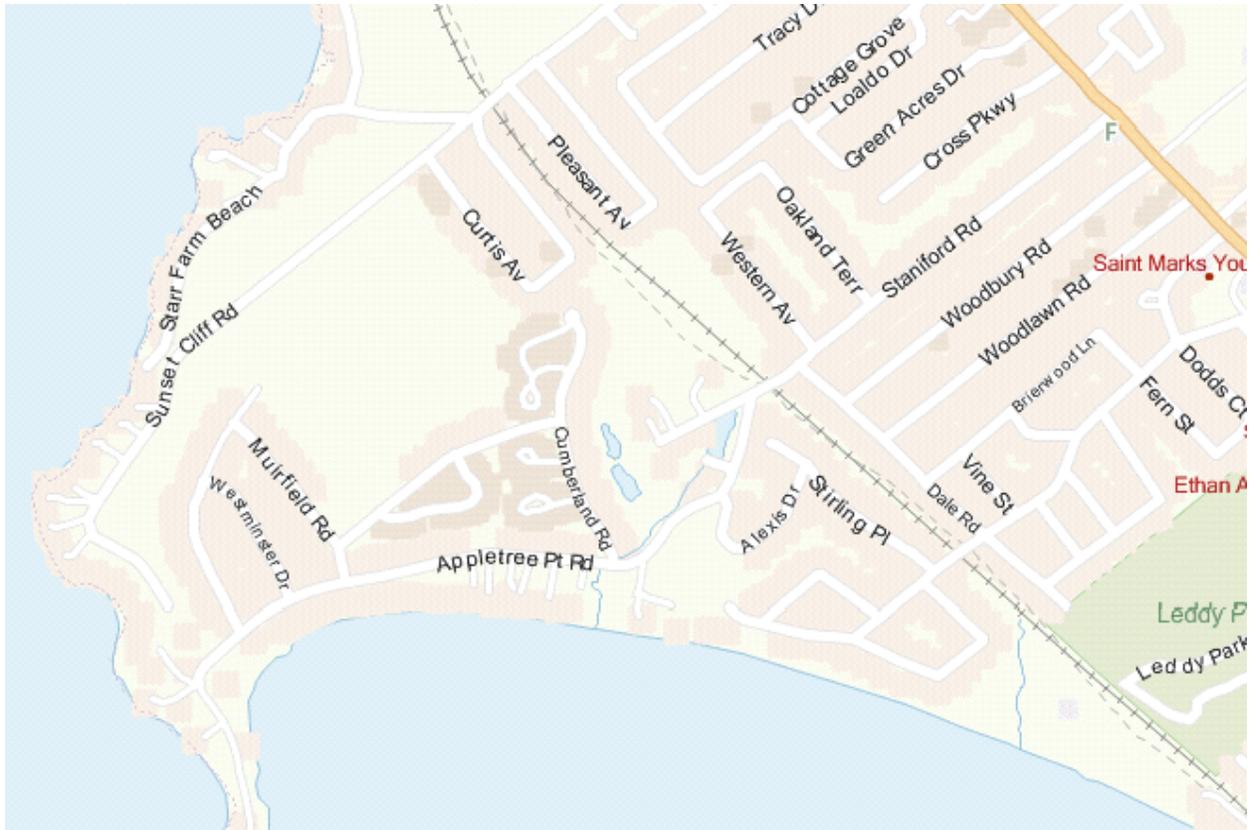
Annotations (Fixed Text)

In addition to dynamic labelling, CartoVista supports annotations which are layers of text feature that are set to a specific scale. Annotations are created with GIS software. If the map you are publishing is set to a specific view with no specific requirements to zoom-in and out too much, fixed annotations are a good approach to develop high quality, cartographic labels.

Base Map Fixed Text Sample - Major Roads and Highways



Base Map Fixed Text Sample - Local Roads





Zoom Layering

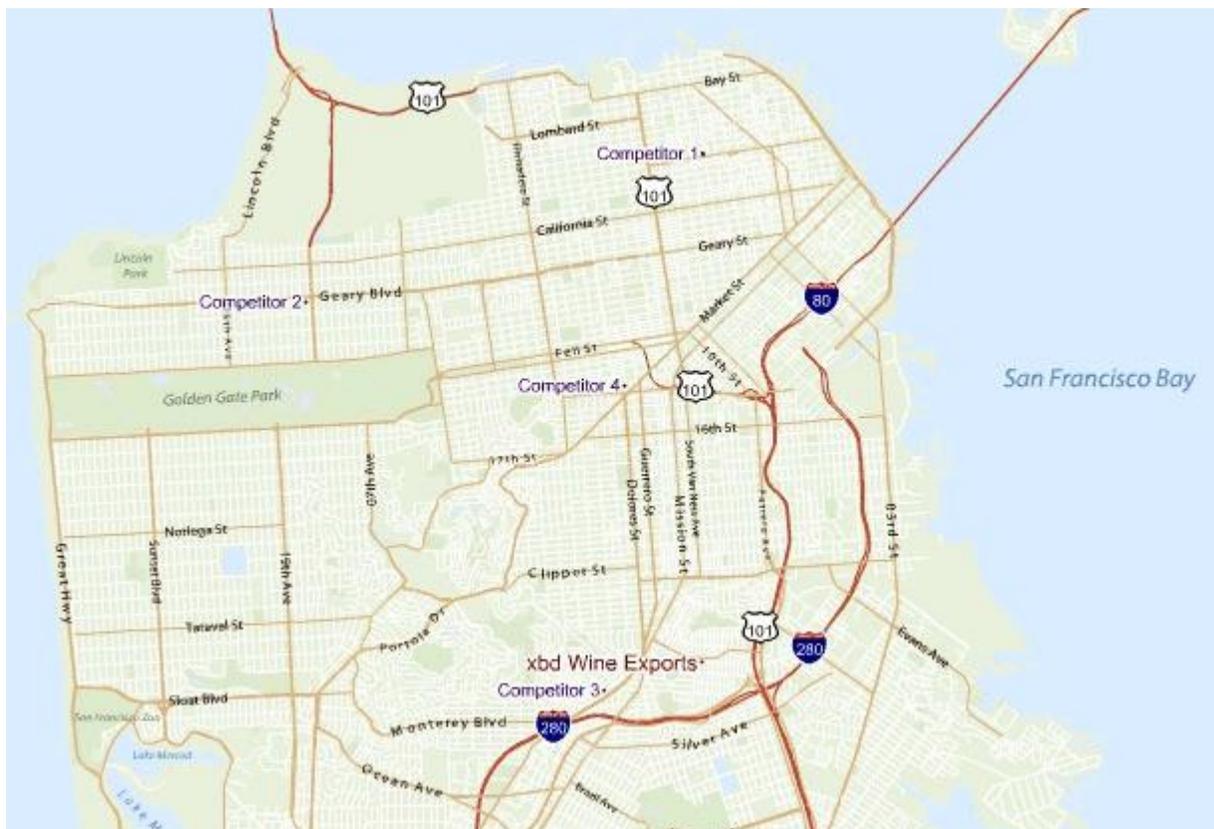
Maps viewed in a digital context, either within a computer mapping application or within an interactive web mapping application, have zoom in and zoom out functions.

Managing what is or is not visible at various zoom levels (scales) is important. This viewing management is known as zoom-layering.

For example, if you take a street map for a city and zoom out to view all the streets that are available, there is too much detail to make the map useful. To manage the amount of detail appearing on a map, you can use the zoom-layering feature.

Zoom-layering features allow you to specify a range of zoom values depicting when a specific layer's elements will be displayed.

Zoom Layering - Sample Map 1: San Francisco View







Thematic Mapping (Themes)

The strength of communicating information lies in the method used to represent it. Maps prove to be a valuable method of representing a relationship between observable occurrences found within a geographic area. Maps that display the spatial distribution of an attribute are known as thematic maps. CartoVista provides a variety of thematic mapping techniques to display your strategic data in innovative and meaningful ways.

When you publish and select indicators in as style and overlay themes, CartoVista automatically selects the type of thematic map you can display based on the data type chosen. The following paragraphs introduce the type of thematic maps supported by CartoVista

Once the theme is displayed, the thematic style dialog is accessible to customize the settings (change the colors, classification method, etc.)

Style Themes

Style themes modify the style of each of the features contained in the chosen thematic layer. The following style themes are available in CartoVista.

Polygon Style Theme

A type of theme that modifies the polygon feature styles in a layer (color and fill pattern) based on one or more indicators. Polygon themes are often associated with some data classification, either with ranges or discrete values. The values are represented by different colors and/or fill patterns on the layer.

For polygons, the following types of analysis are available:

- By Color – Range of Values
- By Color – Gradient
- By Color - Individual Values
- By Fill-Pattern – Individual Values
- By Fill-Pattern - Range of Values

Polyline Style Theme

A type of theme that modifies the polyline feature styles in a layer (color, stroke width and stroke pattern) based on one or more indicators. The following thematic analysis options are available:

- By Color - Range of Values
- By Color – Gradient
- By Color - Individual Values
- By Stroke Width – Individual Values
- By Stroke Pattern - Individual Values

Point Style Theme

A type of theme that modifies the point feature styles in a layer (color, symbol size and symbol shape) based on one or more indicators. The following thematic analysis options are available:

- By Color – Range of Values
- By Color – Gradient
- By Color – Individual Values
- By Graduated Symbols
- By Symbol Shape - Individual Values

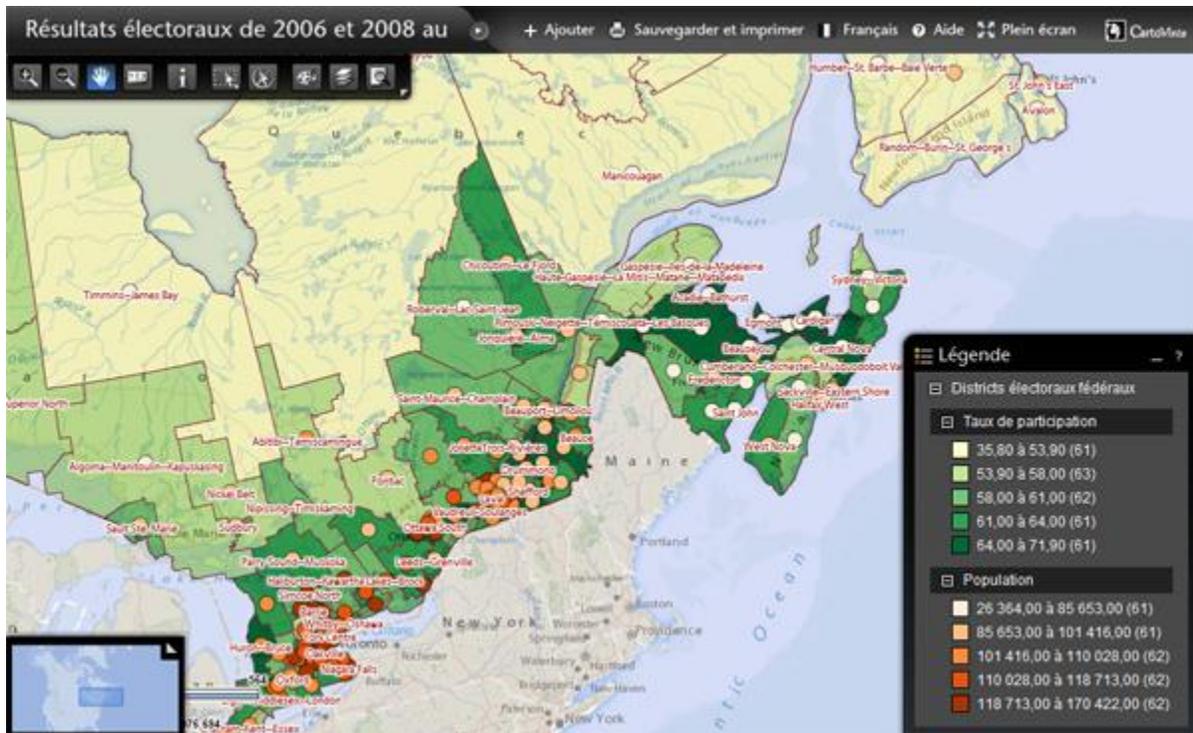
Overlay Themes

Overlay themes are displayed on top of the map to add another dimension to style themes. Using symbols and charts, you can show and easily compare numerical values in your data.

Overlay themes are essentially adding new objects (symbols, charts, etc.) on top of the thematic layer features. Overlay themes have other properties such as the opacity to control how the objects are displayed on top of the map features.

The following types of overlay themes are available and apply to all vector layer types (point, polyline, polygons)

Symbol Overlay Themes



A type of theme that adds symbols on top of the map features as an overlay. Symbols can be displayed with different color, shape and sizes. Symbol overlay themes have the same characteristics as Point Style Themes, except that in this case, the points are created on top of the layer map features.

The overlay symbol shapes are limited to the 13 shapes available with CartoVista.

Chart Overlay Themes



A type of overlay theme that add a chart on top of every map feature in a thematic layer. The following overlay themes are available.

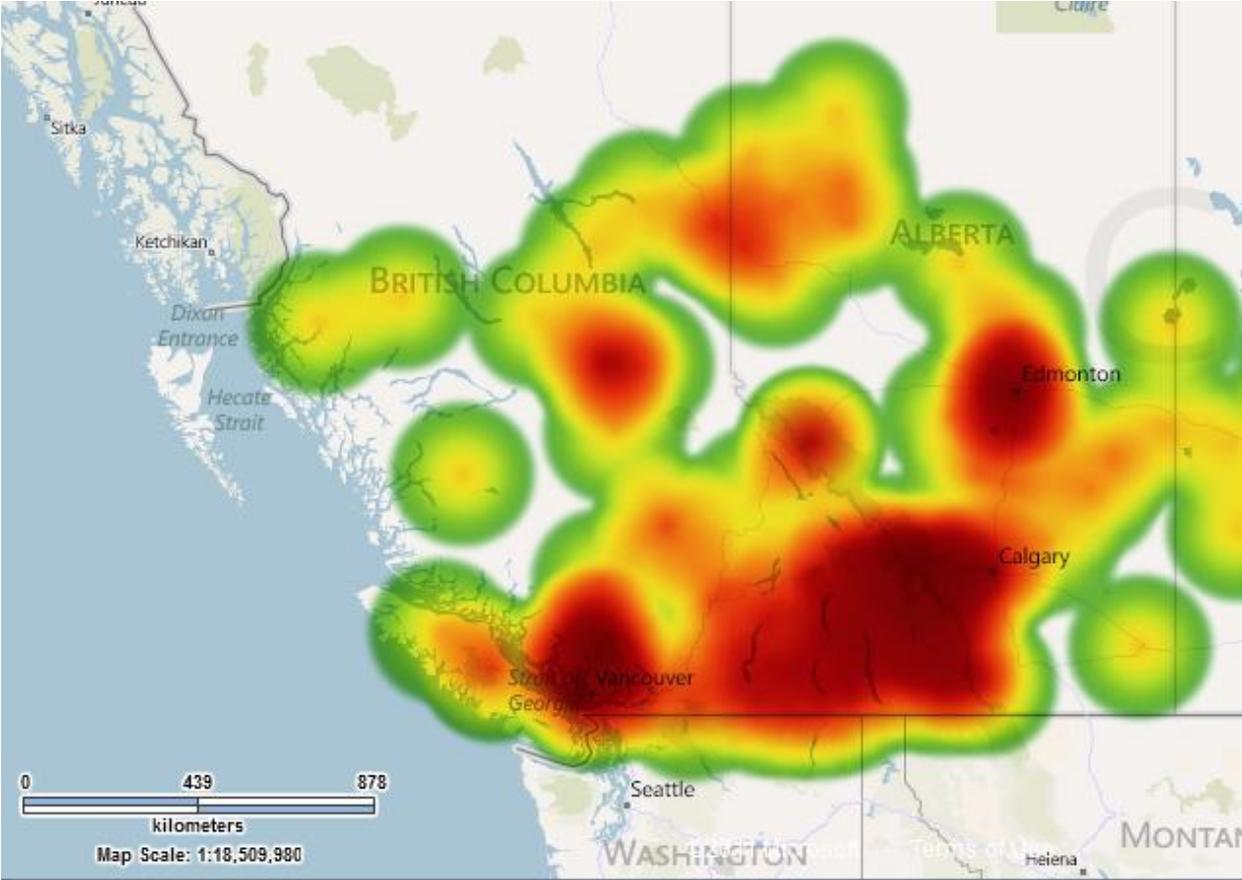
<p><i>Pie Chart Theme</i></p>	<p>A type of overlay theme that displays pie charts on top of map features. Pie chart themes are constructed from a collection of indicators, which have to be of the same data unit.</p>
<p><i>Bar Chart Theme</i></p>	<p>A type of overlay theme that displays bar charts on top of map features. Bar chart themes are constructed from a collection of indicators, which have to be of the same data unit.</p>

HeatMap Themes

Heatmap themes are using color variations to display the density of a point layer coverage.

This type of data representation by color is useful to understand the geographic distribution of a geographic fact or measure.

In this type of thematic analysis, low density areas are usually represented with cold colors (blue, green) while areas of higher density are displayed with warmer tones (yellow, orange, red). A multi color-gradient legend typically accompanies a heatmap.



Sample Heatmap Thematic Analysis



Attributes (Interactive Layers)

In vector layers, attributes are information attached to map features. In GIS files like ESRI shape files and MapInfo tables, attributes are available as "columns" that each contain specific data about the point, polyline or polygon features of a layer.

As part of the publishing process, you can decide which layer will have interactivity enabled in your map output. These map layers can feature some actions such as the display of datatips as well as search and info tool capabilities.

Minimum Requirements for Interactive Layers

Setting an interactive layer requires at least one feature attribute, used to establish unique identifiers (ID) for the map feature.

Unique identifiers are used to establish data binding with indicator (thematic) data.

It is possible to attach multiple attributes to features.

Attributes vs Indicators

Feature attributes are not to be confused with indicators. Indicators are the data values that a potential user would like to see in a thematic analysis on the map. Attributes are more descriptive, they provide contextual information about the object itself. Often, attributes tend to be more static and not change much over time.

In a CartoVista map, attributes are stored directly in the flash objects, in the resulting swf map layers. In contrast, indicators are stored as XML files, so that they can be updated easily.

Name Attribute

The most common attributes are names, such as the name of the geographic features in a map layer. In the case of a polygon layer, a typical attribute maybe the name of each of the region. Very often, features in a layer can use this name for data tips, info tool or to create map labels for the layer.

Example

For instance, if we have a polygon layer of Census Subdivisions, the user can attach a series of key attributes that help define and identify each object in the map, such as:

CartoVista Publisher Documentation

- The Census Subdivision Codes
- The Census Subdivision Name
- The Census Subdivision Name (French)
- The Census Subdivision Type
- The Province Abbreviation



Managing Your Data

This chapter will explain how to manage your data in the CartoVista Publisher:

Managing Your Map Files

- [The Map File Manager](#)
- [Adding New Map Files](#)
- [Map File Actions](#)
- [Managing Missing Data](#)
- [Map File Properties](#)
- [Browsing Map File Data](#)
- [Filtering Map File Data](#)
- [The Web Map Service \(WMS\) Map File](#)

Managing Your Data Files

- [Data File Manager](#)
- [Adding New Data Files](#)
- [Data File Actions](#)
- [Managing Missing Data](#)
- [Data File Properties](#)
- [Data Column Actions](#)
- [Data Column Properties](#)
- [Browsing Data File Data](#)

Stylizing Your Map Files: The Style Manager

- [Adding New Styles](#)
- [Polygon Layer Styles](#)
- [Polyline Layer Styles](#)
- [Point Layer Styles](#)
- [Font Styles](#)
- [Assigning Styles to Features](#)

Managing Coordinate Systems

- [Coordinate System Manager](#)
- [Defining New Coordinate Systems](#)
- [Importing Coordinate Systems](#)
- [Changing a Map Coordinate System](#)
- [Coordinate System Selection Dialog](#)



Managing Your Data

Creating a Map for CartoVista requires coordinating various different types of data. You will have your geographic data, depicting boundaries, points and other map geographies. You will have your data variables that you wish to display thematically. Additionally, you will have a set of styles to apply to the geographic objects, and a coordinate system to apply to the map.

The CartoVista Publisher simplifies the management and creation of all the different types of files, styles and coordinate systems for your CartoVista project. Four specific managers manage the Map Files, Data Files, Styles and Coordinate systems respectively.

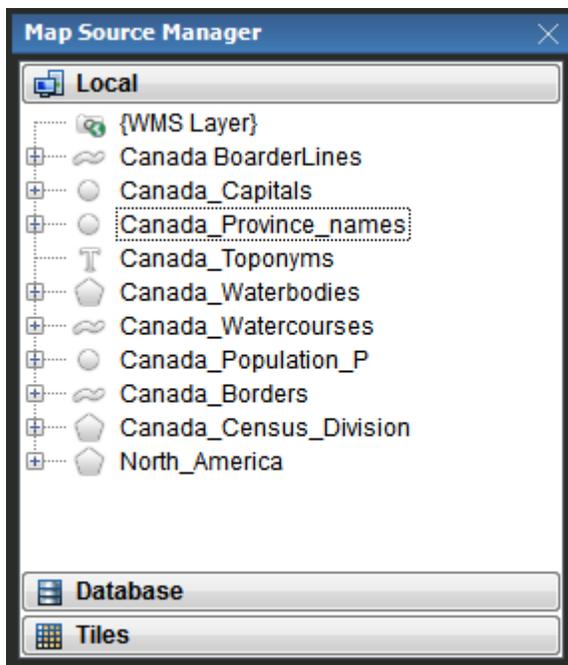
This section of the user guide describes each of the managers and the tasks you can perform to manage your data in a simple system that promotes re-use rather than starting from scratch for each new map.



Managing Your Map Files

The Map Source Manager is designed to help you manage your geographic data. You can display the Map Source Manager from the main menu bar. Select View > Map Source Manager.

The Map Source Manager allows you to create Map Files. Each Map File refers to a specific geographic data file. It will have its own style, labeling and zoom-layering properties. A single geographic data file can be referenced by many different Map Files, each with its own unique name and settings. This allows a single geographic data file to be re-used without having to create multiple copies of the same source file. For example a street network file can be referenced with different display styles appropriate for use at different scales.



NOTE: A Map File's settings are independent of any Map Window in which the Map File is used. In other words, if you use a Map File to build a map and then you change the settings in the map, those settings are not applied to the Map File in the Map Source Manager.

The Map Source Manager allows you to create an unlimited library of reusable Map Files. By centralizing the management of your map files and their style settings, you can rapidly create maps without having to re-find source geographic data every time, or re-apply style settings to those files.

The Map Source Manager divides Map Files into three distinct categories: Local, Database and Tile. Each category has its own section in the Map Source manager.

Local Map Files represent a geographic data file that is on the local machine or network. These files contain Text, Point, Line, Polygon or Raster data. Database Map Files represent a geographic data file this located in a remote database, such as Oracle, Microsoft SQL Server or PostGIS. The geographic data can represent Points, Lines or Polygons.

Tile Providers represent a collection of small raster images obtained over the internet that when assembled together form a complete image of the layer. For more information on Tile layers, see section [Raster Tile Layers](#) or [Creating & Publishing Tiled Base Maps](#).

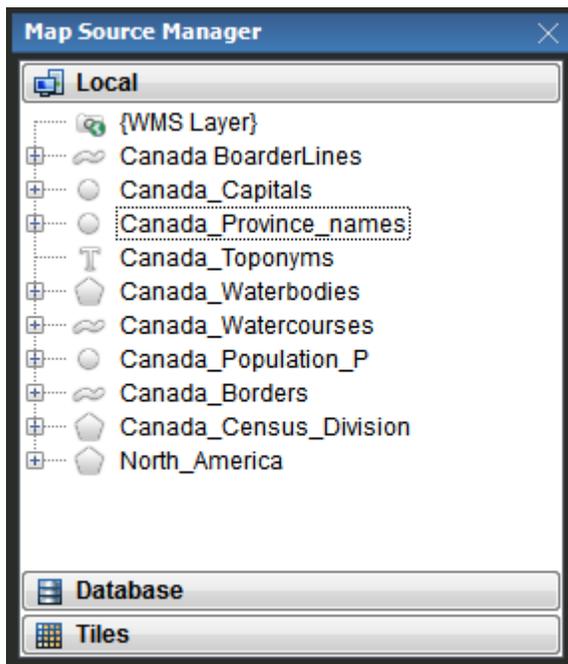
It is also possible to use WMS layers. These are raster images that are obtained from a WMS Server over the internet using the WMS web protocol from the OGC. For more information on WMS layers, see section [The Web Map Service \(WMS\) Map File](#).

Some properties and settings will only be available for specific types of Map Files, or for the specific geographic data type of the source file.



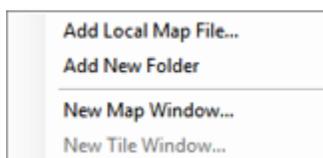
The Map Source Manager

The Map Source Manager is a dockable window that contains a tree structure displaying all the available Map Files. If the Map Source Manager is not visible, select View -> Map Source Manager from the main menu. Since the Map Source Manager is a dockable window, it can also be minimized to the edges of the main application window.



The Map Source Manager has three sections, one for Local Map Files, one for Database Map Files, and one for Tile Providers. Each section contains a tree structure displaying all the available Map Files sorted alphabetically.

Map Files that can have style settings assigned to them have sub-nodes that depict the style settings in use. This can be either a single <<Default>> style, that will be applied to all objects in the Map File, or multiple nodes with one node for each unique identifier in the Map File's unique identifier column. Style nodes will display a visual representation of the style assigned to the identifier.



By right-clicking outside of a Map File node, you can bring up the Map Source Manager context menu. This menu will let you add a new map file appropriate to the category you have open, as well as launch the dialog for creating a new Map, Server or Tile Window. For more information on these options see section [Adding New map Files](#) and section on [Creating a Map Window](#), [Creating a Server Window](#) and [Creating a Tile Window](#) respectively.

It is also possible to create folders/sub-folders to organize and classify the map files within the map file manager. Simple drag and drop will let the user organize the content of the map source manager.

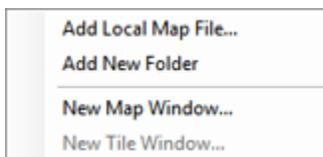
The Map Source Manager will alert you if the source geographic data for one of the local Map Files is missing. Map Files that are missing their geographic data source are highlighted in yellow in the Map Source Manager. Maps that have been created with missing source data will still display, with the caveat that the missing layer is not drawn and the layer will also be highlighted in yellow in the layer control. To correct the file path of a Map File, click on the map file and use either of the Locate or the Locate Main Folder menu options. See section on [Managing Missing Data](#) for more information on locating missing map files.



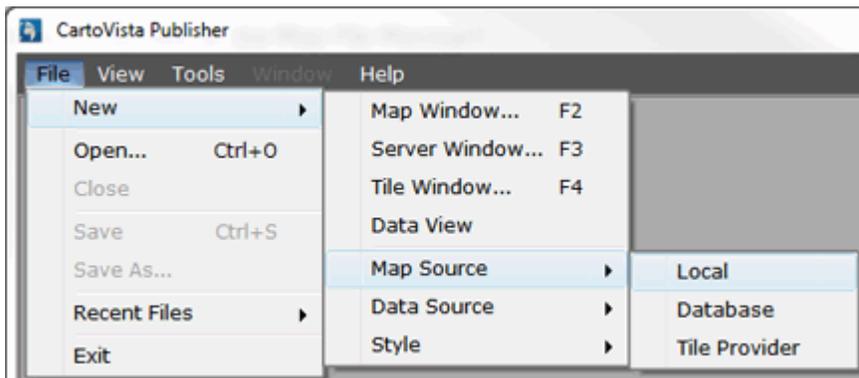
Adding New Map Files

You can use one of the following methods to add new map files to the Map Source Manager.

1. Within the Map Source Manager, right [click](#) in any white space in the Map Source Manager then select the menu "Add Local Map File...", "Add Database Map File" or "Add Tile Provider", depending on which category is open.



2. From the main menu, select File - > New - > Map Source and choose either Local, Database or Tile Provider.



NOTE: You currently cannot add any additional WMS Layers. For information on how to use a WMS layer, see section [The Web Map Service \(WMS\) Map File](#).

Adding a Local Map File

If you have chosen to add a new local Map File, you will be prompted to select the file from a file selection dialog. Make sure you set the file type to display to the correct type of geographic data you are trying to add. Your choices include:

- Vector Formats (both .TAB and .SHP files)
- Raster Formats (all raster extensions supported)
- MapInfo Tables (.TAB files)

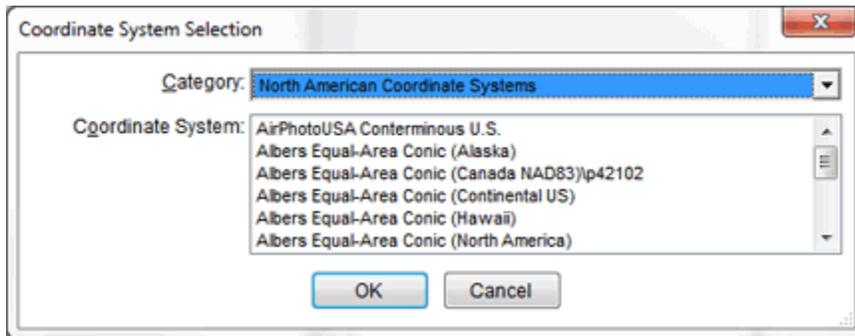
- ESRI SHP Files (.SHP files)
- ESRI Personal GeoDatabase Files (.MDB files)
- All Files

For most geographic data files, the file is then added to the Map Source Manager with the same name as the filename you have selected.

ESRI.SHP files without a .PRJ file

Note: the following is only applicable to ESRI Shapefiles.

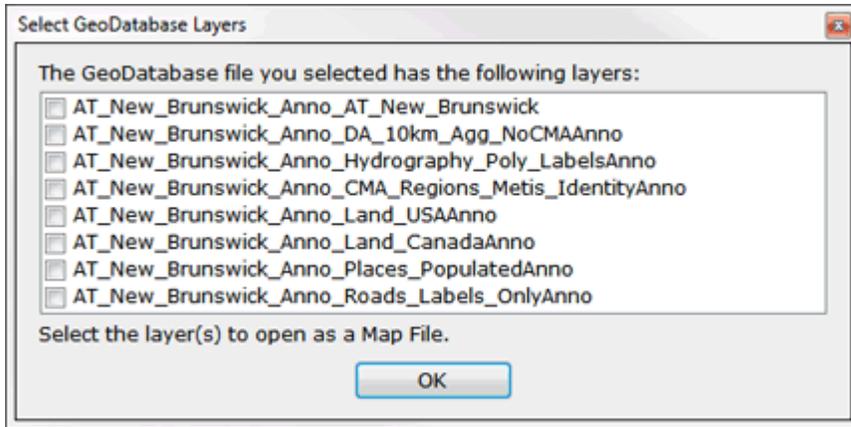
If you are selecting a ESRI .SHP file that does not have a corresponding .PRJ file, you will be prompted to choose the projection for the Map File.



Select the projection that matches the projection used in the .SHP file. Selecting the incorrect projection will lead to the data being placed in the wrong location. For more information on projections, refer to section [Managing Coordinate Systems](#).

ESRI Personal GeoDatabase

An ESRI Personal GeoDatabase file can contain multiple geographic data source files. You will be prompted to choose one or more files from the Personal GeoDatabase to add as Map Files.



Raster Images

When opening raster images, the Map Source Manager needs to know how to position the raster image and its coordinate system.

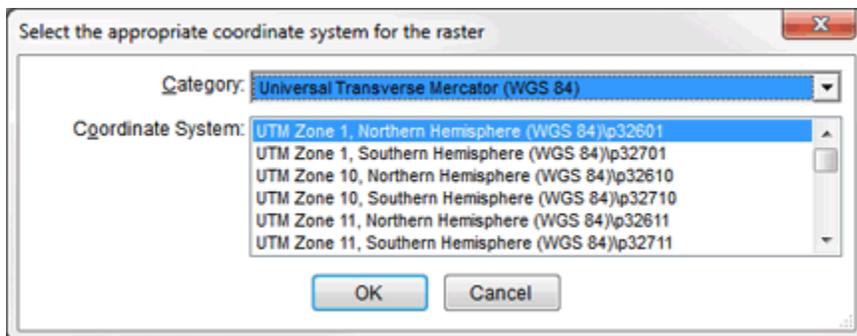
Positioning the raster image with regards to real world coordinates is done with a “world file” that is associated with each raster image. A world file describes the location, scale and rotation of the image.

A world file is a six-line text file with decimal numbers on each line. The name of the file is the same as the associated raster file, with a modified extension.

The following conventions are used to name the world files:

Raster Image Type	World File Extension
.jp2	.j2w
.ecw	.wld
.tif, .tiff	.tfw
.sid	.sdw
.jpg , .jpeg	.jgw
.png	.pgw
.bmp	.bpw

The Map Source Manager will prompt you to select a coordinate system when opening a raster image. Select the projection that matches the projection used in raster image file. Selecting the incorrect projection will lead to the data being placed in the wrong location. For more information on projections, refer to section [Managing Coordinate Systems](#).



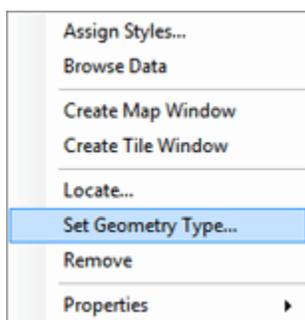
NOTE: If you are working with raster images registered as a MapInfo table with a corresponding .TAB file, the Map Source Manager has all the information it needs. You will not need a world file, nor will you be prompted to select a projection.

Multiple Feature Types in Map Files

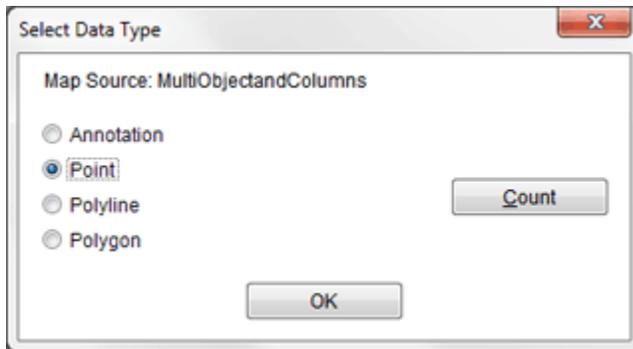
NOTE: The following is only applicable to MapInfo tables, as ESRI Shapes do not support mixed geometries.

If you have selected a MapInfo table that contains more than one type of feature (ex: Polygon and Points), the Map Source Manager will automatically select the geometry type of the first record in the table.

If this is not the correct geometry type to use, it is possible to change the geometry type by right clicking on the Map File in the Map Source Manager and selecting the Set Geometry Type menu option.

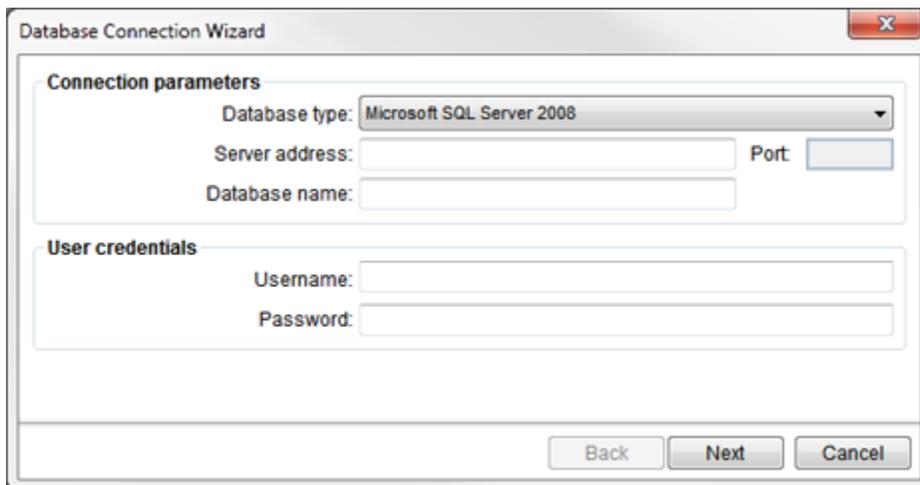


The Select Data Type dialog will let you choose the correct geometry type. If desired, you can click the Count button to display the number of objects of each geometry types in the MapInfo table. If you have a large file, this may take several seconds.



Adding a Database Map File

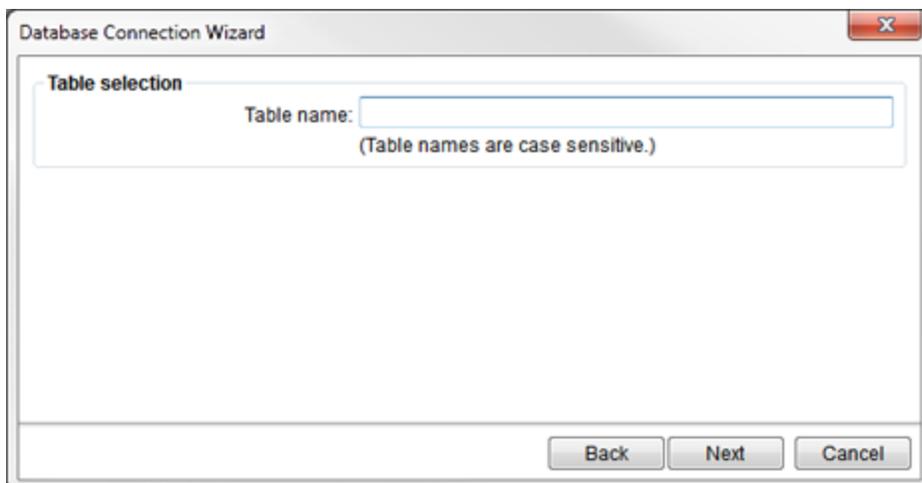
If you have chosen to add a new Database Map File, you will be presented with a wizard that will guide you through the steps.



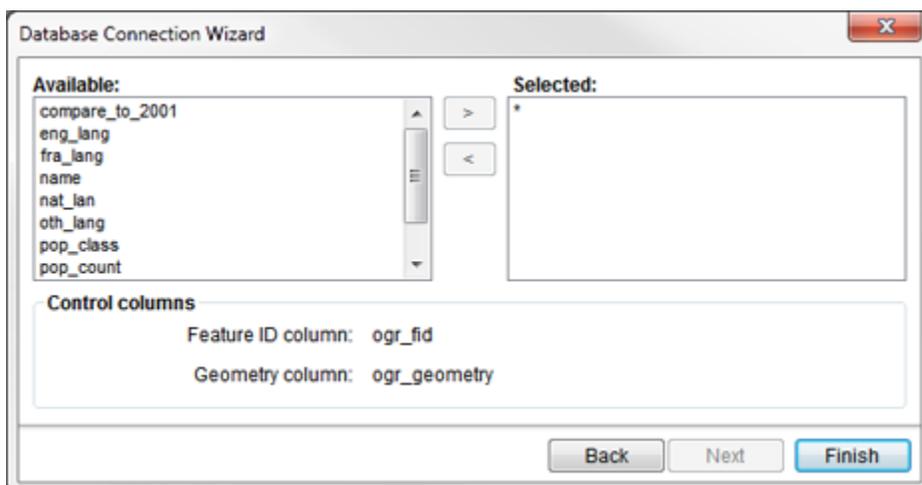
You must first know the type of database you are trying to connect to, and the server address of that database. Currently CartoVista Publisher supports Microsoft SQL Server 2008, Oracle 11g and PostgreSQL (PostGIS). If you do not know the name of your server address, please contact your IT administrator, or the IT administrator of the database you wish to connect to. They will be able to help you with this and the other information such as the Port number you will need to connect.

Enter the database name, username and password that have permission to connect to that database.

Once a connection is established to a database, you must enter the name of the table (or view) that you wish to use. Please note that the table names ARE case sensitive.



Finally, you will select the columns from the Table/View to use as columns in your Map File.



There are 2 options to determine which columns are selected:

Selecting ALL Columns: If no specific columns are selected, a "*" will appear in the Selected list. This is a short form for "All Columns".

Selecting Specific Columns: Select one or more columns from the list of available columns in the Available list and add them to the right hand Selected list using the > button. Use the < button to remove one or more columns from the Selected list and return them to the available list.

NOTE: It is better to use all columns ("*") rather than manually select all the columns individually.

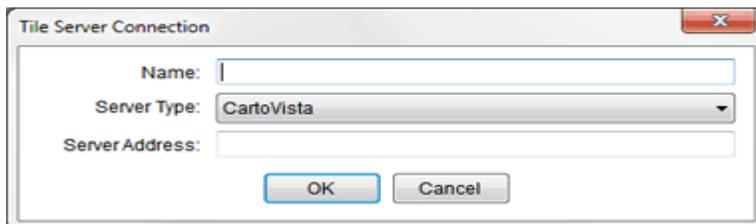
Feature ID Column: The Feature ID Column in the Database Connection Wizard must be set to the column in table which contains the Geographic Features Unique

Identifier. This unique identifier is distinct from the table's primary key and servers to reference the geometry of feature; because of this the Feature ID will not be available in the layers Table and cannot be used for data joins. When the wizard connects to a table it attempts to auto detect the Feature ID column, in which case no further action is required by the user and the Feature ID parameter of the wizard will be automatically populated. If the Feature ID column is not auto detected the user will need to select the column from the drop down list.

Geometry column: The Geometry Column in the Database Connection Wizard should be set to the column of the table which contains the feature geometry of the layer.

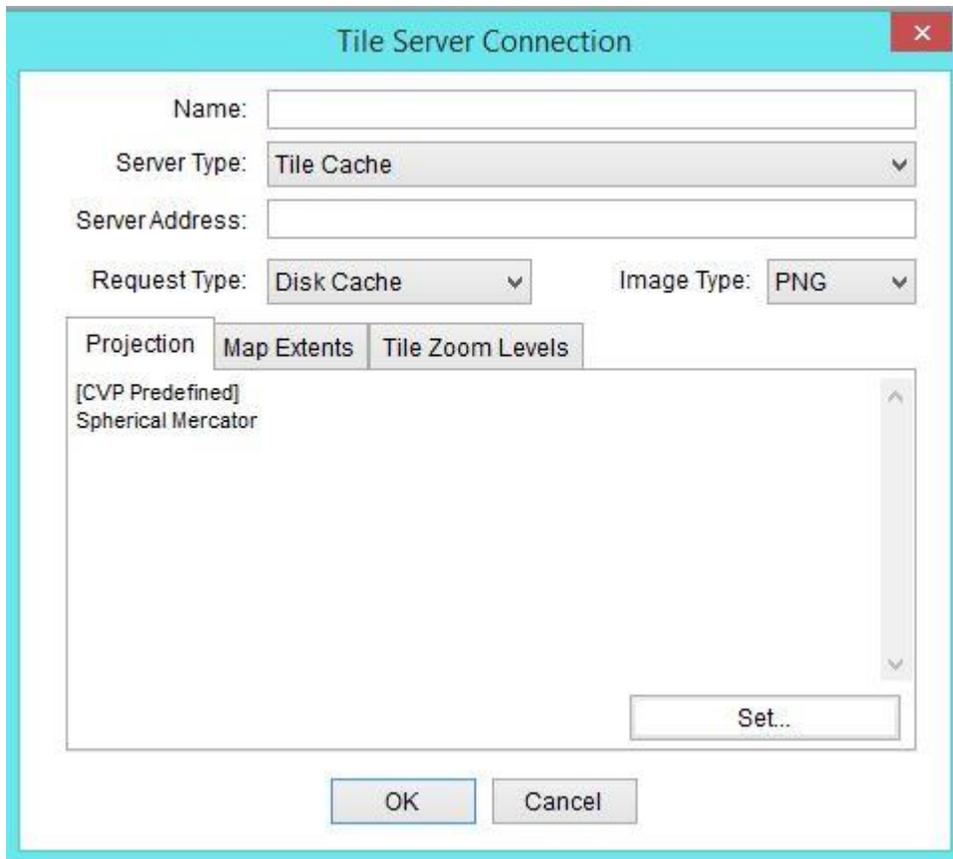
Adding a Tile Provider

There are four different styles of Tile Providers that you can add to the available tile providers:



For CartoVista, ESRI and IGN, enter a name for the new tile provider, and in the Server Address enter the URL where the tiles are located.

If you select a Tile Cache Tile Provider, there are additional parameters that must be provided. Contact the creator of the Tile Cache Provider to find out the exact values that must be entered in order for the tiles to appear correctly.



Request Type: the type of request to make to the Tile Cache server. Options are Disk Cache, World Wind and Tile Mapping Service.

Image Type: the type tile image returned by the Tile Cache Server. Options are PNG, GIF or JPG.

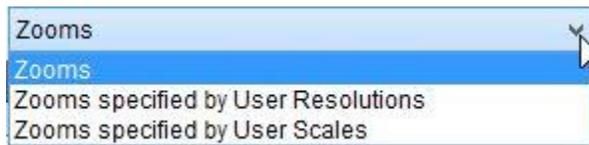
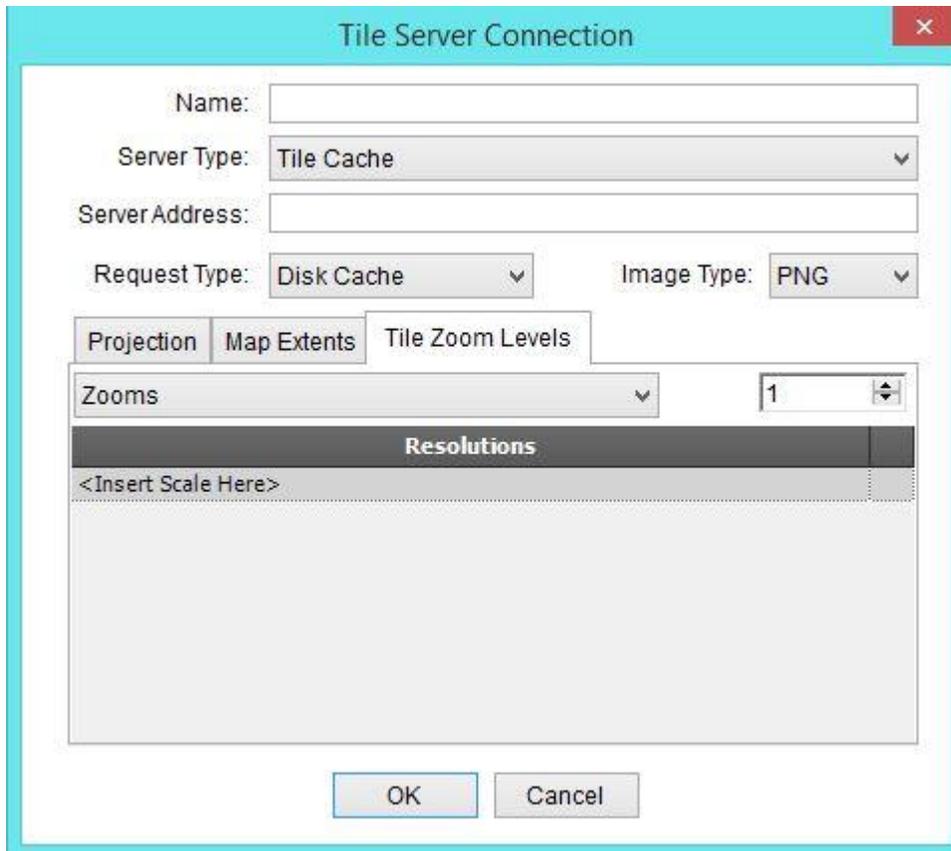
Projection: The projection of the tile set. By default, the Spherical Mercator projection (used by most popular tile providers like Google, Bing and Yahoo) is preselected. However if the Tile Cache Server has tiles in another projection, click the Set button and select the appropriate projection.

Map Extents: The bounding box of the top level of the tileset.

The screenshot shows a dialog box titled "Tile Server Connection". It features a close button in the top right corner. The main area contains the following fields and controls:

- Name:** An empty text input field.
- Server Type:** A dropdown menu with "Tile Cache" selected.
- Server Address:** An empty text input field.
- Request Type:** A dropdown menu with "Disk Cache" selected.
- Image Type:** A dropdown menu with "PNG" selected.
- Map Extents Tab:** This tab is active and contains:
 - Bottom Left Corner:** Two input fields for "X" and "Y", both containing the value "1,00".
 - Top Right Corner:** Two input fields for "X" and "Y", both containing the value "1,00".
- Buttons:** "OK" and "Cancel" buttons are located at the bottom of the dialog.

Tile Zoom Levels: Specifies how many zoom levels are available, and what the scale of the zoom levels are.



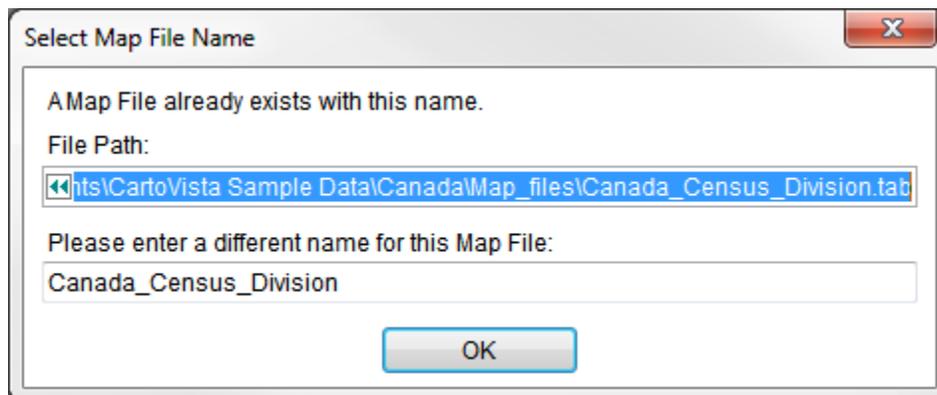
Zooms: By selecting this option, the scale of the zoom levels is calculated based on the initial Extents. The user has to specify the maximum number of zoom levels that are available, and each level is double the scale of the previous zoom level.

Zooms specified by User Resolutions: By selecting this option, the resolutions and number of zoom levels is provided by the user. In the "<Insert Resolution Here>" line, enter each resolutions that are available in the Tile Cache Provider. Multiple resolutions can be entered at one time, as long as they are separated by a comma.

Zooms specified by User Scales: By selecting this option, the scale and number of zoom levels is provided by the user. In the "<Insert Scale Here>" line in the Resolution Scale, enter each of the scales that are available in the Tile Cache Provider. Multiple scales can be entered at one time, as long as they are separated by a comma.

Duplicate File Name

The Map Source Manager expects that each Map File will have a unique name. If you add a new Map File that has the same name as an existing Map File, the Map Source Manager will display a dialog asking you to enter a different name.



Once you have entered a name that does not conflict with an existing Map File, the new Map File will be created. If you want to abort the creation of a new Map File at this point, click on the red X button at the top right of the dialog.

Local Map Files Folders

Local Map Files can be sorted into folders to help with organization. Folders can be created by right clicking outside of the tree structure and selecting Add New Folder.



This will create a new top level folder. It can not have the same name as an existing folder or Map File.

Folders have the following options available via their right click menu:

Rename: Change the name of the folder. The new name must not already exist in the Map Source Manager at the same level as the folder.

Remove: Removes both the folder and any sub-folders or Map Files that are inside of the folder.

Create Map Window: Creates a new Map Window with any Map Files that are within the folder or its sub-folders.

Create Tile Window: Creates a new Tile Window with any Map Files that are within the folder or its sub-folders. This option is only available if you have purchased the Tile Module add-on for the Publisher. For more information about creating tiles see section [Creating & Publishing Tiled Base Maps](#).

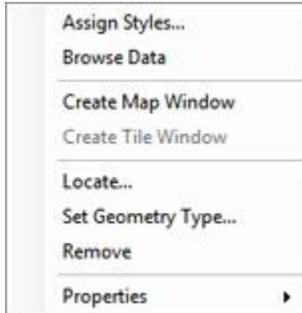
Add New Folder: Creates a sub-folder within the folder.

Map Files can be added to folders using Drag & Drop in the Map Source Manager, or their Folder property in the Map File Properties Dialog. When setting the folder in the Map File Properties dialog, separate sub folders using the “\” character.



Map File Actions

When you right click on a Map File, a contextual menu is displayed. Some menu items may be disabled depending on the type of Map File.



Assign Styles: This option is available for Point, Polyline and Polygon Map Files. It allows you to specify how the geographic objects will be displayed in the Map Window. For more information about assigning styles, see section [Assigning Styles to Features](#).

Browse Data: This option is available for Annotation, Point, Polyline and Polygon Map Files. It allows you to view the data attached to the geographic objects. For more information about browsing data see section [Browsing Map File Data](#).

Create Map Window: This option allows you to create a new map based on the selected Map Files. For more information about creating maps see section [Creating and Configuring a Map](#).

Create Tile Window: This option is only available if you have purchased the Tile Module add-on for the Publisher. It allows you to create a new tile map based on the selected Map Files. For more information about creating tiles see section [Creating & Publishing Tiled Base Maps](#).

Locate: This option allows you to point the Map File at a different geographic data source file, or to update the information if the geographic data source file has been modified. For more information on locating the geographic data source see section [Managing Missing Data](#).

Clear Cache: This option is only available for Tile Map Files. It allows you to clear any tiles that have been cached locally on your computer.

Locate Main Folder: This option allows you to point multiple layers to different geographic data source files all at once by specifying a root directory for all the source files.

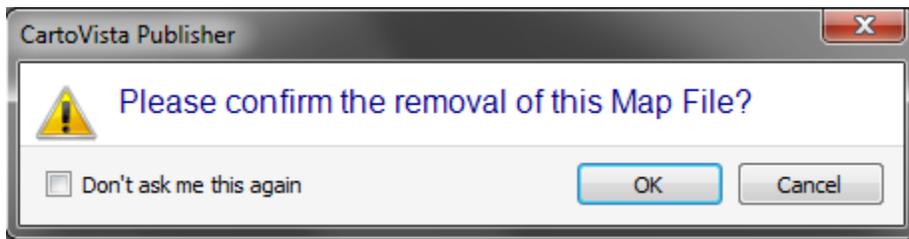
Set Geometry Type: This option allows you to select the geometry type of a Map File that is created from a MapInfo Table.

Remove: This option allows you to remove a Map File from the Map Source Manager. It does not delete the underlying geographic source file, nor does it affect any maps that were created with this Map File.

It is also possible to remove Map Files and Map Files Folders using the Delete key from the keyboard.

New Confirmation Dialogs

A confirmation dialog box is now launched when you remove a Layer from the Layer Control, a Map File from the Map Source Manager or a Data File from the Data File Manager. A "Do not ask me again" option is available within the dialogue to turn off the use of the launched dialog. These new confirmation dialogs can be managed using the Tool > Preference > General Options Tab. 3 check boxes have been added so you can turn on/off the warning dialogs.



Properties: This option allows you to see the properties associated with a specific Map File. See section [Map File Properties](#) for more information.



Managing Missing Data

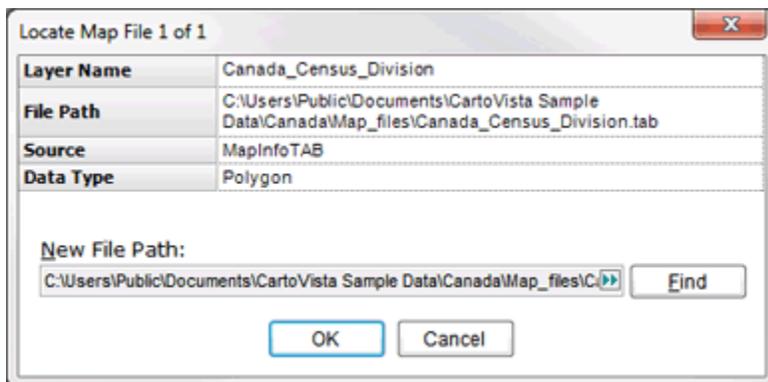
The Map Source Manager will alert you if one of the Map Files that you have been working with is missing its source geographic data file. Map Files that are missing are **highlighted in yellow** in the Map Source Manager.

Maps that have been created that contain layers with missing Map Files will still display, with the caveat that the missing layer is not drawn and the layer will also be **highlighted in yellow** in the layer control.

To correct the location of a Map File that is missing, click on the Map File and use either of the Locate or the Locate Main Folder menu options.

NOTE: You can also select more than one map file and then click on Locate Main Folder to reset the base folder for all files.

When you click on locate, the Locate Map File Dialog is displayed.



Use the Find button to locate the missing map file and click on OK.

NOTE: You can use the Locate action to update a Map File if the source geographic data has changed its column structure. Locating a Map File when this has happened will result in the list of columns available within the Map File to be updated.

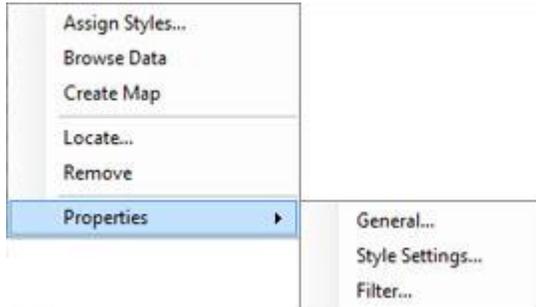


Map File Properties

The Map File Properties dialog allows you to see all the properties associated with the Map File. Changing these properties does not affect any Map File that is already in use in a Map Window. It simply sets the default properties for the next time this Map File is used.

You can use one of the following methods to access the Map File Properties Dialog:

1. Double click on the Map File node in the Map Source Manager
2. Right click on the Map File node in the Map Source Manager and chose one of the options in the Properties' submenu.



This will take you directly to that tab in the Map File Properties Dialog.

General Tab

The General Tab displays basic information about the map *file* .

Map File Name: This is an editable property. You can specify any name. To edit the name, type in the name box. Map file names must be unique within the Map Source Manager.

Folder: The folder in the Map Source Manager where this Map File will be found. This is an editable property. You can specify any folder name. A folder of the appropriate name will be automatically created if necessary.

File Path: The path to the GIS file providing the feature data.

Source: The type of GIS source. One of the following:

- MapInfo Table
- ESRI Shape File
- GeoDatabase File

- Raster File
- WMS Layer
- Tile Layer
- Database Connection

Data Type :The type of data stored in the map file. One of the following:

-  [Polygon](#)
-  [Polyline](#)
-  [Point](#)
-  Annotation
-  Raster
-  WMS
-  Tile

Coordinate System: The GIS file's coordinate system. The text displayed here will be one of the following three options:

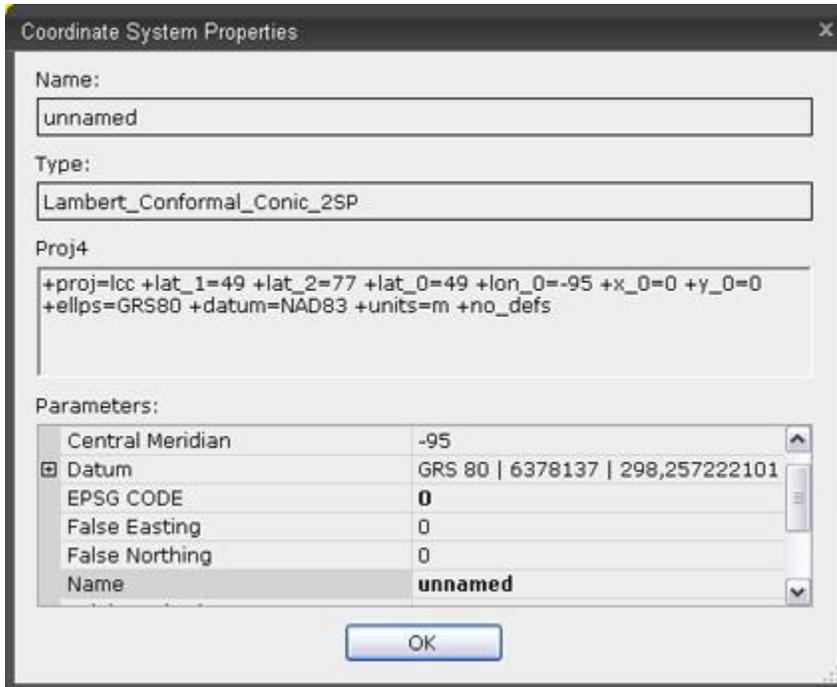
1. PROJ4 format – PROJ4 is a cartographic projections library originally written by Gerald Evenden. Visit <http://trac.osgeo.org/proj/> for more information
2. WKT format – WKT is a text markup language for representing vector geometry objects on a map and spatial reference systems. Visit <http://geoapi.sourceforge.net/2.0/javadoc/org/opensis/referencing/doc-files/WKT.html> for more information
3. User Defined Name – CartoVista Publisher maintains a list of projections in WKT format that have been given a useful projection name and category. This allows for easier interaction with coordinate systems, as they can be categorized into meaningful categories (e.g. UTM Zones) and given meaningful names (e.g. UTM Zone 18, NAD83, Canada)

Metadata (Sources): This field is available to enter Metadata on each Mapfiles. The field supports text and hyperlinks.

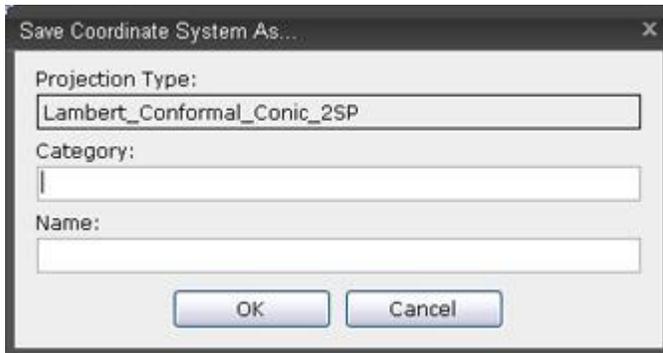
NOTE: See Tools and *Preferences - > Projection Settings* for information on how to change the program settings or how to display projections.

By double-clicking on the coordinate system name, you can choose two of the following options:

- "View properties" displays a dialog with a list of the coordinate system properties.



- "Add to Coordinate System Manager" allows you to add the map file coordinate system to the Coordinate System Manager in a specific category and with a given name. The "Save Coordinate System as..." dialog is displayed.



For more information on Coordinate Systems, Categories and Names, see section [Managing Coordinate Systems](#).

The following Map File attributes are only present when displaying the properties for a Tile Map File.

- **Tile Provider:** The name of the type of Tile Provider
- **Tile URL:** The URL of the Tile Provider
- **Raster Type:** The type of raster images that the Tile Provider sends
- **Closest Zoom:** The closest level of detail provided by the Tile Provider.

The following Map File attributes are only present when displaying the properties for a Database Map File.

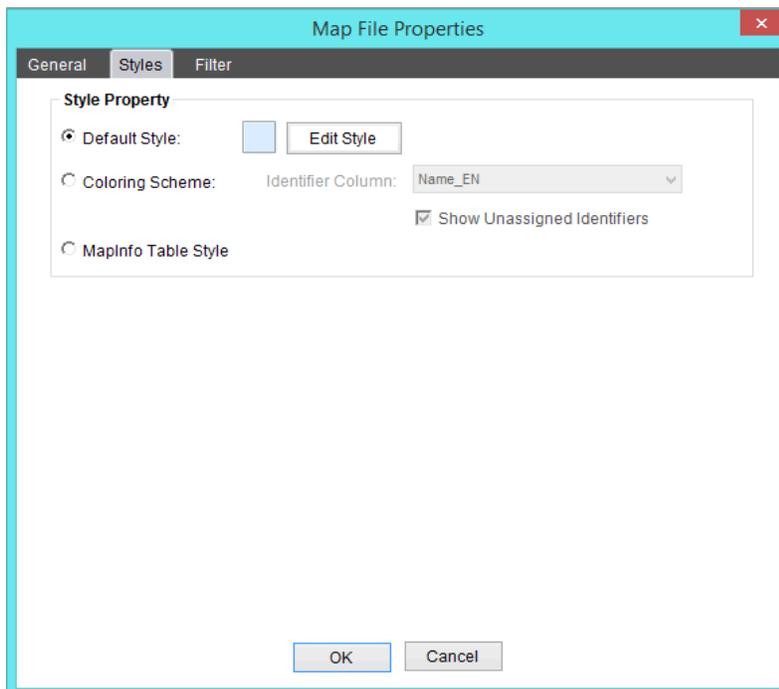
- **Address:** The server address of the database.
- **Port:** The port used on the server.
- **Database:** The name of the database used.
- **Table:** The name of the table/view used.
- **User Name:** The username used to log into the database.

Style Settings Tab

The style settings tab provides information on how to render the geographic objects for the Map File.

For Point, Polyline and Polygon Map Files, the Style Property section is enabled. Annotation Map Files have no style settings to set, and as such do not have this section. For Raster, WMS and Tile Map files, only the Transparent Color (Raster) section is enabled.

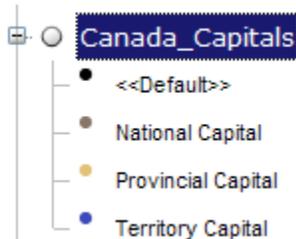
For Point Map Files, a symbol rotation column can be configured. This setting allows the user to rotate the symbol for the point to a specific angle based on that object's field entry in the user specified column.



Style Property

This section controls how styles are displayed for Point, Polyline and Polygon Map Files. There are three ways in which styles can be displayed:

1. **Default Style:** A single style will be used for all geographic objects. To change the default style, click on the Edit Style Button.
2. **Coloring Scheme:** A style will be applied to the geographic objects based on the value in the specified attribute column. Each unique value within the column will have a unique style assigned automatically.



For more information on style assignment see [Assigning Styles to Features](#).

Show unassigned identifiers option

Choose this option to display all the unique identifiers, even if they have not been assigned a style. If this option is not selected, only identifiers with an assigned style (including identifiers auto-assigned by the default style) are displayed.

3. **MapInfo Table Style:** This option is only available when the source geographic data file is a MapInfo Table (.tab). When this option is selected, the style information for each feature will be read directly from the information stored in the MapInfo Table.

NOTE: Some of the MapInfo style options such as *fill* and *stroke* patterns are not supported by the CartoVista Publisher.

Transparent Color (Raster)

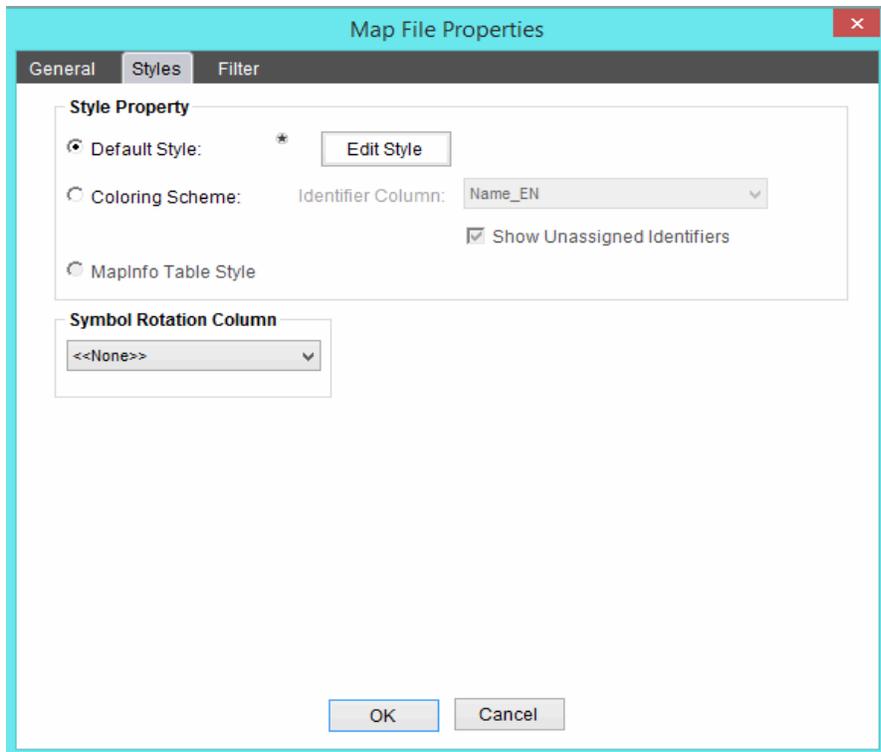
This section controls how transparency is handled for the Raster, WMS and Tile Map Files.

By selecting the "Enabled" checkbox, you can specify a specific color to be transparent. Click on the Color button to choose the specific color that will be transparent.

Symbol Rotation Column (Point)

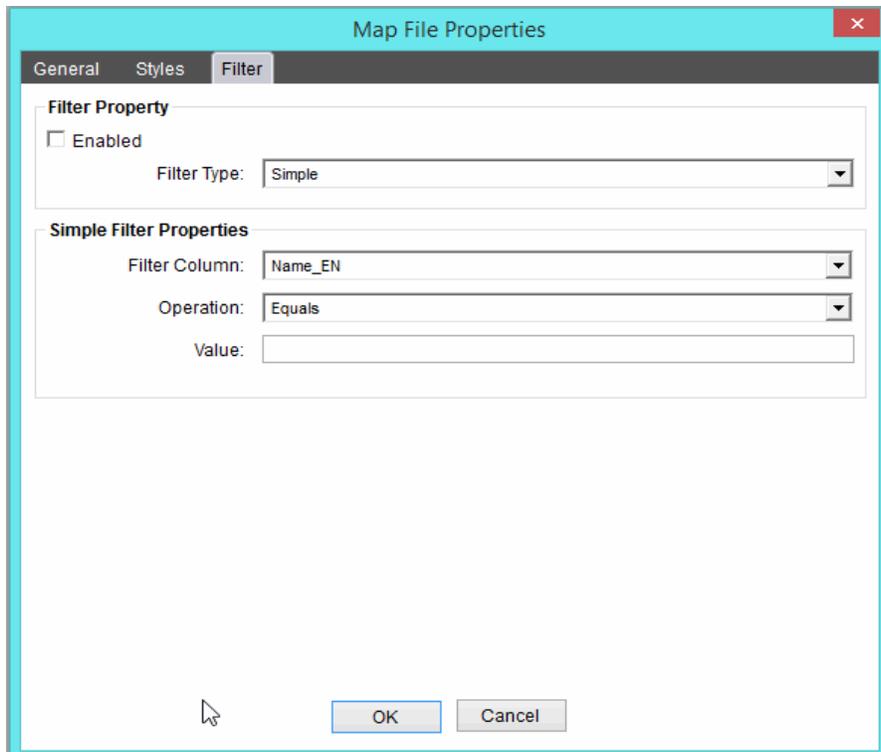
This section controls how points styles can be rotated based on a data column.

By selecting a column containing numeric data, the point symbol displayed will be rotated based on the value of column for that point.



Filter Tab

The Filter tab provides information on the filter (if any) that is applied to the map layer.



For more information on setting filter options, see [Filtering Map File Data](#).



Browsing Map File Data

Browsing your Map File data allows you to see the attribute data attached to each of the geographic objects. This option is only available for Annotation, Point, Polyline and Polygon data types. Raster, WMS and Tile Map Files have no data to view.

To browse a Map File, select the Map File in the Map Source Manager, right click and select "Browse...".

The Map File Table Browser displays **all** data records associated with the map file. If a filter is applied, only the records that match the filter will be displayed. The total number of rows in the map file is displayed in the status bar.

	UNIQUE_ID	Name	Population_Es	Entity_Type_E	Entity_Type_FI	Class	Province_Code
▶ 1	1	Victoria	71590	Provincial Ca...	Capitale pro...	4	59
2	2	Regina	175605	Provincial Ca...	Capitale pro...	5	47
3	3	Toronto	2456800	Provincial Ca...	Capitale pro...	7	35
4	4	Ottawa	763795	National Ca...	Capitale nati...	6	35
5	5	Québec	507985	Provincial Ca...	Capitale pro...	6	24
6	6	Fredericton	47000	Provincial Ca...	Capitale pro...	3	13
7	7	Charlottetown	31205	Provincial Ca...	Capitale pro...	3	11
8	8	Halifax	355870	Provincial Ca...	Capitale pro...	5	12
9	9	St. John's	97890	Provincial Ca...	Capitale pro...	4	10
10	10	Winnipeg	610450	Provincial Ca...	Capitale pro...	6	46
11	11	Edmonton	657355	Provincial Ca...	Capitale pro...	6	48
12	12	Whitehorse	18920	Territory Ca...	Capitale terr...	3	60
13	13	Yellowknife	16450	Territory Ca...	Capitale terr...	3	61
14	14	Iqaluit	5195	Territory Ca...	Capitale terr...	2	62
15	15	Montréal	1019735	Populated pl...	Lieu habité	7	24

231 rows

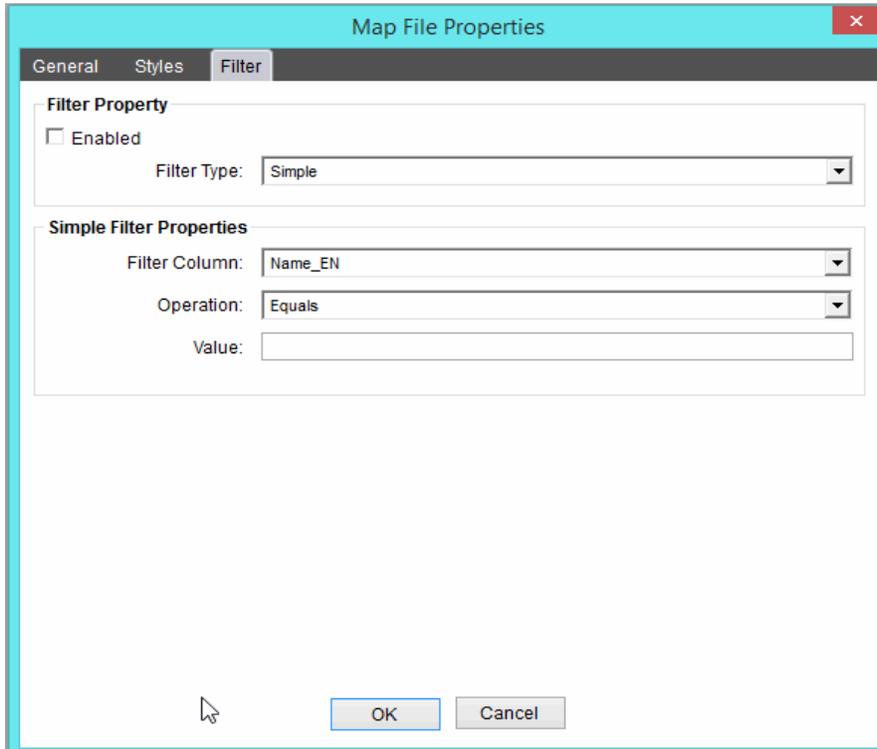
TIP: You can use the column headings to sort records in the table.



Filtering Map File Data

Filtering your Map File data allows you to display only certain features from a Map File rather than all of the features. When filtering is enabled, the features that are displayed will depend a comparison of one or more of the map file's attributes to a user supplied value. This option is only available for Point, Polyline and Polygon data types.

To filter a Map File, select the Map File in the Map Source Manager, right click and select "Filter..." from the Properties menu. The Filter Settings tab of the Map File Properties dialog allows you to set one of three methods for filtering, and enter the information to filter on.



Filter Property

Enabled: When enabled, the filter will be applied to the Map File. The icon representing the type of Map Layer will change to indicate a filter is applied:



	Polyline layer with filtering
	Point layer with filtering

Filter Type: The following filter types are available:

Filter Type	Description
Simple	A single attribute in the feature is compared to a string value.
RegEx	A single attribute in the feature is matched with a regular expression.
Expression	One or more attributes in the feature are compared using logical operators.

Depending on the filter type selected, one of the following filter editors will appear.

Simple Filter Properties

Filter Column: This identifies the attribute column in the source GIS data that will be used in the filter.

Operation: This identifies the operator that will be used in the comparison between the feature’s attribute and the user entered value. If the comparison returns TRUE, then the feature will be displayed.

Operation	Description
Equals	Does an exact, case sensitive match to determine if the attribute is identical to the value.
Not Equal To	Does an exact, case sensitive match to determine if the attribute is not equal to the value.
Less Than	Does a String comparison to determine if the attribute is less than the value. (See notes below on string comparison rules.)
Greater Than	Does a String comparison to determine if the attribute is greater than the value. (See notes below on string comparison rules.)
Less Than and Equal To	Does a String comparison to determine if the attribute is less than or equal to the value. (See notes below on string comparison rules.)
Greater Than and Equal To	Does a String comparison to determine if the attribute is greater than or equal to the value. (See notes below on string comparison rules.)
In Set Of	Does an exact case sensitive match to determine if the attribute is in any number of comma separated strings in the value. (NOTE: Do not add extra spaces)

Not in Set Of	Does an exact case sensitive match to determine if the attribute is NOT in any number of comma separated strings in the value. (NOTE: Do not add extra spaces)
---------------	--

STRING Comparison Rules:

The attribute’s value is compared character by character to the value until either all characters are determined to be identical, or a difference is found.

Space < Everything

A < B, a < b

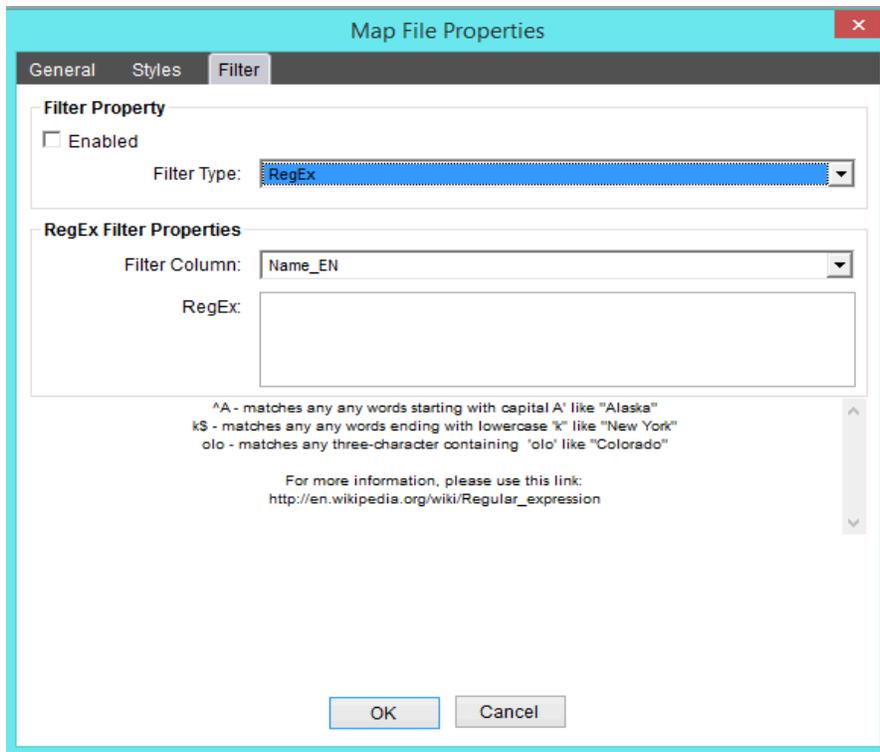
Uppercase < Lowercase

Number < Alphabet

NOTE: Be careful comparing numeric values this way. Because each number is compared one digit at a time, the result can be counter-intuitive. For example, “80” is greater than “1000” because the first digit comparison sets the result for the whole comparison. If you need to do numeric comparisons outside of EQUAL, use Expression filters.

Value: This is the string value that will be compared to the feature’s attribute.

RegEx Filter Properties



Filter Column: This identifies the attribute column in the source GIS data that will be used in the filter.

Regex: The regular expression to match against the attribute's value.

Regular Expressions (Regex)

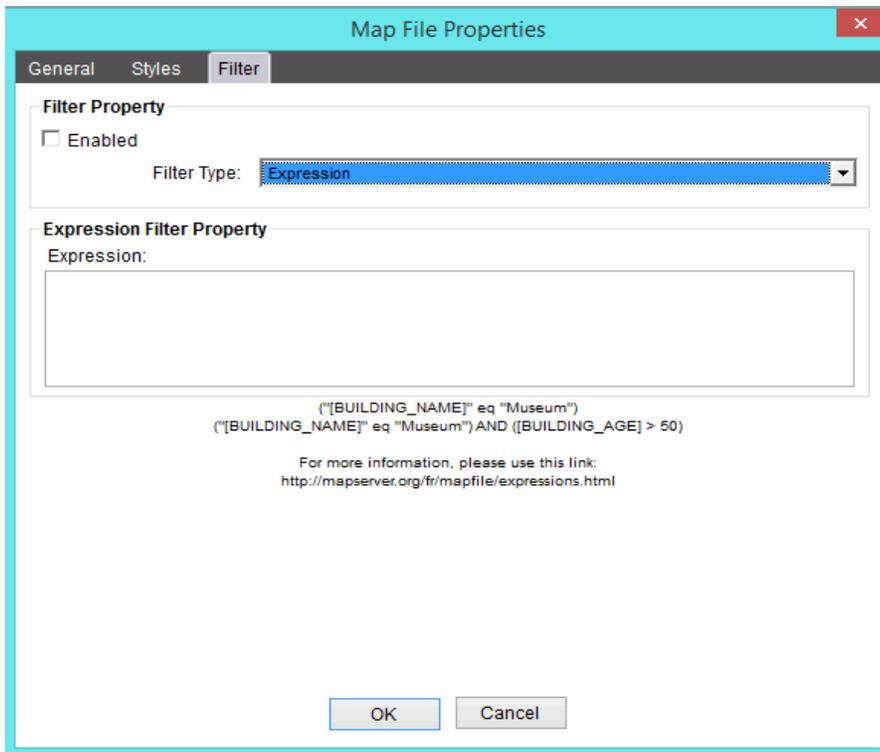
A regular expression provides a concise and flexible means for "matching" (specifying and recognizing) strings of text, such as particular characters, words, or patterns of characters. It is often more concise to specify a set's members by such an expression than by a list. For example, `ab*c` matches "ac", "abc", "abbc", "abbbc", and so on.

Symbol	Description
.	Matches any single character. For example, <code>a.c</code> matches "abc", etc.
[]	A bracket expression. Matches a single character that is contained within the brackets. For example, <code>[abc]</code> matches "a", "b", or "c". <code>[a-z]</code> specifies a range which matches any lowercase letter from "a" to "z". These forms can be mixed: <code>[abcx-z]</code> matches "a", "b", "c", "x", "y", or "z", as does <code>[a-cx-z]</code> .
[^]	Matches a single character that is not contained within the brackets. For example, <code>[^abc]</code> matches any character other than "a", "b", or "c". <code>[^a-z]</code> matches any single character that is not a lowercase letter from "a" to "z". As above, literal characters and ranges can be mixed.

^	Outside square brackets, matches only at the beginning of the string. For example, ^abc will find abcdef but not xyzabc.
\$	Matches only at the end of the string. For example \$abc will find xyzabc but not abcdef.
*	Matches the preceding element zero or more times. For example, ab*c matches "ac", "abc", "abbbc", etc. [xyz]* matches "", "x", "y", "z", "zx", "zyx", "xyzy", and so on. \ (ab\)* matches "", "ab", "abab", "ababab", and so on.

More information on additional RegEx options can be found on the web. As a good start, we recommend http://en.wikipedia.org/wiki/Regular_expression.

Expression Filter Properties



Expression: The expression to evaluate for each feature.

Expressions

Expressions are comparisons that evaluate to a TRUE or FALSE result. They differ from RegEx expressions in that they can involve more than one attribute column and besides pure logical operations there are also operators that allow certain arithmetic, string and time operations.

An expression has two values, and an operator that determines the type of comparison. Expressions can be enclosed in parentheses "(" and ")" and then combined with AND, OR and NOT operators.

String Expressions

"String1" <operator> "String2"

String1/String2 are values enclosed in double quotes. They can reference an attribute column name by enclosing the attribute column name within square brackets inside the double quotes.

For example, "abcxyz" is a string value, whereas "[STATENAME]" will substitute the feature's attribute from the STATENAME column.

String Operations	Description
+	Adds two strings together to form one string. This does not result in a TRUE/FALSE value, but can be used to create composite strings for use in a string expression.
=	Does an exact, case sensitive match to determine if the first string is identical to the second string.
=*	Does an exact, case INSENSITIVE match to determine if the first string is not equal to the second string.
!=	Does an exact, case sensitive match to determine if the first string is not equal to the second string.
<	Does a String comparison to determine if the first string is less than the second string. (See notes on string comparison rules)
>	Does a String comparison to determine if the first string is greater than the second string. (See notes on string comparison rules)
<=	Does a String comparison to determine if the first string is less than or equal to the second string. (See notes on string comparison rules)
>=	Does a String comparison to determine if the first string is greater than or equal to the second string. (See notes on string comparison rules)
IN	Does an exact case sensitive match to determine if the first string is in any number of comma separated strings in the second string. (NOTE: Do not add extra spaces)
~	Returns TRUE when the first string matches the Expression contained in the second string.
~*	Returns TRUE when the first string matches the Expression contained in the second string and the comparison is done case INSENSITIVE.

Numeric Expressions

Number1 <operator> Number2

Number/Number2 are numeric values. They can reference an attribute column name by enclosing the attribute column name within square brackets. For example, [POPULATION] will substitute the feature's attribute from the POPULATION column.

Numeric operators are: =, !=, <, >, <=, >=, IN

The following operations can be performed with numbers. They do not return a TRUE/FALSE value, but can be used to create a number for use in a numeric expression: +, -, *, /, ^



The Web Map Service (WMS) Map File

CartoVista can include one or more dynamic Web Map Service (WMS) layers in its maps. When displaying the map in the CartoVista Viewer, the content of these layers is obtained from the external WMS map server.

WMS Layers in the publisher are represented by a "place holder" WMS Map File named "{WMS Layer}". Simply add this layer to your map like any other layer. Nothing will be displayed in the Publisher's Map Window, but there are some properties that can be set on its layer node in the layer control.

NOTE: You cannot create a map that consists only of a single WMS layer.

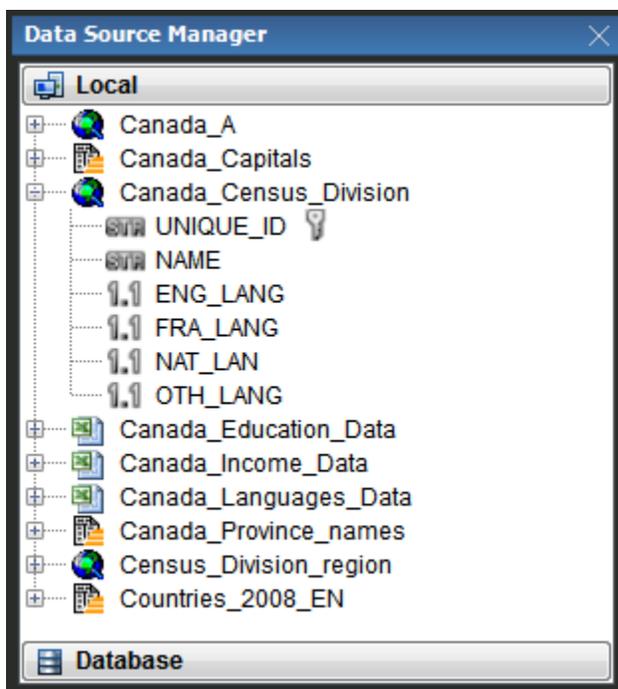
You can add the WMS Map File multiple times to a Map Window. Each WMS layer will have to be configured separately after the map is published. For more information, see section on [configuring your WMS Layers](#).



Managing Your Data Files

The Data Source Manager is designed to help you managed your indicator data. You can display the Data Manager from the main menu bar. Select View > Data Source Manager.

The Data Source Manager allows you to create Data Files. Each Data File refers to a specific local file or database table. It will have a collection of columns which can be used as indicators for creating thematics.



The Data Source Manager allows you to create an unlimited library of reusable Data Files. By centralizing the management of your data files, you can rapidly publish data without having to re-find source files every time.

Data Files are displayed as a tree with all the columns for a data file listed as sub nodes. The column nodes are displayed with an icon that identifies the type of data contained in the column: String, Float, Integer, Byte, DateTime.

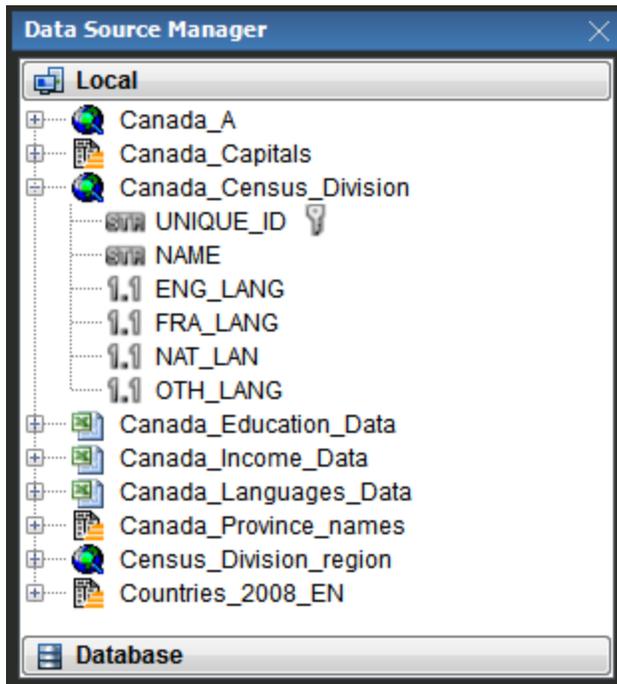


Data Source Manager

The Data Source Manager is a dockable window that contains all of the available data files.

If the Data Source Manager is not visible, select View > Data Source Manager from the main menu. Since the Data Source Manager is a dockable window, it can also be minimized to the edges of the main application window.

The Data Source Manager has two sections, one for Local Data Files and one for Database Data Files. Each section contains a tree structure displaying all the available Data Files sorted alphabetically.



By right-clicking outside a data file node or on the Data File category node, you can bring up the Data Source Manager context menu. This menu will have an option depending on which section of the Data Source Manager you are in. For more information on adding Data Files, see section [Adding New Data Files](#).

The Data Source Manager will alert you if the source file for one of the Data Files is missing. Data Files that are missing their source file are highlighted in yellow in the Data Source Manager. To correct the file path of a Data File, click on the data file and use the Locate menu option. See section [Managing Missing Data](#) for more information on locating missing Data Files.



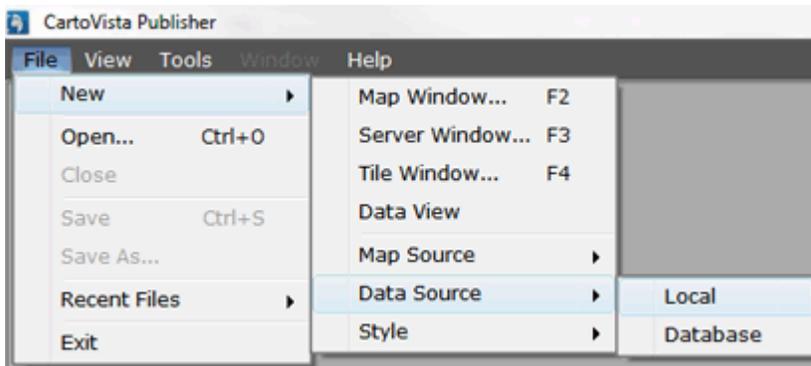
Adding New Data Files

You can use one of the following methods to add new data files to the Data Source Manager.

1. Within the Data Source Manager, right click in any white space in the Data Source Manager or on the main Data Files node then select the menu "Add Local Data File" or "Add Database Data File" depending on which category is open in the Data Source Manager.



2. From the main menu, select File -> New -> Data Source and choose either Local or Database.



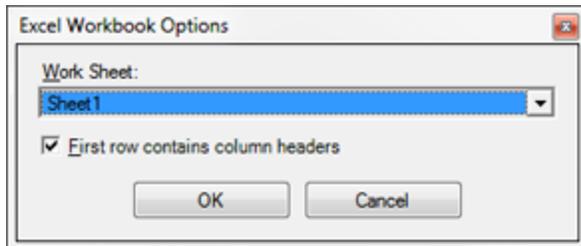
Adding a Local Data File

If you have chosen to add a new local data file, you will be prompted to select the file from a file selection dialog. Make sure you set the file type to display the correct type of file you are trying to add. Your choices include:

- MapInfo Tables
- ESRI Shape Files]
- ESRI Personal Geodatabase Files
- Excel Spreadsheets
- CSV Files
- Text Files

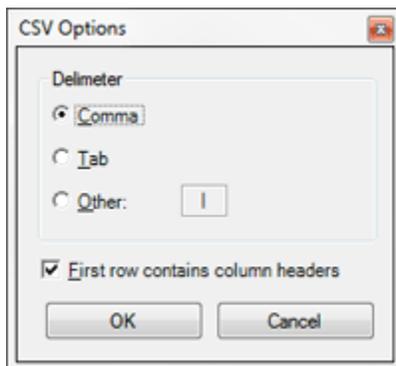
Excel File Workbook Options

If you selected an Excel spreadsheet, you will be prompted to pick on worksheet from the worksheets in the spreadsheet. You will also be asked to indicate if the top row of data contains column headers, rather than data.



CSV and Text File Options

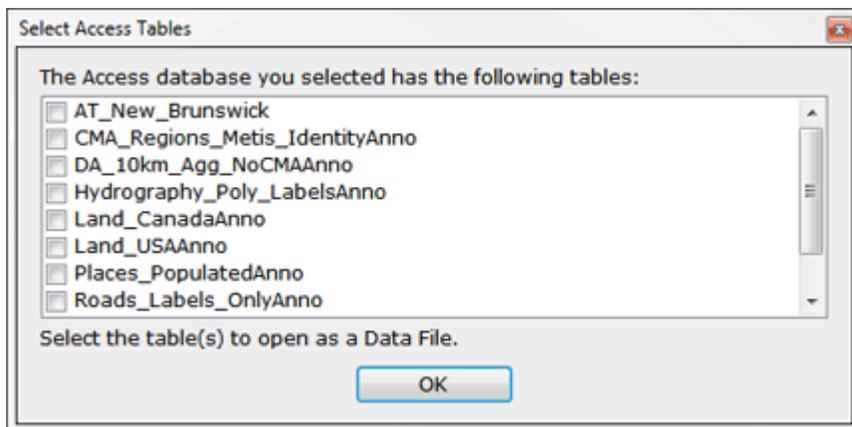
If you selected a CSV or a Text file, you will be prompted to set one or two options. If you selected Text file, you will be asked to specify the delimiter character, which separates columns in the file. Two common choices (Comma and Tab) are provided as radio options, while "Other" lets you specify any single character you wish. You will also be asked to indicate if the top row of data contains column headers, rather than data.



ESRI Personal Geodatabase Options

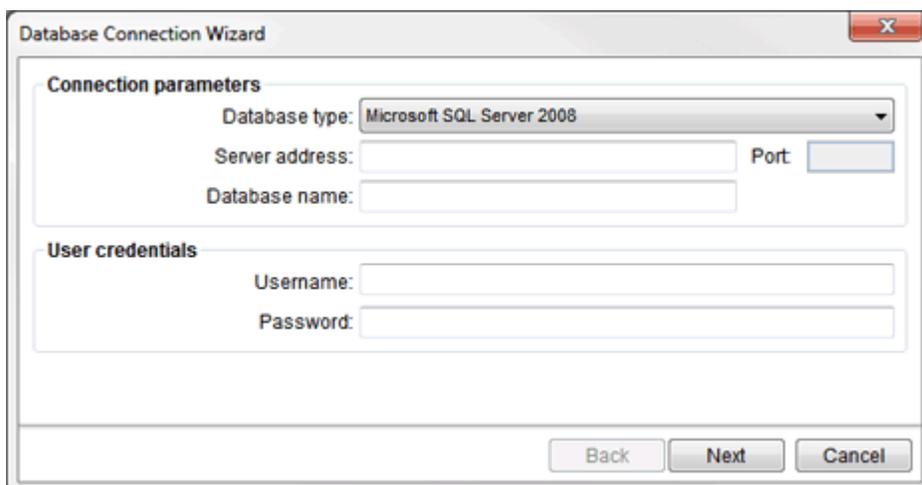
If you selected a ESRI Personal Geodatabase, you will be prompted to select the tables from within the database that you wish to add. You can select more than one table to add at the same time to the Data Source Manager.'

NOTE: You can use this option to open a Microsoft Access Database as well.



Adding a Data File from a Database

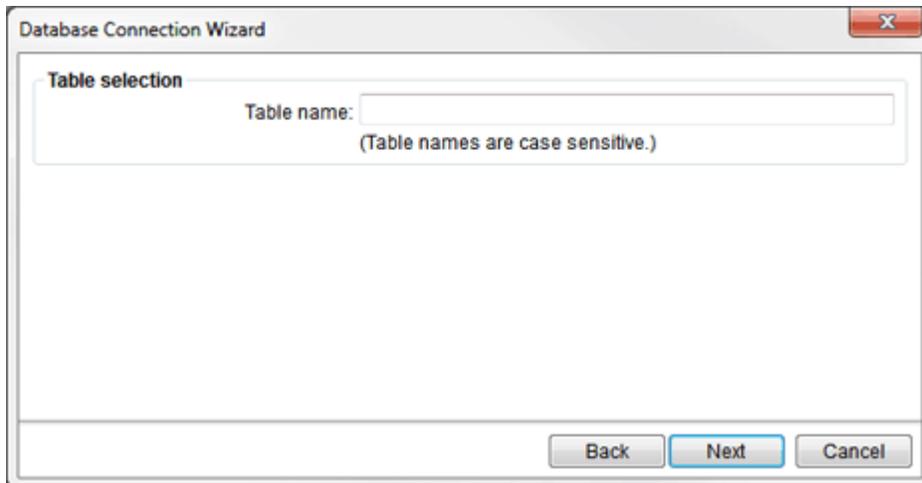
If you have chosen to add a new Database data file, you will be presented with a wizard that will guide you through the steps required to add a Database table.



You must first know the type of database you are trying to connect to, and the server address of that database. Currently CartoVista Publisher supports Microsoft SQL Server 2008, Oracle 10g and PostgreSQL. If you do not know the name of your server address, please contact your IT administrator, or the IT administrator of the database you wish to connect to. They will be able to help you with this and the other information such as the Port number you will need to connect.

Enter the database name, user name and password that have permission to connect to that database.

Once a connection is established to a database, you must enter the name of the table (or view) that you wish to use. Please note that the table names ARE case sensitive.



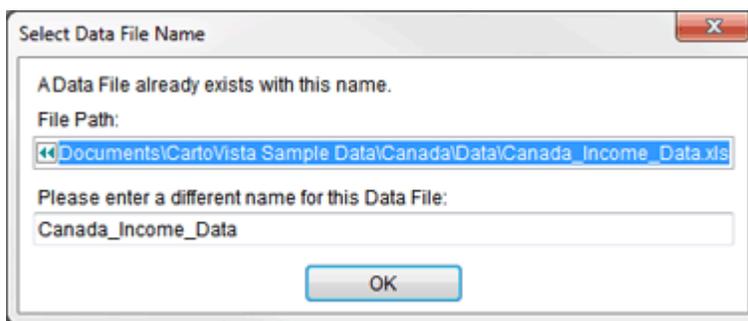
Finally, you will then select the columns from the Table/View to use as columns in your Data File. There are 2 options to determine which columns are selected:

1. **ALL Columns:** Select the "Select Columns" radio button, but remove any column names from the "Selected" list. This will result in a "*" appearing in the Selected list. This is a short form for "All Columns".
2. **Specific Columns:** Select the "Select Columns" radio button and the select from the list of available columns in the left hand listbox and add them to the right hand Selected list box using the > button. Use ">>" to move over all selected columns. You can use the < button to remove a column, or << to remove all columns.

NOTE: It is better to use all columns ("*") rather than manually select all the columns individually.

Duplicate File Name

The Data Source Manager expects that each Data File will have a unique name. If you add a new Data File that has the same name as an existing Data File, the Data Source Manager will display a dialog asking you to enter a different name.

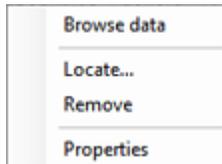


Once you have entered a name that does not conflict with an existing Data File, the new Data File will be created. If you want to abort the creation of a new Data File at this point, click on the red X button at the top right of the dialog.



Data File Actions

When you right click on a Data File, a contextual menu is displayed.



Browse Data: This option allows you to view the data file. For more information about browsing data see section [Browsing Data File Data](#).

Locate: This option allows you to point the Data File at a different source file, or to update the information if the source file has been modified. For more information about Locating Data Files, see section [Adding New Data Files](#).

Locate Main Folder: This option allows you to point multiple layers to different geographic data source files all at once by specifying a root directory for all the source files.

Remove: This option allows you to remove a Data File from the Data Source Manager. It does not delete the underlying source file.

New Confirmation Dialogs

A confirmation dialog box is now launched when you remove a Layer from the Layer Control, a Map File from the Map Source Manager or a Data File from the Data File Manager. A "Do not ask me again" option is available within the dialogue to turn off the use of the launched dialog. These new confirmation dialogs can be managed using the Tool > Preference > General Options Tab. 3 check boxes have been added so you can turn on/off the warning dialogs.



Properties: This option allows you to see the properties associated with a specific Data File. See section [Data Files Properties](#) for more information.

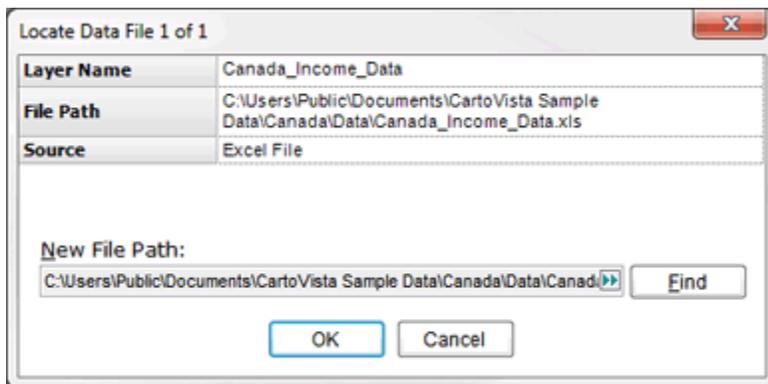


Managing Missing Data

The Data Source Manager will alert you if one of the Data Files that you have been working with is missing its source file. Data Files that are missing are highlighted in yellow in the Data Source Manager.

To correct the location of a Data File that is missing, click on the Data File and use the Locate menu option.

When you click on locate, the Locate Data File Dialog is displayed.



Use the Find button to locate the missing file and click on OK.

NOTE: You can use the Locate action to update a Data File if the source data has changed its column structure. Locating a Data File when this has happened will result in the list of columns available within the Data File to be updated.



Data File Properties

The Data File Properties dialog allows you to see all the properties associated with the Data File. There is only a General Tab available, although some properties only appear if the Data File is based on a Database source.

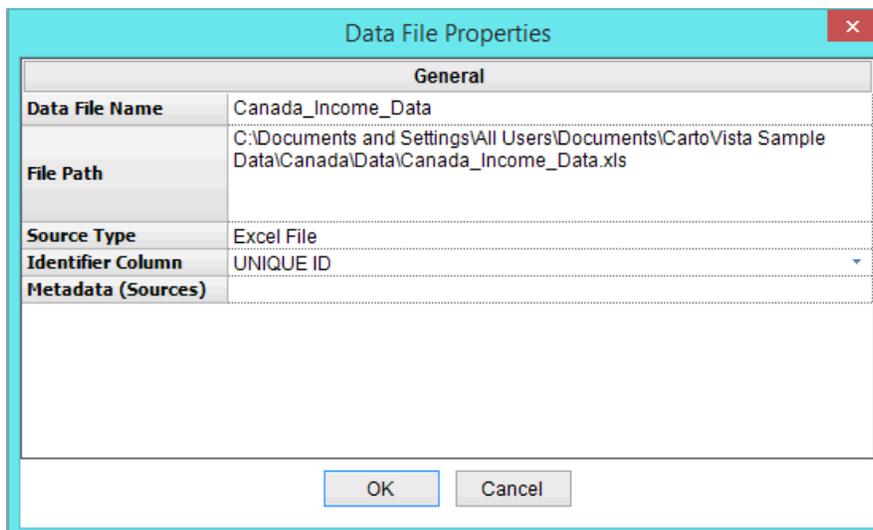
You can use one of the following methods to access the Data File Properties Dialog:

1. Double click on the Data File node in the Data Source Manager
2. Right click on the Data File node in the Map File Manager and choose Properties.



General Tab

The General Tab displays basic information about the data file.



Data File Name: This is an editable property. You can specify any name you want for the data file. To edit the name, type in the name box. Names must be unique within the Data Source Manager.

File Path: The path to the source file for the data.

Source Type: The type of the data file. One of the following:

- MapInfo Table
- ESRI Shape File
- ESRI Personal Geodatabase
- CSV
- Text File
- Excel File
- Database Connection

Identifier Column: This is an editable property. You can specify the column that contains the unique identifier to bind the data. If the column does not actually contain unique values for each record, you will not be able to select the column as the Identifier column.

Metadata (Sources): This field is available to enter Metadata on each Mapfiles. The field supports text and hyperlinks.

NOTE: The unique identifier column will be used to link the data values in the Data File to features in a thematic layer via that layer's unique identifier column. Make sure that when you are publishing data, the unique identifiers in both the Map Layer and the Data File match, or no data will be published by the data publisher.

The following properties will only appear if the Data File is based on a Database.

RDBMS: Identifies the type of database. Currently only Microsoft SQL 2008 is supported.

Server: Identifies the Server address of the database.

Database: Identifies the specific database that is being used.

Table: Identifies the specific table or view in the database that is being used.

SQL: Identifies the SQL statement used to generate the columns for the Data File.



Data Column Actions

- When you right click on a Column of a Data File, a contextual menu is displayed.



- **Set as Unique Identifier Column:** This option allows you identify this column as the unique identifier column for the data file.

NOTE: a data file cannot be used in the data publisher unless a unique identifier column has been set.

- **Properties:** This option allows you to see the properties associated with a specific Column. See section Data Column Properties for more information.

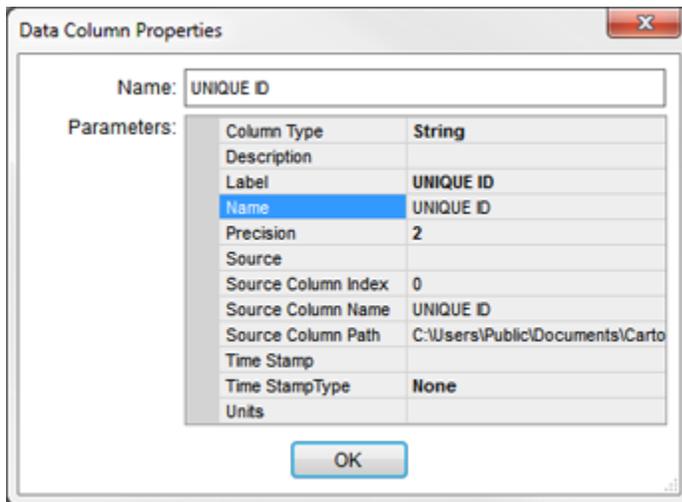


Data Column Properties

The Data Column Properties dialog allows you to see all the properties associated with a single column within a Data File.

You can use one of the following methods to access the Data File Properties Dialog:

1. Double click on the column node in the Data Source Manager
2. Right click on the column node in the Map Source Manager and select Properties.



Column Type: The type of data this column contains. The type of column affects the types of thematic that are available in the CartoVista viewer. The types of columns available are:

- Unknown
- String
- Float
- Integer
- Byte
- Date/Time

Description: A user provided text description of the column.

Label: A user editable label for the column.

Name: The name of the column from the source data file.

Precision: A user editable setting for how many digits of precision will be provided in the data publisher when the column type is FLOAT.

Source: A user editable setting for a description of the source of the data.

Source Column Index: The index of the column from the source data.

Source Column Name: Name of the column from the source data.

Source Column Path: The full path to the source data file.

Time Stamp: A user editable setting for a time stamp value.

Time Stamp Type: A user editable setting for the type of time stamp used. The types of time stamps are:

- None
- Year
- Day

Units: A user editable setting for a description of the units.



Browsing Data File Data

Browsing your Data File data allows you to see the column values for each of records in the data file.

You can create a new Browser Window from your Data Files using one of the following methods.

1. In the Data Source Manager, select one or more Data Files, right click and select "Browse...".
2. In the Data Source Manager, select one or more Data Files. Drag and drop the Data File(s) into the main application window.

	UNIQUE ID	Census Division	Without income (%)	\$10,000 - \$19,999 (%)	\$20,000 - \$29,999 (%)	\$30,000 - \$39,999 (%)	\$40,000 - \$49,999 (%)
▶ 1	1001	Division No. 1	5.43	23.28	15.06	12.13	7.23
2	1002	Division No. 2	6.99	28.8	16.79	9.88	5.18
3	1003	Division No. 3	7.55	32.04	14.94	8.18	4.82
4	1004	Division No. 4	7.58	31.19	15.69	9.12	4.8
5	1005	Division No. 5	5.22	26.63	16.06	11.6	6.23
6	1006	Division No. 6	6.35	25.74	14.78	11.98	6
7	1007	Division No. 7	5.54	32.76	15.83	9.01	5.26
8	1008	Division No. 8	6.75	32.64	16.74	10.22	3.84
9	1009	Division No. 9	5.54	33.02	18.84	10.59	4.56
10	1010	Division No. ...	5.55	20.78	12.49	10.57	6.26
11	1011	Division No. ...	8.91	21.73	15.32	10.31	5.57
12	1101	Kings	2.89	27.22	19.42	15.01	6.87
13	1102	Queens	3.29	22.57	16.99	14.19	8.68

289 rows

TIP: You can use the column headings to sort records in the table.



Stylizing your Map Files

The CartoVista Publisher includes many options to help you manage the cartographic styles of your maps in an easy way. The support for drag and drop will simplify your work when assigning styles to the values in your map files.

Having a style library is also a great way to define standard map styles and color schemes and apply it consistently. In addition to the typical polygon, polyline and symbol styles, the CartoVista Publisher includes the ability to define map label styles for all features. This is very useful to create a set of unique reusable styles.

Getting started quickly with styles:

- The [Style Manager](#) helps you [create](#) or edit current styles.
- The [Polygon](#), [Polyline](#), [Point](#) and [Font Style](#) dialogs are used to define the properties of each style.
- The [Assign Styles to Features Dialog](#) helps you associate styles with values in your map files.



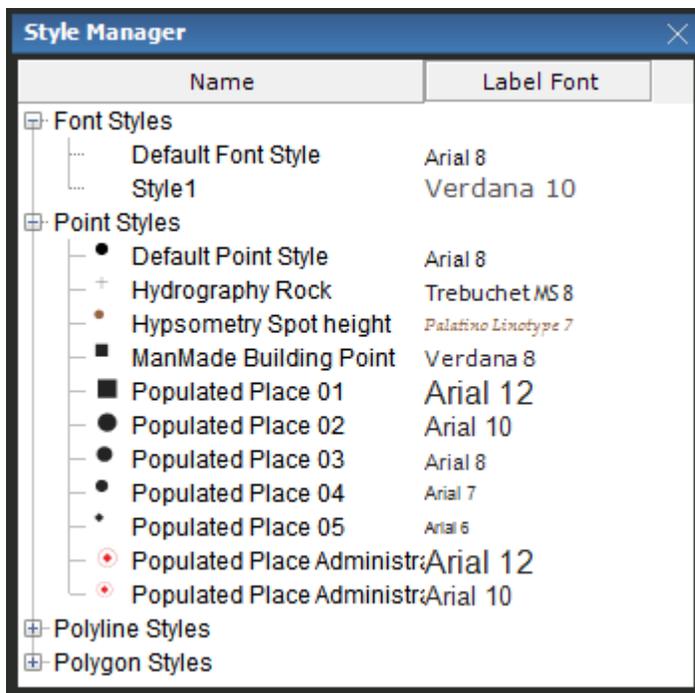
The Style Manager

Style Manager

The *Style Manager* is designed to help content creators work with their map styles. To display the Style Manager Window:

From the menu bar, select **View -> Style Manager**

The Style Manager allows you to create an unlimited library of reusable styles. Each style in the manager can be saved with its own parameters and labeling settings. Having the Style Manager helps you organize and name the usual styles you work with.

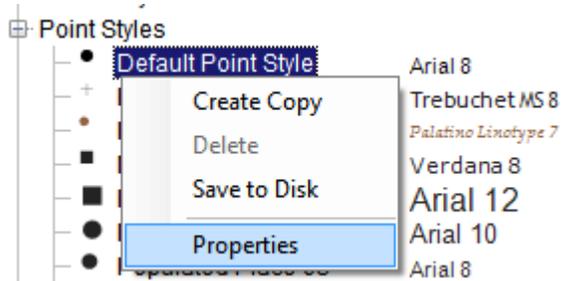


The Style Manager introduces 4 types of styles:

- [Polygon Styles](#)
- [Polyline Styles](#)
- [Point Styles](#)
- [Font Styles](#)

Each style in the Style Manager includes a name, an icon that identifies the style graphically and the *label* which is shown with the appropriate *font* style.

The Style Manager includes a contextual menu to manage each individual style.



To access the menu, double-*click* or right-click on a style:

- Click on **Create Copy** to create a copy of the style.
- Click on **Delete** to delete the style from the library.
- Click on **Save to Disk** to save this style to your hard drive and share it.
- Click on **Properties** to modify the style.



Adding New Styles

You can use one of the following methods to add new styles to the Style Manager.

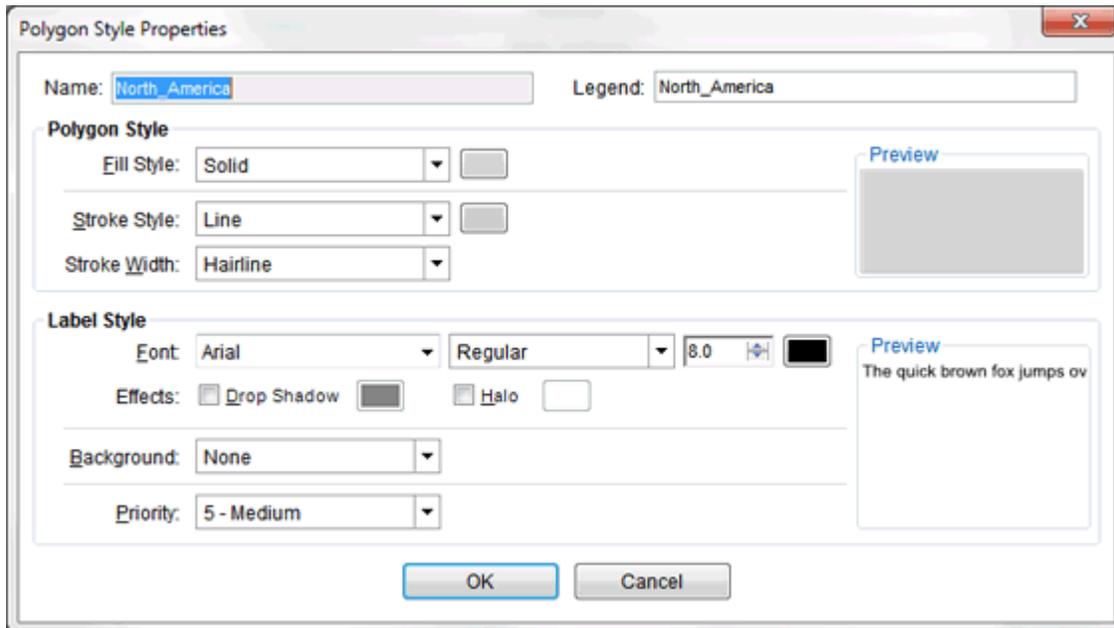
Within the Style Manager

- Right-[click](#) in the [Style Manager](#)
- Select the menu "Add New Style..."
- Choose the type of style you would like to add
- Click on OK



Polygon Layer Styles

Polygon Style Properties Dialog



The *polygon* style properties are used to specify the settings used to *fill* and *stroke* polygon *layer* features.

Style Name

Specifies the style name. Enter/modify the text in the text box to change the style name.

Polygon Style

This section displays the various properties that make up the polygon's style.

Fill Style

This line controls how the fill of the polygon is drawn. There are five ways in which the fill can be drawn:

1) None

No fill is drawn for the polygon.



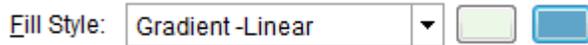
2) Solid

The fill is a single color, selected using the color button next to the drop down.



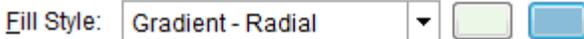
3) Linear Gradient

The fill starts as one color and gradually changes to a second color from left to right. The start and end colors are selected using the two color buttons next to the drop down.



4) Radial Gradient

The fill starts as one color and gradually changes to a second color starting at the center of the polygon and progressing outwards. The start and end colors are selected using the two color buttons next to the drop down.

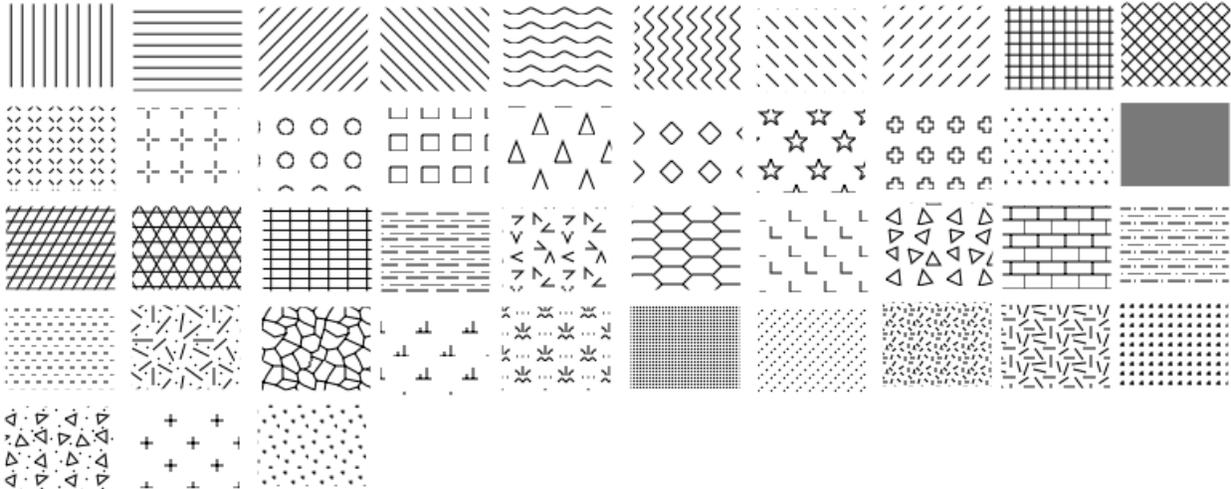


5) Pattern

A single color is used as a background, while a pattern in a second color is drawn over top. The background color is selected using the first color button next to the dropdown and the pattern color is selected using the second color button.



The following patterns are available:



NOTE: This fill type is only valid when creating Tile Maps. If this fill type is selected in a normal Map Window, the fill type behaves as if it was set to Solid.

Stroke Style

This line controls how the stroke of the polygon is drawn. There are four ways in which the stroke can be drawn:

1) None

No stroke is drawn for the polygon.

Stroke Style:

2) Line

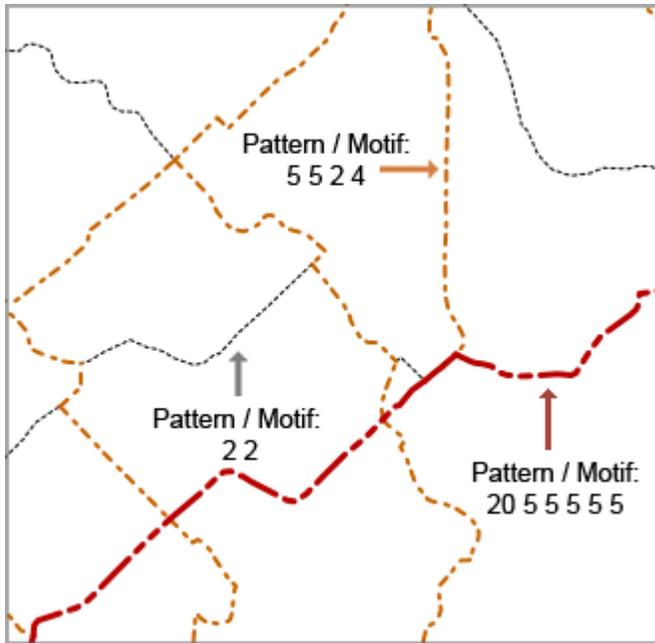
The stroke is a solid line. The color is selected using the color button next to the drop down.

Stroke Style:

3) Dashed

The stroke is a dashed line. The color is selected using the color button next to the drop down. The dash pattern is expressed by a series of alternating numbers (on/off) of pixel width in the edit box beside the color button. E.g. [pixels on] [pixels off] [pixels on] ...

Stroke Style: Pattern:



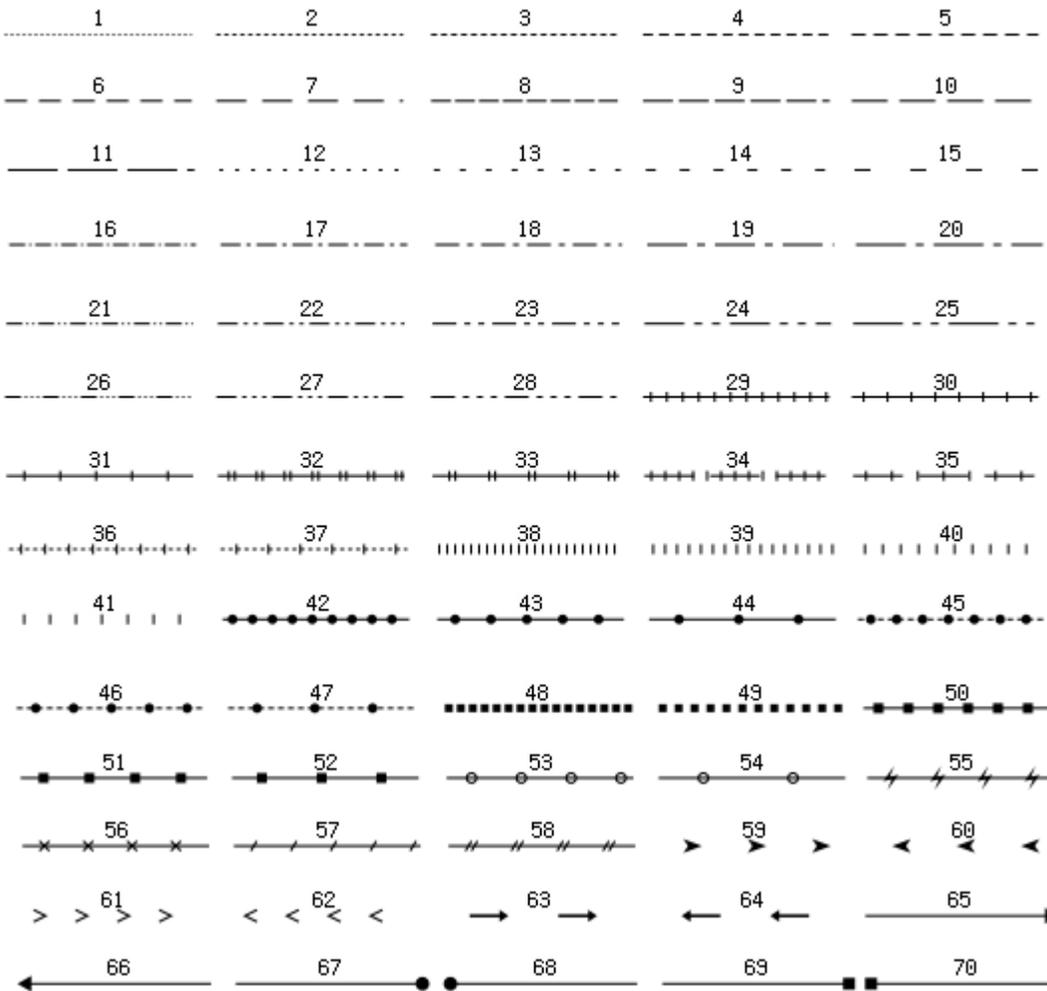
To enter a pattern for your polygon stroke, simply type in the numbers separated by a space character in the pattern text box.

4) Pattern

The stroke is one of a preset number of patterns. The color is selected using the color button next to the drop down.



The following stroke patterns are available:



NOTE: This stroke type is only valid when creating Tile Maps. If this stroke type is selected in a normal Map Window, the fill type behaves as if it was set to Solid.

Stroke Width

This line controls how the width of the stroke of the polygon is drawn. The Hairline option is a fine pixel stroke that displays with a minimum width. The Pixel Width options specify a specific pixel width for the stroke between 1 and 10 pixels.

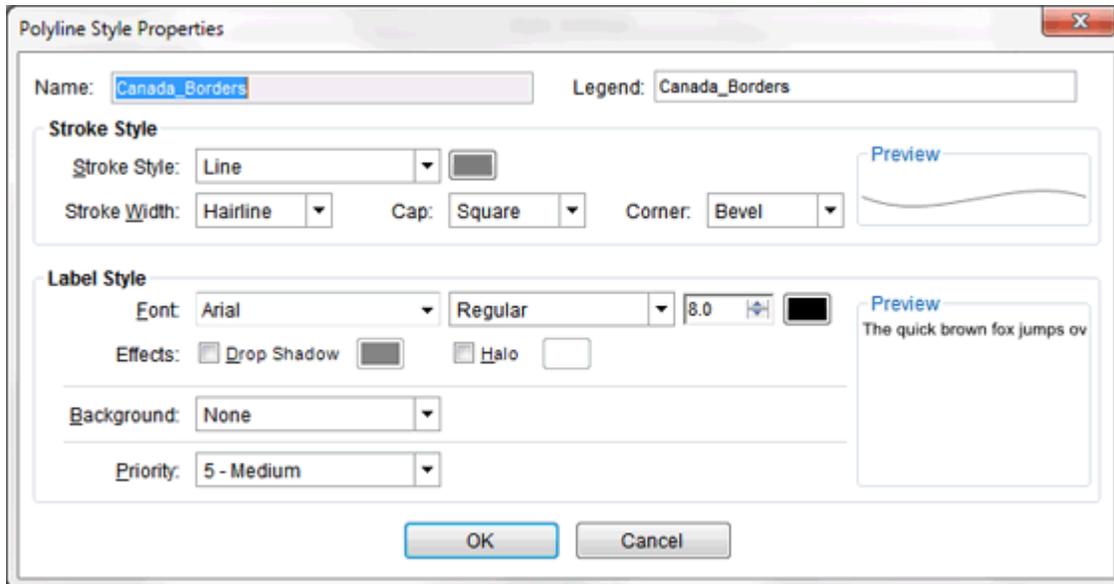
Label Style

This section displays the various properties that make up the polygon's label style. For more information, see the section on [font styles](#).



Polyline Layer Styles

Polyline Style Properties Dialog



The *polyline* style properties are used to specify the settings used to *stroke* polyline *layer* features.

Style Name

Specifies the style name. Enter/modify the text in the text box to change the style name.

Stroke Style

This section displays the various properties that make up the polyline's style.

Stroke Style

This line controls how the stroke of the polyline is drawn. There are four ways in which the stroke can be drawn:

1) None

No stroke is drawn for the polyline.

Stroke Style: ▼

2) Line

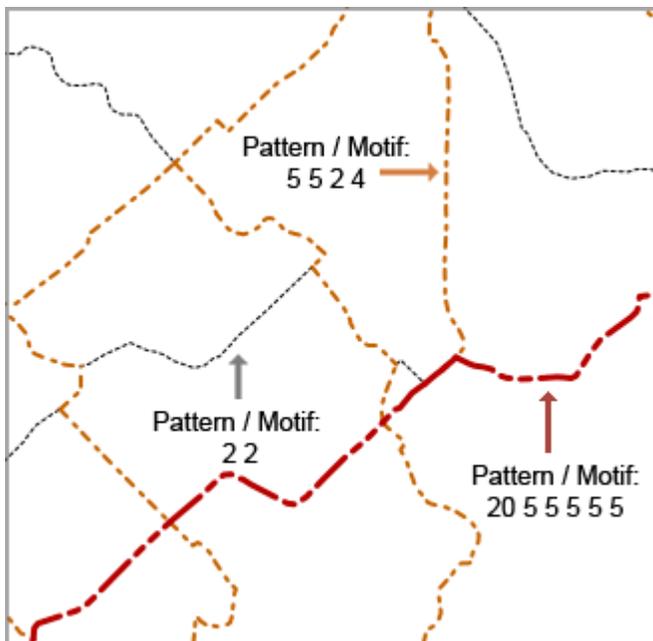
The stroke is a solid line. The color is selected using the color button next to the drop down.

Stroke Style: ▼

3) Dashed

The stroke is a dashed line. The color is selected using the color button next to the drop down. The dash pattern is expressed by a series of alternating numbers (on/off) of pixel width in the edit box beside the color button. E.g. [pixels on] [pixels off] [pixels on] ...

Stroke Style: ▼ Pattern:



To enter a pattern for your polyline stroke, simply type in the numbers separated by a space character in the pattern text box.

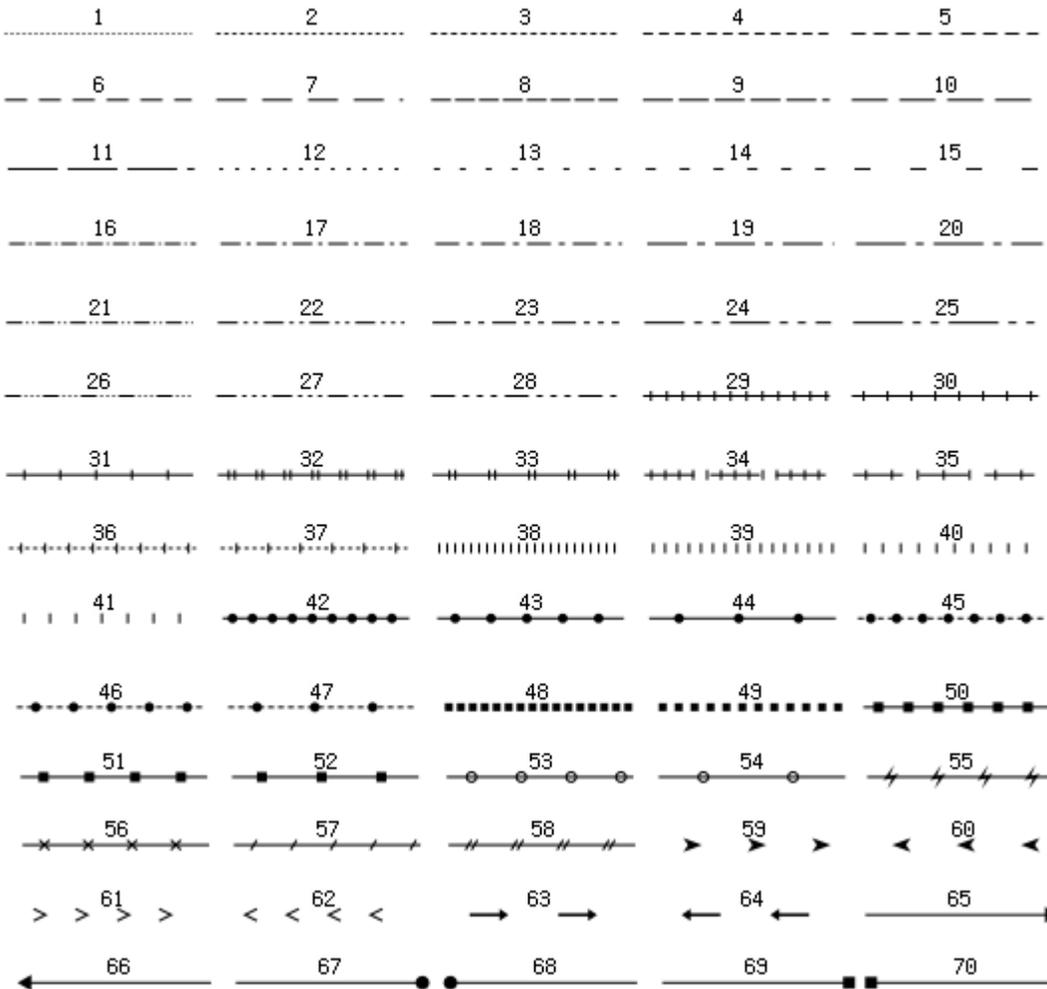
When using the dashed option, you also need to specify a dash pattern.

4) Pattern

The stroke is one of a preset number of patterns. The color is selected using the color button next to the drop down.



The following stroke patterns are available:



Stroke Width

This line controls how the width of the stroke of the polyline is drawn. The Hairline option is a fine pixel stroke that displays with a minimum width. The Pixel Width options specify a specific pixel width for the stroke between 1 and 10 pixels.

Cap

This option controls how the end of the polyline is drawn. There are four ways in which the cap can be drawn:

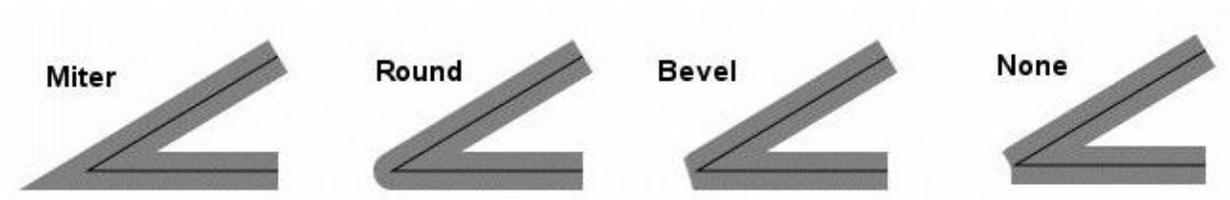
1. Rounded: line extends slightly beyond the ends with a rounded extension

2. Square: line extends slightly beyond the ends with a square extension
3. Butt: stops exactly at the end
4. Triangle: line extends slightly beyond the ends with a triangle extension

NOTE: This option is only valid when creating Tile Maps. If this stroke type is selected in a normal Map Window, the stroke type behaves as if it was set to Butt.

Corner

This option controls how corners of polylines are drawn. There are four ways in which the corner can be drawn:



NOTE: This option is only valid when creating Tile Maps. If this stroke type is selected in a normal Map Window, the stroke type behaves as if it was set to Bevel.

Label Style

This section displays the various properties that make up the polyline's label style. For more information, see the section on [font styles](#).



Point Layer Styles

The *point* style properties are used to specify the settings used to display point *layer* features. There are two different ways to define the point style: Font Symbol or Image Symbol.

Style Name

Specifies the style name. Enter/modify the text in the text box to change the style name.

Point Style

This section displays the various properties that make up the point's style.

Type

This line controls the choice of a Font Symbol or an Image Symbol.

Point Style Properties Dialog - Font Symbol

The screenshot shows the 'Point Style Properties' dialog box. It has a title bar with a close button. The 'Name' field contains 'Canada_Population_P' and the 'Legend' field also contains 'Canada_Population_P'. Under the 'Point Style' section, the 'Type' is set to 'Font Symbol' (selected with a radio button). The 'Font' is 'DBx GEOMATICS Symbols', the size is '4.0', and the color is red. The 'Symbol' is a solid black circle, and the 'Rotation' is '0'. The 'Effects' section has 'Drop Shadow' unchecked and 'Halo' checked. A 'Preview' window shows a single red dot. Under the 'Label Style' section, the 'Font' is 'Arial', the style is 'Regular', and the size is '10.0'. The color is black. The 'Effects' section has 'Drop Shadow' unchecked and 'Halo' unchecked. A 'Preview' window shows the text 'The quick brown fox jun'. The 'Background' is set to 'None' and the 'Priority' is '5 - Medium'. At the bottom are 'OK' and 'Cancel' buttons.

Font

The True Type font used to display the points. Only True Type fonts that are flagged as symbol fonts are displayed. The size of the symbol is set using the edit box next to the drop down. The color is selected using the color button next to this.

Symbol

The specific symbol from the font that will be used to display the point.

Rotation

The angle of rotation for the symbol.

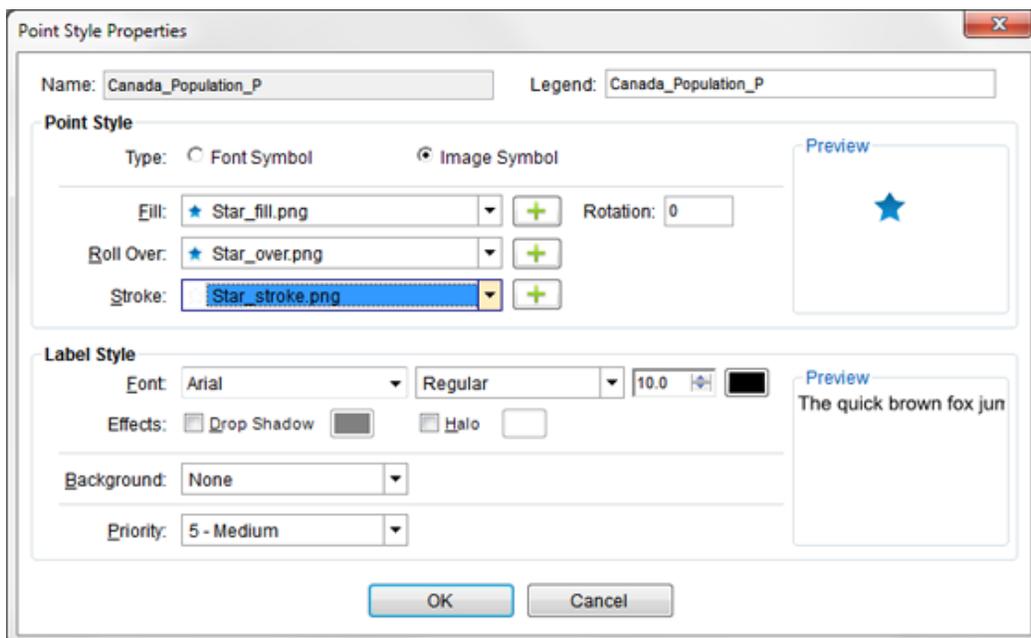
NOTE: This option is only valid when creating Tile Maps. In a normal Map Window, the rotation will always be 0.

Effects

This line controls the two types of effects that can be applied to the point symbol:

1. **Dropshadow:** when enabled, creates a shadow effect for the point. The color of the shadow can be selected using the color button next to the drop shadow label.
2. **Halo:** when enabled, creates a halo effect around the point. The color of the halo can be selected using the color button next to the halo label.

Point Style Properties Dialog – Image Symbol



Fill

This line controls the graphic image that will be used as the “fill” of the symbol. The drop down provides a list of all images added to the Style Manager for use as Point Styles. To add a new image, use the "plus button" next to the drop down.

Roll Over

This line controls the graphic image that will be used when the mouse moves over the symbol. The drop down provides a list of all images added to the Style Manager for use as Point Styles To add a new image, use the "plus button" next to the drop down.

NOTE: This option is only valid when creating regular Maps. In a Tile Window this setting does not apply, and the Fill symbol will always be displayed.

Stroke

This line controls the graphic image that will be used as the “stroke” of the symbol. The drop down provides a list of all images added to the Style Manager for use as Point Styles. To add a new image, use the "plus button" next to the drop down.

The stroke of a point style is colored when the symbol is selected in the Viewer. In order to see the “fill” of the symbol, the image used as a stroke symbol should be transparent to allow the “fill” to be visible.

Rotation

This option controls the rotation for the point’s style (in degrees).

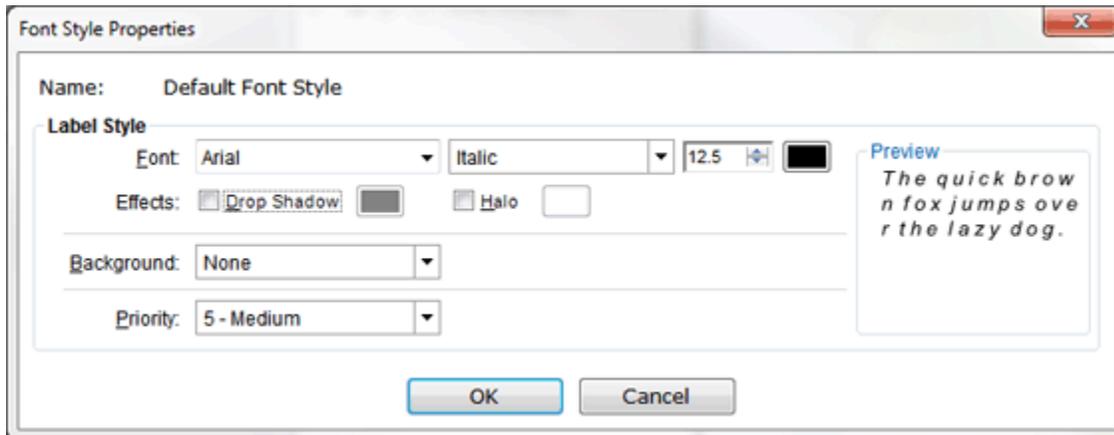
Point Label Style

The **Label Tab** allows to attach and specify label properties to a point style. For more information, see [Font Styles](#).



Font Styles

Font Style Properties Dialog



The font style properties are used to specify the settings used to create labels for a layer's features.

The font style exists in each style, as well as a separate category of styles so that the other style's label properties can be easily changed via drag & drop.

Style Name

Specifies the style name. Enter/modify the text in the text box to change the style name.

Label Style

This section displays the various properties that make up the label's style.

Font

The True Type font used for the labels. The font style is set using the dropdown after the font name. Possible font styles are Regular, Bold, Italic, and Bold & Italic. The size of the font is set using the edit box next to the font style drop down. The color is selected using the color button at the end of the line.

Effects

This line controls the two types of effects that can be applied to the label style:

1. **Dropshadow:** when enabled, creates a shadow effect for the label. The color of the shadow can be selected using the color button next to the drop shadow label.
2. **Halo:** when enabled, creates a halo effect around the label. The color of the halo can be selected using the color button next to the halo label.

Background

This line controls the background of the label. There are three ways in which the background can be drawn:

1. None

No background is drawn for the label

2. Color

A solid color is drawn behind the label Use the color button next to the drop down to select the color.

3. Image

A graphic image is drawn behind the label. Use the drop down to select any of the images that were added to the Style Manager for use as background images.

NOTE: This option is useful to create road shields for example.

Priority

This line controls the priority for this label style. Priority ranges from 1 (low) to 10 (high). Priority determines which labels are drawn first when labelling a layer.



Assigning Styles to Features

The CartoVista Publisher is designed to make it simple to assign styles to features in a map file or a layer that is part of a working map. You can either use the drag and drop capabilities or the [Assign Style dialog](#) to do this.

Assign Styles using Drag and Drop

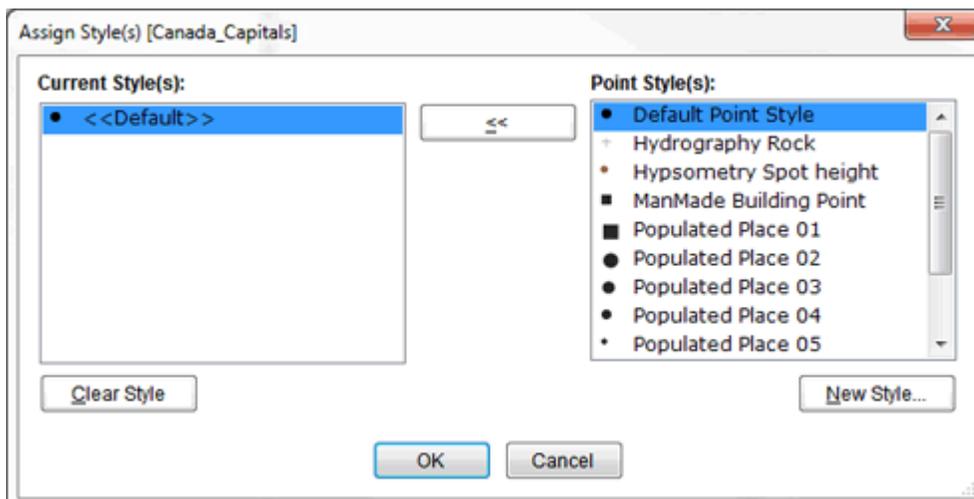
To apply a specific style to a map *file* or a map *layer*, simply expand the style with the expand button  in the tree view. Then drag the style you want to apply into the target layer / map file style. The style is applied and showed on the map if this is a map window.

Assign Styles Dialog

This dialog allows the user to easily assign styles to features in a map layer. To access this dialog:

- Right-click on a map file in the [Map Source Manager](#) and select **Assign Styles**
- Right-click on a layer in the [Layer Control](#) and select **Assign Styles**

A map layer or map file can be setup with multiple styles, based on values in a specific *column* . To setup the column used to define styles, see [Map File Style Settings](#).



To assign a style, select a style from the Styles list box. Next, select one or more identifiers from the Unique Identifiers list box that you want to assign the style(s) to and click on the << button. The style is assigned to the value and displayed in the left list. You can also drag & drop a style directly from the right hand list onto an identifier in the left hand list.

Use default style for unassigned unique identifiers option

Use this option to apply the *default* style to *unassigned identifiers*.

Clear

Use this button to remove assignments from the styles selected in the Unique Identifiers list.

New Style

Click on the "New Style..." button to create a new style.



Managing Coordinate Systems

The CartoVista Publisher is designed to read coordinate information from GIS map files and make the coordinate system management as easy as possible. Drag and drop operations make coordinate system change very easy.

The [Coordinate System Manager](#) contains predefined coordinate systems as well as the ability to [import](#) and [define new](#) coordinate systems from recognized and standard GIS projection parameters.



Coordinate System Manager

Map Files and Coordinate Systems

Each map *file* has a corresponding coordinate system. The CartoVista Publisher automatically detects the map file coordinate system if available. This is the case for MapInfo tables and ESRI Shape with .PRJ files.

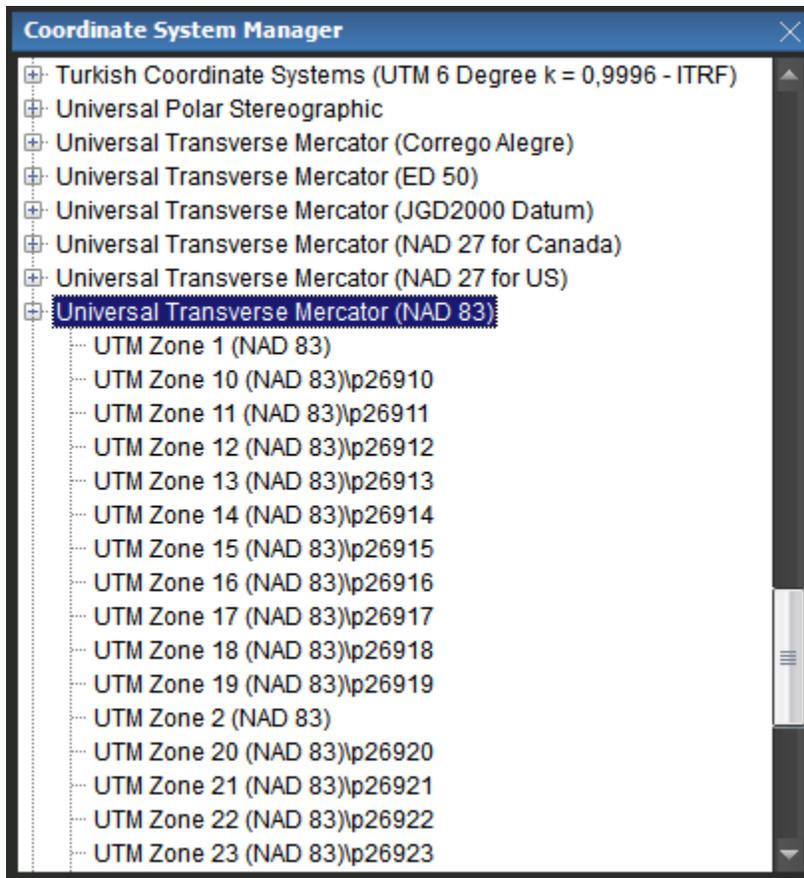
Get Information on the Coordinate System of a Map File

To get information about a file *coordinate system*, *click* on the map file and select Properties. The coordinate system information is displayed in the General Tab of the [Map File Settings and Properties Dialog](#).

Default Map Coordinate System

By *default*, when you create a map with the CartoVista Publisher, the first *layer* in the map defines the coordinate system of the map window.

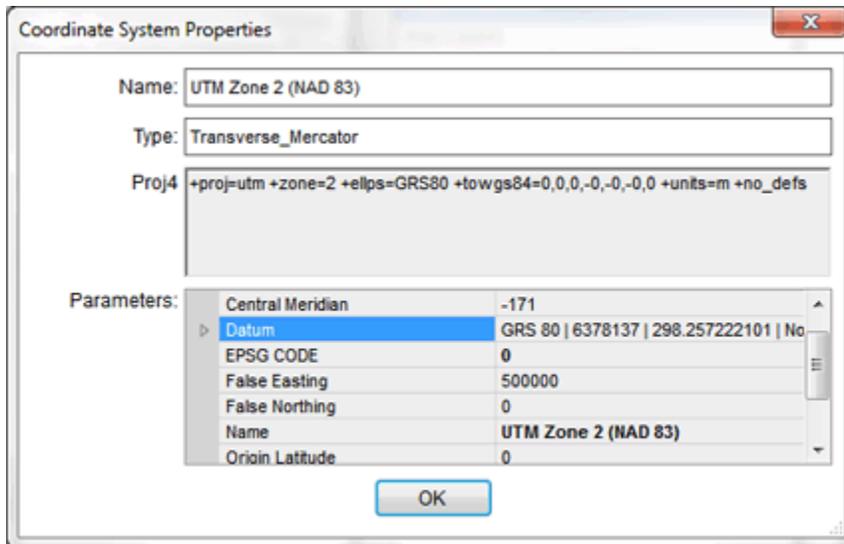
Predefined Coordinate Systems



The Coordinate System Manager comes with over 21 coordinate system categories, containing more than 1400 coordinate systems. Each category can contain one or more coordinate systems. The predefined coordinate system range from world projections to local coordinate systems. To get specific information about a coordinate system in particular, select it from the list and click on the **Properties** menu.

Coordinate System Properties

To access this dialog, click on a coordinate system name in the Manager and select "Properties". The Coordinate System Properties dialog is displayed.



Each of the coordinate system parameters (*projection*, datum, false easting, false northing, units, etc) is displayed in the dialog tree view.

Customizing and Changing Coordinate Systems

- To create a new coordinate system, see [Defining new Coordinate Systems](#)
- To import coordinate system from existing GIS definitions such as MapInfo, Well Known Text ([WKT](#)), EPSG codes or [ESRI.PRJ](#) files, see [Importing Coordinate System](#).
- To modify a map coordinate system, see [Changing a Map Coordinate System](#).



Defining New Coordinate Systems

The CartoVista Publisher includes the ability to create new coordinate systems by importing standard GIS coordinate system definitions. You can choose of the following methods to define the coordinate system parameters and [import](#) it in the Coordinate System Manager.

- MapInfo Coordinate System Expression
- OGC Well Known Text
- PROJ4 Coordinate System Expression
- EPSG Code
- ESRI PRJ Coordinate System Expression



Importing Coordinate Systems

To import a coordinate system, click on one of the existing categories and choose one of the methods below.

Importing from MapInfo Coordsys Clause

Import Coordinate System

Category: MapInfo Projections

Name: Austalian Mercator

MI Coordsys: CoordSys Earth Projection 12,12, "m", 0

OK Cancel

MapInfo stores its *Coordinate System* Clause in a string that defines all of the coordinate system parameters. For information on the MapInfo Coordsys Clause, see the MapBasic Help.

To import a MapInfo Coordinate System Clause:

- Enter a category in the text [field](#)
- Enter a name in the text field
- Enter the Coordinate System Clause (MI Coordsys) in the text field
- [Click](#) on OK

Importing from an ESRI PRJ Projection

Import Coordinate System

Category: ESRI PRJ Projections

Name: Canada

PRJ File Path:

OK Cancel

ESRI Shapes use files with the .PRJ extension to store coordinate system parameters.

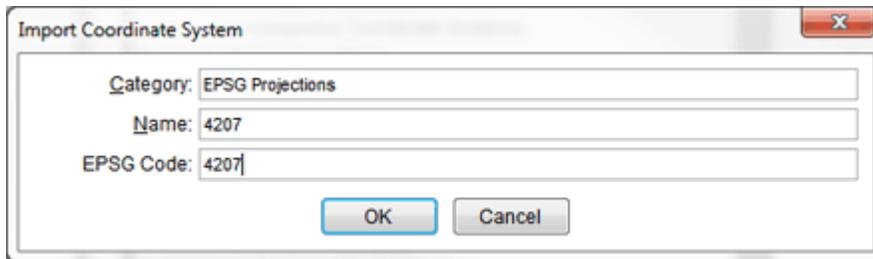
To import an ESRI PRJ coordinate system:

- Enter a category in the text field

- Enter a name in the text field
- Enter the PRJ [file](#) path in the text field
- Click on OK

Importing from EPSG Codes

It is very common in GIS to define projections using the European Petroleum Survey Group (EPSG) codes.

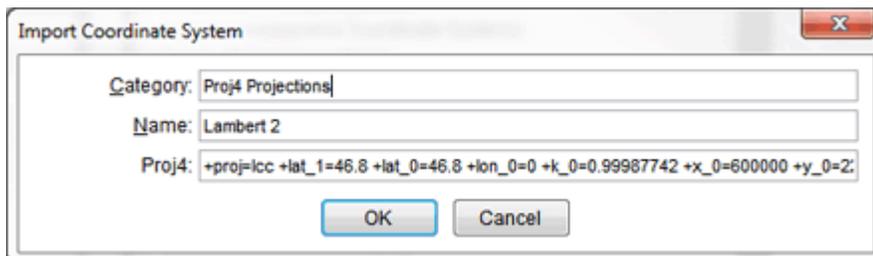


The screenshot shows a dialog box titled "Import Coordinate System". It has three text input fields: "Category" with the value "EPSG Projections", "Name" with the value "4207", and "EPSG Code" with the value "4207". At the bottom of the dialog are two buttons: "OK" and "Cancel".

To import a coordinate system by *EPSG code* :

- Enter a category in the text field
- Enter a name in the text field
- Enter the EPSG code in the text field
- Click on OK

Importing from PROJ4

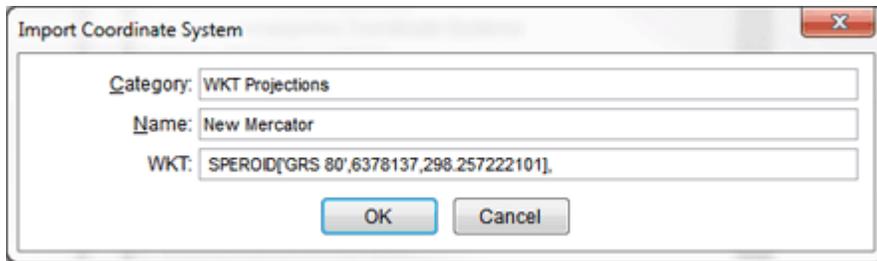


The screenshot shows a dialog box titled "Import Coordinate System". It has three text input fields: "Category" with the value "Proj4 Projections", "Name" with the value "Lambert 2", and "Proj4" with the value "+proj=lcc +lat_1=46.8 +lat_0=46.8 +lon_0=0 +k_0=0.99987742 +x_0=600000 +y_0=2;". At the bottom of the dialog are two buttons: "OK" and "Cancel".

To import a coordinate system by *PROJ4* :

- Enter a category in the text field
- Enter a name in the text field
- Enter the PROJ4 string in the text field
- Click on OK

Importing from Well Known Text (WKT)



To import a coordinate system by *WKT*:

- Enter a category in the text field
- Enter a name in the text field
- Enter the WKT string in the text field
- Click on OK

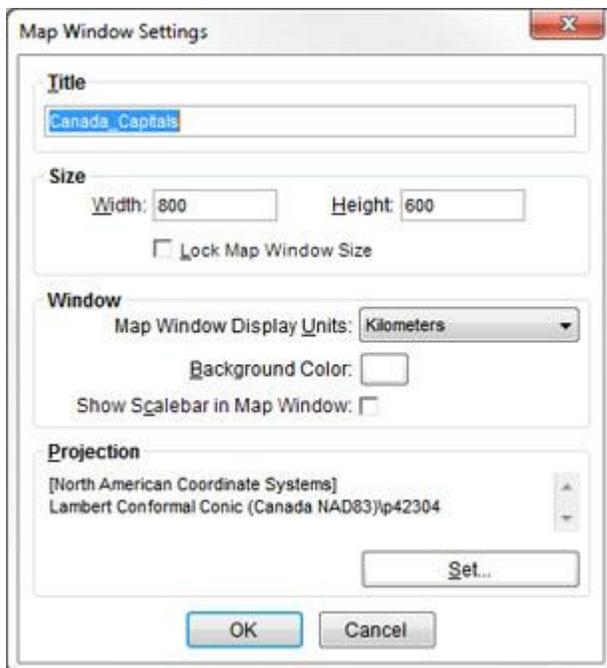


Changing a Map Coordinate System

Changing the Map Coordinate System by Drag and Drop

Drag a *coordinate system* from the Coordinate System Manager into the map.

Changing the Map Coordinate System from the Map Settings Dialog



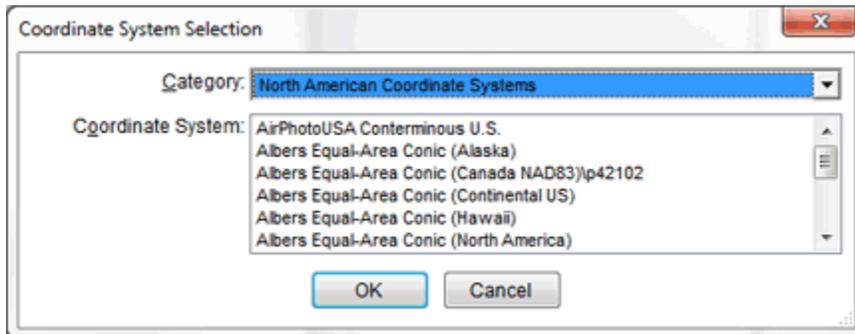
The text displayed in the projection group box will depend on your settings in the Tools > Preferences > Projection Settings dialog.

If you have checked the "Display Projection Name if Available", the Category and Projection name will be displayed. The category name will be enclosed in square brackets ('[' and ']') while the Name will be displayed on the row below.

If the projection has not been given a category/name, the name will be "Unnamed". This simply means that there is no human-attributed text associated with that particular projection.

If you have not checked the "Display Projection Name if Available", the projection will be displayed in either the Proj4 format, or the Well Known Text (WKT) format. For more information on Proj4, see <http://trac.osgeo.org/proj/>.

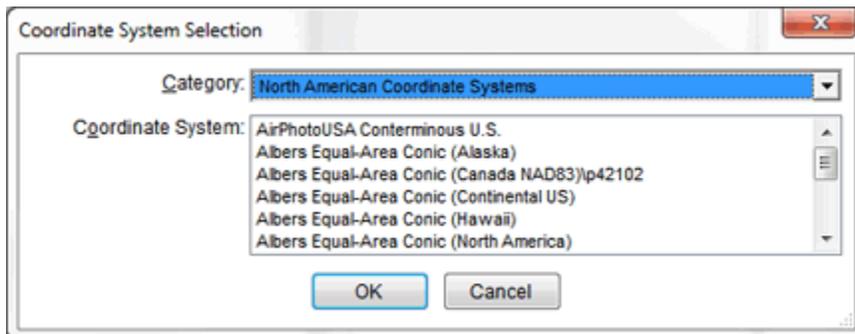
Click on the "Set..." button to display the Coordinate System Selection dialog and choose a coordinate system. See Coordinate System Selection Dialog for more information.





Coordinate System Selection Dialog

The Coordinate System Selection dialog allows you to select a coordinate system from the many coordinate systems that are available. The CartoVista Publisher ships with over 21 coordinate system categories that contain more than 1400 coordinate systems. More coordinate systems can be added by the user.



Category: A group of coordinate systems. This dropdown lists all the categories that are present in the Coordinate System Manager as the top level nodes.

Coordinate System: A specific coordinate system. This lists all the individual coordinate systems that are part of the selected category.

NOTE: Double clicking on a coordinate system in the Coordinate System list will open the Coordinate System Properties dialog to display the properties of that particular coordinate system.

The names given to each category and/or coordinate system are designed to assist users in selecting the correct Coordinate System to use. Users are free to name categories and coordinate systems in any manner they choose. For example, a category may be called "Company Projections" and the coordinate systems within it may be called "Project1", "Project 2" etc.



Creating Maps for CartoVista

The CartoVista Publisher's primary focus is to assist you in creating the map you need to deploy with your CartoVista solution.

You can either create a new map, or open an existing map. Once you have created the map you want, publish your map to create the files needed for deployment to the CartoVista solution. Saving the map creates a map definition in a .CVM file that can be reopened later.

Here are the topics of this chapter:

[Creating Maps for CartoVista](#)

- [Creating a Map Window](#)
- [Layer Selection Dialog](#)
- [Adding Tile Layers to a Map](#)
- [Importing MapInfo Workspace \(.MWS\)](#)

[The Map Window](#)

- [Main Toolbar](#)
- [Map Toolbar](#)
- [Map Window Menu](#)
- [Map View Settings Dialog](#)
- [Map Settings Dialog](#)
- [Viewer Configuration Dialog](#)

[The Layer Control](#)

- [Changing Map Layers](#)
- [Layer Actions](#)
- [Managing Missing Data](#)
- [Layer Properties](#)
- [Setting Legend Options for Map Layers](#)
- [Publishing a Map](#)



Creating a Map Window

You can create a Map Window from an existing .CVM file using one of the following methods:

1. Open an Existing .CVM file

From the main menu, select File > Open menu option. A dialog will prompt you to locate the .CVM file that defines the map. Once you have selected a .CVM file, a Map Window will open as defined in the .CVM.

2. Drag & Drop an existing .CVM file

You can drag and drop a .CVM file from Windows Explorer onto the main application. This will open a Map Window as defined in the .CVM.

3. Double-click an existing .CVM file

You can double click a .CVM file from Windows Explorer. This will start up the Publisher and automatically open the Map Window as defined in the .CVM. If the Publisher is already running, the Map Window will open in the Publisher without starting a new instance.

NOTE: CartoVista Publisher 4.1.1 can open any .CVM created with any previous version of the CartoVista Publisher. However if you save the map from CartoVista Publisher 4.1.1, you will not be able to use the .CVM with a previous version of the Publisher.

You can also create a new Map Window using one of the following methods:

1. From the Main Menu New option

In the Main Menu, click on File > New Map.... For more information on the rest of the process see [Layer Selection Dialog](#).

2. From the Map Source Manager shortcut menus

Right click on one or more Map File nodes. From the context menu, select "Create Map Window".

Right click away from Map File Nodes. From the context menu, select "New Map Window..". For more information on the rest of the process, see [Layer Selection Dialog](#).

Right click on a Folder Node. From the context menu, select "Create Map Window". This will create a map from all the Map Files within the folder and its sub-folders.

3. Drag & Drop from the Map Source Manager

Select one or more Map Files. Drag and drop the map files into the main application window. A new Map Window will be created from the map files you have selected.

Select a Folder node. Drag and drop the folder node into the main application window. A new Map Window will be created from all the Map Files within the folder and its sub-folders.

4. Drag & Drop existing Map Layers(s)

In an existing Map Window, select one or more Layers from the Layer Control. Drag & Drop the layers into the main application window. A new Map Window will be created based on the layers you have selected and the map you dragged them from.

5. Press F2

Pressing F2 at any time will start the creation of a Map Window. For more information on the rest of the process, see [Layer Selection Dialog](#).

6. Convert from a Tile Window

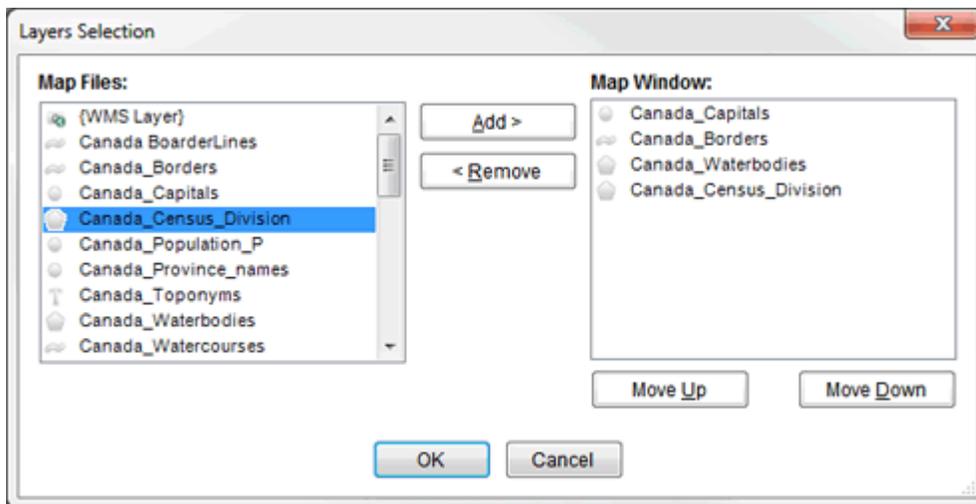
When a Tile Window is the active window, in the Main Menu, click on File > Convert To > Map Window. A file save dialog will prompt you for a name to save the new .CVM as, and then the Map Window will open based on the existing Tile Window.

NOTE: If you include a TILE layer in your map window, you will be alerted via a dialog to the Terms of Use of that Tile Layer. You will have to click "I Accept" to include that layer in your map. You may also have to enter a key from the tile provider as well. For more information see section [Adding Tile Layers to a Map](#)



Layer Selection Dialog

The Layer Selection Dialog allows you to select the layers to appear in the map, their order, and set the name of the layer to something other than the name of the Map File.



You can access the Layer Selection Dialog using one of the following methods:

1. While creating a new map from the Main Menu

From the main menu, select File > New Map.

2. From the Map Source Manager

In the Map Source Manager, right click on a Category node, or outside of an existing node. From the context menu, select "Create Map Window...".

3. From the Layer Control

In the Layer Control, right click on the root Layer Control node. From the context menu, select "Select Layers".

Adding Layers

- Select one or more map files from the left list box and click on the Add >> button to add it to the map. You can also double-click on a layer in the map files list.

- Layers will be inserted into the Map Window list layers depending on their layer type, and the existing set of layers in the list. Text layers will be put above a layer of any other type, while points will appear above the first polyline layer, polylines above the polygon layers and raster images at the bottom of the list.

Removing Layers

Select a layer from the right list and pick the << Remove button to remove it from the map. You can also click and drag layers up and down within the Map Window list.

Reorder Layers

Select a specific layer and click on the Move Up / Move Down buttons to change the map layers order.

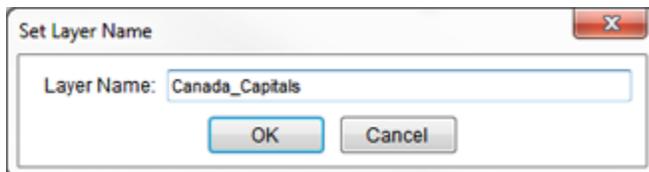
Layer Names

Layers will be added to the Map Window list named the same as they were found in the map files list. However if you add a layer to the Map Window list more than once, the layer name that will be used will appear besides the map file name with parenthesis {}.

You can change the name of a layer by right-clicking on the layer in the list on the right. This will bring up a menu option called "Edit Layer Name...". Select this menu option to bring the Set Layer Name dialog.

Set Layer Name Dialog

The Set Layer Name dialog allows you to set the name of a layer in the Map.



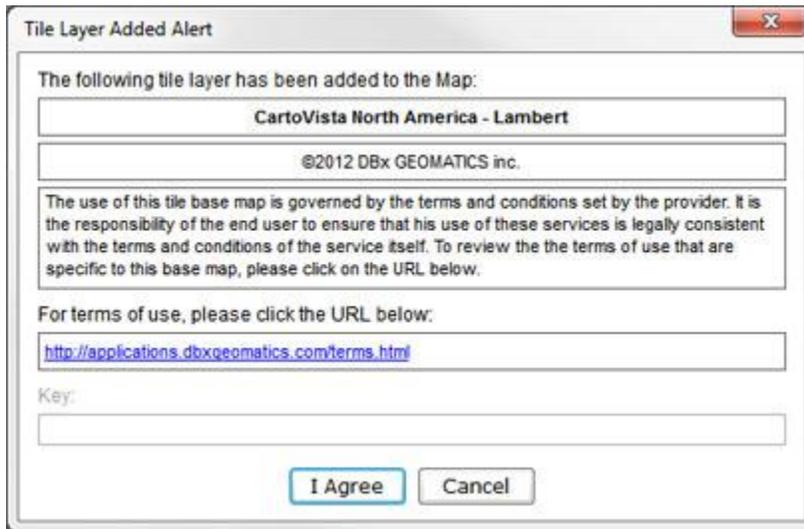
Layer Name: The name of the layer in the map window. This name must be unique within the map layers.

NOTE: By default, a layer is named the same as the Map File you use to create the layer. If you use a Map File multiple times, the layer name will automatically have an underscore (" _ ") and a number appended to the end of the layer name.



Adding Tile Layers to a Map

Any time you add a Tile Layer to a Map, you will be alerted via a dialog to the Terms of Use and the Copyright of that Tile Layer. The Terms of Use are set by the creator/owner of that set of tiles. It is your responsibility to ensure that you have read the terms of use, and that you have permission to include that Tile Layer in your map and that it conforms to the Terms of Use.

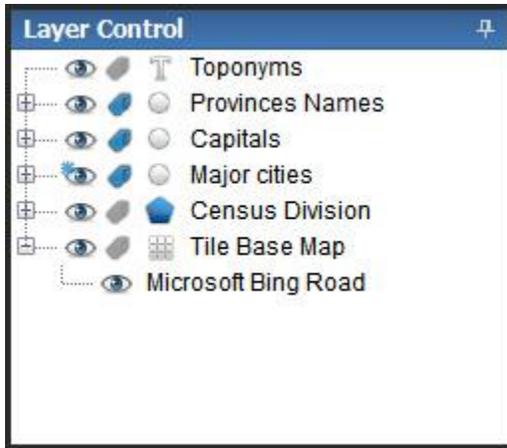


Some Tile Layers will require you to enter a key obtained from the creator/owner of that set of tiles. Enter that key in the Key: field in the dialog to ensure the key is properly published to the map.

If you do not agree with the terms of use, click the Cancel button, and the Tile Layer will not be added to the Map.

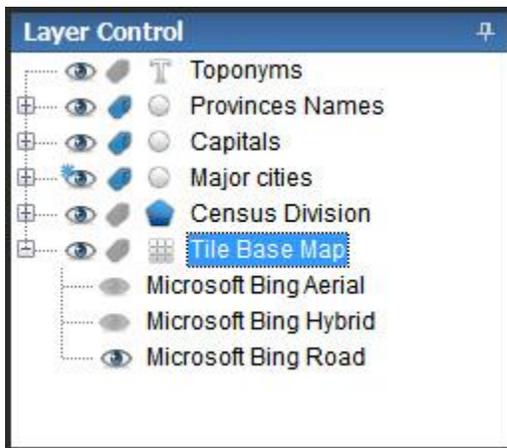
Tile layers are unlike other layers, in that multiple tile providers can all be added to a single tile layer. The map creator is able to select which will be the default tile provider used when the map is displayed, but the end user can change this to any of the tile providers available.

When a Tile Layer is added to a Map, the layer is automatically called "Tile Base Map". This name can be changed in the Layer Properties dialog, General Tab. The tile provider that was added appears as a sub-node underneath the layer node.



Additional Tile Providers can be added via Drag & Drop by selecting a tile provider from the Map Source Manager and dropping it onto the Tile Base Map node. You can only add each tile provider once.

The currently active tile provider will have an open eye besides its name. You can change to another tile provider by clicking on the closed eye next to it.



The Layer Properties dialog will display a special tab for Tile Layers that allow you to manually select the tile providers and the active tile provider. See section [Layer Properties](#) for more information.

Since MapInfo Professional Version 8.0, users can save their workspace in the MWS format. To save your map window in the MWS format in MapInfo Professional:

1. Select the menu **File - > Save Workspace**
2. From the dialog box, pick the MapInfo Workspace Format (.MWS) in the Save as type option.

Importing a MapInfo Workspace (.MWS)

To import a MapInfo workspace in the CartoVista Publisher:

1. Select the menu **File - > Open Map**
2. From the files of type dropdown in the file open dialog, select the MapInfo Workspaces (.mws) option
3. Browse to your computer and select the .MWS file you wish to import
4. Click on OK

The corresponding map is created in the CartoVista Publisher.

Support Notes

Map layers retain their visibility, zoom layering and labelling settings.

Style Handling

- Style modified on layers are converted to their corresponding default styles in the CartoVista Publisher
- Styles of individual values themes are converted to layer classes (multiple styles) in the CartoVista Publisher

Other Restrictions

- Only MapInfo native layers are supported (native .tab files) in the import process.
- Range, pie chart, bar chart, graduated symbols and dot density thematic layers are ignored
- Some of the styles available in the map may be mapped to regular styles in the CartoVista Publisher. For example, fill patterns will be mapped to normal (solid) colors.

Logging

When importing a workspace, a Log.txt file is created in the folder where the workspace resides. The Log file contains information about the conversion and potential unsupported nodes in the XML.

Sample Log.txt file

```

INFO - Starting the process
INFO - Reading DataSourceDefinitionSet
INFO - Reading TABFileDataSourceDefinition
INFO - Reading MapDefinitionSet
WARN - Unsupported node:DisplayConditions.ResizeMethod
WARN - Unsupported node:DisplayConditions.RasterConditions
INFO - Reading LayerList
INFO - Reading FeatureLayer CAN_Provinces
WARN - Unsupported node:MapDefinition.MapLegendSet
WARN - Unsupported node:WorkSpace.MapinfoApplicationData
INFO - Process ended successfully
INFO - Starting the process
INFO - Reading DataSourceDefinitionSet
INFO - Reading TABFileDataSourceDefinition
INFO - Reading MapDefinitionSet
WARN - Unsupported node:DisplayConditions.ResizeMethod
WARN - Unsupported node:DisplayConditions.RasterConditions
INFO - Reading LayerList
INFO - Reading FeatureLayer CAN_Provinces
WARN - Unsupported node:MapDefinition.MapLegendSet
WARN - Unsupported node:WorkSpace.MapinfoApplicationData
INFO - Process ended successfully
INFO - Starting the creation of the map window
INFO - Layer creation done successfully
INFO - Map window creation done successfully
INFO - Write done successfully
    
```



The Map Window

The CartoVista Publisher Map Window visually displays the map files which comprise the map with their associated styles and settings applied

The Map Window is composed of the following 4 parts:

Map Display

Displays the map as determined by the layers selected and the style and other settings applied to each layer.

Main Tool Bar

A toolbar containing options for actions that will be performed with the map.

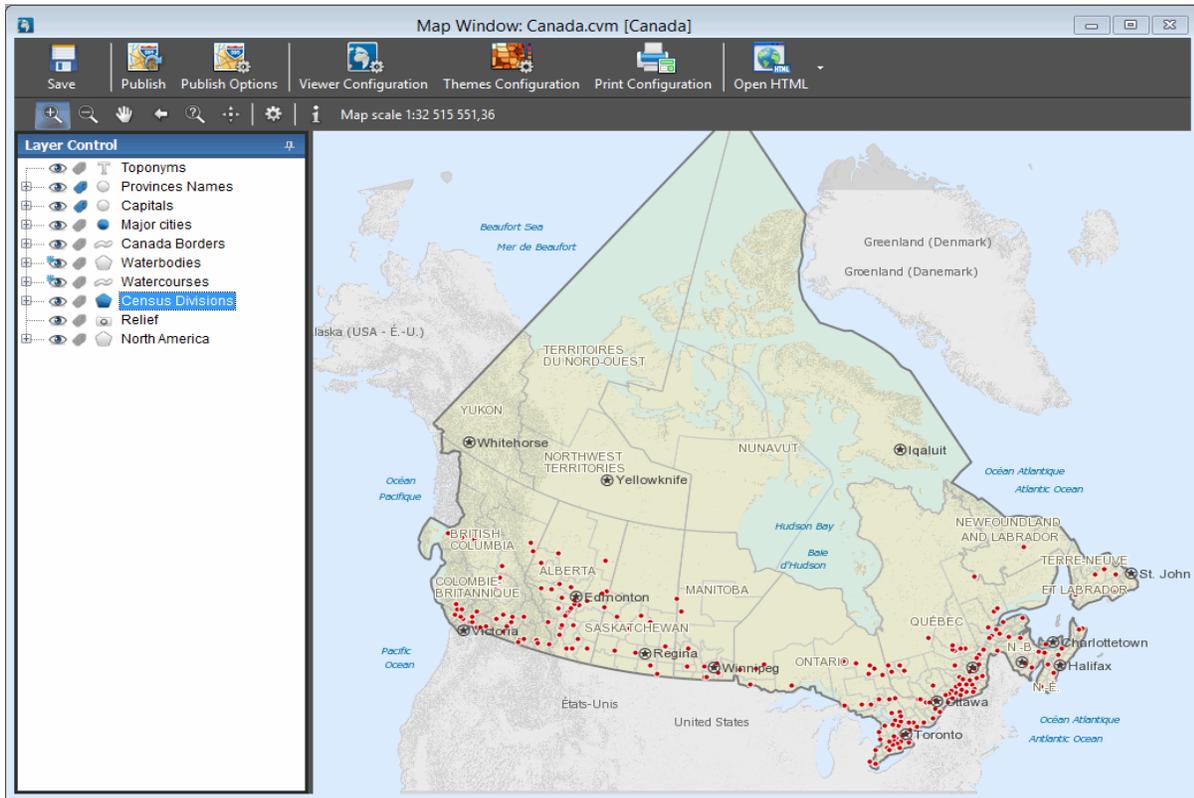
Map Tool Bar

A toolbar containing options for navigating and altering the map.

Layer Control

Lists the layers present in the map and allows the user to adjust the settings used for each layer.

Creating Maps for CartoVista





Main Toolbar

Save Button



The Save Configuration button saves your current map to a .CVM file.

When you save a .CVM file, you are saving the settings, layout and other attributes needed to recreate the map window. You are not saving the underlying GIS files, simply a reference to where they are located.

If you want to give someone a copy of your map, ensure they already have the GIS files loaded into CartoVista Publisher with the same names, or include the source GIS files in the package you transfer so they can add them.

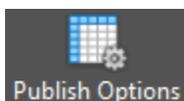
Publish Button



The Publish button will publish the current map with the existing settings without any user interaction. If you want to change the publish settings, click on Publish Options button.

NOTE: If you have not previously published the map and set the map output name, the Publish Options Dialog will be displayed so that you can set the map output name.

Publish Options Button



Click on the **Publish Map** button once you are ready to publish your CartoVista map. The button then displays the Publish Options Dialog so that you can specify the map *output* name and folder output.

Viewer Configuration Button



The **Viewer Configuration** button will display the Viewer Configuration Dialog so that you can set up the CartoVista Viewer which will be used to display the published map.

Themes Configuration Button



To assist in configuring the published CartoVista map, the Themes Configuration button allows you to interact with your published Map and setup the default themes for the initial view of the map.

The Themes Configuration button will open a new window in the Publisher that contains the Adobe Flash player, which will display the published map. Add the appropriate theme(s) to your map until you are satisfied and then click the "Save" button. This will update the configuration file so that the current theme set will be loaded by default when the map is viewed.

If you have not yet published your map, this button will not be active.

Print Configuration Button



It is possible to configure print templates for every map deployed in CartoVista. The Print Configuration button allows you to setup the content of those templates and define the default one. It will open a new window in the Publisher that contains the Adobe Flash player, which will display the published map. Create the appropriate print templates by selecting which items should be displayed in the templates, and the level of interaction you decide to give to the end user.

You will be able to visualize the results of your configurations directly in the dialog. When you are done, you just need to "Save" your templates in your cvm, and "Publish" them in the configuration file.

If you have not yet published your map, this button will not be active.

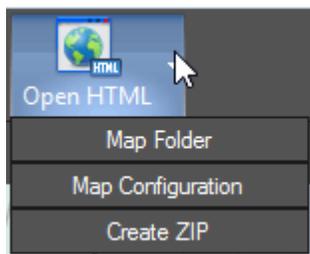
Open HTML Button



The Open HTML button will open your default browser and open the published map in the browser.

If you have not yet published your map, this button will not be active.

This button now includes additional options, available by clicking on the right side arrow.



Map Folder: this menu opens the published map folder.

Map Configuration: this menu opens the published map XML Configuration File.

Create ZIP: this menu creates a ZIP File including the published map and all files required to deploy on a web server.



Map Toolbar

Map Navigation Tools

Zoom-In Tool



Display a closer view of the map.

Use this tool to display a closer view in the current map.

- Select this tool from the tool bar.
- Click on the map to zoom-in.
- The map is zoomed-in by a factor of 2.

TIP: You can also draw a rectangle on the map (click and drag) to closely define the area you want to zoom to.

Zoom-Out Tool



Display a wider view of the map.

Use this tool to display a wider view in the current map.

- Select this tool from the tool bar.
- Click on the map to zoom out.
- The map is zoomed-out by a factor of 2.

Pan Tool



Recenter the map.

Use this tool to re-center the current map.

- Select this tool from the tool bar.
- Click and drag the map to recenter.

- Once the map is recentered as you need it, release the mouse.

Previous View Tool



To display the map from the previous view.

Use this tool to display the previous view from the current map view.

- Select this tool from the tool bar.
- Click on the tool.
- The view comes back to the previous zoom level.

Change View Tool



Change the current map view by entering coordinates.

The Change View tool is used to access the Change View Dialog to set the view of the Map.

View Entire Layer Tool



Set the map view to the extent of a map layer.

Use this tool to access the view entire layer dialog to set the map bounds to the extent of a specific layer.

View Entire Layer Dialog



To set the map view to all layers in the map window, select <<ALL LAYERS>>.

To set the map view to a specific layer, select it from the list and click on the Zoom button.

Map Settings Tool

The Map Settings tool is used to access the Map Settings dialog to set the title, coordinate system and dimension (width and height) of the map. For more information on map settings, see the [Map Settings Dialog](#).

Scale / Width Display

Depending on the application preference setting, either the map scale (e.g. 1: x) or the Map Width (e.g. x Kilometers) will be displayed after the Info tool.

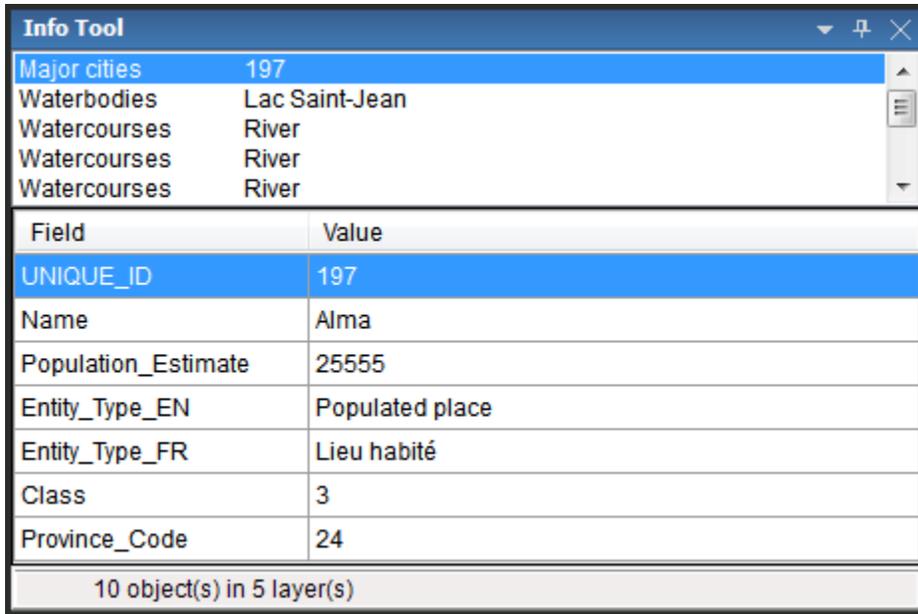
Info Tool



Use this tool to get attribute information about map features.

Select this tool from the tool bar and click on a map location. The info tool window displays a list of all objects at the location of the click.

Info Tool Window



If you have only selected a single object from the map, the field names and values for that object are displayed. If the location you clicked has multiple objects (same layer or different layer) the Info Tool window displays a list of objects at the top of the dialog. Selecting the different objects updates the fields/values to the selected object. The status bar at the bottom tells you exactly how many objects have been selected from how many layers in the Map Window.



Map Window Menu

The Map Window Menu is in the main menu and is only active when the map window is open.

Layer Selection

Opens the Layer Selection Dialog. See section on [Layer Selection Dialog](#) for more information.

Change View

Opens the Map View Settings Dialog. See section on [Map View Settings Dialog](#) for more information.

Previous View

Returns to the Map Window to the previous zoom/scale and location. If you have not moved/panned or otherwise changed the view of the map, this has no effect.

This option is also available in the popup menu available when you right click in the Map Window.

View Entire Layer

Opens the View Entire Layer Dialog. If you have only one layer in the Map window, the Map Window automatically zooms to the extents of that layer.

Settings

Opens the Map Settings Dialog. See section on [Map Settings Dialog](#) for more information.

Save Map Window As

This option allows you to save the current map as a raster image.

Publish

Automatically publishes your map using the existing settings. See section on [Publishing a Map](#) for more information.

Publish Options

Opens the Publish Options Dialog. See section on [Publishing a Map](#) for more information.

Themes Configuration

Opens the [Themes Configuration Dialog](#), in order to prepare the themesets that will show by default when opening the CartoVista application.

Print Configuration

Opens the Print Configuration Dialog, to let the user prepare the print templates.

Open HTML

Opens the default browser and opens the published map in the browser. If you have not yet published your map, this menu option will not be active.



Map View Settings Dialog

This dialog has three uses:

- You can set the current map view by specifying a scale or zoom and with the map's centroid or bounding coordinates;
- You can also set the maximum view possible for the map by setting bounding coordinates.
- You can set the zoom layering that applies to the whole map.

This dialog can be accessed by choosing Map Window > Change View from the main menu, clicking on the Change View button in the Map Window's Map Toolbar  or by right clicking in the map window and selecting Change View from the popup menu.

Map View Settings Dialog

Use Lat/Long Coordinate System Values Option

Many of the edit boxes in this dialog require coordinates. The values entered will be in the coordinate system of the Map Window. However, if your map is projected to a coordinate system other than Latitude/Longitude, you have the option to set the coordinates using Latitude/Longitude anyway.

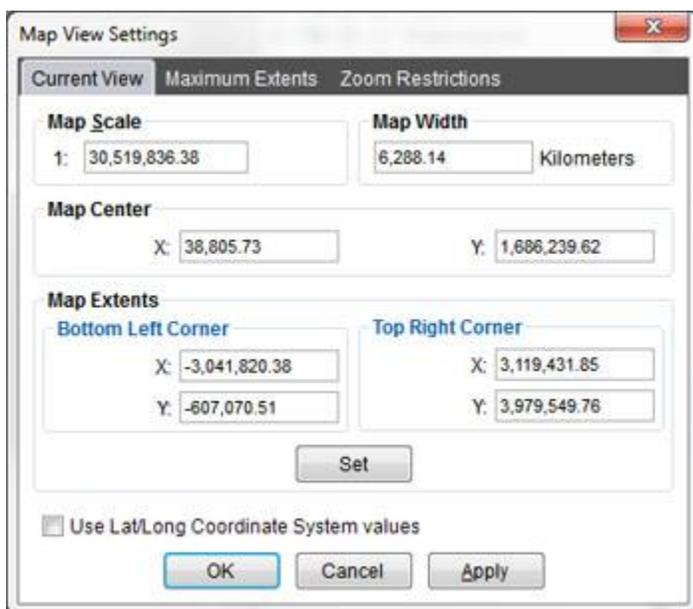
Check the "Use Lat/Long Coordinate System Values" checkbox at the bottom of the dialog box. All coordinate system values in this dialog will then be required to be

entered in Latitude/Longitude values. Uncheck this setting to return to the coordinate system units of the projection of the Map.

If the map is already in a Latitude/Longitude projection, this checkbox will be disabled.

For more information on coordinate systems, see section [Managing Coordinate Systems](#).

Current View



The current view of the map window is determined by two factors. The scale of the map and the coordinates of the center of the map window.

Map Scale / Map Width

There are two methods to set the scale of the map:

1. Using a Scale: A map scale is simply the ratio that compares a distance on a map to the actual distance on the ground. It is typically denoted as 1 : X, where 1 represents one inch on the map, and X represent how many inches in the real world. Small-scale maps (e.g., 1:10,000,000) typically depict a large area, such as a continent or a country. Large-scale maps (e.g., 1:10,000) depict much smaller areas, such as a city block-level.
2. Using a Map Width: Some users are more familiar with setting a map's width to a specific distance. Specify the distance (e.g. 5 kilometers) that you wish the map to display, and the map will adjust its scale to accommodate the required distance.

Once the scale has been determined, set the center of the map by entering the X, Y or Latitude/Longitude coordinates. If the Map's projection is "Latitude/Longitude", you will only be able to set this by entering Latitude/Longitude values. If the Map is projected to another coordinate system, the values will be in the X, Y units of the specified coordinate system. (Usually either meters or feet).

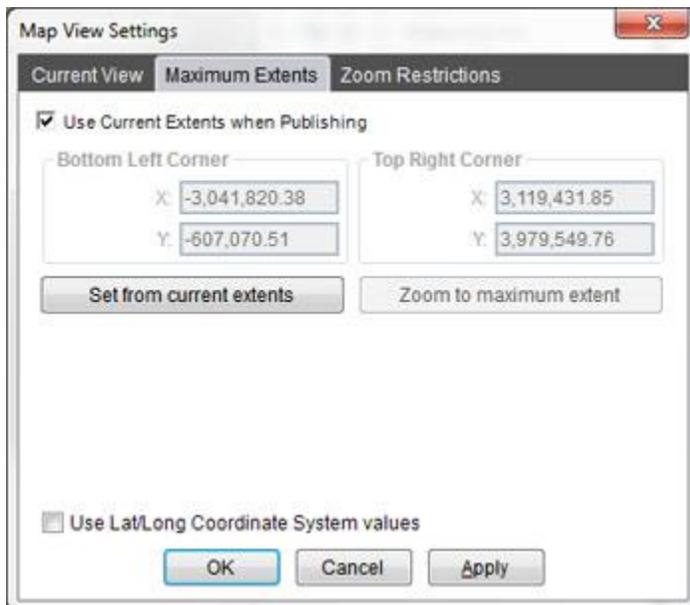
Map Center

Set the center of the map by entering the coordinates.

Map Extents

Set the bounds of the map by entering the coordinates of the bottom left and top right corners. Press the Set button to apply the coordinates to the map immediately.

Maximum Extents



The maximum extents determines how far out a user can zoom on the map. Normally these extents are set to the same value as the Current Extents that are in use when the map is published. The "Use Current Extents when Publishing" will be checked in this case.

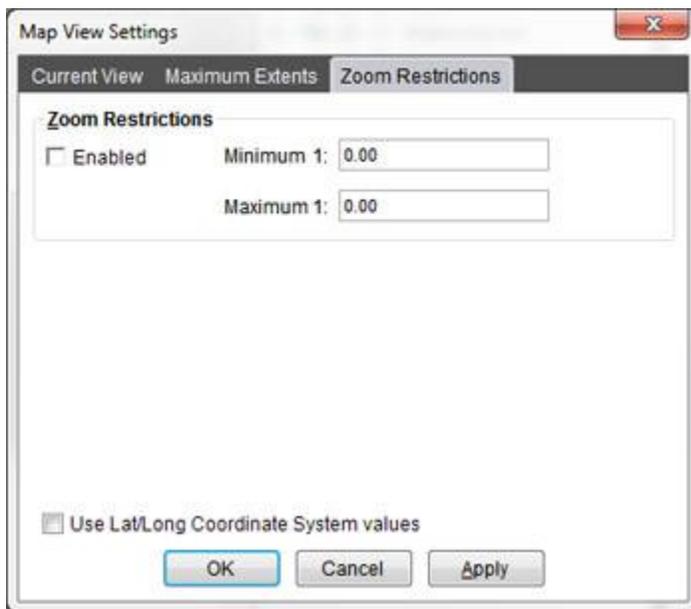
In some cases, you may wish to start with an initial view that is not the maximum extent. This allows users to zoom in or out from the initial appearance of the map. Uncheck the "Use Current Extents when Publishing" checkbox to allow a specific maximum extent to be set.

When you uncheck the “Use Current Extents when Publishing” checkbox, the Bottom Left Corner and Top Right Corner coordinate boxes become enabled. You can set these values to the specific maximum extent you wish the user to be able to zoom too.

The “Set From Current Extents” button is a quick way to update the Bottom Left and Top Right corner settings. Set the map to the maximum extent you wish to be available to the user, and then click the “Set from current Extents” button to update the Bottom Left and Top Right corner settings appropriately. Clicking this button automatically un-checks the “Use Current Extents when Publishing” checkbox.

If you wish to see what the maximum extent is actually set to, you can use the “Zoom to Maximum Extent” button to set the current view to be equal to the Maximum Extent. This button is not available when the Maximum extent is using the Current View setting.

Zoom Restrictions



Zoom restrictions set a minimum & maximum zoom when the Map is being viewed in the Viewer. These restrictions will prevent the viewer from zooming the map closer in or farther out than the values you have set.



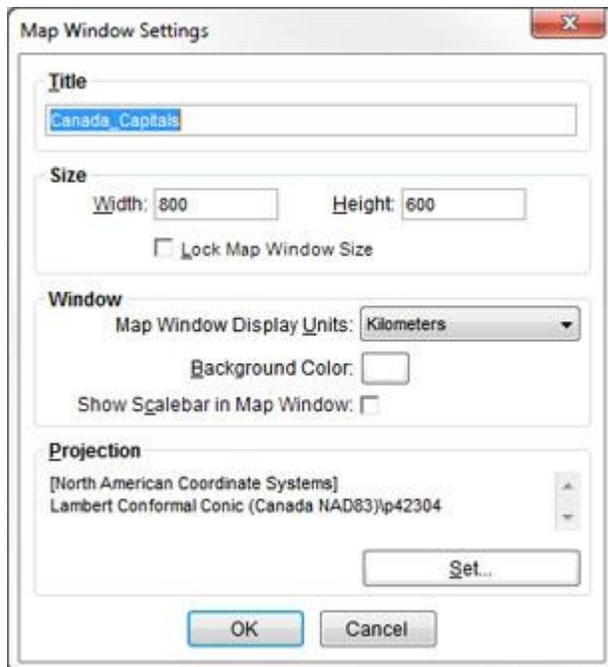
Map Settings Dialog

This dialog lets you set the title, dimensions and the coordinate system of the map.

This dialog can be accessed by choosing Map Window > Settings from the main menu, clicking on the Settings tool button in the Map Window's Map Toolbar  or by right clicking in the map window and selecting Map Window Settings from the popup menu.

Map Title

The map's title can be entered by typing in the text box at the top of the Map Settings dialog.



The map title is displayed in the CartoVista map output, in the title section at the top of the map. Since unlimited themes can be created with external XML data in CartoVista, the best practice is to create a title that is a simple geographic description of the area covered for the map. For example, if you create a map of the United States (showing state boundaries), you should name your map USA.

Size

In the CartoVista Publisher, the map size is defined in pixels.

To enter a specific map size in pixels, enter values in the map size width and height text boxes.

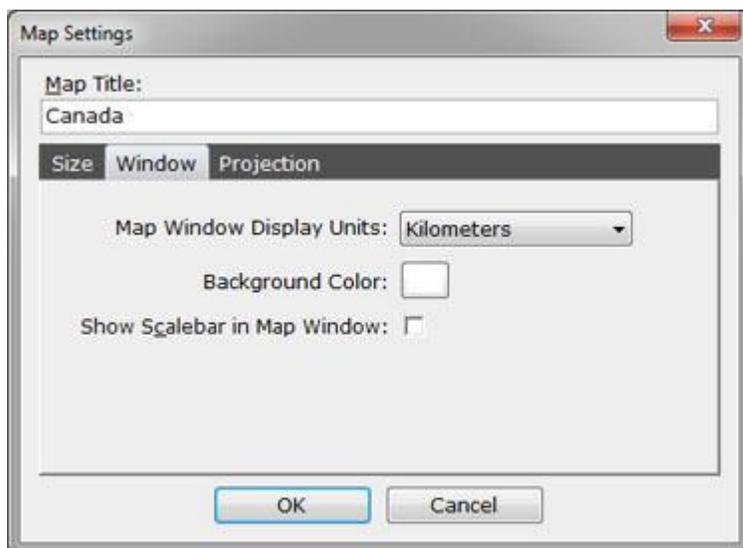
NOTE 1: If you resize the map window in the CartoVista Publisher, the width and height in pixels also change. To prevent accidentally resizing the window, you can Lock the Size of the Map Window.

NOTE 2: Be careful when you use the "MAXIMIZE" button on the map window. Although the map window will take up as much space as available inside the CartoVista Publisher, the width and height setting when you publish the map will be what is set in the Map Settings dialog. This may be considerably smaller than what is displayed on the screen!

The Lock Size option fixes the map dimensions when enabled. By default, CartoVista does not lock the map size. When you resize the map window in the publisher, the size of the map in pixels changes. When the Lock Size option is enabled, you will not be able to change the size of the map window.

Window

The Window section allows you to edit the settings that apply to the Map Window in general.



Map Window Display Units

This defines the units used to display linear information such as the map width. Choices are: inches, feet, miles, meters, kilometers.

Background Color

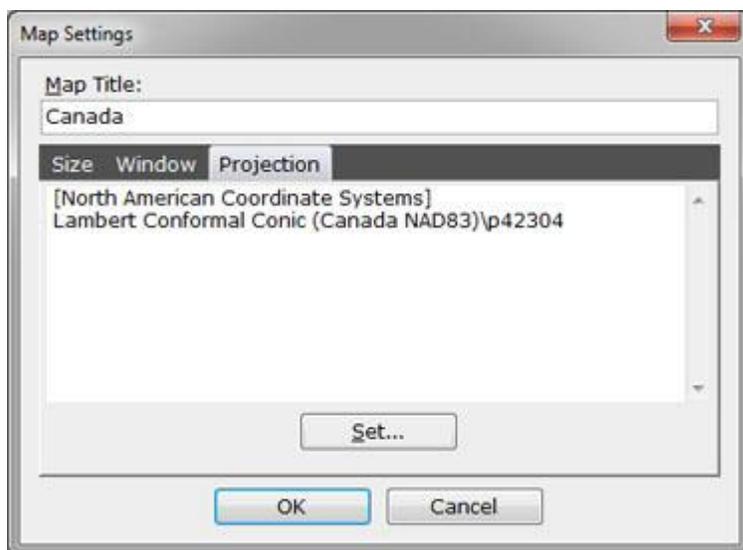
This defines the color that is in the background of the map. Choose a color with the color picker. The default background color can also be specified in the Tools and Preferences Dialog - Map Window Settings Tab

Show Scalebar in Map Window

This checkbox allows you to display a scale bar in the bottom left corner of the Map Window. The scale bar will only show inside the Map Window. If you wish to display a scalebar in the final output map, use the Show Scalebar option in the [Viewer Configuration Dialog](#).

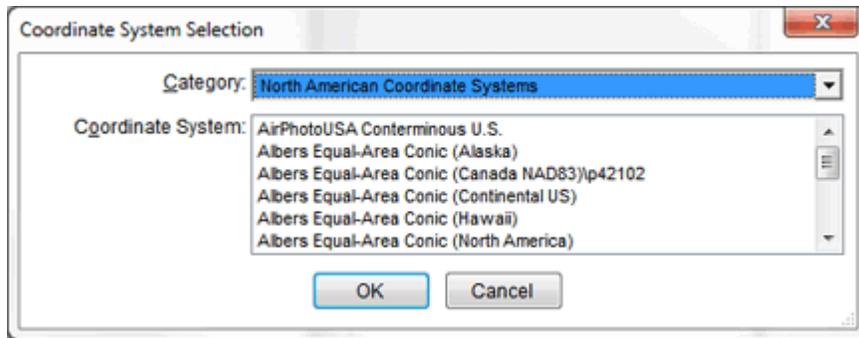
Projection

The Projection section displays the currently selected coordinate system for the Map Window.



The coordinate system information is dependent on the Publisher application settings. (see [Tools and Preferences - Projection Settings](#)) There are three ways that the information could be presented: Well Known Text (WKT), PROJ4, or a User Name.

If you want to change the map coordinate system, you can click on the Set... button to display the Coordinate System Selection dialog and choose a new coordinate system.



NOTE 1: You can also change the coordinate system by dragging a coordinate system from the Coordinate System Manager and dropping it directly onto the Map Window.

NOTE 2: If you have a Tile Server layer in your map window, you will not be able to change the projection. This is because the map needs to be in the same projection as the Tile Server in order for the map to appear correctly a line.



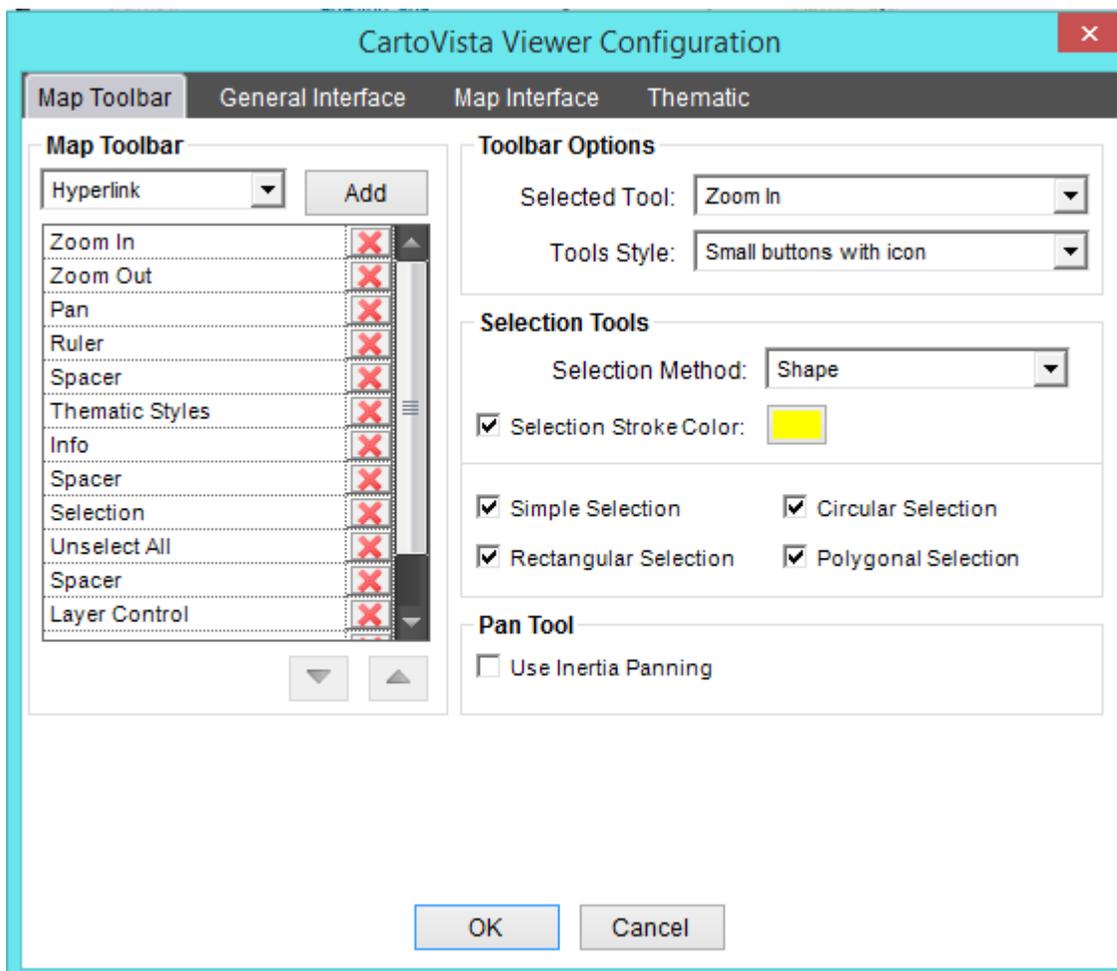
Viewer Configuration Dialog

The CartoVista Viewer Configuration dialog provides a set of options to configure the CartoVista Viewer. Customizable options include the tools that are available, the menu options and the language and additional map dialogs that are present.



The dialog is accessed by clicking the **Viewer Configuration** button in the Map Window.

Map Toolbar Tab



Map Toolbar Section

The Map Toolbar Section allows you to define the tools that will be available in the CartoVista Viewer.

The order that the tools appear in the list is the order they will appear in the CartoVista Viewer toolbar.

To add a tool (or a spacer between tools), select the tool from the drop down list and click the "Add" button.

Use the  button to remove a tool.

Use the  button to move a tool down one row. You cannot move the tool in the list down.

Use the  button to move a column up one row. You cannot move the first tool in the list up.

List of tools:

Icon as it will appear in the CartoVista Viewer	Name of the Map Tool Icon	Description
	Zoom In	Zooms in by 2x
	Zoom Out	Zooms out by 2x
	Initial Extents	Zooms to the initial map view
	Pan	Lets the user drag the map up/down and left/right
	Previous View	To display the map from the previous view
	Next View	To display the next view (after clicking on Previous)
	Ruler	Measure distances on the map
	Area Calculator	Calculate the area of an object drawn on the map
	Info	Opens an info dialog and displays information about any selectable
	Hyperlink	Navigate to different when using a drill-down or access normal hyperlinks
	Selection	Gives the user a choice of the available selection tools
	Unselect All	Clears the current selection

	Layer Control	Opens the Layer Control dialog
	Search	Opens the Search dialog
	Drawing/Annotation	Opens the drawing/annotations toolbar
	Thematic Styles	Opens the Thematic Styles dialog
	Spacer	Puts a small space between tool buttons.

Toolbar Options Section

Selected Tool: this drop down list is used to define which tool be selected by default in the toolbar when launching the CartoVista application.

Tools Style: This dropdown determines the style for the buttons in the Map Toolbar. There are three options available:

1. Small buttons with icon:



(Published CartoVista Viewer output sample)

2. Small buttons with icon and text:



(Published CartoVista Viewer output sample)

3. Large buttons with icon and text:



(Published CartoVista Viewer output sample)

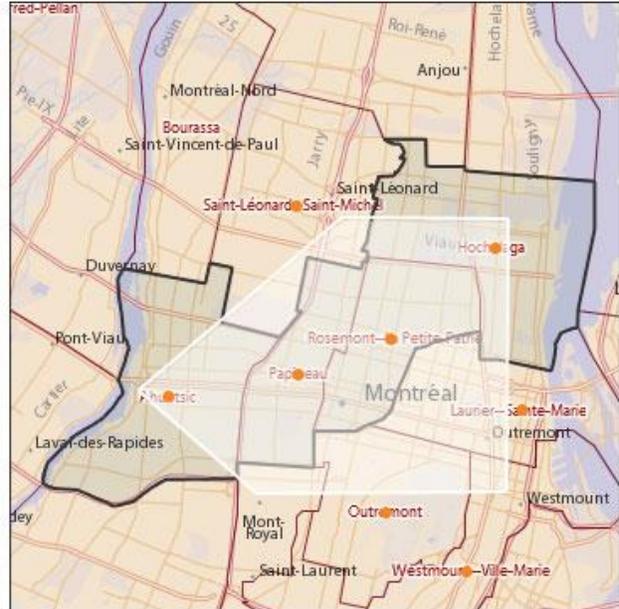
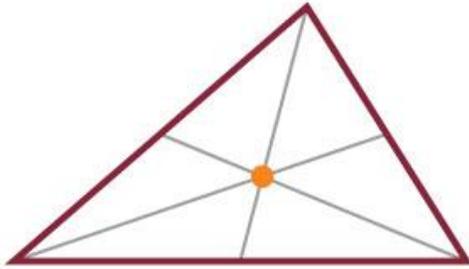
Selection Tools

The selection methods that are available to the Selection Tool in the toolbar.

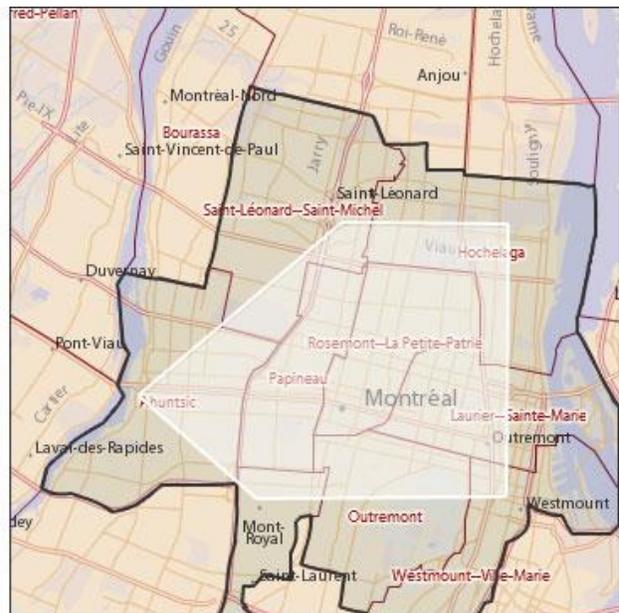
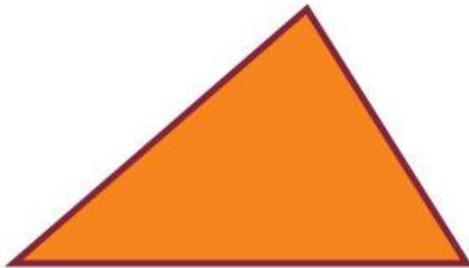
Selection Method: When using one of the selection tools that creates an area for selection, this dropdown determines if objects that intersect that area are selected.

There are three options available:

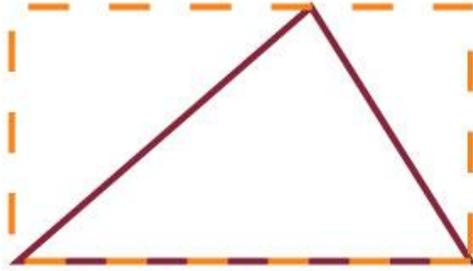
1. **Centroid:** the centroid of the objects must be within the area of the selection tool to be included.



2. **Shape:** some portion of the object must be within the area of the selection tool to be included.



3. **Bounding Box:** the enclosing bounding box of the object must be within the area of the selection tool to be included.



Selection Stroke Color: Check this option to enable a selection stroke color effect. Whenever an object is selected, the object's stroke will turn the color selected from the color selection button.

NOTE: Some objects do not have a stroke associated with them. E.g. Point objects, Text Objects. In such cases, there will be no effect. Some objects only have a stroke associated with them. E.g Polyline objects.

There are four different methods of selecting objects that can be available:

1. **Simple Selection** : Allows you to click on the map and select one object.
2. **Rectangular Selection** : Allows you to click and drag on the map to create a rectangular area for selecting objects.
3. **Circular Selection** : Allows you to click and drag on the map to create a circular area for selecting objects.
4. **Polygonal Selection** : Allows you to draw a polygon on the map to create an area for selecting objects.

Check all the selection methods that you wish to be available. When you click on the selection tool in the toolbar, an additional toolbar will display allowing you to select the specific selection tool to use.



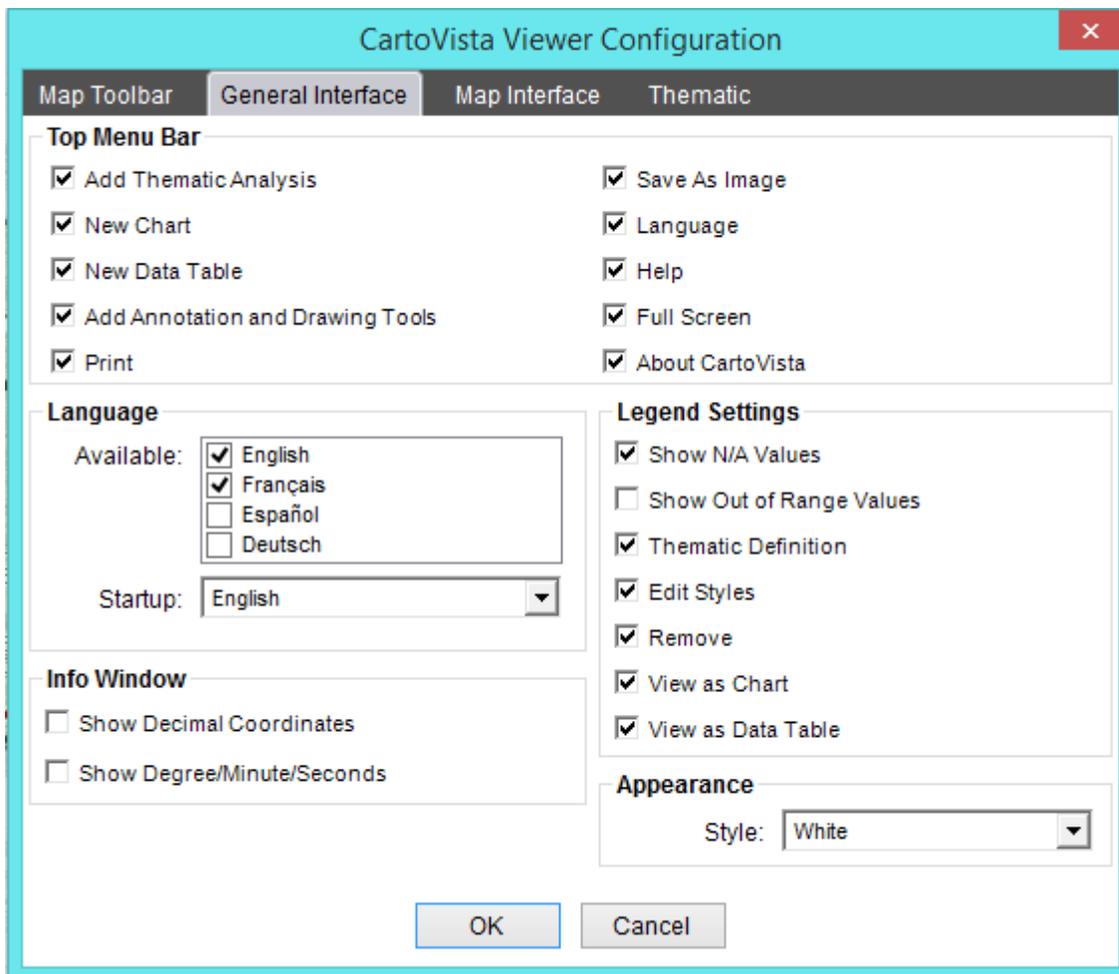
In addition, the dropdown at the beginning of the selection toolbar lets you pick which layer the selection will be from.

While making a selection, you can hold the SHIFT or CONTROL key down to add additional objects to the selection. You can even change the selection tool and continue to add objects to the current selection using the SHIFT or CONTROL key.

Pan Tool

Use Inertia Panning: When this box is checked, this option adds visual effects when panning on the map.

General Interface



This tab is used to define the configuration referring to the CartoVista application general interface.

Top Menu Bar

The top menu bar is the right hand part of the title bar that appears to the right of the  symbol. (Click on the arrow to hide the top menu bar.)

Check all the options that you wish to be available in the top menu bar.

Several menus and buttons can be added to the Top Menu Bar that is displayed at the top right corner of the application.



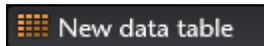
The following options will appear under the  menu:



Add Thematic Analysis Menu: Adds a new thematic analysis to one of the interactive layers in the map. An Add Thematic Analysis Dialog is displayed to choose the indicator(s) to display and the representation method.



Add New Chart Menu: Add a new chart. An Add Chart Dialog is displayed to choose the layer and indicator(s) to use to create the chart

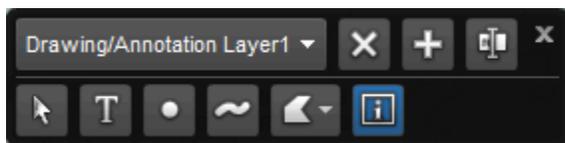


Add New Data Table Menu: Adds a new data table. An Add New Data Table Dialog is displayed to choose the layer, attributes and indicators.

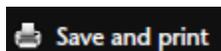


Add Annotation and Drawing Tools: Adds the annotation and drawing toolbar, to add drawings and annotations on the map.

After choosing this option in the drop down list, the following toolbar is available below the standard toolbar:

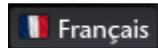


The following options will appear as their own button in the Top Menu Bar:



Save and Print Menu: Saves the current map or prints it. A Save and Print Dialog is displayed to choose different output options (print, PDF or PNG).

If print templates have been prepared, they will be available after clicking on this button.



Language Button: Chooses the language for the user interface.



Help Button: Provides access to the built-in HTML help system.



Full Screen Button: Switches to a full screen view of the map.



About CartoVista Button: Displays the CartoVista About Dialog.

Language

Available: Lists the current supported languages available for CartoVista. By selecting a language in this list, it can be selected as the default language and will appear as a choice when the user clicks on the Language Button in the Top Menu Bar.

Startup: Sets the language selected by default when the map is first displayed. The list of languages is based on the languages selected in the Available Languages list.

Info Window

Determines if coordinates are displayed at the top of the info tool window when you click on the map.

Show Decimal Coordinates: Coordinates are displayed with decimal precision.

Show Degree/Minute/Seconds: Coordinates are displayed in Latitude/Longitude in Degree/Minute/Seconds format.

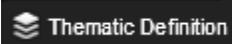
Legend Settings

The first two check boxes will defined how to display some additional information about the data in the legend:

- Show N/A Values: to display in the legend an additional color for the objects for which there is no data available in the dataset. Additional parameters can be defined in the [indicator properties](#) to set which value should be considered as being not available.

- Show Out of Range Values: to display the objets for which the indicator value falls outside the ranges of values defined for the displayed theme.

The other checkboxes will define which functionalities will be available through the Settings menu  accessible from the legend.



Thematic Definition: To open the dialog to edit the content of the thematic. The user can modify the thematic analysis displayed on the map.



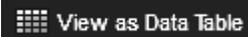
Edit Styles: To open the dialog used to change the thematic styles.



Remove: To remove the thematic analysis from the map.



View as Chart: To view the indicator in a chart.

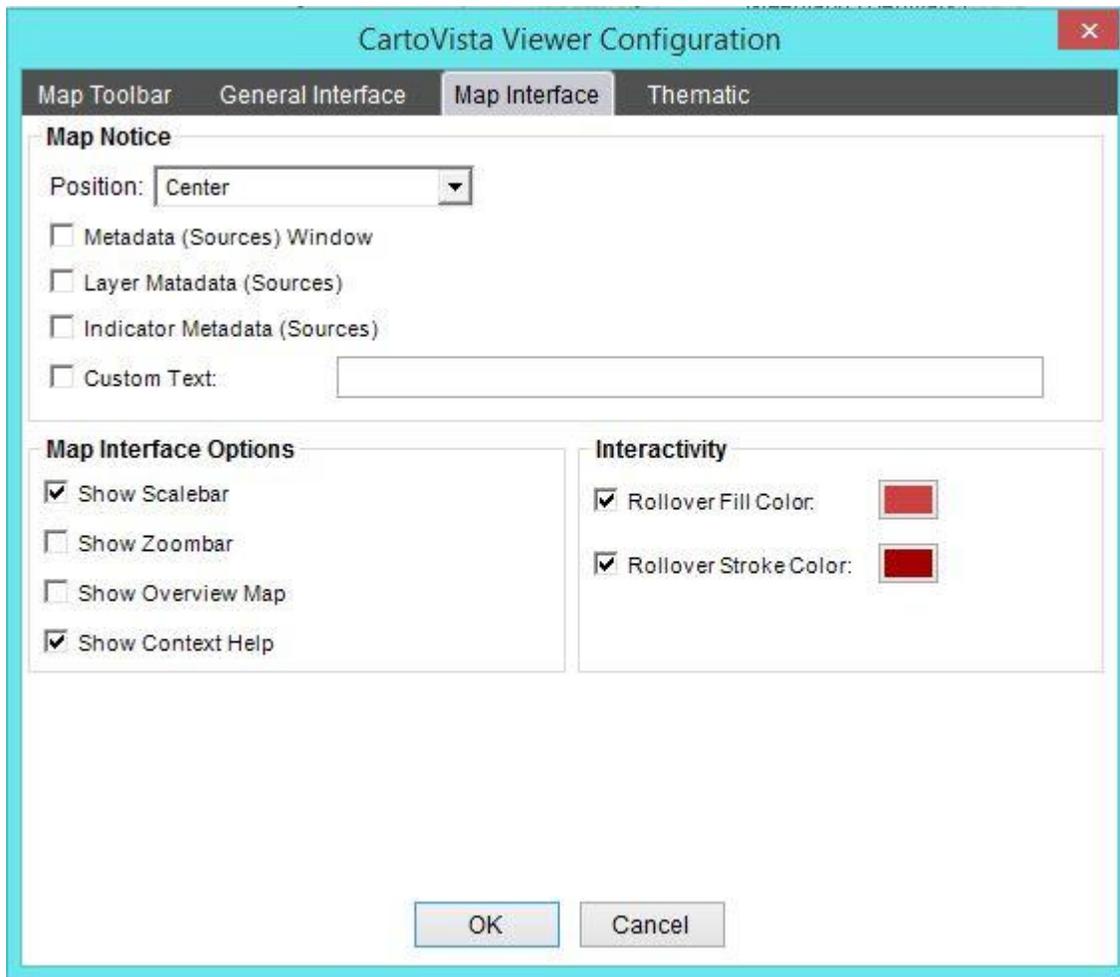


View as Data Table: To view the indicator in a data table.

Appearance

It is now possible to change the look and feel for the CartoVista application, choosing one of the following style: White, Black, Earth and Blue.

Map Interface



Map Notice

The Map Notice is text that appears at the bottom of the map and contains information about the source, copyright and thematic data sources.

Position: Positions the text at the bottom of the map either Left, Center or Right.

Metadata (Sources) Window: When checked, turns the data source text into a button that opens a dialog showing all data source information. If unchecked, the data will be displayed at the bottom of the map, one after the other depending on which sources are made available.

Layer Metadata (Sources): When checked, automatically includes Map Files sources logged in the Map File General Properties, for the layers included in the map.

Indicator Metadata (Sources): When checked, automatically includes information about the data sources used in the thematic analyses displayed.

Custom Text: When checked, includes the User specified text in the Map Notice.

Map Interface Options

- **Show Scalebar:** Check to display the Scalebar at the bottom left corner of the application.



- **Show Zoombar:** Check to display a vertical zoom bar for zooming in and out in the map window.



- **Show Overview Map:** Check to display the overview window at the top right corner of the map.



- **Show Context Help:** Check to allow access to contextual help; this will add a question mark at the top right corner of each dialog box.

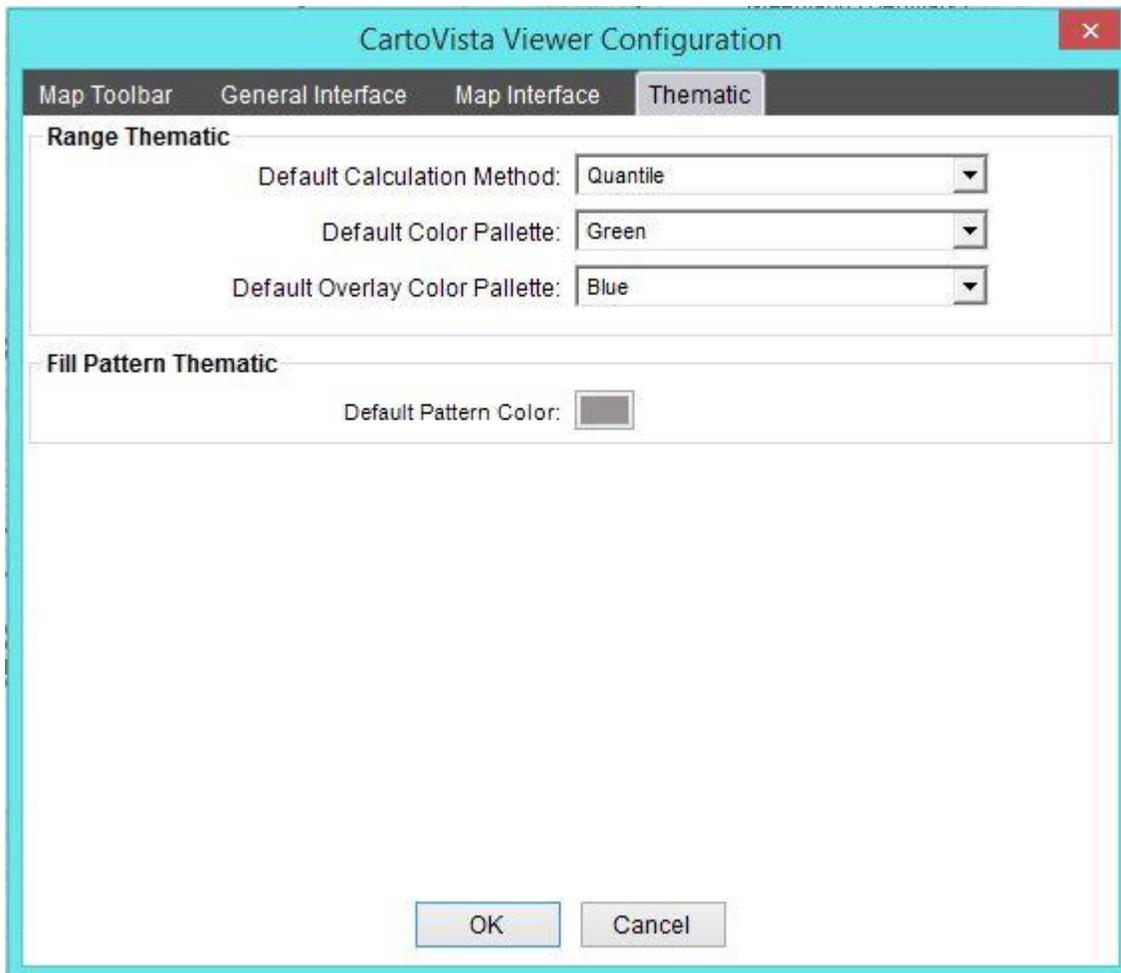
Interactivity

Rollover Fill Color: Check this option to enable a fill rollover effect. Whenever the mouse is over a geographic object that is in an interactive layer, the object's fill will turn the color selected from the color selection button.

Rollover Stroke Color: Check this option to enable a stroke rollover effect. Whenever the mouse is over a geographic object that is in an interactive layer, the object's fill will turn the color selected from the color selection button.

For more information on Interactive Layers see section on [Interactivity and Thematics Tab](#).

Thematic



Range Thematic

Default Calculation Method: You can choose the classification method used to calculate the default ranges by choosing from this drop down list. The following methods are available:

Quantiles	A range classification method that distributes a set of values into groups that contain an equal number of values. This method places the same number of data values in each class and will never have empty classes or classes with too few or too many values. It is attractive in that this method always produces distinct map patterns.
Jenks	A range calculation method (also referred to as Natural Breaks Classification method) designed to determine the best arrangement of values into different classes. This is done by seeking to minimize each class's average deviation from the class mean, while maximizing each

	class's deviation from the means of the other groups. In other words, the method seeks to reduce the variance within classes and maximize the variance between classes.
Equal Ranges	A calculation method that simply divides records across ranges of equal size.

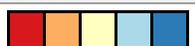
Default Color Palette: You can choose the default color palette for ranges thematic analysis. The following options are available:

Color Palette	Name
	Green
	Orange
	Blue
	Purple
	Red
	Magenta
	Yellow
	Grey
	Green-Yellow
	Green-Blue
	Red-Orange
	Red-Purple
	Blue-Purple
	Blue-Green
	Purple-Blue
	Purple-Red
	Blue-Green-Yellow
	Red-Orange-Yellow
	Brown-Orange-Yellow
	Green-Blue-Purple
	Orange-Purple

	Red-Blue
	Red-Yellow-Blue
	Red-Yellow-Green
	Spectral

Default Overlay Color Palette: You can choose the default range color palette for overlay themes. The following options are available:

Color Palette	Name
	Green
	Orange
	Blue
	Purple
	Red
	Magenta
	Yellow
	Grey
	Green-Yellow
	Green-Blue
	Red-Orange
	Red-Purple
	Blue-Purple
	Blue-Green
	Purple-Blue
	Purple-Red
	Blue-Green-Yellow
	Red-Orange-Yellow
	Brown-Orange-Yellow
	Green-Blue-Purple

	Orange-Purple
	Red-Blue
	Red-Yellow-Blue
	Red-Yellow-Green
	Spectral

Fill Pattern Thematic

Default Pattern Color: to define the default color used to display patterns. The user can change the color afterwards using the Edit Style Menu.



Layer Control

Each CartoVista Publisher map includes an integrated layer control, which displays the list of layers in the map.



The layer tree contains one node for each layer in the Map Window. Layers that have style settings assigned to them have sub-nodes that depict the style settings in use. This can be either a single <<Default>> style, that will be applied to all objects in the Map File, or multiple nodes with one node for each unique identifier in the Map File's unique identifier column. Style nodes will display a visual representation of the style assigned to the identifier.

NOTE: The styles of layers in a Map Window are completely independent from the Map File Manager. Any changes you make to the style of a map layer will NOT be reflected in the Map File that was used to create the layer from the Map File Manager.

The Layer Control will alert you if the source geographic data for one of the layers is missing. Layers that are missing their geographic data source are highlighted in yellow. The Map will still display, with the caveat that the missing layer is not drawn. To correct the file path of a Layer, click on the layer node and use either of the Locate or the Locate Main Folder menu options. See section on [Managing Missing Data](#) for more information on locating missing layers.

Layer Control Icons

The layer control includes icons for each map layer to help you quickly identify important properties of the layer. The Visibility and Labels icon also allow you to toggle the properties without having to use the Layer Control Dialog.

Visibility Icons

This icon indicates if the map layer is visible or not. Clicking the icon will toggle the visibility on or off.

	Layer is visible
	Layer is normally visible, but the layer is currently not visible due to the scale of the map and Visibility Range restrictions. See Visibility Ranges Tab in Layer Properties .
	Layer is NOT visible.

Labels Visibility Icons

This icon indicates if the layer’s labels are visible or not. Clicking the icon will toggle the visibility on or off.

	Labels are visible.
	Labels are normally visible but the labels are currently not visible due to the scale of the map and Visibility Range restrictions. See Visibility Ranges Tab in Layer Properties .
	Labels are NOT visible.

NOTE: If labels are not yet setup, clicking on the icon to turn them on will automatically select the first column to be the label column.

Layer Types and Icons

This icon indicates the layer’s base geographic data type. If the icon is colored, interactivity has been enabled for the layer.

	Polygon layer
	Polygon layer with interactivity activated
	Polygon layer with filtering
	Polygon layer with interactivity activated and filtering
	Polyline layer
	Polyline layer with interactivity activated
	Polyline layer with filtering
	Polyline layer with interactivity activated and filtering
	Point layer
	Point layer with interactivity activated

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	Point layer with filtering
	Point layer with interactivity activated and filtering
	Annotation layer
	Annotation layer with interactivity activated
	Raster (image) layer from a file
	Raster (image) layer from a WMS Server
	Raster (image) layer from a Tile Server

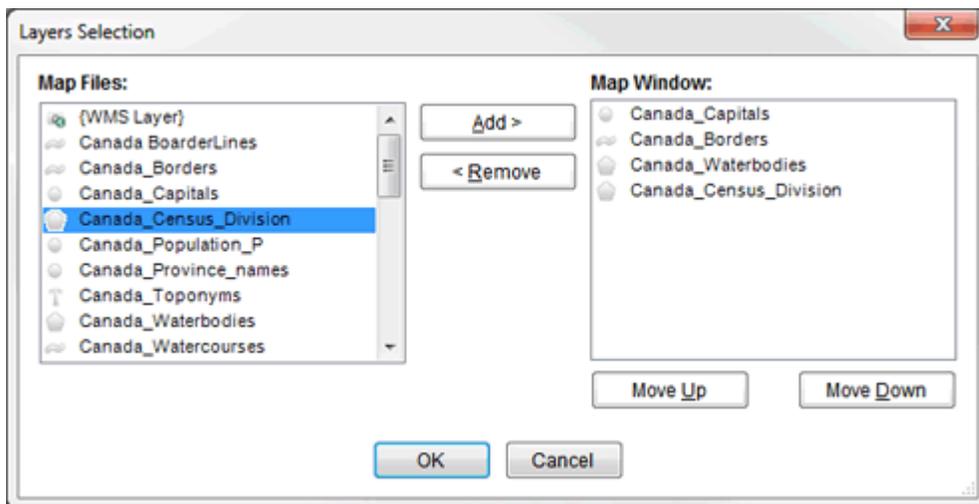


Changing Map Layers

Once a Map Window has been created, it is still possible to add, remove or reorder the layers.

Using the Layer Selection Dialog

By right clicking on the Map Layers node in the Layer Control, you can access the Layers Selection dialog from the popup menu that appears. You can use this dialog to add, remove, reorder and rename layers. For more information see section on [Layer Selection Dialog](#).



Using Drag and Drop

You can add more layers to the Map Window by dragging and dropping one or more Map Files from the Map File Manager. You can drop the Map Files into either the Layer Control or the Map Display area.

You can also add more layers to the Map Window by dragging and dropping one or more Layers from another Map Window directly into the Layer Control.

Where layers that are added by drag and drop will be inserted into the existing map will depend on where they are dropped.

If you drop outside of the Layer nodes (anywhere in the Layer Control), or onto the Map Layers node, the layers will be inserted based on their data type. Text

(Annotation) layers will always appear as the topmost layers. Other layer types will be inserted above the first layer of a similar type or above the first layer of the next layer type. Refer to Layer Types and Icons to determine the layer type order.

If you drop inside the Layer nodes (between 2 Layer nodes), the layers will be inserted above the layer you have dropped onto. A black insert bar will appear in the Layer Control to visually indicate where the layers will be inserted.

NOTE: If a new layer is added via drag and drop with the same name as an existing layer, the new layer's name will have an _2 appended. (Or _3, or _4 depending on the existing layer names.)

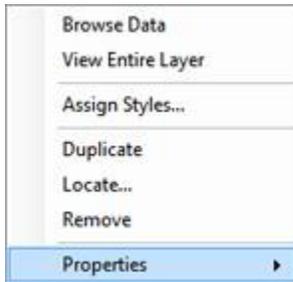
You can also reorder the layers of a Map Window using drag and drop. Simply select it the layer control and drag it to the desired location.

NOTE: Once a layer has been added to the Map Window, changes you make to the layer properties and styles do NOT change the properties of the source Map File in the Map File Manager. This allows you to customize your map files within a Map Window as needed. If you want to make changes to a Map File that will be persisted to other maps, make the changes in the Map File Manager.



Layer Actions

When you right click on a Layer's node, a contextual menu is displayed. Some menu items may not be present depending on the type of Layer.



Browse Data: This option is available for Annotation, Point, Polyline and Polygon layers. It allows you to view the data attached to the geographic objects. For more information about browsing data see section [Browsing Map File Data](#).

View Entire Layer: Sets the current Map Window's view to the extent of the layer.

Assign Styles: This option is available for Point, Polyline and Polygon layers. It allows you to specify how the geographic objects will be displayed in the Map Window. For more information about assigning styles, see section [Assigning Styles to Features](#).

Duplicate: This option creates a new layer in the map window that is an exact duplicate of the selected layer.

Locate: This option allows you to point the layer to a different geographic data source file, or to update the information if the geographic data source file has been modified. For more information on locating the geographic data source, see section on [Managing Missing Data](#).

Locate Main Folder: This option allows you to point multiple layers to different geographic data source files all at once by specifying a root directory for all the source files.

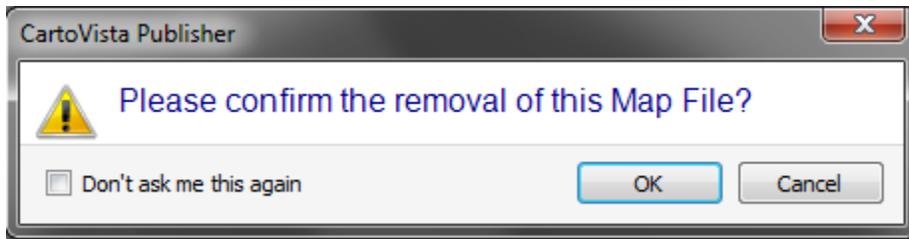
Remove: This option allows you to remove a layer from the Map Window. It does not delete the underlying geographic source file.

It is also possible to remove Map Files using the Delete key from the keyboard.

NOTE: You cannot remove the last layer from a Map Window

New Confirmation Dialogs

A confirmation dialog box is now launched when you remove a Layer from the Layer Control, a Map File from the Map Source Manager or a Data File from the Data File Manager. A "Do not ask me again" option is available within the dialogue to turn off the use of the launched dialog. These new confirmation dialogs can be managed using the Tool > Preference > General Options Tab. 3 check boxes have been added so you can turn on/off the warning dialogs.



Properties: This option allows you to see the properties associated with a specific Layer. See section [Layer Properties](#) for more information.

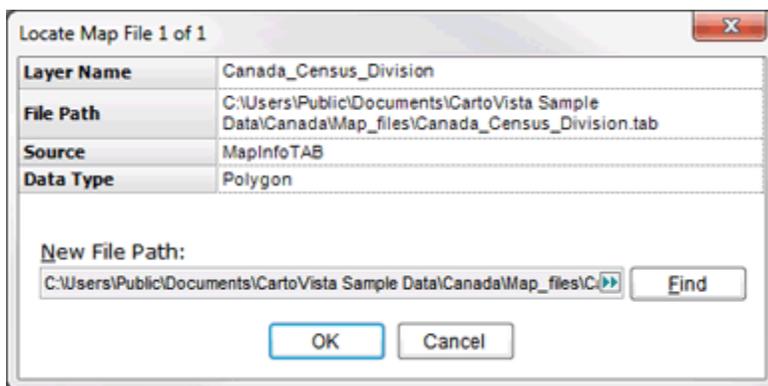


Managing Missing Data

The Layer Control will alert you if one of the layers that you have been working with are missing their source file. Layers that are missing are highlighted in yellow in the Layer Control.

To correct the location of a Layer that is missing, click on the Layer and use the Locate menu options.

When you click on locate, the Locate Data File Dialog is displayed.



Use the Find button to locate the missing file and click on OK.

NOTE: You can use the Locate action to update a Layer if the source data has changed its column structure. Locating a Layer when this has happened will result in the list of columns available within the Layer to be updated.



Layer Properties

The Layer Properties Dialog allows you to see and modify all of the properties associated with the Layer included in a Map Window.

The general information about the name, visibility and format

The styles

The filtering

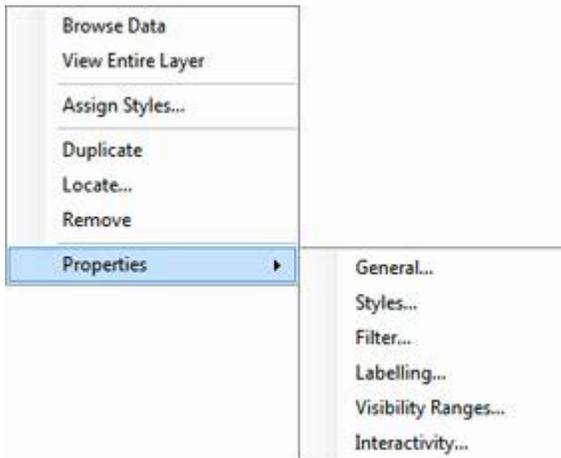
The labelling

The visibility ranges for both the layer and the labels

The interactivity and thematic settings

You can use one of the following methods to access the Layer Properties Dialog within a Map Window:

1. Double click on the Layer node in the Layer Control
2. Right click on the Layer node in the Layer Control and chose one of the options in the Properties' submenu.

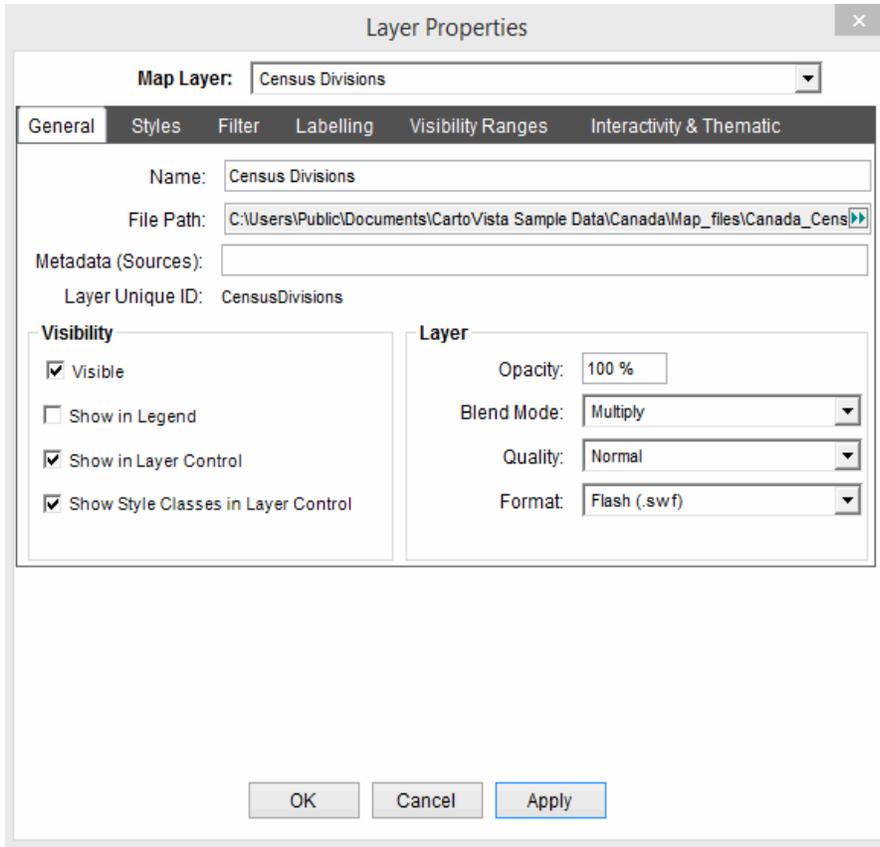


This will take you directly to that tab in the Layer Properties Dialog.

NOTE: Not all tabs are available for all layer types.

General Tab

The General Tab displays basic information about the layer and allows the user to set the visibility, as well as the opacity, the blend mode, the quality and the output format of the layer.



Name: This is an editable property. You can specify any name you want for the layer. To edit the name, type in the name box. Names must be unique within the Map Window.

File Path: The path to the GIS file providing the feature data. This field cannot be changed, but the path can be copied/pasted elsewhere.

Layer Unique ID: A Unique ID assigned to this layer (the unique ID is usually the name of the source file). This cannot be changed, but the label can be copied/pasted elsewhere.

Visibility

Visible: The map layer visibility. Click on the check box to make the layer visible or invisible. By default, this option is checked.

Show in Legend: This option controls if the map layer will be shown in the CartoVista legend or not. By default, this option is unchecked and map layers are not shown in the legend.

NOTE: This option is not available for Annotation and Raster (all types) layers.

Show in Layer Control: This option controls if the map layer will be shown in the CartoVista layer control or not. By default, this option is checked.

Show Style Classes: This option controls if the classes defined in the map layer will be shown in the CartoVista layer control or not. By default, this option is checked. The style classes will be set in the Style Tab.

NOTE: This option is not available for annotations, raster layers, tiles and WMS layers.

Layer

Opacity: The opacity of the map layer. Use this property to set the map layer opacity (in percentage) from 0 (Transparent) to 100 (Fully Opaque).

Blend Mode: The following blend modes are available:

Blend Mode	Description
normal	The display object appears in front of the background. Pixel values of the display object override those of the background. Where the display object is transparent, the background is visible.
layer	Forces the creation of a transparency group for the display object. This means that the display object is pre-composed in a temporary buffer before it is processed further. This is done automatically if the display object is pre-cached using bitmap caching or if the display object is a display object container with at least one child object with a blendMode setting other than BlendMode.NORMAL.
multiply	Multiplies the values of the display object constituent colors by the colors of the background color, and then normalizes by dividing by 0xFF, resulting in darker colors. This setting is commonly used for shadows and depth effects. For example, if a constituent color (such as red) of one pixel in the display object and the corresponding color of the pixel in the background both have the value 0x88, the multiplied result is 0x4840. Dividing by 0xFF yields a value of 0x48 for that constituent color, which is a darker shade than the color of the display object or the color of the background.
screen	Multiplies the complement (inverse) of the display object color by the complement of the background color, resulting in a bleaching effect. This setting is commonly used for highlights or to remove black areas of the display object.
lighten	Selects the lighter of the constituent colors of the display object and the color of the background (the colors with the larger

	<p>values). This setting is commonly used for superimposing type.</p> <p>For example, if the display object has a pixel with an RGB value of 0xFFCC33, and the background pixel has an RGB value of 0xDDF800, the resulting RGB value for the displayed pixel is 0xFFF833 (because 0xFF > 0xDD, 0xCC < 0xF8, and 0x33 > 0x00).</p>
overlay	<p>Adjusts the color of each pixel based on the darkness of the background. If the background is lighter than 50% gray, the display object and background colors are screened, which results in a lighter color. If the background is darker than 50% gray, the colors are multiplied, which results in a darker color. This setting is commonly used for shading effects.</p>
hardlight	<p>Adjusts the color of each pixel based on the darkness of the display object. If the display object is lighter than 50% gray, the display object and background colors are screened, which results in a lighter color. If the display object is darker than 50% gray, the colors are multiplied, which results in a darker color. This setting is commonly used for shading effects.</p>
difference	<p>Compares the constituent colors of the display object with the colors of its background, and subtracts the darker of the values of the two constituent colors from the lighter value. This setting is commonly used for more vibrant colors.</p> <p>For example, if the display object has a pixel with an RGB value of 0xFFCC33, and the background pixel has an RGB value of 0xDDF800, the resulting RGB value for the displayed pixel is 0x222C33 (because $0xFF - 0xDD = 0x22$, $0xF8 - 0xCC = 0x2C$, and $0x33 - 0x00 = 0x33$).</p>
invert	<p>Inverts the background.</p>
alpha	<p>Applies the alpha value of each pixel of the display object to the background. This requires the blendMode setting of the parent display object to be set to BlendMode.LAYER. For example, in the illustration, the parent display object, which is a white background, has blendMode = BlendMode.LAYER.</p>
erase	<p>Erases the background based on the alpha value of the display object. This requires the blendMode of the parent display object to be set to BlendMode.LAYER. For example, in the illustration, the parent display object, which is a white background, has blendMode = BlendMode.LAYER.</p>

NOTE: Of all of the Blend modes only Alpha and Layer will not have a visible effect in the Publisher. In order to see the effect of these two blend modes, you must publish the map and use the Viewer.

Quality:

Quality: Defines how accurate the vector output will be for a map layer. The publishing process simplifies map features by eliminating duplicate nodes in polygon and polyline layers. This setting affects the node reduction so that at a higher quality, there is less node reduction.

The quality can be:

- Normal
- Improved
- Enhanced
- High
- Highest

NOTE: If the layer is meant to be published at a large view (small scale), meaning without too many zoom-in based on the visibility ranges, then the Normal quality should be appropriate. If you would like to enable zooming a lot (large scale), the increasing the quality will produce better cartographic results when zoomed in.

ADVISE: Aside from setting the quality in the CartoVista Publisher, generalizing your GIS data remains important, depending on what you want to publish.

Format: You have the option to choose the output format. Two choices are currently available: Flash (.swf) and Geometry (.shp).

The following tables are explaining some of the differences between the two formats Flash (.swf) and Geometry (.shp)

Initial loading time in the CartoVista Viewer

Flash	It is not possible to confirm that a format is faster than the other.
Geometry	

Maximum number of objects

Flash	Around 5 000 polygons.
Geometry	Around 15 000 polygons.

NOTE : In summary, the limit in the number of vector objects will be depend on the acceptable loading time in the CartoVista Viewer.

When preparing a map for CartoVista, it is important to remember the following:

Using a Tile Base Map will limit the usage of vector data.

The CartoVista Server component has been developed to overpass the limitations in the number of vector objects. The CartoVista Server will store data on the server and render information based on the extent of the view, which will also limit the loading time.

For more information on the CartoVista Server:
<http://cartovista.com/cartovistaserver.aspx?language=en>

Displaying the map when panning inside the CartoVista Viewer

Flash	The view is constantly refreshed in the CartoVista Viewerh.
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Geometry	The view is refreshed from time to time in the CartoVista Viewer
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Additional visual effects (Style Tab)

Flash	Additional visual effects are not available for Flash layers
Geometry	Drop Shadow, Outer Glow and Inner Glow

The screenshot shows the 'Layer Properties' dialog box for a map layer named 'Census Divisions'. The 'Styles' tab is selected. Under 'Style Property', 'Default Style' is chosen with a yellow color swatch. 'Coloring Scheme' is set to 'Identifier Column: UNIQUE_ID' with 'Show Unassigned Identifiers' checked. The 'Effects' section, highlighted with a red box, contains the following settings:

- Drop Shadow: Color: [Black swatch], Knockout
- Outer Glow: Opacity: 50 %, Size: 3 px
- Inner Glow: Strength: 100 %, Distance: 3 px, Angle: 120 °

Buttons for 'OK', 'Cancel', and 'Apply' are visible at the bottom of the dialog.

File size

Flash	Really compact, smaller.
Geometry	Larger.

NOTE : the size of the output file has an impact on the upload time to deploy the application on the web server. It does not have such an impact on the download time within the CartoVista Viewer.

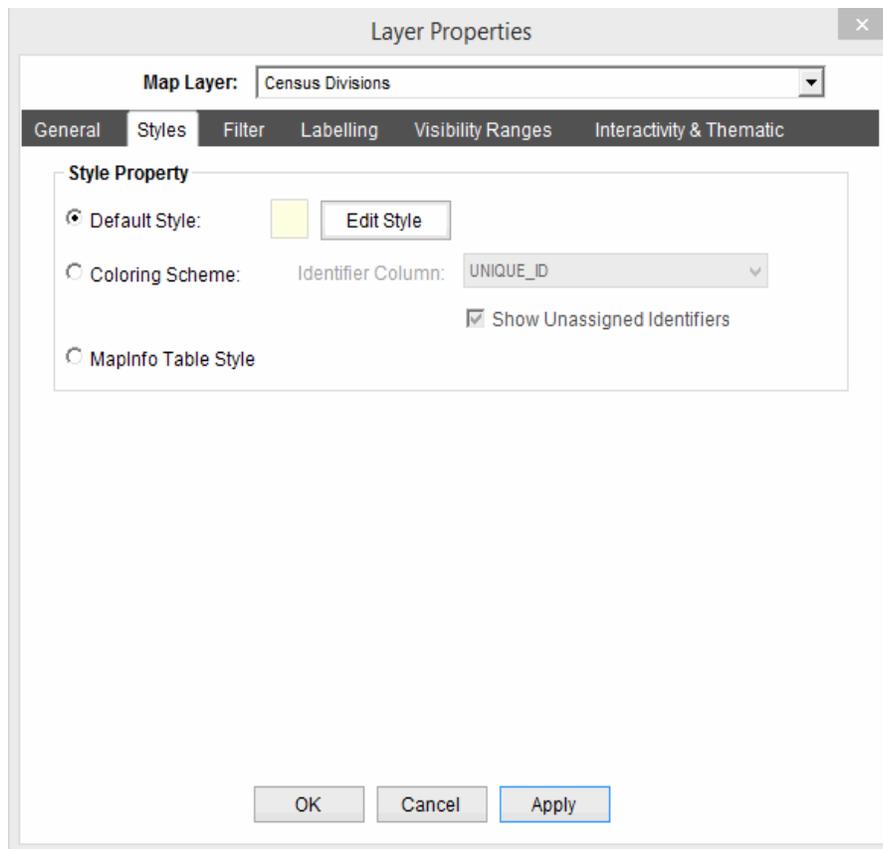
Compatibility with mobile devices (important in case of development of a CartoVista application with the mobile SDK)

Flash	Not compatible.
Geometry	Compatible. This format is the one to be use for a CartoVista mobile deployment.

Styles Tab

The Styles tab provides information on how to render styles for the map layer.

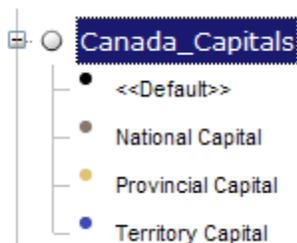
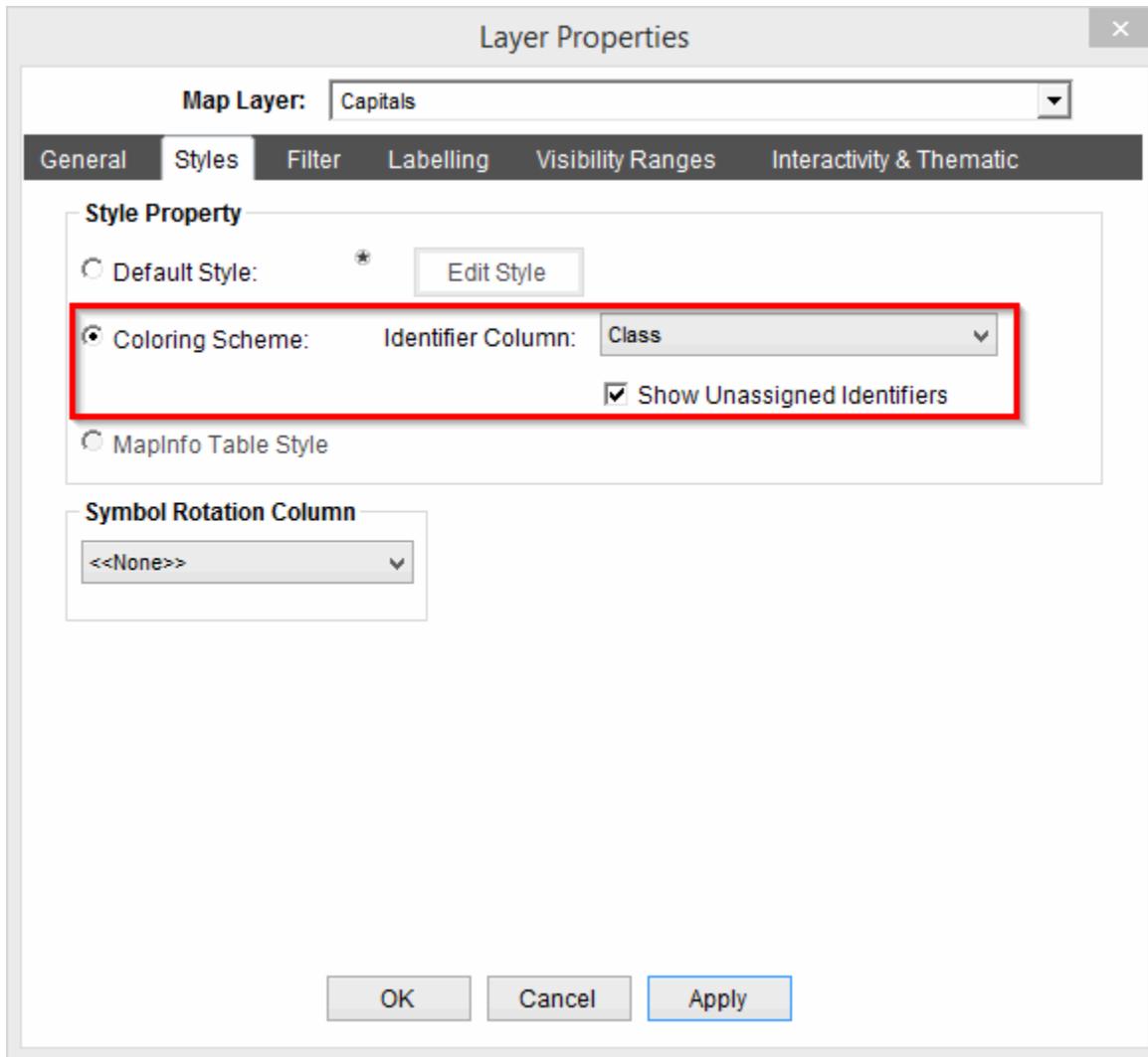
The content of the dialog will depend on the output format defined in the general parameters (General Tab), and the type of layer on which the style is applied.



Styles Property

This section controls how styles are displayed for Point, Polyline and Polygon Map Files. There are three ways in which styles can be displayed:

1. **Default Style:** If this option is checked, a single style will be used for all geographic objects of the layer. To change the default style, click on the Edit Style Button.
2. **Coloring Scheme:** If this option is checked, a style will be applied to the geographic objects based on the value in the specified attribute column. Each unique value within the column will have a unique style assigned automatically.



The styles applied on the layer, and the names can be modified afterwards. For more information on style assignment see [Assigning Styles to Features](#).

Show unassigned identifiers option

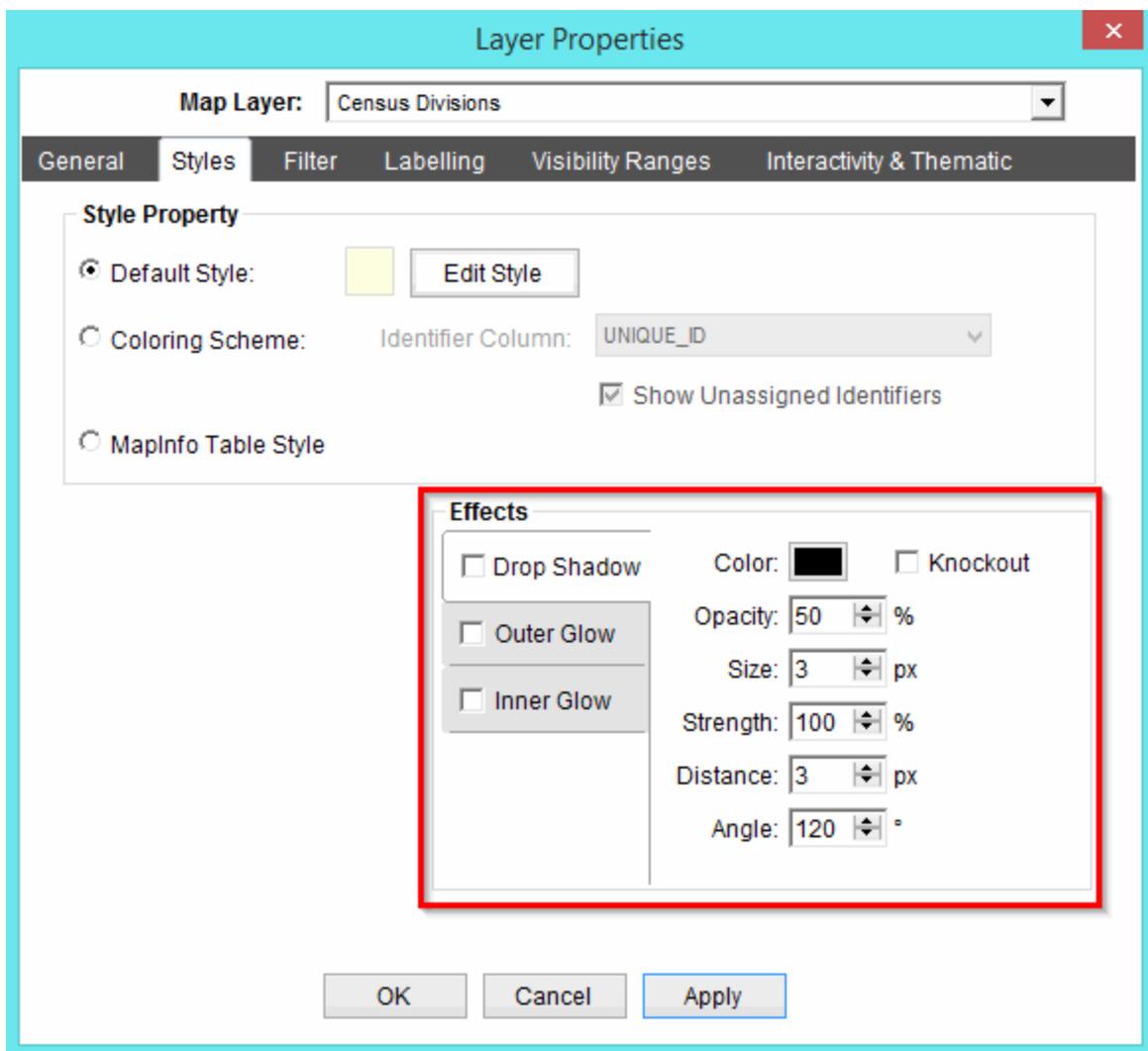
Choose this option to display all the unique identifiers, even if they have not been assigned a style. If this option is not selected, only identifiers with an assigned style (including identifiers auto-assigned by the default style) are displayed.

3. **MapInfo Table Style:** When this option is selected, the style information for each feature will be read directly from the information stored in the MapInfo Table. This option is only available when the source geographic data file is a MapInfo Table (.tab).

NOTE: Some of the MapInfo style options such as fill and stroke patterns are not supported by the CartoVista Publisher.

Effects

When the output format is Geometry (.shp), advanced graphic effects options are available.



Transparent Color (Raster)

This section controls how transparency are handled for the Raster, WMS and Tile Map Files.

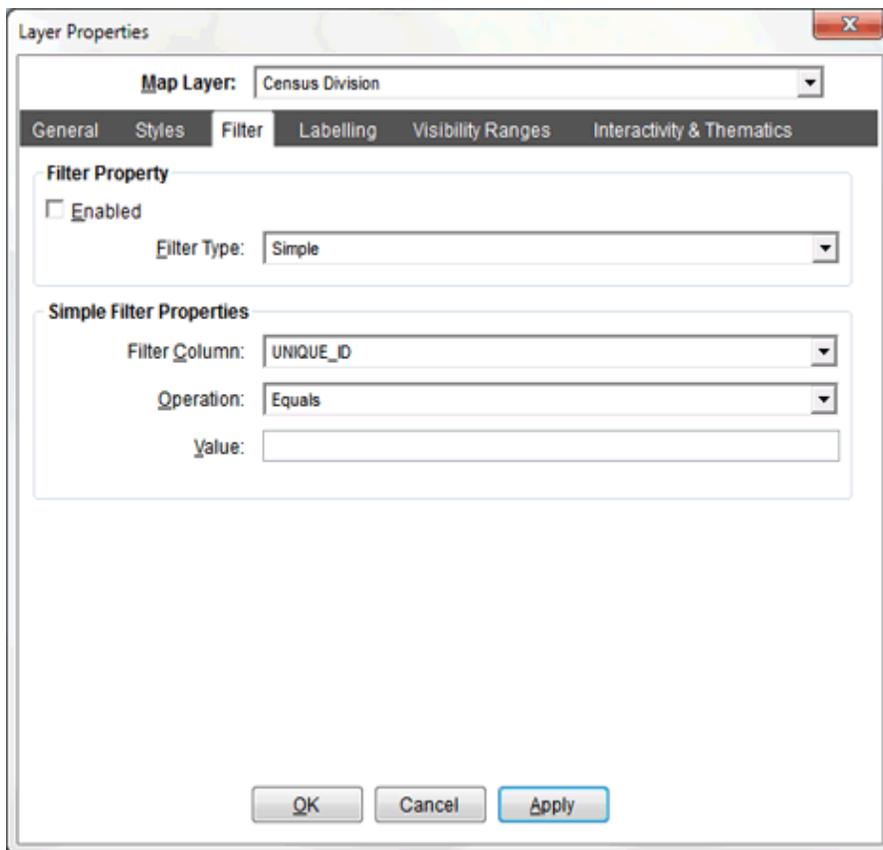
By selecting the “Enabled” checkbox, you can specify a specific color to be transparent. Click on the Color button to choose the specific color that will be transparent.

Symbol Rotation (Points)

For Point Map Files, a symbol rotation column can be configured. This setting allows the user to rotate the symbol for the point to a specific angle based on that object’s field entry in the user specified column.

Filter Tab

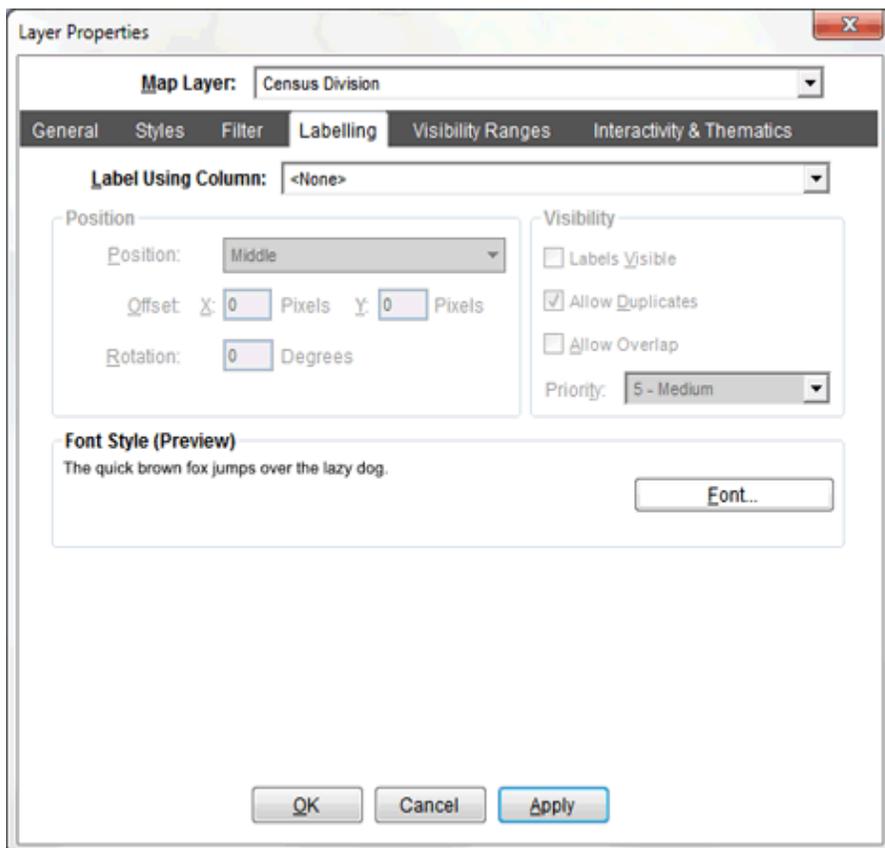
The Filter tab provides different options to filter geographic objects within a map layer.



For more information on setting filter options, see [Filtering Map File Data](#).

Labelling Tab

The labelling tab allows you to specify how map labels are rendered for a layer.



Standard Properties

Label Using Column

Choose the column to use for labelling .

Visibility

Labels Visible: Define if labels are visible or not. To make labels visible, enable the check box.

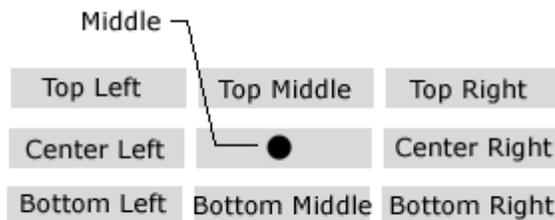
Allow Duplicates: This option controls if objects duplicate label names are allowed within a layer. For example, you may have a street layer with multiple segments having the same name (MAIN ST for example). If you want to label "MAIN ST" only once on the map, do not check this option. If you want to allow duplicate labels on the map, enable the check box.

Allow Overlap: This option controls if label overlaps are allowed for this map layer. When enabled, , label text can overlap other labels of the map. When disabled, map labels do not overlap.

Priority: The Priority option is used to define which labels are rendered first on the map. Each map layer can have a priority ranging from 1 (low) to 10 (high). By default, map layers have a priority of 5 (medium).

Position

Position: You can use this option to control the anchor point of the map label. You can choose from the following position options by selecting from the drop down list.



The text alignment for each line of a multi-line label will follow the Left, Middle or Right position defined by this setting.

An "Auto Placement" position is also available in the drop down list. This will attempt to place the label to the Center Right, but if the label cannot be placed there due to an existing label, the other positions will be tried until either an acceptable placement is found, or no placement is possible, in which case the label will not be displayed.

Offset X and Y: The offset X and Y option defines a distance in pixels to offset the position the label in relationship to the feature. Specify a value in pixels to enable this option for both X (Horizontal) and Y (Vertical) positions.

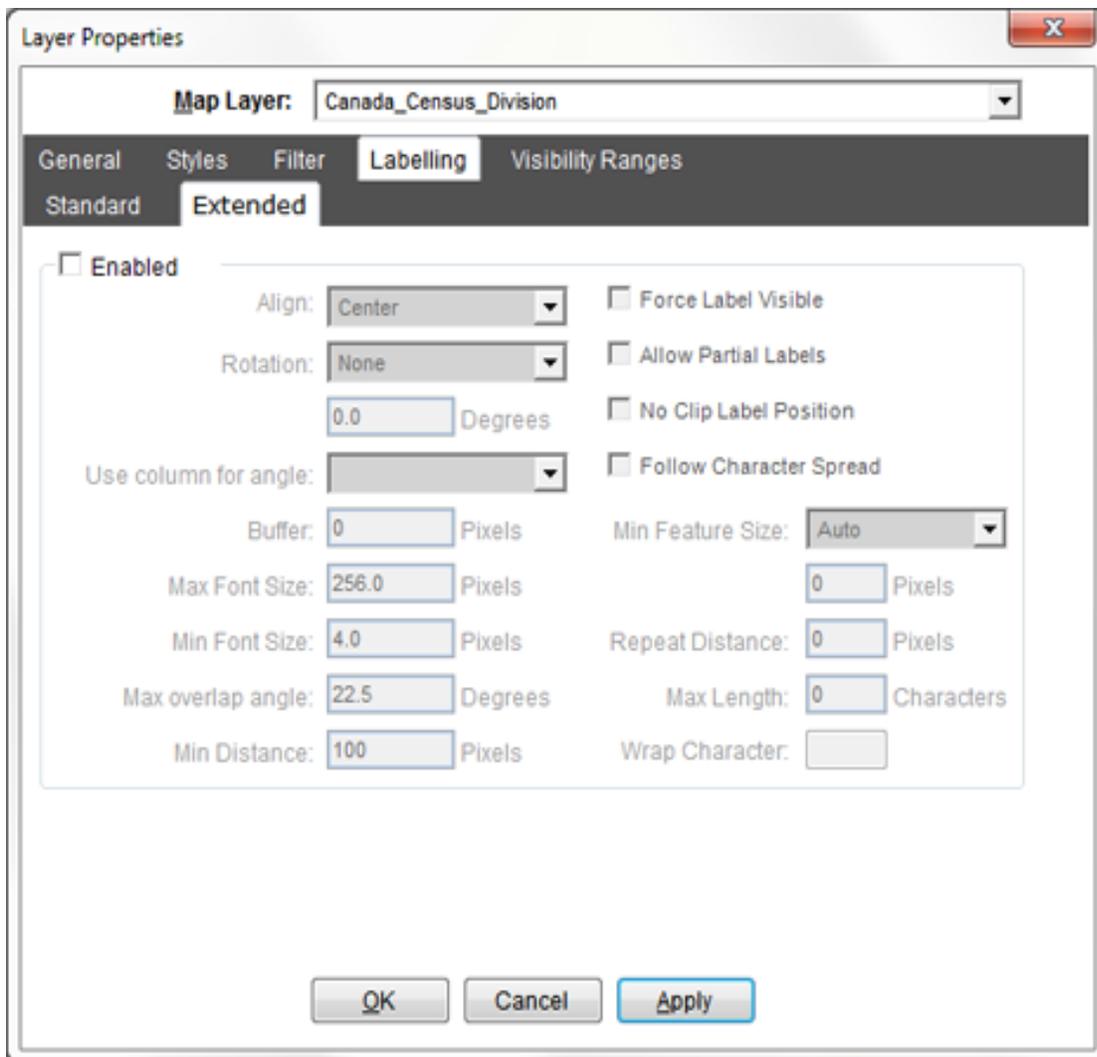
Rotation: Use this option to specify a rotation angle for the map labels. Enter an angle in degrees.

Font

To specify the font style setting for the label, click on the Font Button. See section on [Font Styles](#) in [Stylizing your map Files](#).

Labelling Tab (Extended Properties)

Extended labelling properties are available if you are creating a Tile Window. The Label tab will have two sub-tabs, "Standard", described above, and "Extended". The extended properties allow you to have even more control over how map labels are rendered for a layer.



Enabled: A global enablement for all properties in the extended tab. Check this option to use these properties.

Align: Specifies text alignment for multiline labels. When extended properties are not available, everything is always aligned Left..

Rotation: Specifies how labels will be rotated.

1. **None:** The label is not rotated.
2. **Double:** Sets a specific rotation for all labels. Use the text box under the drop down to specify the angle.
3. **Auto:** The rotation is calculated by the Map Window based on the linear feature.
4. **Follow:** Computes a curved label for appropriate linear features.

5. **Attribute:** Allows a feature's field value from a column to be used. The Use column for Angle dropdown specifies the column to use.

Buffer: A padding, in pixels around the labels. It is used to maintain spacing around the text to maintain readability. Other labels won't be placed into this space.

Max Font Size: The maximum font size to use when scaling text in the map.

Min Font Size: The minimum font size to use when scaling text in the map.

Max overlap angle: The angle threshold to use in filtering out ANGLE FOLLOW labels in which characters overlap (floating point value in degrees).

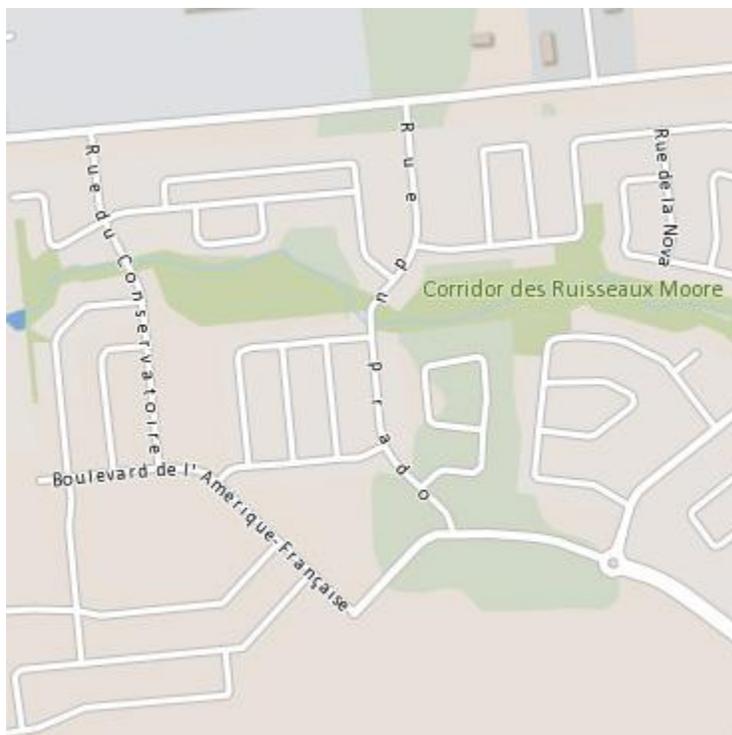
Min Distance: The minimum distance between duplicate labels in pixels.

Force Labels Visible: Forces labels to appear, regardless of collisions with other labels.

Allow Partial Labels: Permits labels to run off the edge of the map.

No Clip Label Position: Disables the clipping of shapes to the map extents when determining label anchor points. This avoids changes in label position as extents change between map draws.

Follow Character Spread: Labels along polylines will be spread out across the entire length of the polyline. The AUTO rotation option MUST be set to permit this option to work.



Min Feature Size: Determines how big a feature has to be before it will be labeled.

1. **Auto:** The feature must be bigger than the label.
2. **Integer:** Specifies the feature must be bigger than the size specified in the edit box (in pixels) below the dropdown. For line data the overall length of the displayed line is used, for polygons features the smallest dimension of the bounding box is used

Repeat Distance: The interval in pixels that a label will be repeated on every line of a multi-part line or polygon.

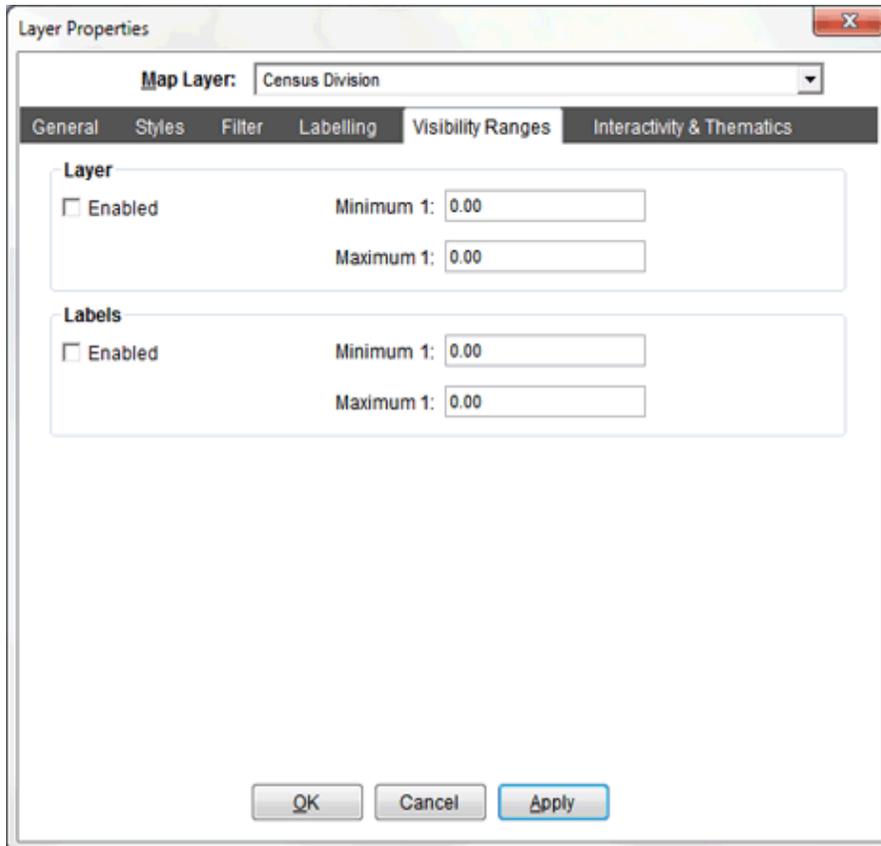
Max Length: When the Wrap Character is set, line breaks only occur after the defined number of characters.

Wrap Character	Max Length = 0	Max Length > 0	Max Length < 0
Set	Always wrap at wrap character	newline at the first WRAP character after MAXLENGTH characters	always break at exactly MAXLENGTH characters
Not Set	No effect	skip label if it contains more than MAXLENGTH characters	always break at exactly MAXLENGTH characters

Wrap Character: The character that represents an end-of-line condition in label text, thus resulting in a multi-line label.

Visibility Ranges Tab

The visibility settings are used to specify if the layer and/or labels for a layer are shown at a certain map scale. Enabling visibility ranges is very useful to provide appropriate data views for the layer. To enable visibility ranges, click on the check box to enable the option and specify minimum and maximum values.



Layer

The Layer settings apply to the layer as a whole, including the labels.

Enabled: When enabled, if the Map Window scale is not within the Minimum and Maximum values, the layer will not display. The layer visibility icon will change to  in the Layer Control.

Minimum: The minimum scale for which the layer is displayed. Below this scale the layer will not be visible (inclusive).

Maximum: The maximum scale for which the layer is displayed. At this scale and above the layer will not be visible (exclusive).

Labels

The Labels settings apply to only the labels (this option is available only if labels have been enabled in the Labeling Tab).

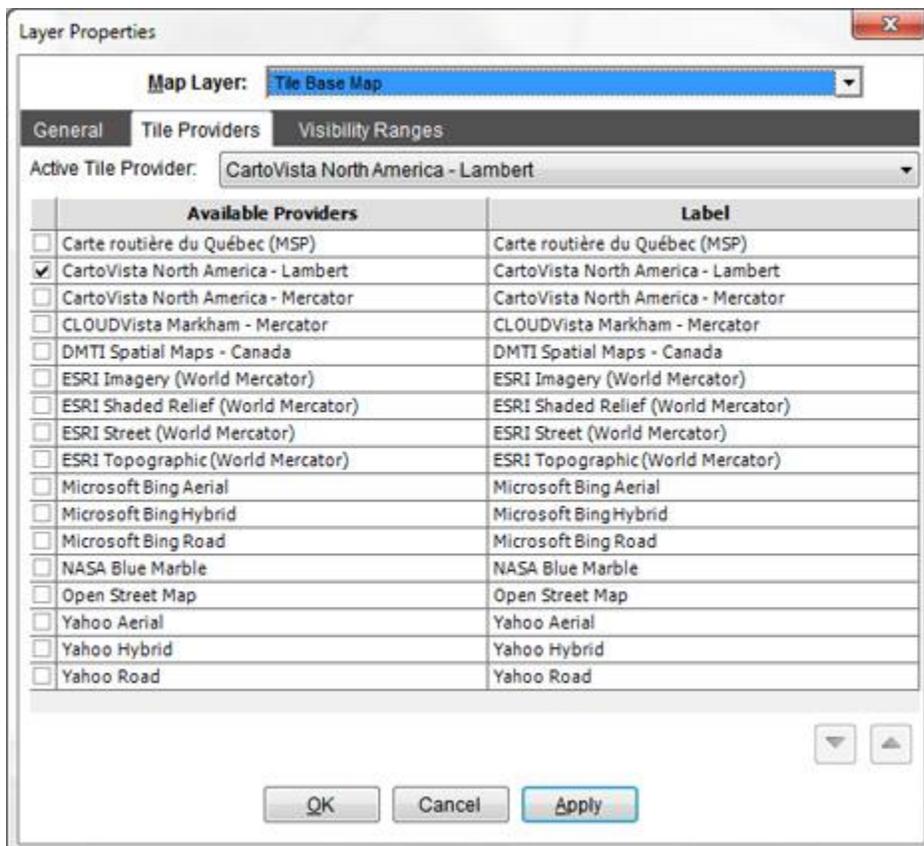
Enabled: When enabled, if the Map Window scale is not within the Minimum and Maximum values, the labels will not display. The layer label icon will change to  in the Layer Control.

Minimum: The minimum scale for which the labels is displayed. Below this scale the labels will not be visible (inclusive).

Maximum: The maximum scale for which the labels is displayed. At this scale and above the labels will not be visible (exclusive).

Tile Providers Tab

The tile providers tab allows you to specify the tile providers that are available in a tile layer and choose the default provider.



The available providers grid lists all the Tile Providers available in the Map Source Manager, plus any additional ones that were unique to this layer. Checking the checkbox next to the provider name will include the tile provider and it will be listed as a sub-node under the layer node in the layer control.

The Label column allows you to change the text that will appear to the end user in the Viewer's layer control.

Use the Active Tile Provider to set which of the selected tile providers is currently displayed in the Publisher, as well as which one will be automatically displayed when the map is loaded in the Viewer.

Interactivity and Thematics Tab

The interactivity and thematics tab allows you to specify the user's interactivity with the layer. There are five ways to make a layer interactive:

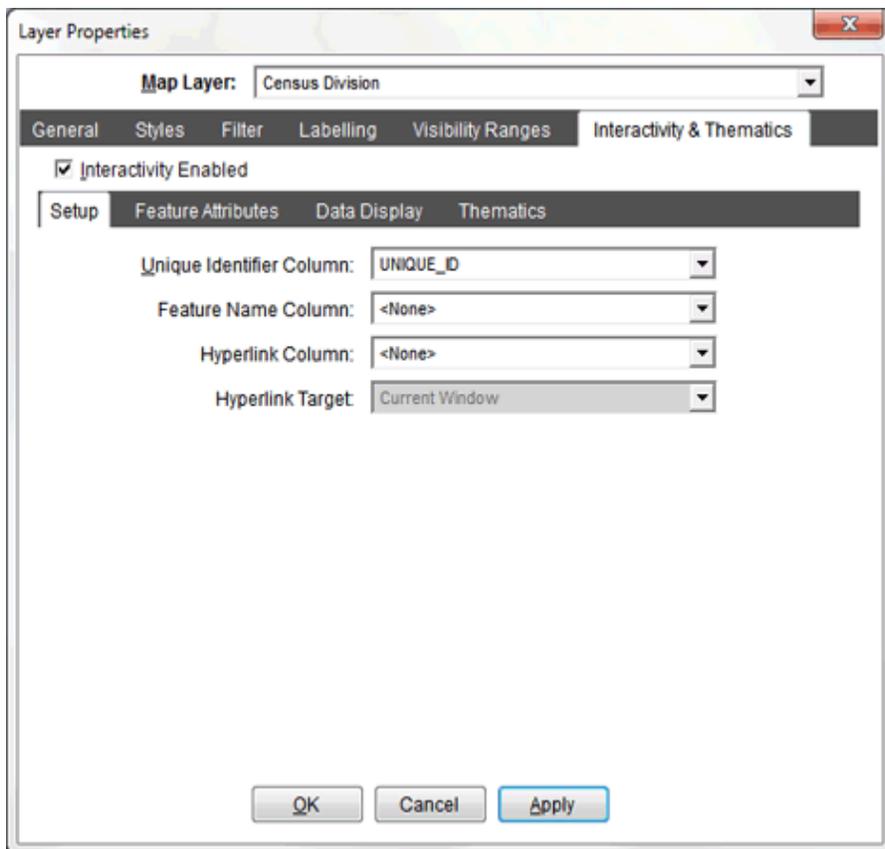
1. **Data Tips:** When you move the mouse over a geographic object in the layer, a data tip window will appear that contains information about the geographic object your mouse is over. When you move off a geographic object, the window closes.
2. **Information Dialog:** When you click in the Map with the Info Tool, the Info Tool Dialog appears containing information about all the geographic objects that lay under the mouse click.
3. **Hyperlink:** When you click on a geographic object with the Hyperlink Tool, the URL stored in the geographic object is opened. Hyperlinks can also be used to identify other maps to open in a "drill down" situation.
4. **Searching:** You can define a layer as searchable so that specific geographic objects can be located and zoomed to in the map.
5. **Thematic Analysis:** Thematic analysis allows you to display indicator data as either a style override on the layer, or as an overlay addition to the layer.

After checking the "Interactivity Enabled" check box, you will have access to the four additional tabs:

- Interactivity Setup
- Feature Attributes
- Data Display
- Thematics

Interactivity Setup

This tab should be setup first, as the remaining tabs depend on the unique identifier column that is set here.



Unique Identifier Column: This identifies the column in the source GIS data that contains the unique identifier for each record.

If you try to choose a column that does not contain a unique identifier for each record, you will be alerted that you cannot use that column.

If you do not have a column that contains unique identifiers, choose "<AUTO-GENERATE>" which will use the record's row number as its unique identifier.

NOTE: Thematic Analysis requires that a specific column be selected, and will not work with a unique identifier column of "<AUTO-GENERATE>".

Feature Name Column: This identifies the column in the source GIS data that contains the "feature name" for each geographic object. This name is the one that is most commonly included in the data-tip.

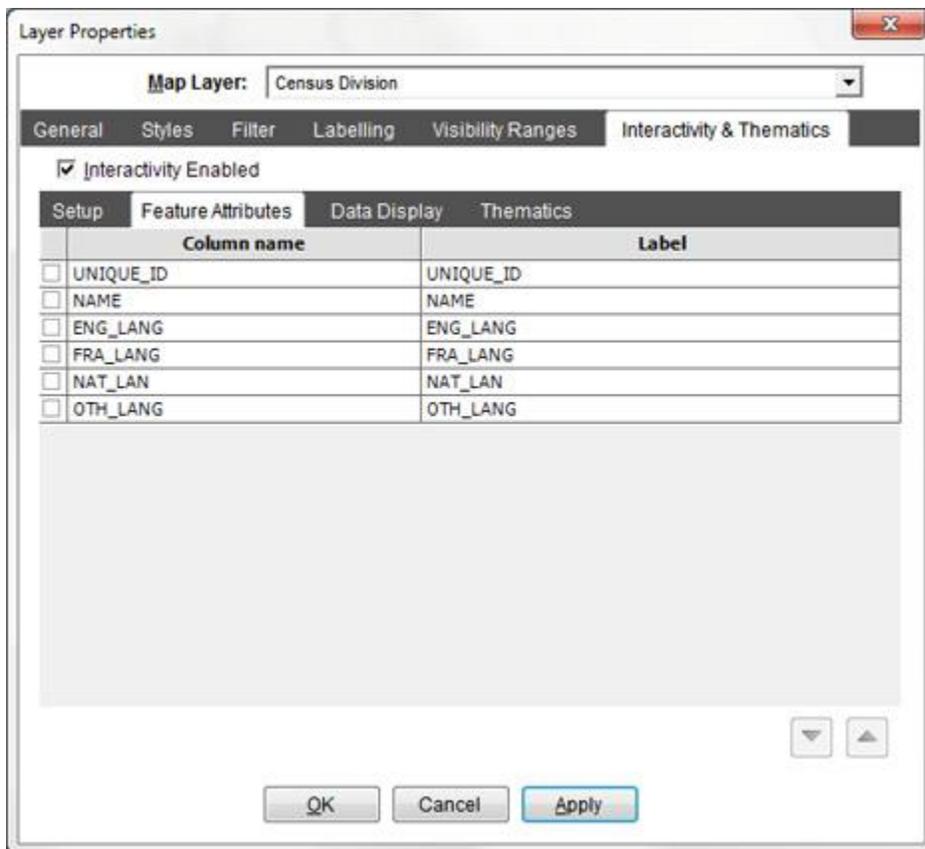
Hyperlink Column: This identifies the column in the source GIS data that contains a valid URL.

Hyperlink Target: This allows you to choose how the URL specified in the hyperlink column will be opened.

Target value	Description
Current Window	Open the hyperlink in the current window (replaces CartoVista).
Drill down	If the hyperlink is a CartoVista map, the linked map will be opened in the map window.
New Window	Opens the hyperlinks in a new browser window.

Feature Attributes

The feature attributes tab lets you define which columns in a layer's source GIS data are available as Attributes. Attributes are information attached to map features and are used in the display of Data Tips as well as the Info Tool and Selection and Search capabilities.



The tab displays all the columns that are available. Checking the checkbox next to the column name will include the columns' data when the map is published, and it will be available for use as a Data Display element.

The Label column allows you to change the text that will appear to the end user that identifies the column.

The ▼ and ▲ buttons at the bottom of the tab allow you to change the order of the columns.

NOTE: The Unique Identifier, Feature Name and any column used as a DataDisplay will be automatically checked. If the column is used in any of these ways, you will not be able to unselect it in this tab.

Data Display

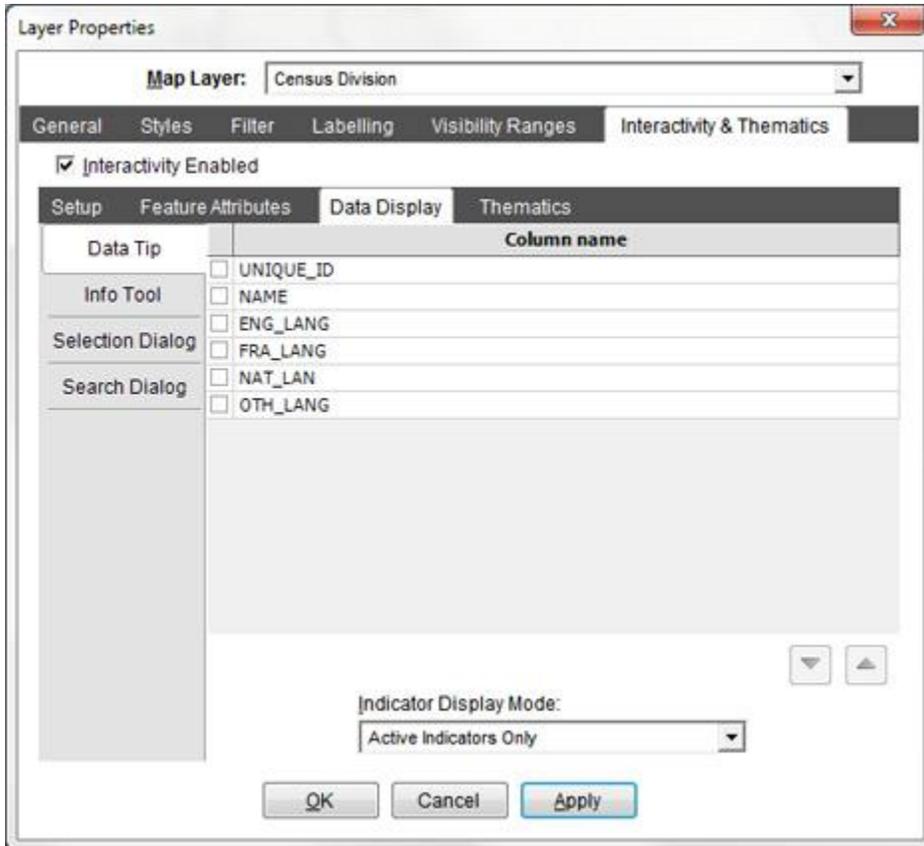
This Data Display tab will let you define which attributes of a geographic object will be displayed in one of the four ways in the Viewer:

Data Tip: Displayed in the rollover information bubble.

Info Tool: Displayed in the Info Window when using the Info Tool

Selection Dialog: Displayed in the Selection Dialog when a selection is made

Search Dialog: Available as a column in the Search Dialog when the Search tool is used.



Checking the checkbox next to the column name will include the column in the appropriate display. The label used to identify the data will be the label that was set in the Feature Attributes column.

If the column was not previously selected in the Feature Attributes tab, it will automatically be selected for you. You cannot uncheck a column that is checked in the Feature Attribute column unless it is not used in any Data Display option, or as the Unique Identifier or Feature Name.

The ▼ and ▲ buttons at the bottom of the tab allow you to change the order of the columns.

Indicator Display Mode: Use this drop-down to specify which indicators (if any) should be included in the Data Tip and/or Info Tool results.

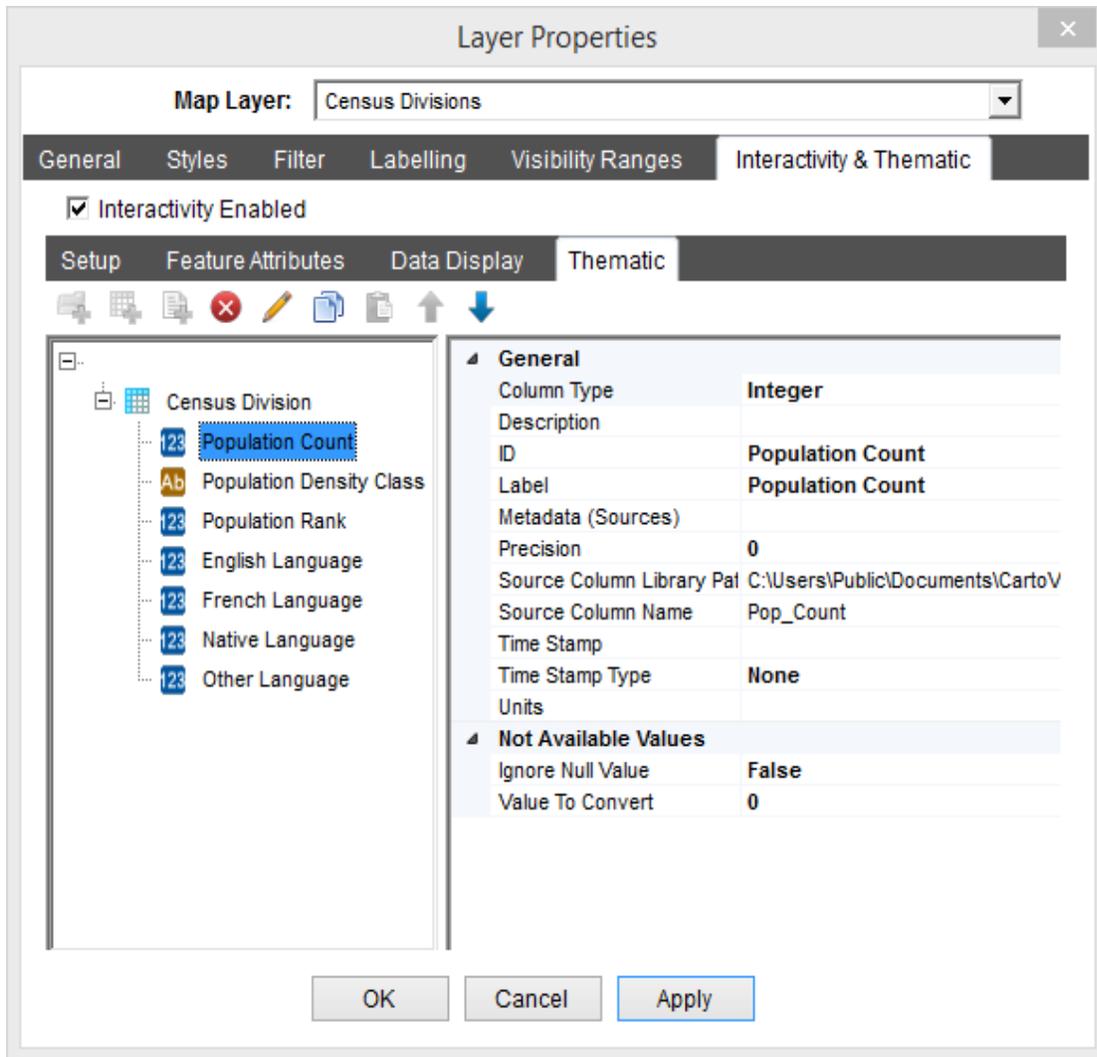
Indicator Display Mode:



1. **None:** No indicators will be displayed in the data tip / info tool.
2. **Active Indicators Only:** Only active indicators used in the current thematic analyses will be displayed in the data tip / info tool.
3. **All Indicators in Active Tables:** All indicators from the indicators tables used in the current thematic analyses will be displayed in the data tip / info tool.
4. **All Indicators:** All indicators linked to the layer will be displayed in the data tip / info tool.

Thematic

The Thematic tab will let you define the thematic data for this layer. The tab lets you work with both the data that is attached to the layer, and any additional data files that you may also have.



If you open this tab, and you do not have any categories or indicator tables defined, you will be automatically taken to the add indicator dialog, and a default indicator table will be created for you with the indicators you have selected.

For more information on toolbar in this tab, see the section on the [Thematic Layer Toolbar](#).

For more information on the properties of the various items displayed in this tab, see the section on [Thematic Layer Properties](#).



Setting Legend Options for Map Layers

When working with map layers in the layer control (or in the Map File Manager), the map layer styles are displayed in the tree when you expand a map layer. Each style attached to a layer is displayed.

○ USA Population

- <<Default>>
- 2
- 4
- 5
- 7

You can double click on the styles to configure what name is displayed in the CartoVista layer control and legend windows.

The Legend Text Box

Once you double clicked on a style, the Style dialog is displayed. Each Style dialog has an legend text box where you can enter text that represent the feature class.

Legend:

When you publish the map, the CartoVista Publisher uses the legend text to name the classes within the layer.

USA Population	<input checked="" type="checkbox"/>	<input type="checkbox"/>	100%
● From 10,000 to 25,000	<input checked="" type="checkbox"/>	<input type="checkbox"/>	100%
● From 25,000 to 50,000	<input checked="" type="checkbox"/>	<input type="checkbox"/>	100%
● From 50,000 to 100,000	<input checked="" type="checkbox"/>	<input type="checkbox"/>	100%
● 100,000 or more	<input checked="" type="checkbox"/>	<input type="checkbox"/>	100%



Creating Hyperlinks Between Maps

CartoVista maps can be organized as a hierarchy of maps to create effective drill-down navigation. Drill-down is a natural way to explore map data and understand links between geographies. When drilling-down from one level to another, CartoVista keeps your indicator variable selection, if applicable.

To set up a drill-down scenario in the Publisher, you need to link the appropriate maps by defining Hyperlink Target.

1) Setting up the column and hyperlink values

The first step is to add a column in the layer to store your hyperlinks. Those hyperlinks need to be named following a naming convention, using the MAPS folder and the name of the configuration file to load for the map.

For a map called USA, the following hyperlink value would apply:

- **Maps/USA/USAConfig.xml**

2) Choose the Hyperlink column and target

The second step is to define the Hyperlink Column and the Hyperlink Target to “Drill down” in the Layer Properties, Interactivity & Thematics Settings.

3) Publish Maps

The last step is to publish the maps: the main map, as well the drill-down maps, making sure to follow the naming convention above.

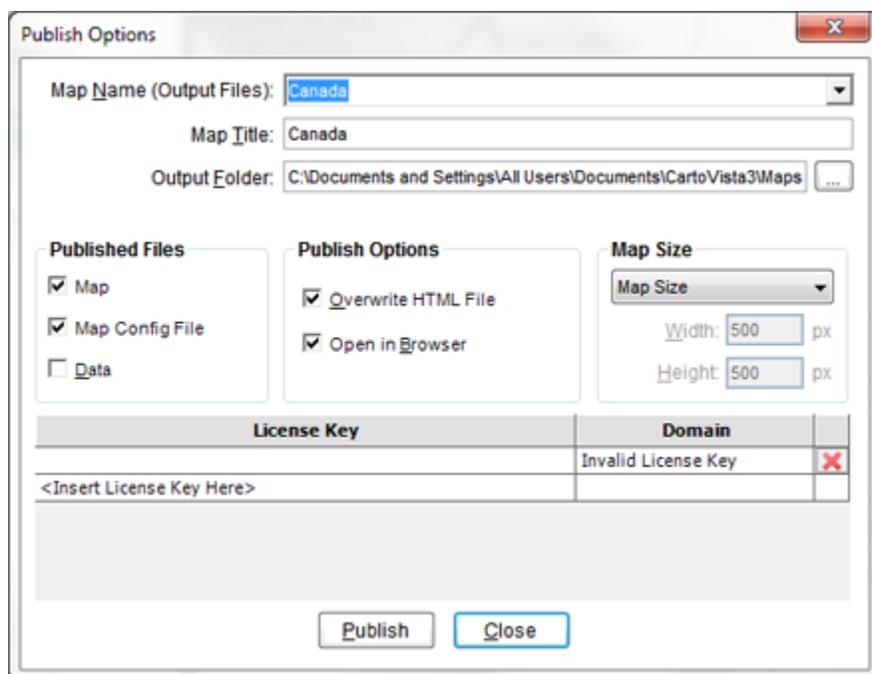


Publishing a Map

Once you have created and configured your map, you need to publish the map.

Before you can publish your map, you need to identify the Map Name, and the Output Folder to publish the data to. Use the Publish Options button to bring up the Publish Options Dialog where you can set these options.

Once you have set the Publish Options, use the Publish button to publish the map.



Map Name (Output Files): The name of the map. It is used for a folder name in the Output Folder, the name of the default HTML page and the name of the .SWF file created. For more information on map name and related files, see [Maps Folder](#).

Map Title: The map title is displayed in the CartoVista map output, in the title section at the top of the map. This setting can also be edited in the Map Settings Dialog.

Output Folder: This is the folder where Maps are published. Each map will have its own sub-folder named according to the Map Name setting. By default, the installation directory of CartoVista is:

C:\Users\Public\Documents\CartoVista4\Maps\

To specify a different Maps folder, click on the button beside the text box.

Relative to the Maps folder, the CartoVista Viewer must be located in one of the following 3 directories:

1. The same directory
2. A sub directory called "CartoVista4"
3. The parent directory

When you select a new location, the Publisher looks to find the CartoVista Viewer (CartoVistaViewer.swf) in any one of the directories specified above.

If the CartoVista Viewer cannot be located, a warning message is displayed below the path and a **"Restore Default"** button will appear. Click on the "Restore Default" button to reset the output folder to the default location.



For more information on file outputs and folders for deployment, see [The CartoVista Viewer](#).

Published Files

Map : Select this option to publish the output map .SWF.

Map Config File: Select this option to publish the map's Config.XML file.

Data: Select this option to publish the map's thematic Data View.

Publish Options

Overwrite HTML File: Check this option to overwrite the default HTML page. If this is unchecked and a default HTML file already exists, a new one will not be created.

Open in Browser: Check this option to show the output result in your default web browser.

Map Size: Use the drop down to set the size of the Map in the default HTML page that is created when you publish the map. There are three options available:

- 1) **Map Size**: The map will have the same size as it was created in the Map Window.

- 2) **Full Screen:** The map will take up as much room in the page as possible.
- 3) **Fixed:** The map will be sized to the specific size in pixels set in the Width and Height edit boxes.

Width: The width in pixels of the output map.

Height: The height in pixel of the output map.

Viewer License Keys

To deploy a CartoVista map to a web server, you will need to enter your Viewer License Key. This key is obtained by contacting [CartoVista](#). The license key is linked to the domain name for the web server that the CartoVista Solution will be deployed on. If you have multiple domain names to support, the license key for each domain must be entered.

Enter your license key in the text box marked <Insert License Key Here>. Once you have hit enter, or moved the focus from the textbox, a new line will be added to the list of license keys. If you have entered a valid license key, the domain that key is registered for will be displayed in the "Domain" column. If the key is not valid, it will display "Invalid License Key".

Use the  button to remove a license key that is not needed for the map. The Publisher will remember the license keys you previously used and automatically enter them for you when you create a new map.

You do not need a license key if you wish to create and view CartoVista maps on your local machine. However a "Demo / Evaluation" watermark will be displayed in the Viewer.





Creating Thematic Data for CartoVista

The CartoVista Publisher's secondary focus is to assist you in create the thematic data you need to deploy with your CartoVista solution.

A CartoVista Map can contain one or more thematic layers. Which layers are thematic is defined when you setup your map. For more information on setting up a thematic layer, see [Interactivity and Thematics](#).

Both the Layer Properties > Thematics tab and the Data Publisher allow you to work with your Data Files to pull indicators together and organize them into a Data View. Once you have created the Data View, publish your data to create the files XML files needed for deployment to the CartoVista solution. When working with the Data Publisher, you can save the Data View to create a .CVD file. When working with a CartoVista Map, the Data View is automatically saved within the Map's .CVM file.

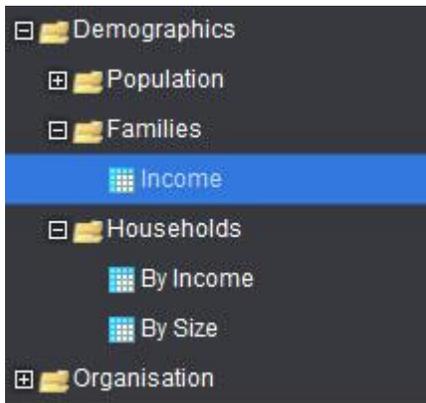
This chapter will explain the following concepts:

- [Thematic Data Architecture](#)
- [Creating a Data Publisher Window](#)
- [The Data Publisher Window](#)
- [Main Toolbar](#)
- [Thematic Layer Toolbar](#)
- [Adding Indicators](#)
- [Thematic Layer Properties](#)
- [Publishing Your Data](#)



Thematic Data Architecture

Thematic data is organized into Indicators, Indicator Tables and Categories. This gives you complete flexibility as to how your data is organized and displayed in the Viewer.



Indicators

An Indicator is a specific set of data elements that can be displayed thematically. Each data element in the indicator contains a unique identifier and a value. The unique identifier will be used to link the data element to the map object, while the value will be used for thematic mapping.

Indicators can be either numeric  or string  values. The type of thematics available will depend on the type of data the Indicator represents.

Indicator Tables

An Indicator Table is a collection of Indicators. Indicator Tables allow you to group together related Indicators. When the end user will switch between related Indicators they should all be placed in the same Indicator Table.

NOTE: There is a default maximum of 20 Indicators per Indicator Table. This limit can be changed in the Tools > Preferences dialog.

Categories

Categories (and sub-categories) are used to organize your Indicator Tables in a meaningful data tree. If you have many Indicator Tables, organizing them into

categories will assist the end user in locating the Indicator Table that he is looking for.



Creating a Data Publisher Window

You can create a Data Publisher Window using one of the following methods:

1. Open an Existing .CVD file

From the main menu, select File > Open menu option. A dialog will prompt you to locate the .CVD file. Once you have selected a .CVD file, a Data Publisher Window will open as defined in the .CVD.

2. Drag & Drop an existing .CVD file

You can drag and drop a .CVD file from Windows Explorer onto the main application. This will open a Data Publisher window as defined in the .CVD.

3. Double Click on an existing .CVD file

You can double click on a .CVD file from Windows Explorer. This will start up the Publisher and automatically open the Data Publisher Window as defined in the .CVD. If the Publisher is already running, the Data Publisher Window will open in the Publisher without starting a new instance.

NOTE: CartoVista Publisher 3.7 can open any .CVD created with any previous version of the CartoVista Publisher. However if you save the data view from CartoVista Publisher 3.7, you will not be able to use the .CVD with a previous version of the Publisher.

4. Create from an Existing .CVM file

From the main menu, select Tools > Data Publisher > From CartoVista Map menu option. A dialog will prompt you to locate the .CVM file. Once you have selected a .CVM file, a Data Publisher Window will open as defined in the Data View contained in the .CVM.

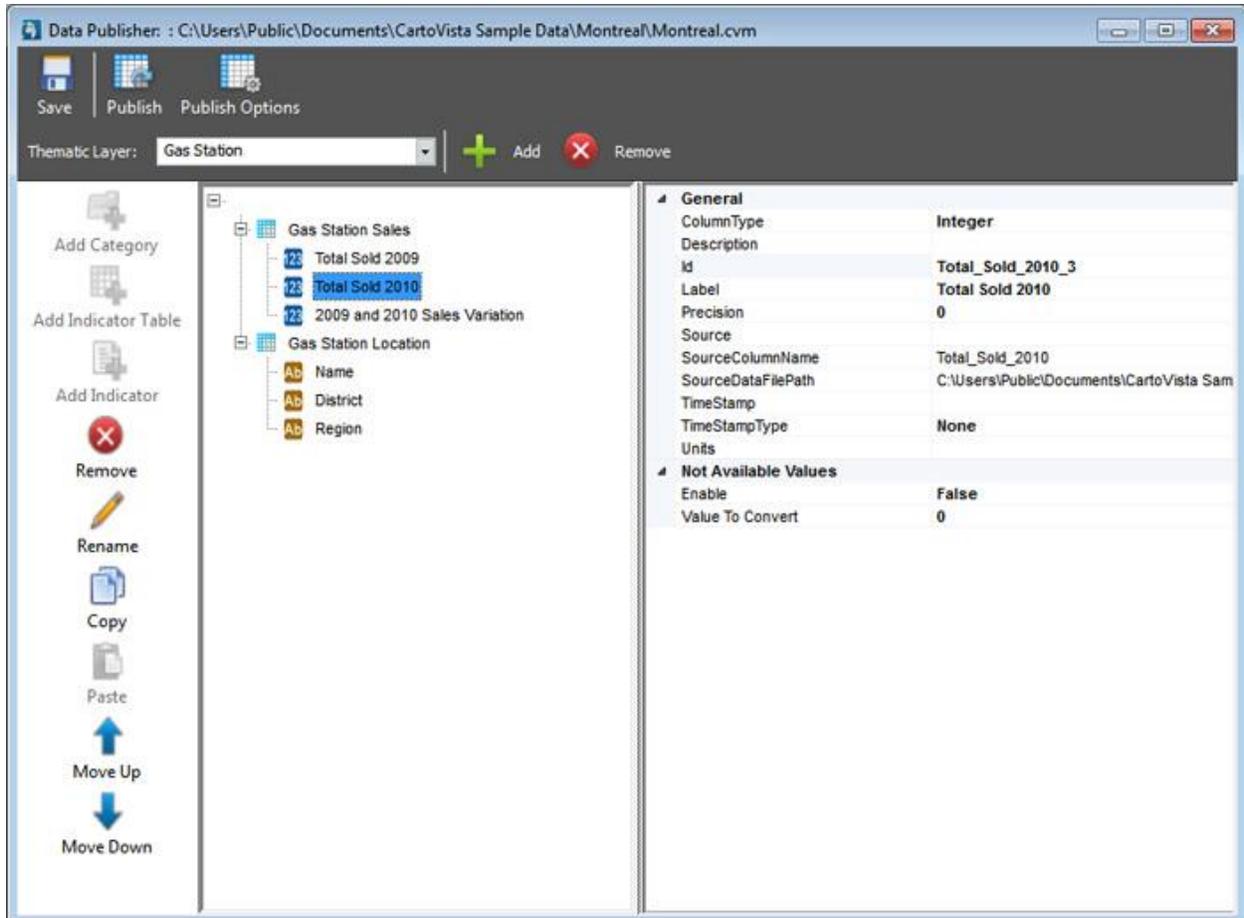
5. Create a new Data View

From the Main Menu, select Tools > Data Publisher > New Data View.



The Data Publisher Window

The Data Publisher Window visually displays the Data View. It is composed of the following 3 parts:



Main Tool Bar

Allows you to save or publish the Data View as well as Add/Remove/Rename thematic layers in the Data View.

Thematic Layer Tool Bar

A vertical toolbar on the left side of the Data Publisher Window containing options for adding or removing elements to a Thematic Layer.

Thematic Layer Display

A two part window that contains the details about a Thematic Layer. In the left panel, a tree of Categories, Indicator Tables and Indicators is displayed. In the right panel, the properties associated with the selected Category, Indicator Tables or Indicator are displayed.

NOTE: The proportion of the Thematic Layer Display assigned to the tree versus the properties can be changed by dragging the separator between the two sides.



Main Toolbar

Save Button



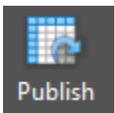
The Save button saves your current Data View to a .CVD file. If you have not already saved your Data View, you will be prompted for a file name.

When you save a .CVD file, you are saving the settings and other attributes needed to recreate the Data Publisher Window. You are not saving the underlying data files, simply a reference to them.

If you want to give someone a copy of your Data View, ensure they already have the Data files, or include the source Data files in the package you transfer.

If you have opened the Data Publisher Window from a .CVM, the Save button will save the changes back to the .CVM file. You can still use the main menu File > Save As menu option to save the Data View to a .CVD file.

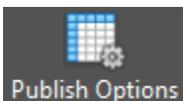
Publish Button



The Publish button will publish the Data View with the existing settings without any user interaction. If you want to change the publish settings, click on the Publish Options button.

NOTE: If you have not previously published the Data View, the Publish Options dialog will be displayed so that you can set the map output name.

Publish Options Button



The Publish Options button will display the Publish Options Dialog so that you can specify the map output name and specify the output directory.

Thematic Layer Dropdown



The dropdown displays a list of all the Thematic Layers in the Data View. Selecting a Thematic Layer will result in the Thematic Layer Display updating to reflect the chosen Thematic Layer.

Add Button



The Add button will start a dialog to add another Thematic Layer to the Data View.

There are two possible dialogs that could be displayed:

1. If your Data Publisher Window was opened from a .CVM, the Add Thematic Layer Wizard dialog will appear. See section on [Adding Indicators](#).

You will only be able to create Thematic Layers for the layers in the CartoVista Map that have interactivity enabled and a unique identifier column set.

If you have already created a Thematic Layer for each layer in the CartoVista Map that is interactive, you will be alerted and no additional layer will be created.

2. If your Data Publisher Window is not opened from a .CVM, the Thematic Layer Name dialog will appear. See section on [the Data Publisher Window](#).

You will be able to create as many Thematic Layers with whatever name you wish. However in order for the Thematic Layer to be useful in the Viewer, the Thematic Layer name must match the name of a layer in the Map that has interactivity enabled and a unique identifier column set.

Remove Button

The Remove button will remove the current Thematic Layer from the Data Publisher Window.



Thematic Layer Toolbar

This tool bar is located on the left of the Data Publisher Window or at the top in the Layer Properties > Interactivity > Thematics Dialog. This toolbar helps you organize your indicator data. You can create a hierarchy of categories for the selected Thematic Layer.

Add Category



Add Category

Allows you to add a Category to the "root" node or an existing Category (as a sub-category). You will be prompted to enter a Category Name.

Add Indicator Table



Add Indicator Table

Allows you to add an empty Indicator Table to the "root" node or an existing Category. You will be prompted to enter an Indicator Table Name.

Add Indicator

Allows you to add an Indicator to an Indicator Table. See section on [Adding Indicators](#).

Remove



Remove

Allows you to remove a Category, Indicator Table or Indicator. Removing a Category also removes any subcategories and Indicator Tables that are underneath it. Removing an Indicator Table also removes any Indicators it contains.

Rename



Rename

Allows you to rename a Category or an Indicator Table. If you wish to change the name of an Indicator, use the Label property of the Indicator.

Copy



Copy

Copies to the clipboard the currently selected Indicator, Indicator Table or Category.

Paste



Paste

Pastes the Indicator, Indicator Table or Category into the currently selected item.

This button will only be active if the currently selected item is of the correct type to receive what was copied.

- Indicators can only be pasted into an Indicator Table.
- Indicator Tables can only be pasted into Categories or the "root" node of the Thematic Layer.
- Categories can only be pasted into other Categories or the "root" node of the Thematic Layer.

Move Up



Moves the selected Category, Sub-Category, Indicator Table or Indicator up in the tree.

Move Down



Moves the selected Category, Sub-Category, Indicator Table or Indicator down in the tree.



Adding Indicators

Once you have added an Indicator Table to your thematic layer, you can add indicators to it.

If you are using the Layer Properties > Interactivity > Thematics page, you can only use the Add Indicator wizard to add indicators to your layer. Otherwise, you can also use Drag & Drop on Data Files and Data Columns in the Data Source Manager to add indicators. Only Data Columns from a Data File that has a Unique Identifier set will be allowed to drop onto an Indicator Table. See section [Data File Properties](#) on Setting Unique Identifier Columns.

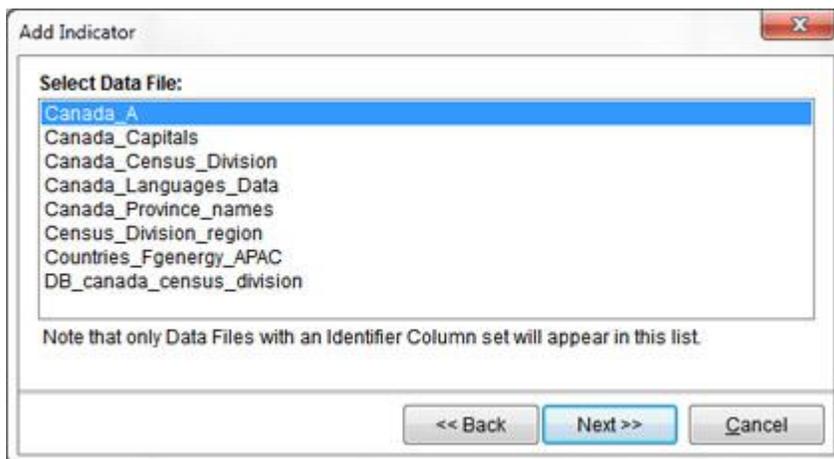
NOTE: Indicators in an Indicator Table do not all have to come from the same Data File. You can create an Indicator from any Data File and add it to any Indicator Table.

Add Indicator Wizard



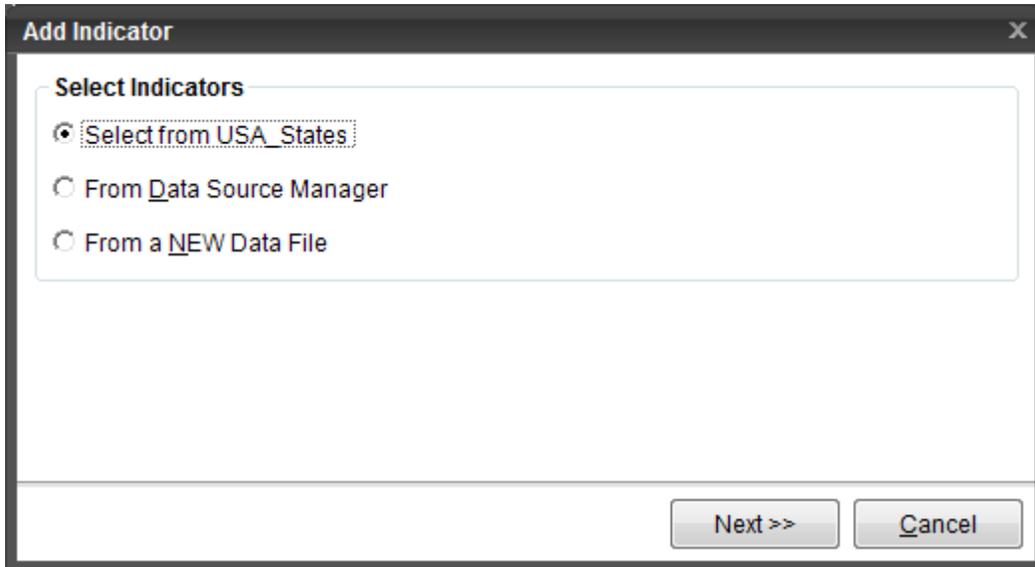
Add Indicator

Clicking the Add Indicator button on the Thematic Layer toolbar will present the Add Indicator Wizard. Use the options in the first page to indicate where the indicator will come from. Select your option and click Next:



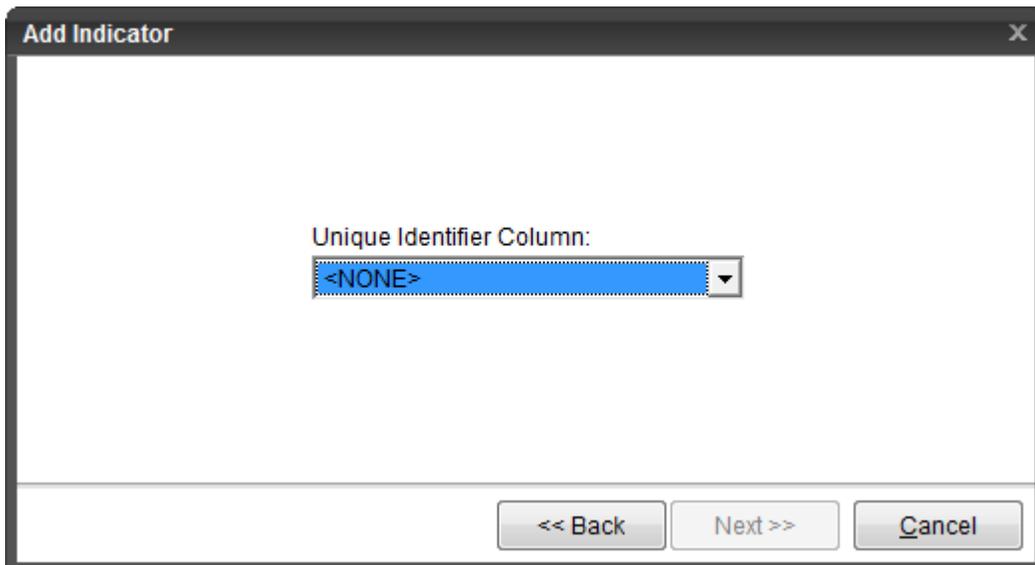
The "Select from <Layer Name>" option is ONLY available when adding indicators from the Layer Properties > Interactivity > Thematics layer.

If you choose "From Data Source Manager" in the first page of the wizard, you will be prompted to select from the list of Data Files available in the Data Source Manager:



Select the Data File and click Next.

NOTE: Only Data Files that have a Unique Identifier  set will be listed in the dialog. See section on Setting Unique Identifier Columns in [Data File Properties](#).



If you choose "From NEW Data File" in the first page of the wizard, a dialog will prompt you to locate the source of the new Data File. You will then be prompted to specify the unique identifier column for that Data File.



The final step in the wizard is to select the columns from the Data Source that will be used as indicators. Selected the columns and then click Finish.

> Moves the selected column from the Available list to the Selected list

>> Moves all columns from the Available list to the Selected list

< Moves the selected column from the Selected list to the Available list

<< Moves all columns from Selected list to the Available list



Thematic Layer Properties

Categories, Indicator Tables and Indicators all have various properties associated with them. You will see the properties in the right hand panel of the Thematic Layer display when you select something in the tree view.

General	
ColumnType	Integer
Description	
Id	Total_Population
Label	Total_Population
Precision	0
Source	
SourceColumnName	Total_Population
SourceDataFilePath	C:\Documents and Settings\all use
TimeStamp	
TimeStampType	None
Units	
Not Available Values	
Enable	False
Value To Convert	0

NOTE: The proportion of the Thematic Layer Display assigned to the tree versus the properties can be changed by dragging the separator between the two sides.

Category Properties

ID: A unique (within the thematic layer) identifier string.

Label: The text label for the category.

Indicator Table Properties

ID: A unique (within the thematic layer) identifier string.

Label: The text label for the indicator table.

URL: The path to the XML data file that will be created for this Indicator Table. The data file will contain the definition of all the indicators within it, along with the data.

Indicator Properties

ColumnType: The type of data represented. One of the following values:

- Integer
- String
- Float
- Numeric
- Date / Time

Description: Text description of what the indicator is.

ID: A unique (within the thematic layer) identifier string.

Label: The text label for the indicator.

Precision: Used for numeric data to determine the precision for calculations and presentation.

Source: A text description of the data source.

SourceColumnName: The name of the data file column used as the source.

SourceDataFilePath: The path of the source file used for the data.

TimeStamp: A time stamp that helps identify when the indicator data was provided.

TimeStampType: The accuracy of the time stamp. One of the following values:

- None
- Year
- Month
- Day

Units: The data unit description that is displayed in the Viewer (legend, info-tips, etc.).

For Numeric Indicators the following additional properties are available in the "Not Available Values" Category:

Enable: Indicates if the Null Value will be ignored when publishing, which will create a 'no data' value.

Value to Convert: The value to use as “no data”.

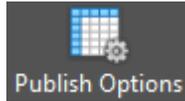
TIP: To save time, you can select multiple indicators at the same time and then use the options to setup the units, description, source and other metadata in one operation.



Publishing Your Data

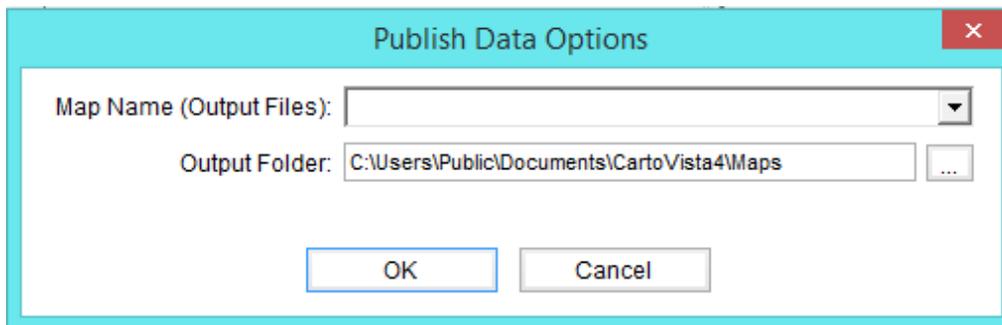
Once you have created and configured your Data View, you need to publish the data. If you are using the Data Publisher Window, follow the instructions below. If you are using the Map Window > Layer Properties > Interactivity > Thematics Tab, see the section on [Publishing a map](#).

Before you can publish your data, you need to identify the Map Name, and the Output Folder to publish the data to. If you have opened the Data Publisher from an existing .CVM, these values may already be populated for you based on the .CVM settings.



Click the **Publish Options** button to open the Publish Options Dialog.

Publish Options



Map Name: The name of the map the thematic data is associated with. It is used for a folder name in the Output Folder. For more information on map name and related files, see Map Folder Content.

Output Folder: This is the folder where Maps are published. Each map will have its own sub-folder named according to the Map Name setting. By default, the installation directory of CartoVista is:

C:\Users\Public\Documents\CartoVista4\Maps\

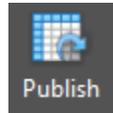
To specify a different Maps folder, click on the button beside the text box.

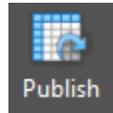
Relative to the Maps folder, the CartoVista Viewer must be located in one of the following 3 directories:

1. The same directory
2. A sub directory called "CartoVista4"
3. The parent directory

When you select a new location, the Publisher looks to find the CartoVista Viewer (CartoVistaViewer.swf) in any one of the directories specified above.

If the CartoVistaViewer.swf cannot be located, a warning message is displayed below the path and a "**Restore Default**" button will appear. Click on the "Restore Default" button to reset the output folder to the default location.



Once these options are set, use the  Button to create the Indicator XML data.



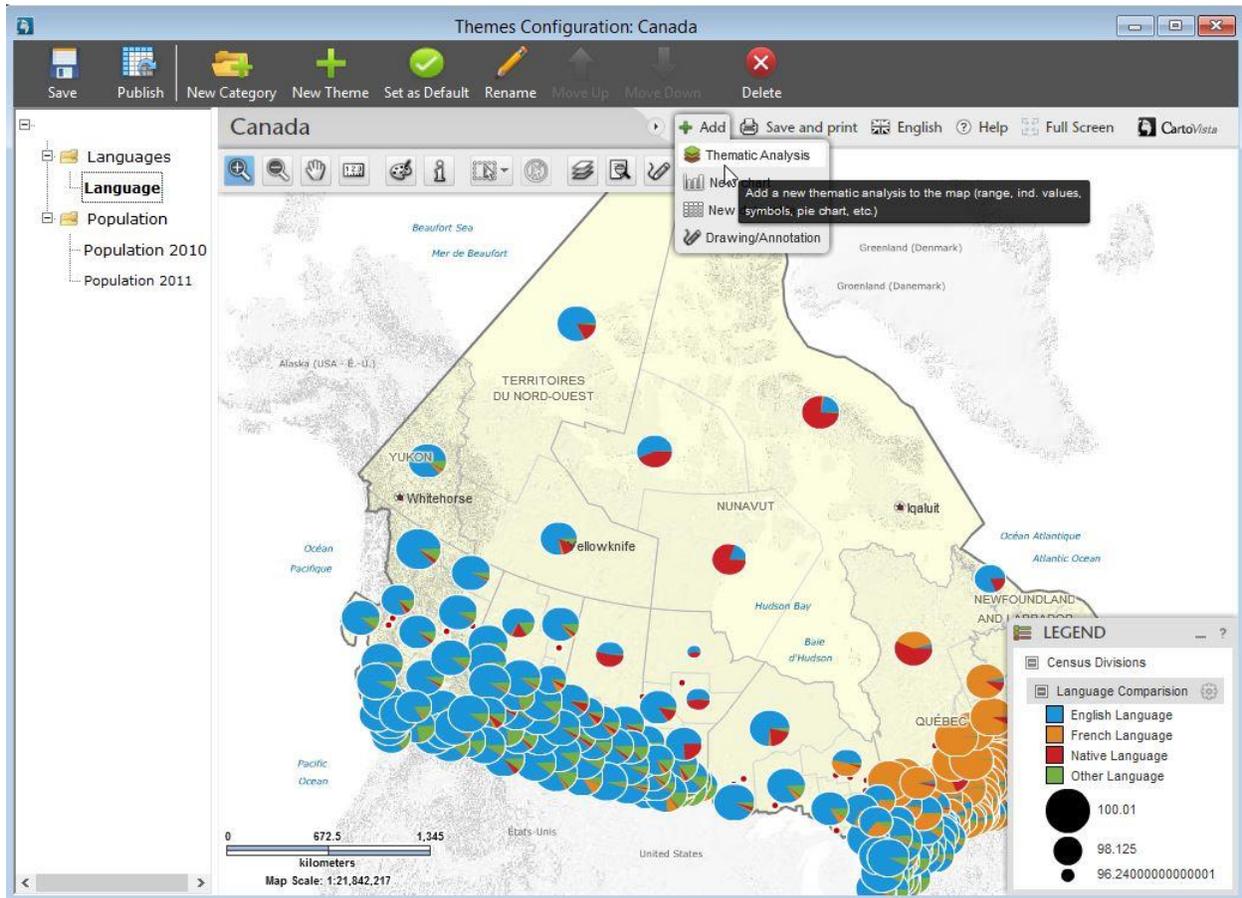
Creating & Managing Thematic Analysis

This chapter will cover the following items:

- [Themes Configuration Window](#)
- [Map Display](#)
- [Main Tool Bar](#)
- [Themes List](#)



Themes Configuration Window



The Themes Configuration Window visually displays the published map and allows the user to setup the themes that will be present in the map. In this dialog, the user will be able to define all themes exposed to the end user through a drop down list.

It is also possible to create a treeview to classify all those themesets within categories/sub-categories, allowing the publishing of an unlimited number of themesets.

The Themes Configuration Window is composed of the following 3 parts:

Map Display

Displays the map as published by the Map Window using the CartoVista viewer. The user can prepare the themesets using the standard CartoVista functionalities. It is also possible to set additional parameters using the layer control, such as the opacity and the layers and labels visibility. Those settings are saved for each themeset.

Main Tool Bar

A toolbar containing options for actions that will be performed with the map.

Themes List

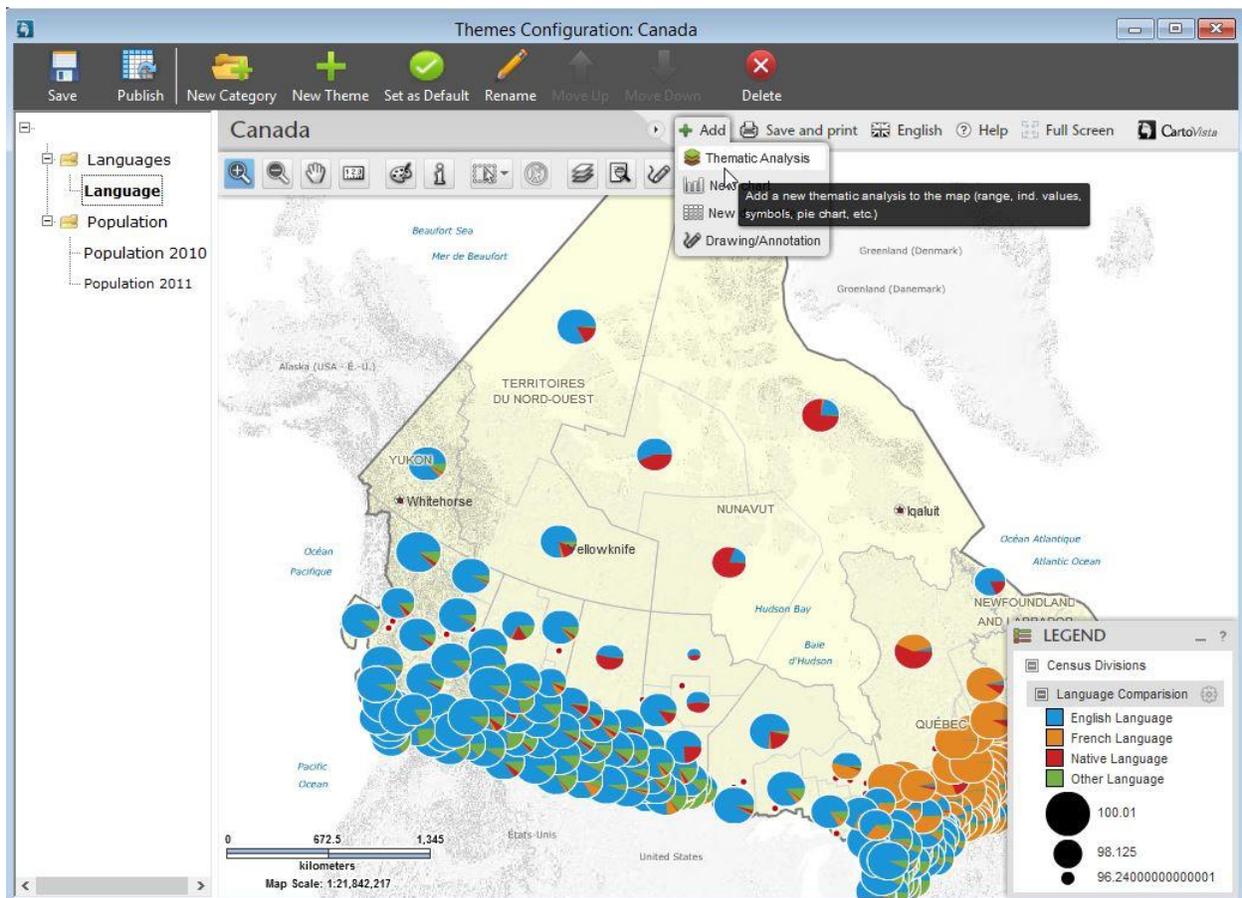
Lists the Categories, Sub-categories and Themes present in the map and allows the user to select the theme to be displayed by default.

Map Display

The Map Display area of the Themes Configuration Window uses the CartoVista Viewer to display the map. The interface of the CartoVista Viewer is available to interact with the map.

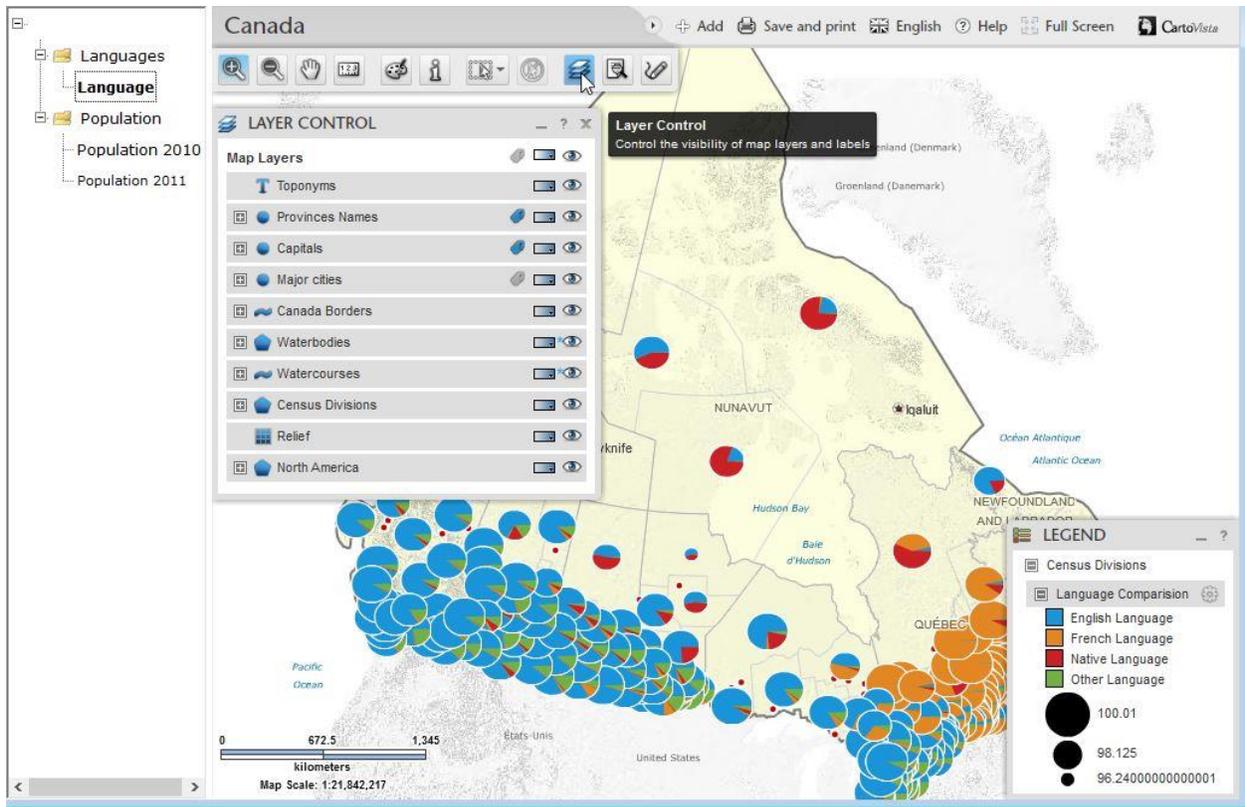
Use the Add > Thematic Analysis to setup the thematic analysis that will be available within the CartoVista viewer. for any layers that will be displayed automatically when the selected Theme is activated.

All of the CartoVista style options are available in this dialog, and the settings will be saved for each map.



It is also possible to define the opacity and visibility settings for each themeset, using the layer control.

CartoVista Publisher Documentation





Main Tool Bar

Save



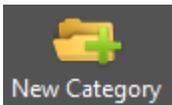
Saves the Map Window, Data Publisher (if any) and the Themes Configuration to the Map's .CVM file.

Publish



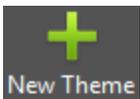
Updates all the Theme's settings to the Map's configuration file.

New Category



To create categories/sub-categories to classify the themesets in a treeview. Those themesets are then available in the drop down list of the CartoVista Viewer.

New Theme Button



Removes any Thematic Analysis from the Map, and creates a new Theme.

Default Theme



Sets the selected Theme as the default theme. This theme will automatically be loaded when the Map is viewed in the publisher.

The list of Themes in the window will display a  next to the Theme name to indicate which Theme is the default one.

Rename



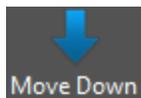
Changes the name of the Theme.

Move Up



Changes the order of the Themes by moving the currently selected Theme up one position in the list.

Move Down



Changes the order of the Themes by moving the currently selected Theme down on position in the list.

Delete

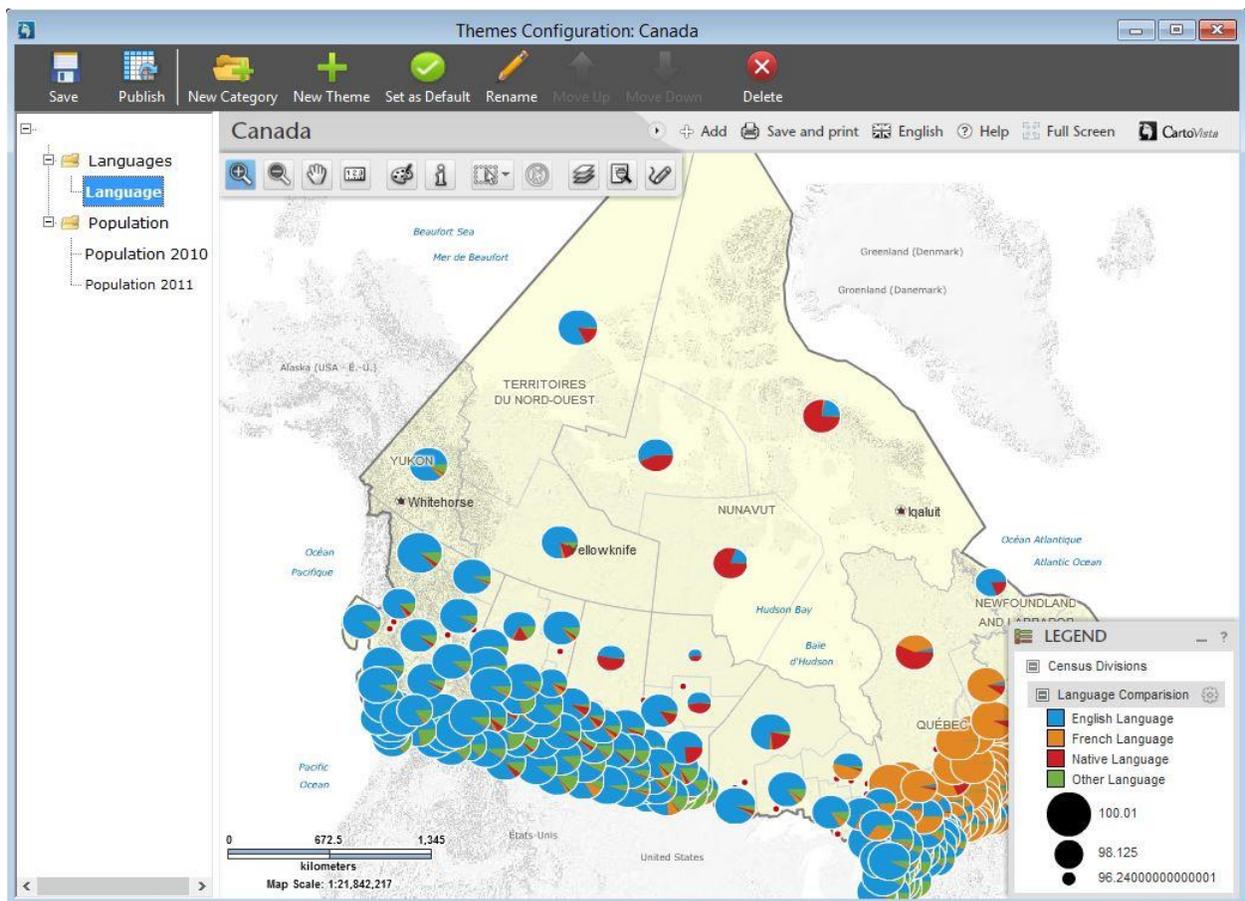


Removes a Theme from the list of available Themes. If the Theme removed was also the Default theme, the first Theme in the list becomes the new Default Theme.

Themes List

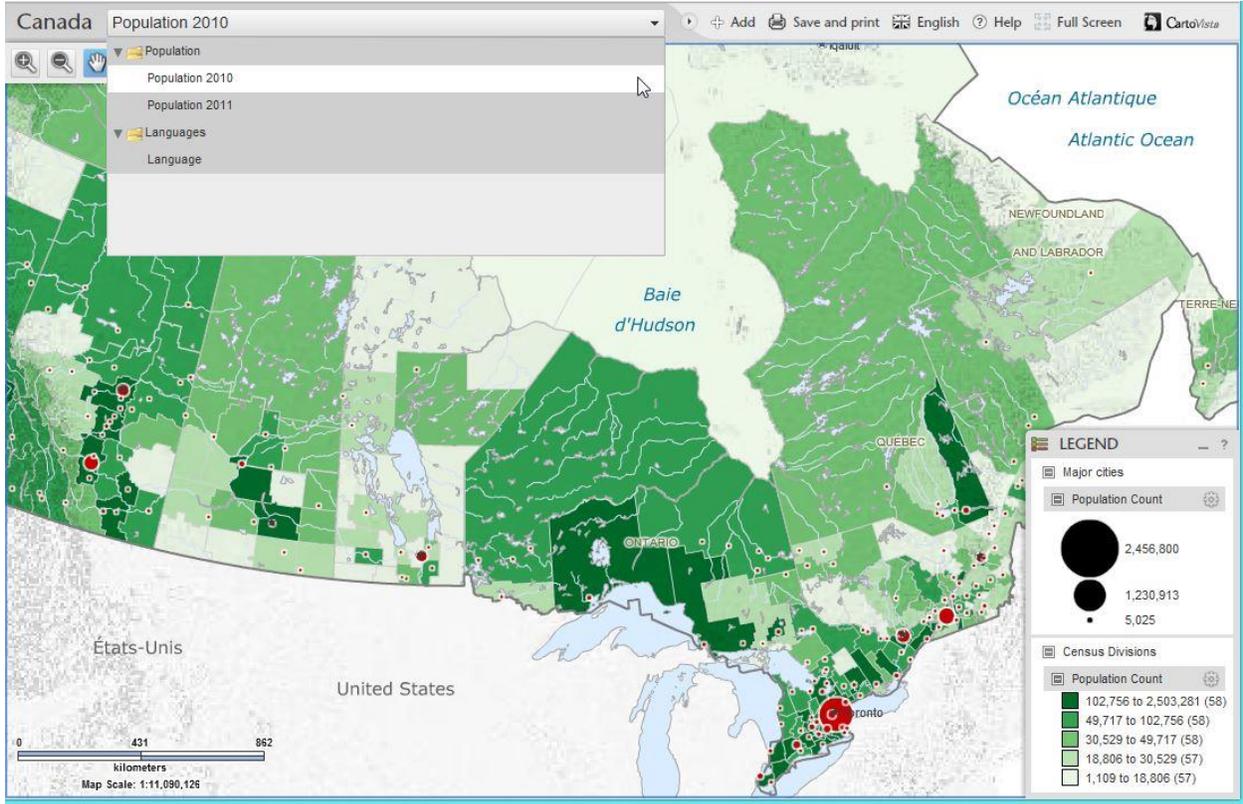
Lists the Themes that will be available in the Map, as well as specifying the order that they will appear in the dropdown inside the viewer.

The list is prepared in the publisher:



And is available in the drop down list treeview in the CartoVista Viewer.

CartoVista Publisher Documentation





Creating & Managing Print Templates and Print Layouts

- [Description and Prerequisites](#)
- [Main Toolbar](#)
- [Template List](#)
- [Print Layout](#)

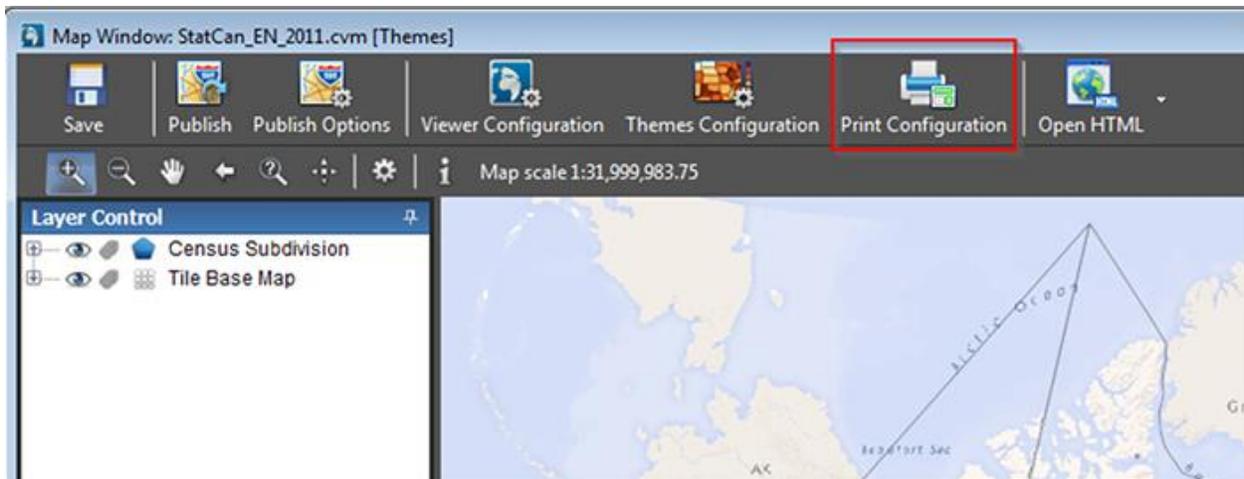


Description and Prerequisites

Description

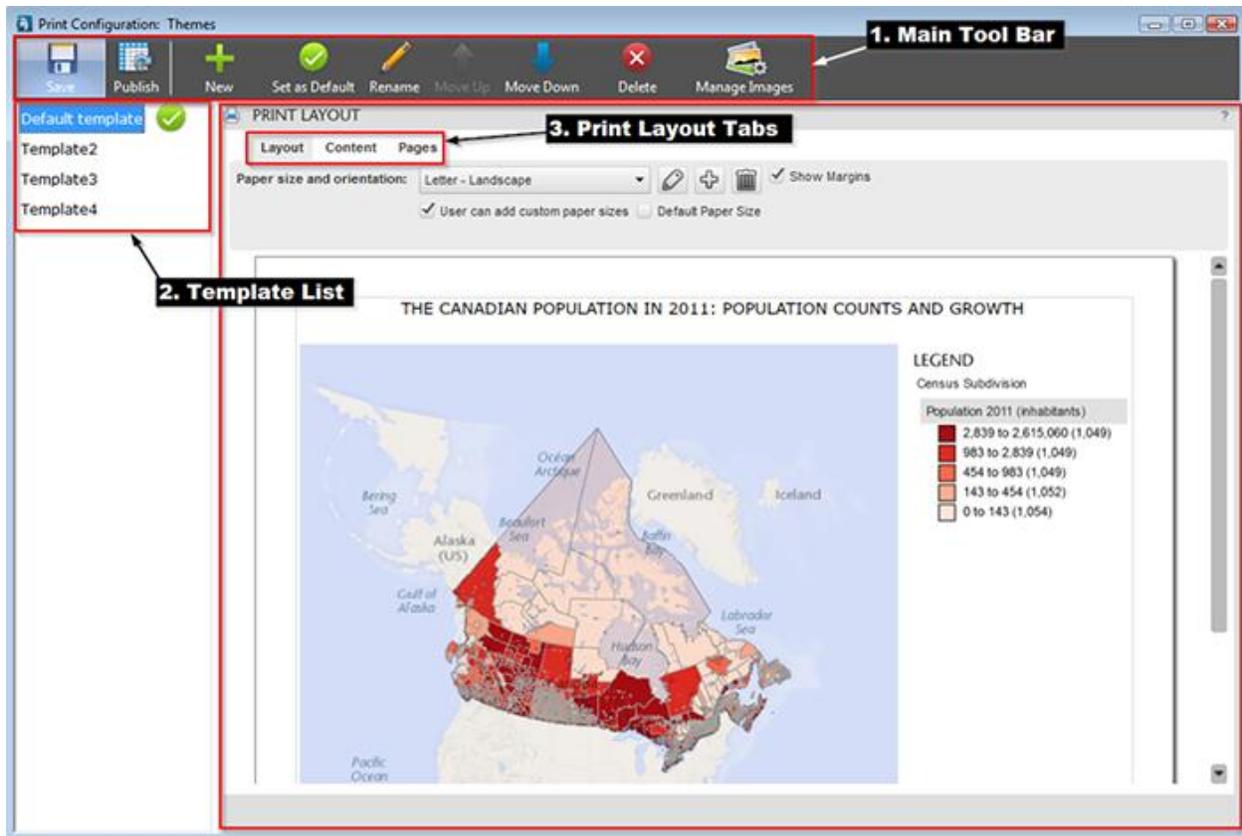
The Print Configuration Window is used to design Print Templates that will be available to end users in the CartoVista Viewer.

To access the Print Configuration Window, select the Print Configuration Button in the active Map Window.



The Print Configuration Window is composed of 3 parts:

- [1. The Main Tool Bar](#)
- [2. The Template List Area](#)
- [3. The Print Layout Area](#) with 3 menu tabs

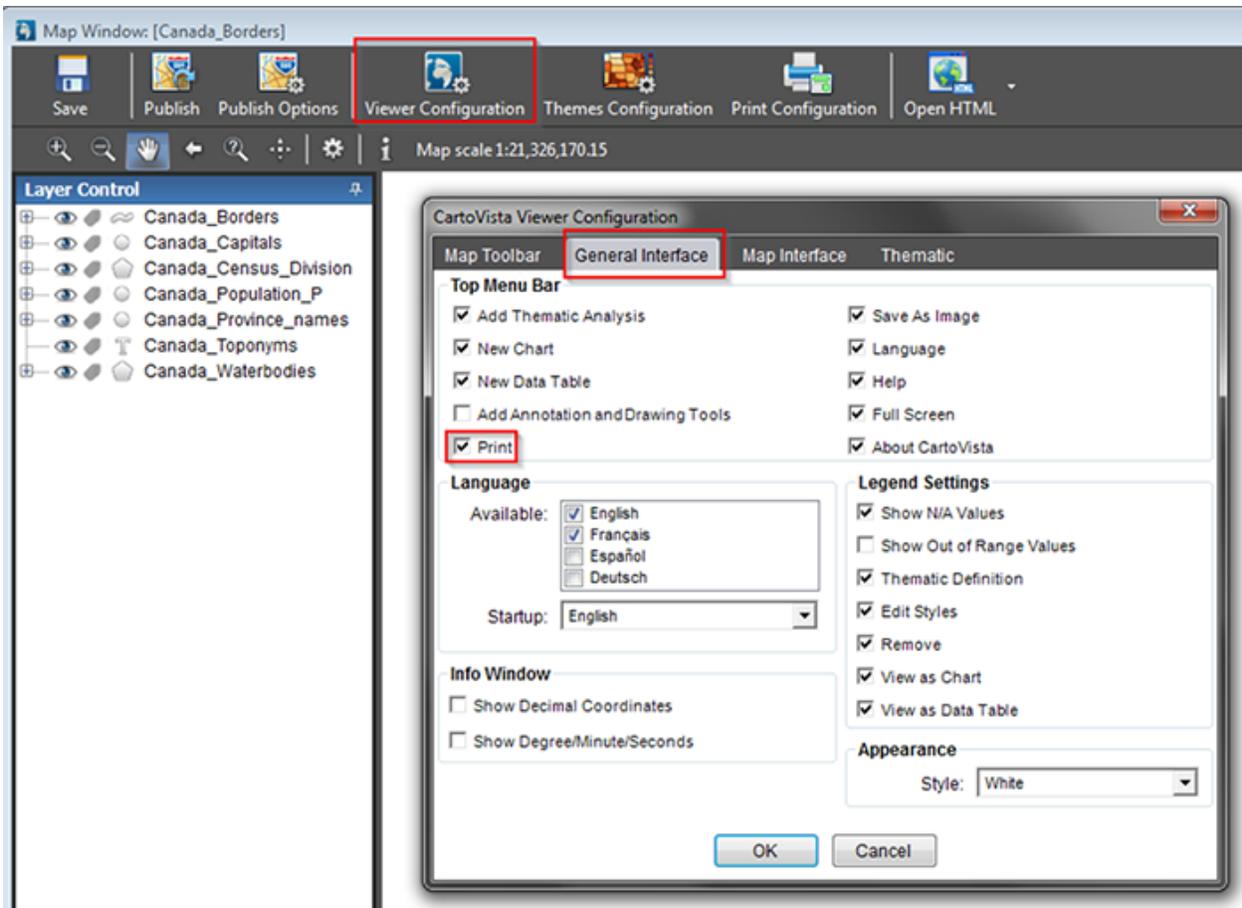


When the Print Configuration Dialog is launched for the first time, a default Print Template will be displayed. The Default Print Template includes the following items: a map, a legend, a title and the date.

If Theme Sets have been previously created using the Theme Configuration Dialog, the default Theme Set map will appear as the default Print Template map, along with the related legend.

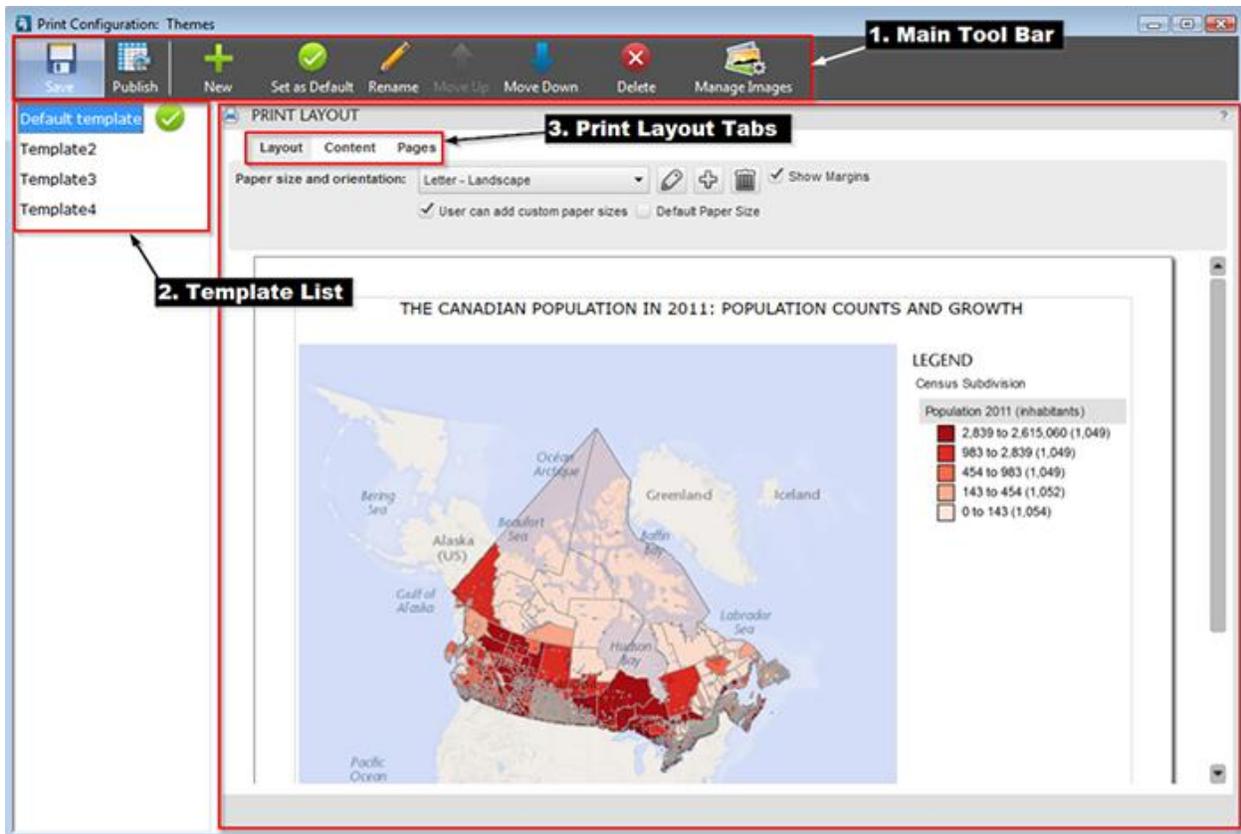
Prerequisites

1. You must first publish your map to be able to open the Print Configuration dialog and view the initial default Print Template.
2. If you want your CartoVista Viewer users to have access to the Print Templates you have defined, the CartoVista Viewer print option must be checked in the Viewer Configuration Dialog. (Map Window – Viewer Configuration - General Interface Tab > Print checkbox checked).



Main Toolbar

The Main Tool Bar (1) contains a set of options to perform Print Template related actions.

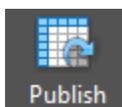


Save



The Save command saves the Print Configuration in the Map Window's .CVM file.

Publish



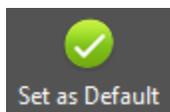
The Publish command updates all the Print Settings in the Map's configuration file. This command should be issued before publishing your map if you want your Print Templates available in the CartoVista Viewer.

New



The New command creates a new blank Print Template.

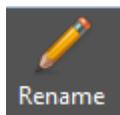
Set as Default



The Set as Default command sets the selected Print Template as the default Template. The Default Template will be the initial Print Template loaded when the Save and Print action is launched in the CartoVista Viewer.

The  displayed next to the Print Template name indicates which template is the default one.

Rename



The Rename command allows you to rename the selected Print Template.

Move Up



This action will change the order of the selected Print Template Up one position in the template list.

Move Down



This action will change the order of the selected Print Template Down one position in the template list.

Delete

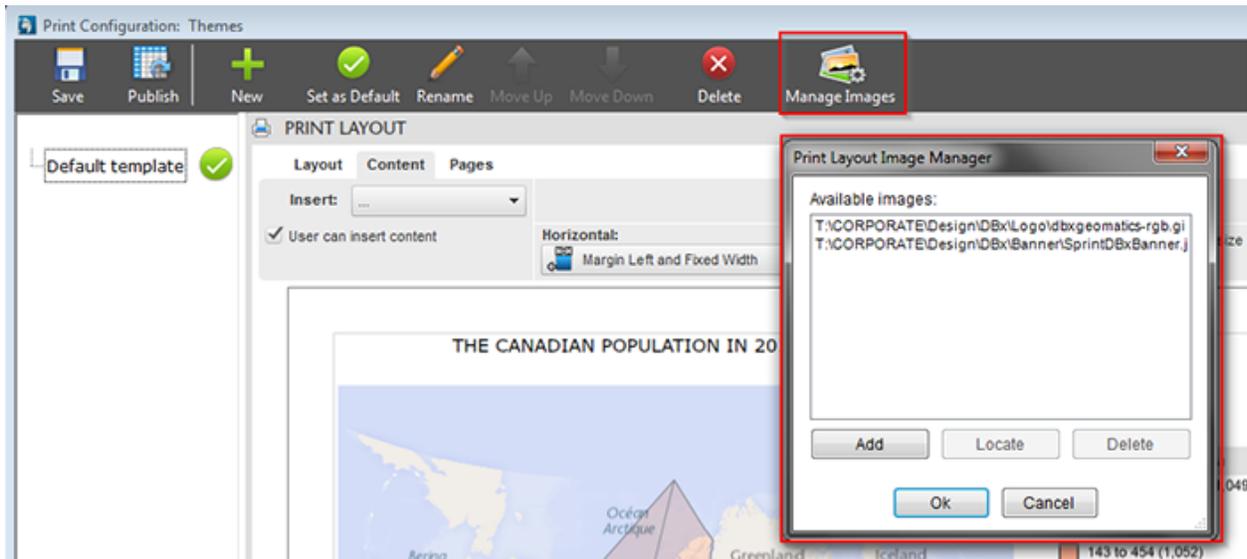


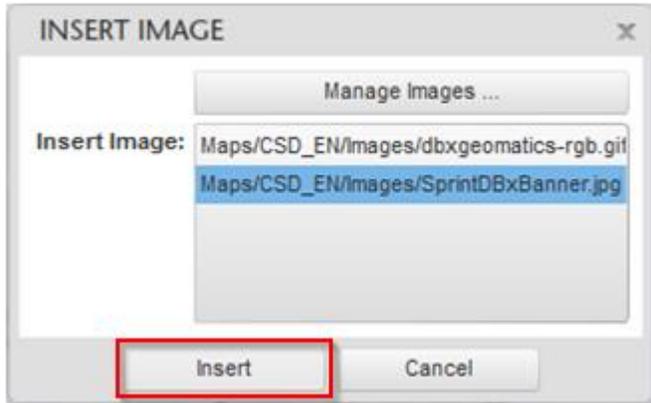
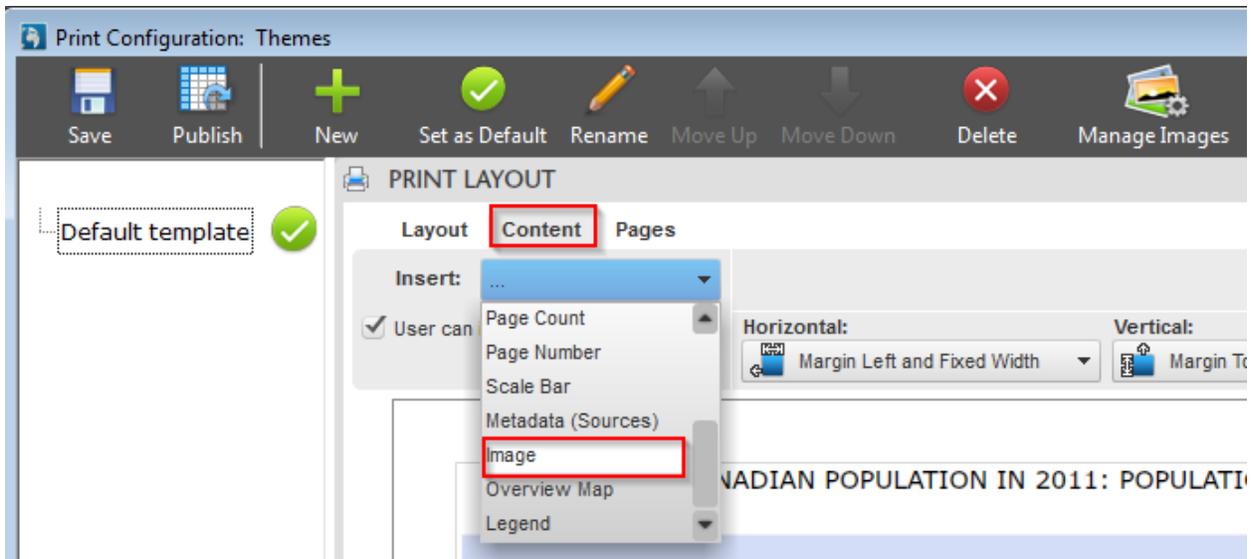
The Delete command removes the selected Print Template from the list of available Print Templates.

If the removed Print Template was the Default Print Template, the first Print Template in the list becomes the new Default Print Template.

Manage Images

The Manage Images button will access an image management system. You can add numerous images links in the image management system (e.g. Logos, photos). Stored image links can easily be retrieved and the associated image inserted as a Content Item in the Print Layout via the Content Tab > Content > Insert Image tool.



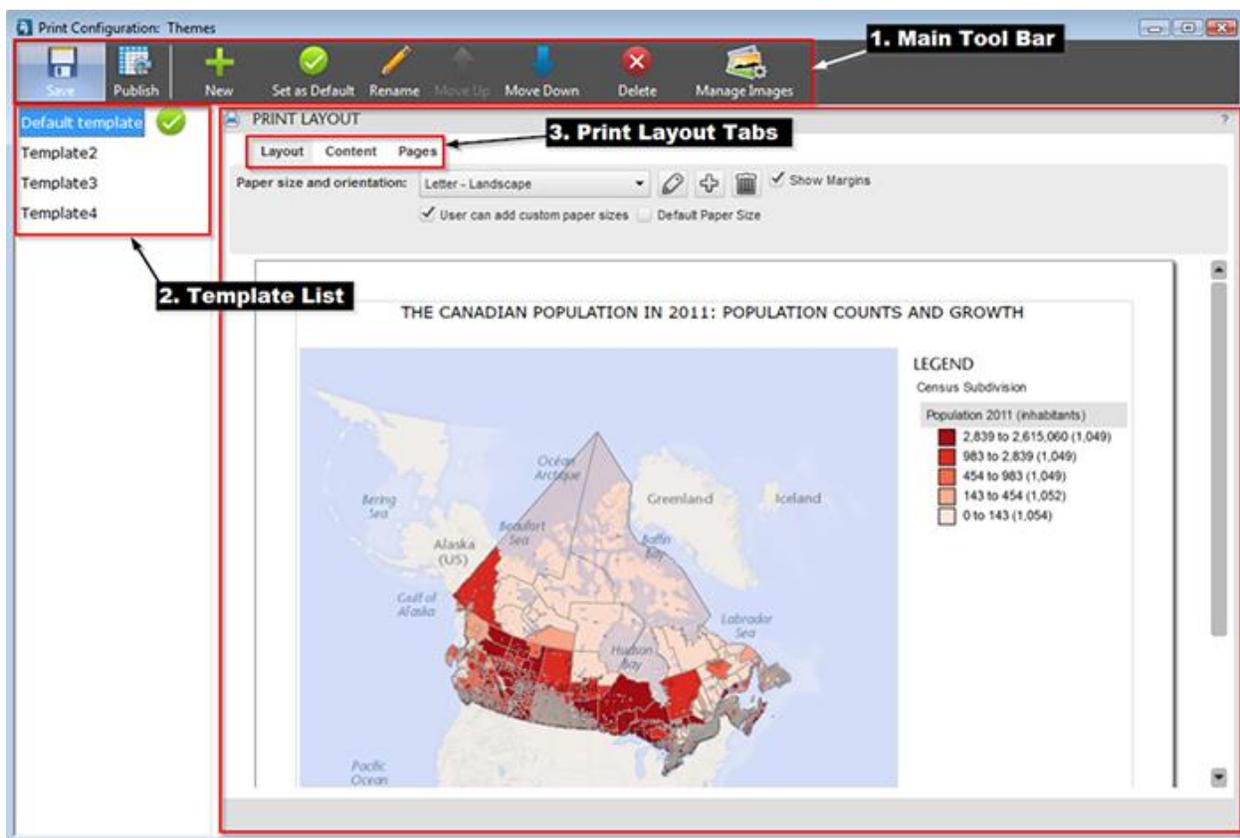


Template List

This area (2) lists the created Print Templates.

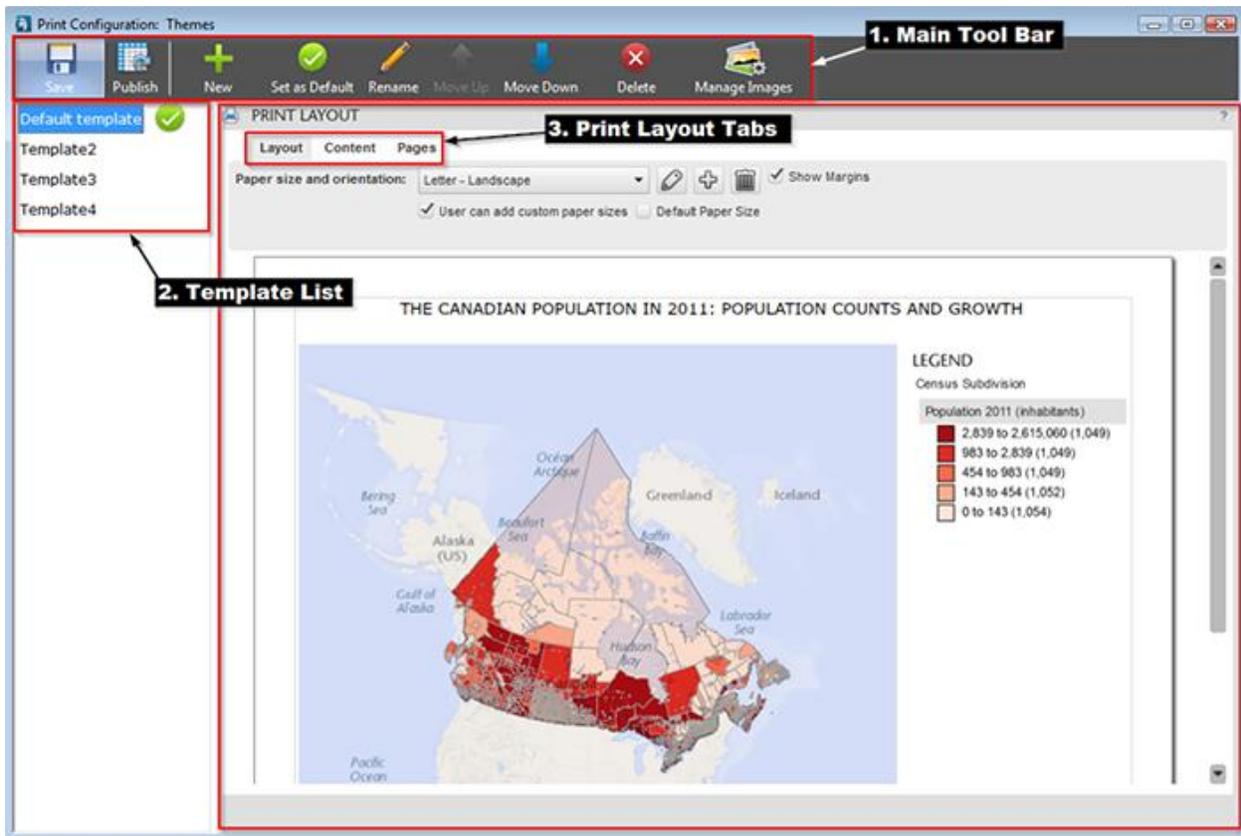
The listed Print Templates can be individually selected for editing in the Print Layout area.

The Print Templates are listed in the order they will display in the CartoVista Viewer dropdown list available in the Save and print dialog. The management of list is done using the commands within the Main Tool Bar.



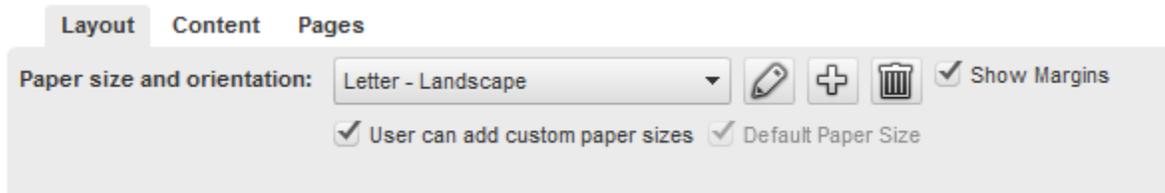
Print Layout

The Print Layout area (3) displays the Layout of the Print Template selected in the Print Template List (2).



Each Print Layout can be customized using the tools available within the Layout, Content and Pages Tabs. These tools provide extensive design options to prepare a customized Print Template for your CartoVista Viewer users.

Layout Tab



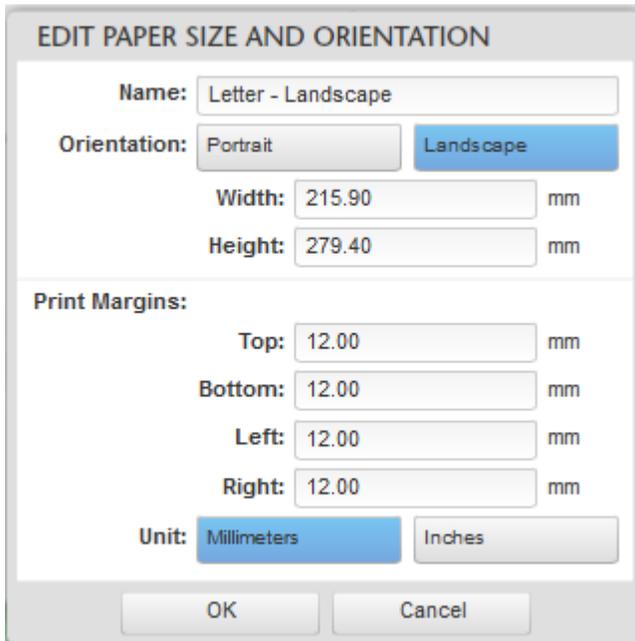
The Layout Tab is used to define the paper sizes and orientations available in the Print Template.

Each Print Template can include one or several pre-defined or custom paper sizes and orientation settings.

Edit Paper Size

This tool lets you edit any of the custom paper sizes previously created.

Note: Provided Default Paper Sizes Can Not be edited.



EDIT PAPER SIZE AND ORIENTATION

Name:

Orientation:

Width: mm

Height: mm

Print Margins:

Top: mm

Bottom: mm

Left: mm

Right: mm

Unit:

Add Paper Size

This tool lets you add an existing default paper size and orientation setting or lets you create a new custom one.

To create a new custom setting scroll down the Paper Size Option and select the 'custom' item from the list of available settings.

Tip: To create a new custom setting based on the values of a default setting, select the default setting item first and then select the custom item.

Paper size settings are inherent to the current Print Template. Therefore, new and custom Paper Size Settings are not duplicated when a new Print Template is created.



Delete Paper Size

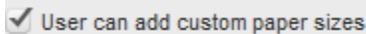
This tool lets you delete any of the listed Paper Sizes Settings. This only impacts the Settings included in the Print Template being edited. If you create a new Print Template, all default paper sizes settings will be available.

Tip: If you delete a default setting by mistake, you can add it again using the Add Paper Size button (+)

Locking actions



Checking this box will let the CartoVista Viewer user see the defined page margins associated with this Print Template.



This checkbox defines if the CartoVista Viewer user will be allowed to create new paper sizes when printing from the CartoVista Viewer.



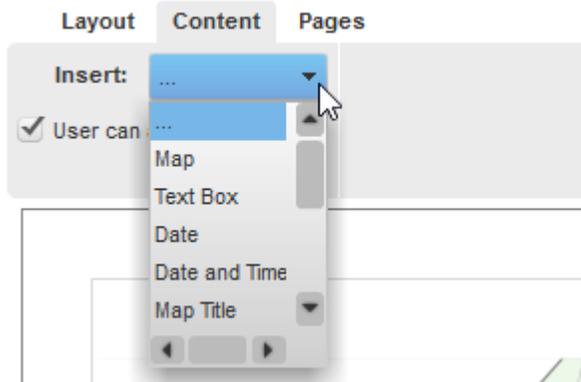
The Default Paper Size check box specifies which paper size will be used by default when loading the Print Template in the CartoVista Viewer. The paper size checked by default is the Letter-Landscape size.

To change the default paper size, you simply need to choose another paper format and check the Default Paper Size checkbox. The checkbox will then be greyed out for that specific paper size. Only one paper size can be defined as the Default Paper Size for each Print Template.

Content Tab

The Content Tab is used to define items that will be displayed in the Print Template.

The Insert Drop Down



The Insert Drop Down lists the items that can be inserted in your Print Layout:

- Map
- Text Box
- Date
- Date and Time
- Map Title
- Page Count
- Page Number
- Scale Bar
- Metadata (Sources)
- Image
- Legend
- Graph (if a graph is opened in the CartoVista Viewer)
- Table (if a table is opened in the CartoVista Viewer)

Note: The same type of item can be included several times in the Print Template.

Specific Graphic Design Tools

Once inserted in your layout each item has a specific graphic design tools set to allow you to customize the item within the layout.

General Content Locking Action

The **User can insert content** box allows you to define whether or not content can be added by the CartoVista Viewer user in this Print Template. If the box is unchecked, the CartoVista user will not be able to add content. If checked he will be allowed to add content.

Item Locking Actions

You can apply specific locking action to your items. Item locking actions are intended to reduce or increase the capabilities of the CartoVista user to modify the Print Template.

It is possible to lock the position and size of an item in the CartoVista Viewer. If the **Lock position and size box** is checked, the CartoVista Viewer user will not be able to change the position and the size of that item in this Print Template.

Item editing locking actions such as **Text Lock** and **Style Lock** can also be applied.

Note: You can activate or deactivate item locking settings on previously placed items. To do so select the placed item and set the required lock setting.

"Horizontal" and "Vertical" margins Options

The size and positioning of the content items are automatically adjusted when paper settings are changed.

"Horizontal" and "Vertical" margins Options are available to define the positioning of each item in the template when changing the paper size.



Horizontal:

- Margin Left and Fixed Width: The left margin remains unchanged, and the width of the item is fixed. The size of the right margin will automatically change when changing the paper size.

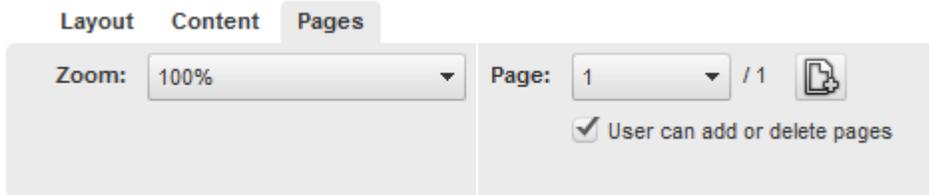
- Margin Right and Fixed Width: the right margin remains unchanged, and the width of the item is fixed. The size of the left margin will automatically change when changing the paper size.

- Margin Center and Fixed Width: The item remains centered on the page, and its width is fixed. The size of the right and left margins will automatically change when changing the paper size.

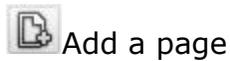
- Margin Left and Right: The margins remain unchanged. The size of the item will automatically change when changing the paper size.

Vertical: The options for the Vertical Margin work as for the Horizontal option, but are applied in relationship to the top and bottom margins.

Pages Tab



This tab is use to add and delete additional pages to your Print Template.



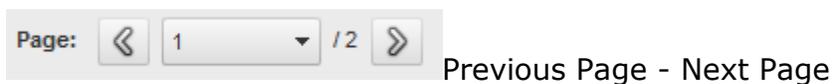
This tool adds a new page to the template. Newly added pages are based on the Start Page (Master Page). By default the Start Page is empty. You can design you Start Page as required prior to adding a page and subsequently added page will duplicate the Start Page. To access the Start Page scroll down the Page: drop down list.

Newly added page can be further modified if required using the design tools available.



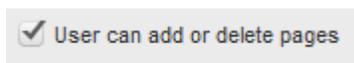
The delete page icon allows you to remove the active page from your page set.

Note: You cannot remove the Start Page and at you will not be able to remove all pages. At least one page must remain in your Print Template.



You can navigate among your pages using the page drop down list or by using the arrow keys.

Page Locking Action



The option "User can add or delete pages" defines if the CartoVista Viewer user can add a page or not to the Print Template. If the box is unchecked, the end user will not be able to add pages. If the box is checked he will be able to add pages in this Print Template.



Creating & Publishing Tiled Base Maps

Introduction

The mapping concepts section presented some of the [key benefits or using raster tiles](#) as part of your web mapping deployment strategy.

The CartoVista Publisher offers the capacity to package a multitude of map layers into your own custom tile base map. Using your GIS data layers (vector or raster), you can create your own tile maps with advanced cartographic styles. The publisher tile module also features advanced labelling parameters and extended styles to let you create atlas quality base maps.

Chapter Content

This chapter introduces the concept of tile windows and how to set up and create your own tile layers with the CartoVista Publisher.

- [Choosing an Appropriate Tiling System](#)
- [Considerations for Creating Tiles](#)
- [Creating a Tile Map Window](#)
- [Working with a Tile Map Window](#)
 - [Toolbar](#)
 - [Map Tools](#)
 - [Menu](#)
- [Tile Window Layer Glow Effects](#)
- [Understanding Tile Numbers](#)
- [Generating Tiles](#)
 - [Tile Generation Dialog](#)
 - [Tile Output Content](#)

- [Displaying Your Tile Map in CartoVista](#)

NOTE: The Tile Publisher Module is an Add-In to the standard CartoVista Publisher. It requires the purchase of an additional license in addition to the license for the Publisher.



Choosing an Appropriate Tiling System

CartoVista supports the following two types of tiling systems. You have to choose the type of tiling system to use when you [create your tile map window](#).

Spherical Mercator Tile System

This type of tile system, known as the EPSG code 3857, is based on the World Mercator Projection and was popularized by tile map providers, including:

- Google Maps
- Bing Maps
- Yahoo Maps
- Open Street Map
- Blue Marble
- Cloud Made
- ESRI ArcGIS Server Tile Cache

The term Spherical Mercator is used to refer to the fact that these providers use a Mercator projection which treats the earth as a sphere, rather than a projection which treats the earth as an ellipsoid. This affects calculations done based on treating the map as a flat plane, and is therefore important to be aware of.

In order to be entirely compatible with the tile providers above and properly overlay data on top of these maps, it is necessary to use this projection specifically.

TECHNICAL NOTE:

Projections in GIS are commonly referred to by their "EPSG" codes, identifiers managed by the European Petroleum Survey Group. One common identifier is "EPSG:4326", which describes maps where latitude and longitude are treated as X/Y values. Spherical Mercator has an official designation of EPSG:3857. However, before this was established, a large amount of software used the identifier EPSG:900913.

The World Spherical Mercator Projection is expressed with the following proj4 expression:

**`+proj=merc +a=6378137 +b=6378137 +lat_ts=0.0
+lon_0=0.0 +x_0=0.0 +y_0=0+k=1.0 +units=m`**

Tiles maps created with the Spherical Mercator system share a common number of zoom levels, which are established with the same origin. The tile system is composed of tiles (images) of 256 x 256 pixels.

The Global Extents for the Spherical Mercator are the following:

- XMin: -20037507.0671618
- YMin: -19971868.8804086
- XMax: 20037507.0671618
- YMax: 19971868.8804086

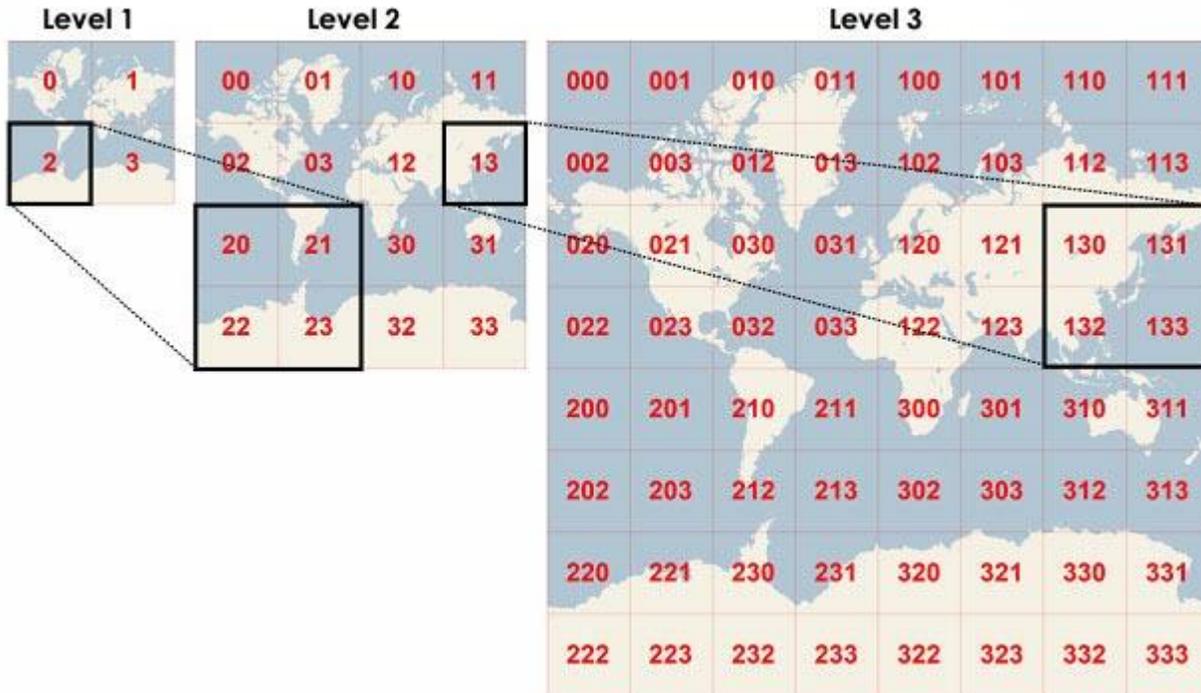
Please note that in the Mercator Coordinate system, the map scale associated with a zoom level depends on the latitude. For example, the nearest equivalent to a 1:50,000 map is zoom level 13 (nominally 1:54,000 at the equator, but 1:27000 at latitude 60).

Compatibility with existing tile providers

You can choose to use the Spherical Mercator tiling system if you want your map tiles to be compatible with common map providers such as GoogleMaps, Bing Maps, OpenStreetMaps and others. This is very useful to provide alternative tiles in the case where one provider is not available or does not provide enough details for an area of interest.

When you choose this tiling system the [Tile Map Window](#) that you create uses the Spherical Mercator Projection with specific zoom levels. The vector data in your map is automatically reprojected properly to the Spherical Mercator projection.

Zoom Levels and Coverage



On zoom level 0 (the lowest zoom level, in which the entire world can be seen on one map) there is only one tile containing the whole map. On the next zoom level this tile gets divided into 4 subsections, which form the next zoom level. Therefore on zoom level 1 you have 4 tiles and so on.

The number of tiles per zoom level can be calculated as follows:

$$\text{Number of tiles per zoom level} = 4^{\text{zoom_level}}$$

That means on zoom level 20 there are 1,099,511,627,776 tiles !

You can choose the zoom levels you need to generate using the [Tile Generation Dialog](#). When defining the coverage (by rectangle, polygon or a GIS file) and which zoom levels your tiles will provide, it is also important to [consider the storage and processing requirements](#).

CartoVista Tiling System

The CartoVista tiling system is used when you want to work with a projection that is different from Spherical Mercator. The tile system is specifically composed of tiles measuring 256x256 pixels.

This tiling system is defined using the following parameters:

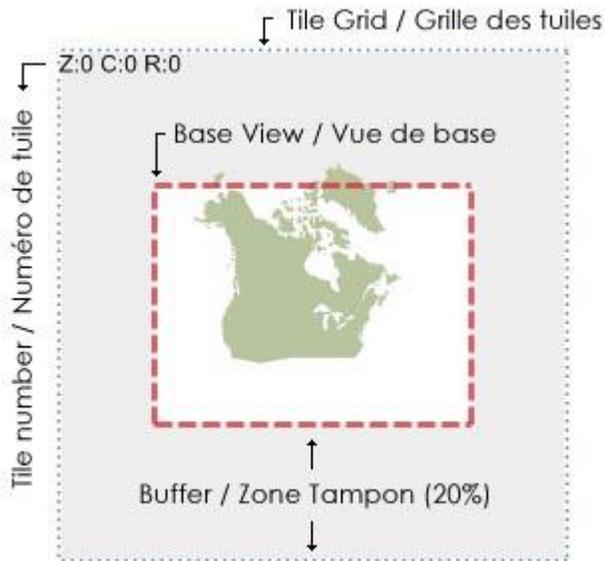
- The map coordinate system (projection)
- The map extents (minx, maxx, miny, maxy) for the tile base map

- The number of zoom levels (the maximum zoom level)

Map Extents (Base View)

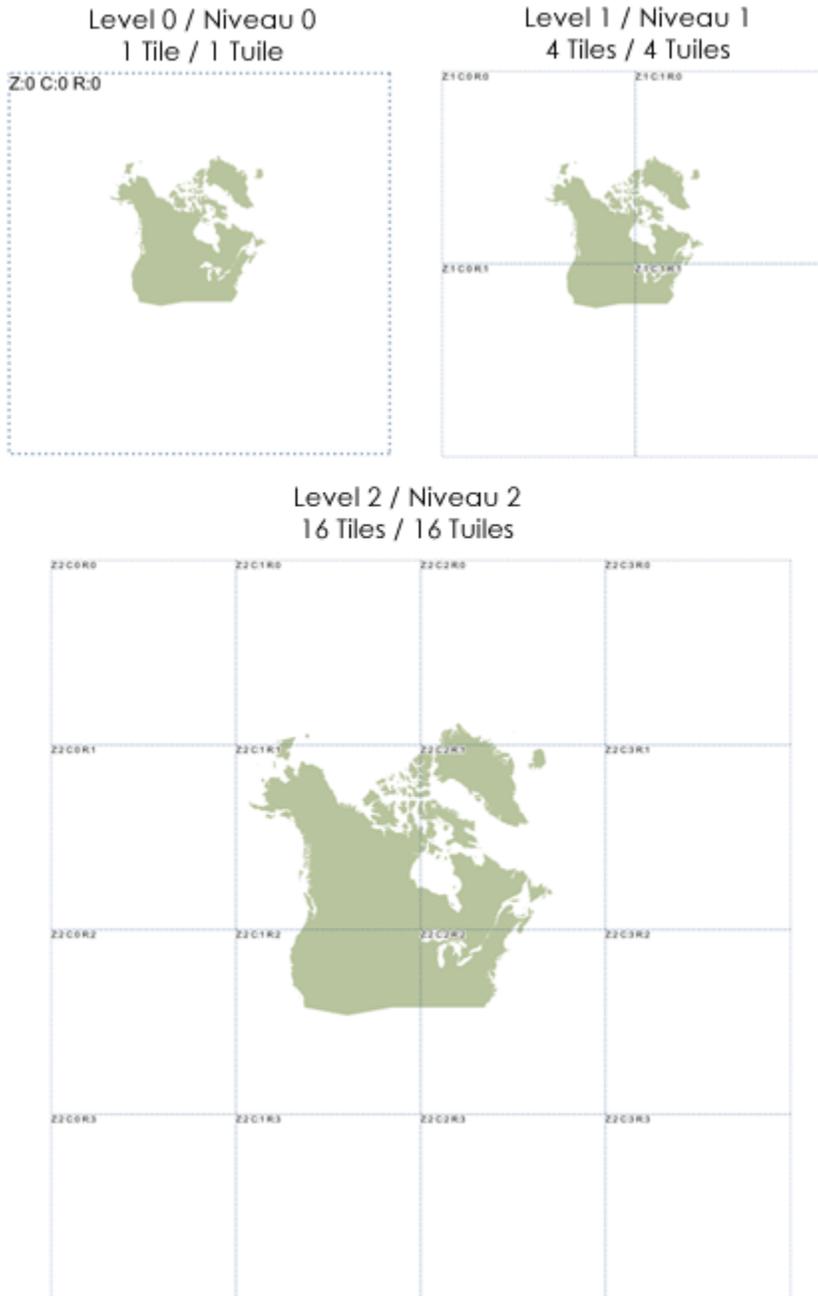
The map extents (base view) is the most important parameter as it defines the origin of the tile system. The first zoom level is defined as a tile of 256x256 pixels that covers the extent specified as the base view.

When establishing the base view, a buffer zone of about 20% is added for the first tile, to enable zooming and panning around the map edges. You can display the base view as well as the tile grid and tile numbers directly in the publisher.



Zoom Levels

Like with the Spherical Mercator Projection, for each new zoom level in the CartoVista Tiling system, there are 4 times more tiles than the previous one.



The following table shows how the number of tiles grows exponentially with the zoom level (without applying any coverage restrictions).

Zoom level	Number of tiles
0	1
1	4
2	16
3	64

CartoVista Publisher Documentation

4	256
5	1,024
6	4,096
7	16,384
8	65,536
9	262,144
10	1,048,576
11	4,194,304
12	16,777,216
13	67,108,864
14	268,435,456
15	1,073,741,824
16	4,294,967,296
17	17,179,869,184
18	68,719,476,736
19	274,877,906,944



Considerations for Creating Tiles

The CartoVista Publisher is designed to create tile images as fast as possible. It is capable of generating about 30 tiles (images) per second on a typical desktop computer workstation. The time it takes to generate tiles is highly dependent on the number of features and complexity of the cartographic rendering (labelling, etc.).

When you are creating tiles with the CartoVista Publisher it creates images locally or on a network drive. The folders created are setup in a structure that is optimized for data access.

Portable Network Graphics (PNG)

Map tile images created with the CartoVista Publisher are saved in Portable Network Graphics (PNG) format, which is optimized for usage on the web. As PNG supports transparency, it is also possible to setup a transparent color in the output. This is very useful in particular if you plan to overlay different tile layers on top of each other.

Plan the number of images to generate and the required storage

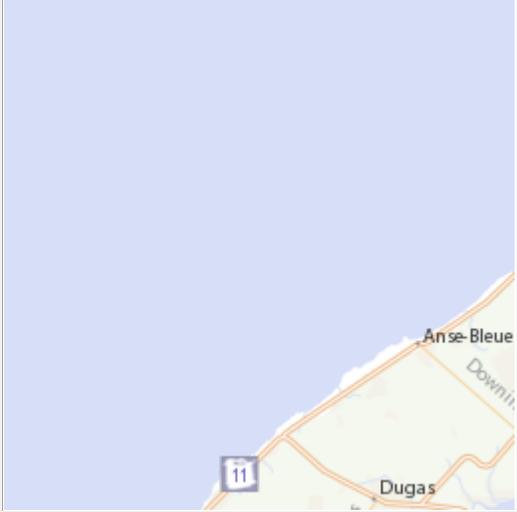
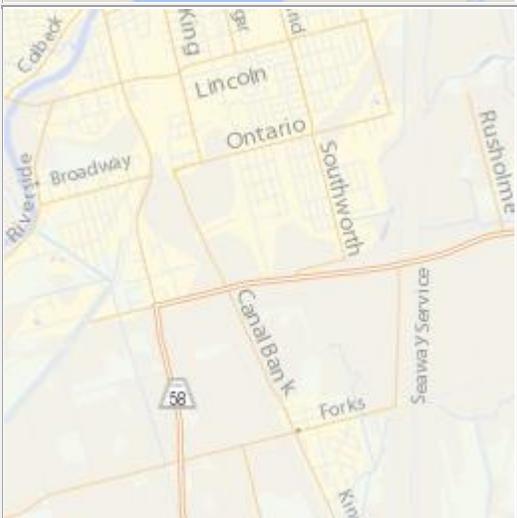
As you define the number of zoom levels and geographical coverage of the tile map you are creating, it is very important to understand the number of tile images that will be generated as well as the storage space that will be required for them.

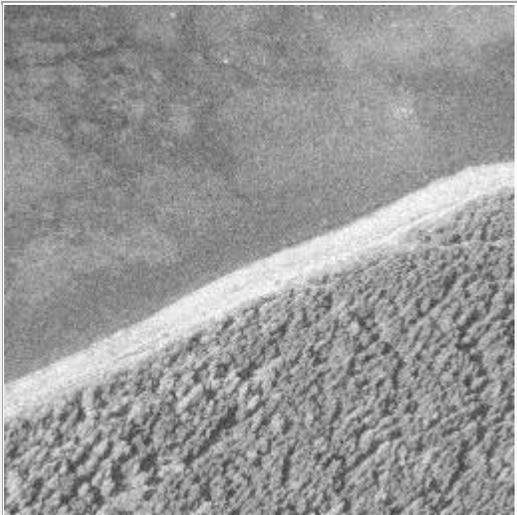
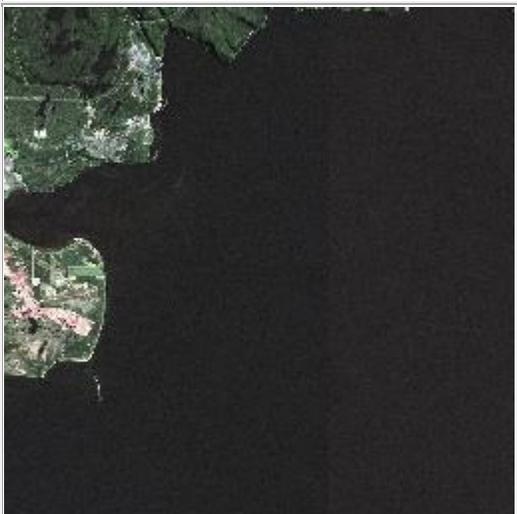
As you design your tile map, you have to establish the maximum level of details you want to provide. A fundamental question to ask is "Do you really need all zoom levels?". The number of zoom levels required depends on the nature of the map you are producing and the requirement for the end user to understand and make use of the map's geographic context. Every additional new zoom level you include adds a considerable number of tile images to the output.

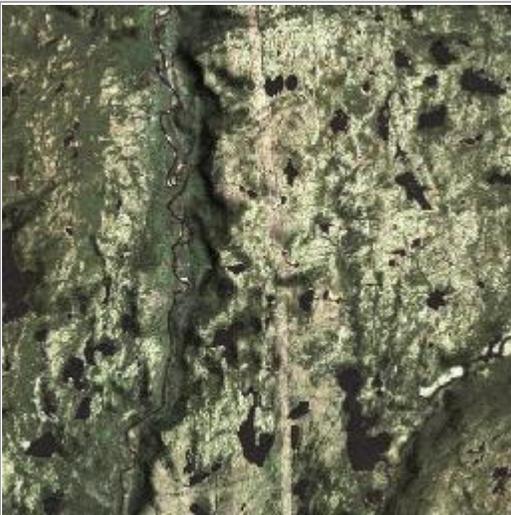
The size of each individual tile images depends on the complexity of the map tile in terms of the number of map features and content (colors, redundancy, etc.).

The following table outlines some sample tiles and their associated size in kilobytes.

Tile Image	Description	Size (Kilobytes)
------------	-------------	------------------

 A vector map showing a coastal area. The top half is a large blue area representing water. The bottom right shows a landmass with a road labeled '11' and two locations: 'Anse-Bleue' and 'Dugas'. The map uses simple colors and lines to represent the terrain and infrastructure.	<p>Vector map with homogenous content (mostly water, some land)</p>	<p>12 KB</p>
 A vector map of a bay area. The central feature is 'Padilla Bay' in blue. Surrounding land is shown in light brown and green. Labels include 'Anacortes', 'Similk Beach', 'Deception Pass State Pk', 'Swinomish Indian Reservation', 'Fredonia', 'North Fork Skagit P.', and 'Guemesi Channel'. The map includes more detail than the first, such as parks and reservations.	<p>Vector map with moderate content (water, land, map labels, etc.)</p>	<p>37 KB</p>
 A vector map of a densely populated urban area. The map is filled with a grid of streets in yellow and orange. Labels include 'Lincoln', 'Ontario', 'Southworth', 'Forks', 'Seaway Service', 'Carroll Bank', 'Broadway', 'Riverstone', 'Cobble', 'Bury', 'Gard', and 'Kim'. A road labeled '58' is also visible. The map shows a high density of features and labels.	<p>Vector map with dense content (streets, water, land cover, etc.)</p>	<p>55 KB</p>

 A vector map showing a street grid in a city. The map is yellow and orange, with street names like St. Clair, Dupont, Bloor, Bathurst, Shaw, Dundas, Queen, and King. There are also labels for 'Parker's', 'Roncesvalles', and 'Parkside'.	<p>Vector map (street level) with dense content (streets, water, land cover, etc.)</p>	<p>73 KB</p>
 Aerial photography in grey scale, showing a low density of detail. The image is mostly dark with some lighter, textured areas.	<p>Aerial photography (Grey scale) with a low density</p>	<p>86 KB</p>
 Aerial photography in color, showing a low density of detail. The image is mostly black with some green and brown patches, indicating mostly water.	<p>Aerial photography (Color) with a low density (Mostly water)</p>	<p>109 KB</p>

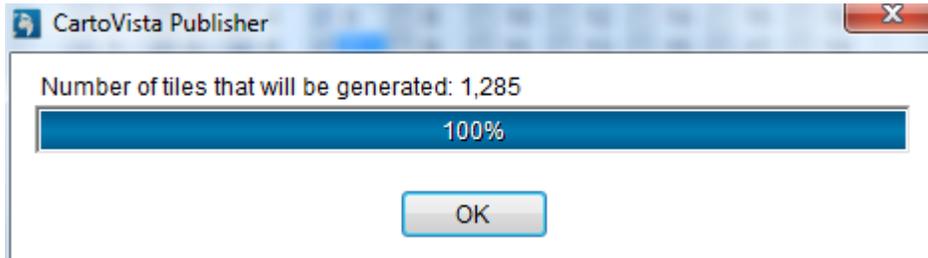
	<p>Aerial photography with a medium density (medium number of colors)</p>	<p>114 KB</p>
	<p>Aerial photography (Satellite view) with a high density (high number of colors)</p>	<p>196 KB</p>

The following table outlines the number of tiles per zoom level and associated storage size (in kilobytes) for a North American tile dataset in Lambert Conformal Conic, for zoom 0 to 7.

Zoom level	Number of tiles	Total Tile size (kb)	Total Tile size (mb)	Average tile size (kb)
0	1	45	0.05	45
1	4	210	0.21	52
2	16	800	0.8	50
3	64	2,500	2.5	41
4	256	9,600	9.6	35
5	1,024	24,000	24	24
6	4,096	54,000	54	13
7	16,384	136,000	136	8

The Count Tiles Button

The Count Tiles Button in the [Tile Generation Dialog](#) is a very useful way to determine how many tiles will be created, without actually generating them. To get the count, simply open up the dialog and click on the Count Tiles button. The count is displayed in an information window.





Creating a Tile Window

You can create a tile window using one of the following 4 methods.

1. Open an existing .CTM

This can be done in 3 different ways:

- From the main menu, select the option File -> Open. A dialog is displayed to let you choose the .CTM file that corresponds to the map you need.
- By double clicking on a .CTM file in Windows Explorer
- By dragging and dropping a .CTM file in the publisher (in a free area)

Once the .CTM file is selected, the tile map window is opened with the configurations that were previously saved in the .CTM.

2. Convert an existing .CVM or .CSM file

After opening a .CVM or .CSM file, you can use the menu File - > Convert To - > Tile Window.

A dialog is displayed to specify a name and location for the new .CTM file that will be created from the .CVM or .CSM file specified. Once this step is done, the tile map window is displayed with the configurations of the original file. If the map is not in the Spherical Mercator projection, the projection selection dialog is displayed to let you choose the type of tiling system you want.

NOTE:

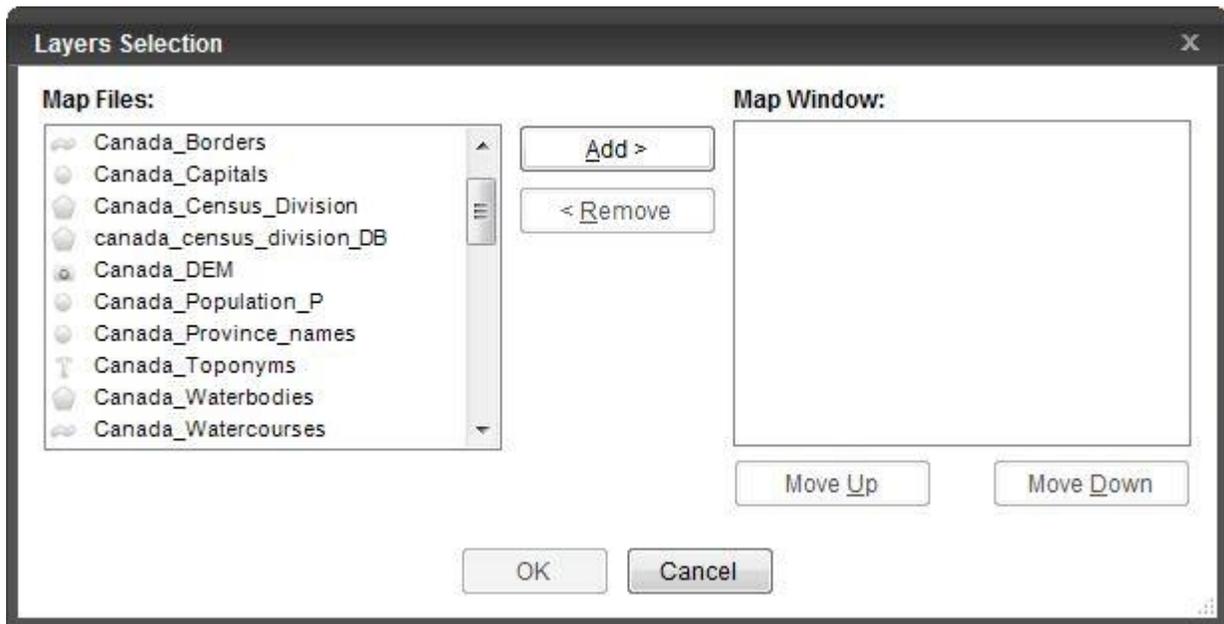
The configurations of a server map window and a tile window being different, there are some attributes and parameters of the .CVM or .CSM that may not be transferred in the new .CTM. In reverse, some of the parameters of the new .CTM that are not part of a .CVM or .CSM will have to be configured for the map tile window to work properly.

3. Create a new map tile window from the layer selection dialog

This can be done in the following 3 ways:

- From the main menu, choose the option File - > New - > Tile Window
- By right-clicking in a free area of the map source manager and choosing the option New Tile Window.
- By pressing the F4 key.

After executing one of the above, the layer selection dialog is displayed. From this dialog, you can select map layers that are already loaded in the map source manager and add them to your tile window. For more information, see the [Layer Selection Dialog](#).



4. Create a new tile window from cartographic sources in the map source manager

This can be done one of the following 3 ways:

- By dragging and dropping one or more sources (GIS files, etc.) from the map source manager in a free area while pressing the ALT key.
- By right clicking on one or more sources that are selected in the map source manager and choosing the option "New tile window".
- By dragging and dropping one or more selected layers from an existing tile window in a free area of the publisher.

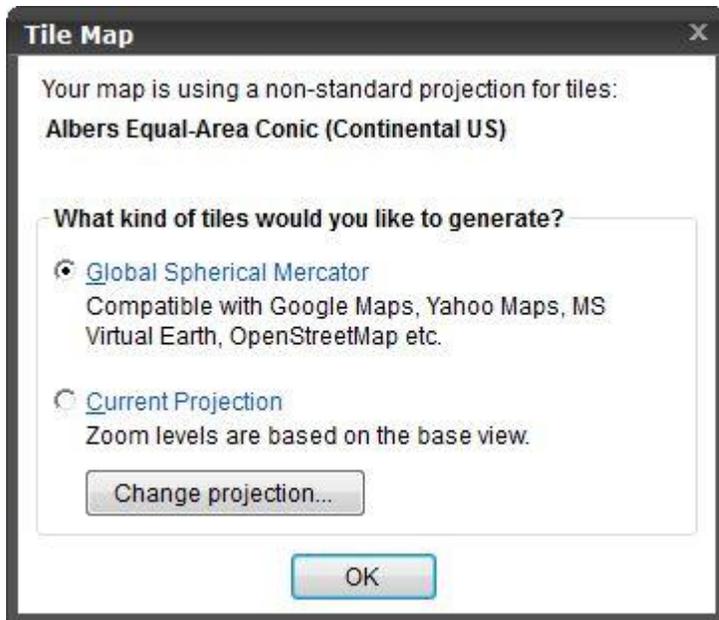
For the first 2 methods, the projection selection dialog is displayed if the selected layers are not in the Spherical Mercator projection. If the third method is used, the projection of the tile window (where layers were selected) will be maintained.

NOTE :

NOTE: It is not possible to include a layer based on a Tile Map File in a Tile Window. If you try to convert a Map Window that includes a Tile based layer, that layer will be removed from the Tile Window.

Tile System Coordinate System Selection Dialog

The first time a new Tile Window opens, you will be prompted to select the projection to use.



If you choose to use the Global Spherical Mercator, the Tile Window will use the Spherical Mercator Tile system. If you select any other projection, the Tile Window will use the CartoVista Tile System. For more information on these tile systems, see the section on [Choosing an Appropriate Tiling System](#).



Working with a Tile Window

Tile Windows allow you to create a tiled base map that you can use in the CartoVista Viewer.

The Tile Window is composed of the following 4 elements:

Map Display

Displays the map as determined by the layers selected and the style and other settings applied to each layer.

Main Tool Bar

This tool bar contains the options to access the [Tile Generation Dialog](#), the [Set Base View Dialog](#) (if using the CartoVista tiling system) and the [Tile Coverage Dialog](#).

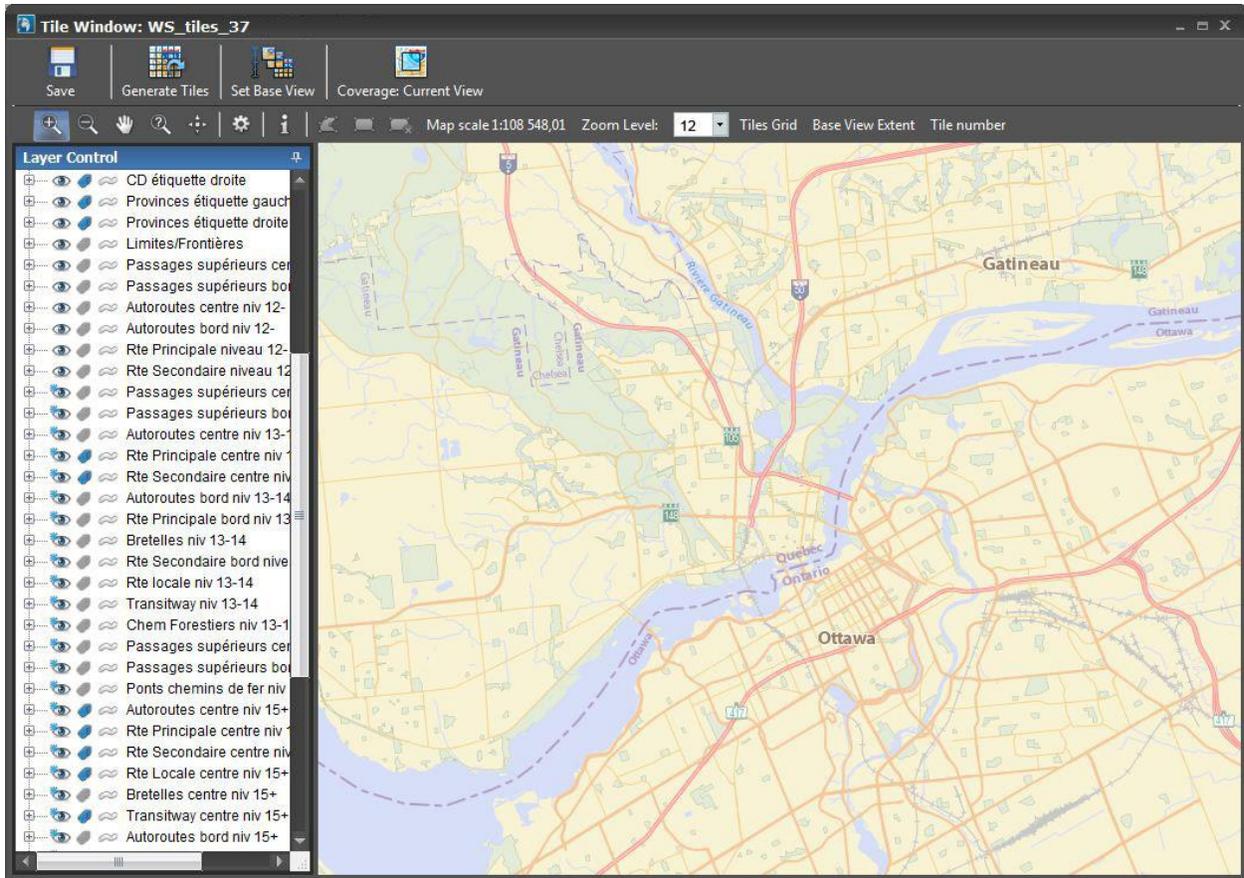
Map Tool Bar

A toolbar containing options for navigating, altering the map. There are also tools for defining the geographical coverage of the tiles, selecting the current zoom level and displaying additional boundary outlines for the tiles.

Layer Control

Lists the layers present in the map and allows the user to adjust the settings used for each layer. For more info see [Layer Control](#).

CartoVista Publisher Documentation





Tile Window Main Toolbar

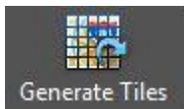
Save Button



The save button saves the current Tile Map to a .CTM file. When you save a .CTM file, you save all of the parameters of the tile map, including the base view and the attributes required to recreate the tile window. You are not saving the underlying GIS files, simply a reference to where they are located.

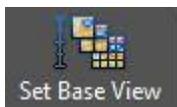
If you want to give someone a copy of your map, ensure they already have the GIS files loaded into CartoVista publisher with the same names, or include the source GIS files in the package you transfer to them so they can add them.

Generate Tiles Button



The Generate Tiles Button opens the [Tile Generation Dialog](#) to create the tiles, based on the parameters you have established.

Set Base View Button



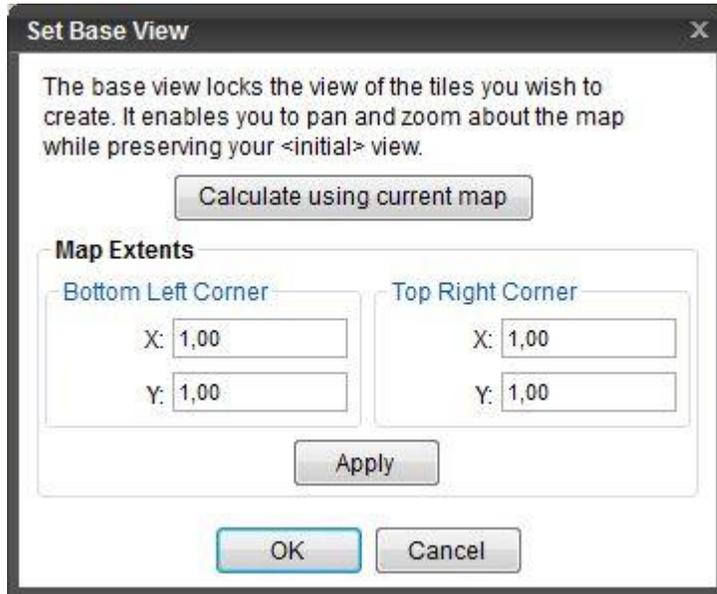
The Set View Button opens accessing the [Set Base View Dialog](#) to define the base view of your tile system and the extents (limits) of your tile data set. The first zoom level (zoom 0) and other zoom levels are established based on the scale of the base view.

NOTE :

This button is only available when the map is using the CartoVista Tile system. When the tile system is Spherical Mercator, the base

view is the entire world and cannot be changed.

Set Base View Dialog



Calculate using current map

Sets the base view extents to the extents currently displayed in the map display.

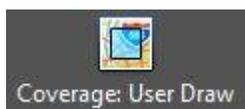
Bottom Left Corner

Manually sets the X and Y coordinates of the bottom left corner of the base view extents.

Top Right Corner

Manually sets the X and Y coordinates of the top right corner of the base view extents.

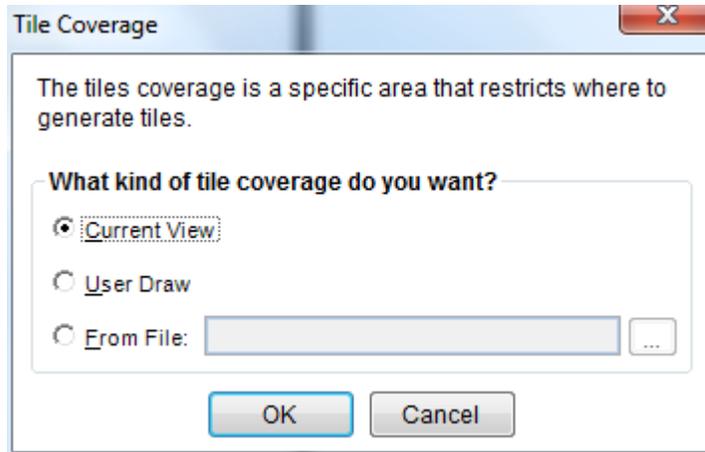
Coverage Button



The Coverage Button opens the Tile Coverage Dialog. This dialog is used to define the coverage of your tiles. The active source of the coverage is identified on the

button (Current view, user draw, from file). The coverage area is displayed as a dashed blue line on the map display.

Tile Coverage Dialog



Allows you to specify how the geographic coverage will be determined. There are three options available:

1. Current View: the extent of the current map display is used as the coverage zone.

2. User Draw: you must manually draw the coverage on the map display using one of the three drawing tools available in the Map Toolbar.

3. From File: you define the geographic coverage via a GIS file (ESRI Shape File or MapInfo .TAB). The GIS file can contain multiple objects of different type (polygons, lines or points). For a tile to be generated, at least one pixel of the tile must overlap an object in the GIS file.

NOTE :

In order for a tile to be included, all that is required is that 1 pixel of the tile be overlapping with the coverage zone.



Tile Window Map Tools

Map Navigation Tools

Zoom In Tool



Display a closer view of the map.

Use this tool to display a closer view in the current map.

- Select this tool from the tool bar.
- Click on the map to zoom-in.
- The map is zoomed-in by a factor of 2.

NOTE :

Tile windows are behaving differently than normal windows for zooming. It is not possible to define a custom scale in a tile window. The map scales are fixed based on the defined zoom levels and the selected tile system.

TIP: You can also draw a rectangle on the map (click and drag) to closely define the area you want to zoom to.

Zoom Out Tool



Display a wider view of the map.

Use this tool to display a wider view in the current map.

- Select this tool from the tool bar.
- Click on the map to zoom out.
- The map is zoomed-out by a factor of 2.

Pan Tool



Recenter the map.

Use this tool to re-center the current map.

- Select this tool from the tool bar.
- Click and drag the map to recenter.
- Once the map is recentered as you need it, release the mouse.

Change View Tool



Change the current map view by entering coordinates.

The Change View tool is used to access the [Change View Dialog](#) to set the view of the Map.

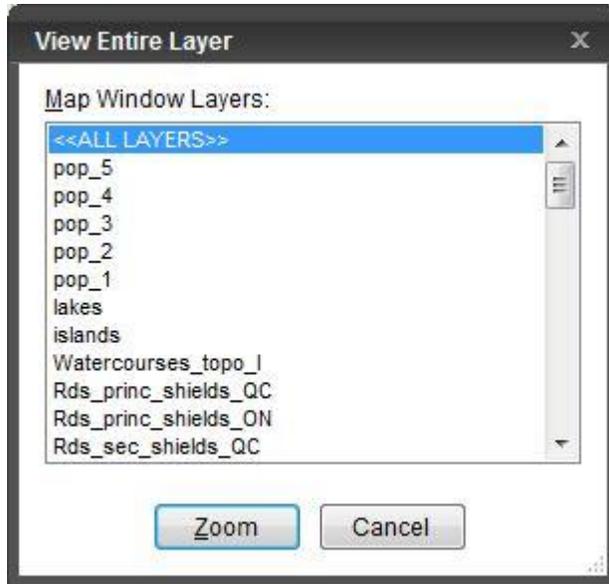
View Entire Layer Tool



Set the map view to the extent of a map layer.

Use this tool to access the view entire layer dialog to set the map bounds to the extent of a specific layer.

View Entire Layer Dialog



To set the map view to all layers in the map window, select <<ALL LAYERS>>.

To set the map view to a specific layer, select it from the list and click on the Zoom button.

Map Settings Tool



The Map Settings tool is used to access the [Map Settings dialog](#) to set the title, coordinate system and dimension (width and height) of the map.

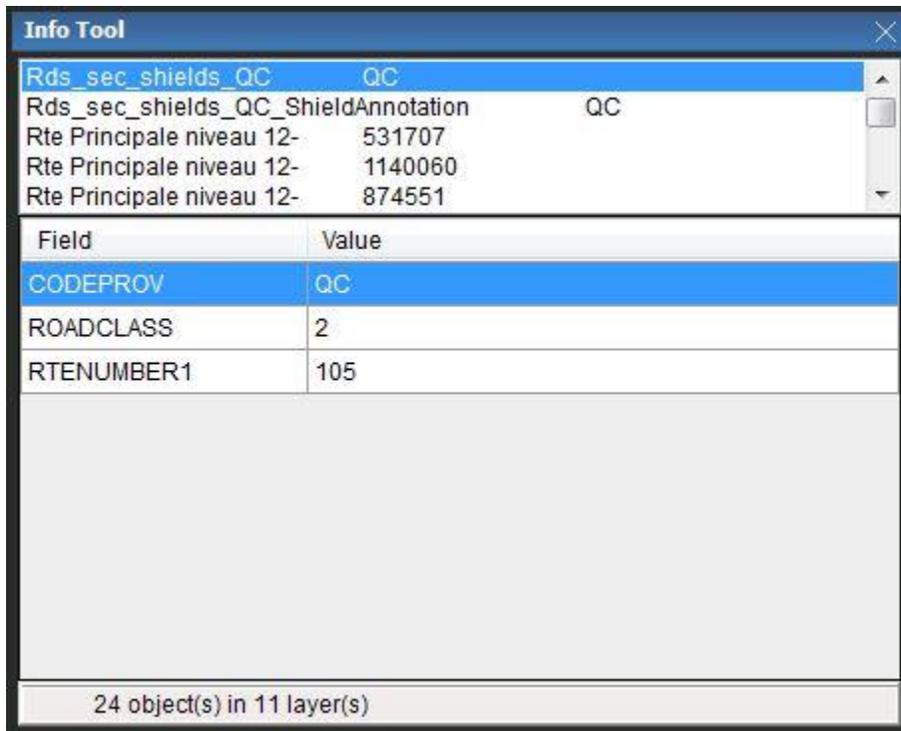
Info Tool



Use this tool to get attribute information about map features.

Select this tool from the tool bar and click on a map location. The info tool window displays a list of all objects at the location of the click.

Info Tool Window



If you have only selected a single object from the map, the field names and values for that object are displayed. If the location you clicked has multiple objects (same layer or different layer) the Info Tool window displays a list of objects at the top of the dialog. Selecting the different objects updates the fields/values to the selected object. The status bar at the bottom tells you exactly how many objects have been selected from how many layers in the Map Window.

Coverage Drawing Tools



Drawing the Tile Coverage Area

When the Tile Coverage option is set to "User Draw", these 3 drawing tools become available to define the tile coverage area. The first tool draws a custom polygon for the coverage. The second one draws a rectangle. The last tool deletes the coverage that was drawn.

The coverage region will be displayed in the Map Display with no fill and a dashed blue stroke.

Display of scale / zoom width

Depending on the application preference setting, either the map scale (e.g. 1: x) or the Map Width (e.g. x Kilometers) will be displayed after the drawing tools.

Zoom Level

This drop down list displays the current zoom level of the tile map. You can also pick from the list to go directly to a specific zoom level without using the zoom tools or the mouse wheel.

Tiles Grid Button

This button toggles the display of tile outlines at the current zoom level. When enabled, each tile's boundary is displayed with a light blue outline.

Base View Extent Button

This button toggles the display of the base view's extent for the tile system. When enabled, the base view is drawn with a red outline.

Tile Number Button

This button toggles the display of identifiers for each individual tile displayed. The identifier includes the zoom level, row and column numbers. See [Understanding Tile Numbers](#) for more information.



Tile Window Menu

The Tile Window menu is accessible from the main menu and is present when a tile window is the active window.

Layer Selection...

Opens the Layer Selection Dialog. See the [Layer Selection Dialog](#) section for more information.

Change View...

Opens the Map View Settings dialog for the current map view. See the [Change View dialog](#) for more information.

Previous View

Returns the map display to the previous zoom/scale and location. If you have not moved/panned or otherwise changed the view of the map, this has no effect.

This option is also available in the popup menu available when you right click in the map display.

View Entire Layer...

Opens the View Entire Layer Dialog. See the [Map Tool Bar](#) for more information.

Settings

Opens the [Map Settings dialog](#).

Set Base View

Opens the [Set Base View dialog](#) to define the base view for your tiles.

Set Coverage

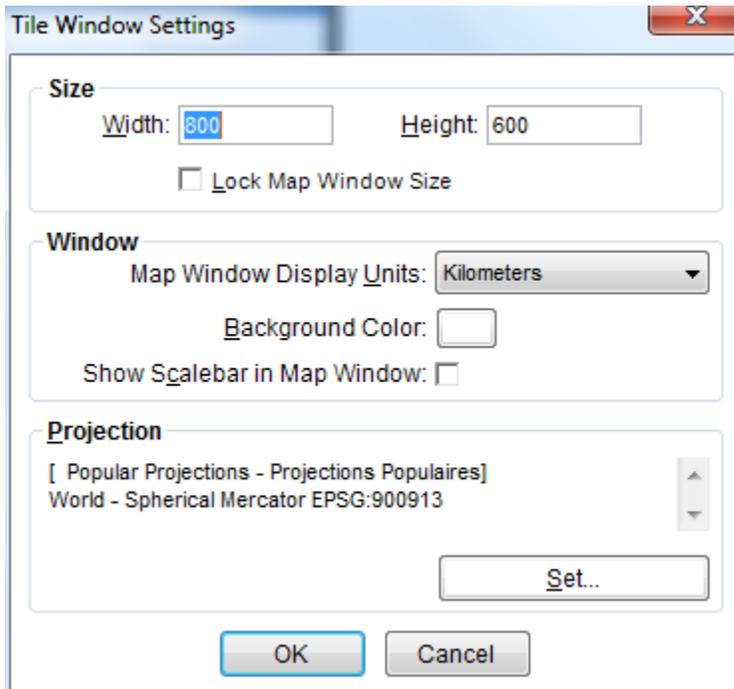
Opens the [Tile Coverage Dialog](#) to establish the area covered by your tiles.

Generate Tiles

Opens the [Tile Generation Dialog](#) to start generating your tile images.



Tile Window Settings



This dialog lets you set the size, dimensions and the coordinate system of the tile map if using the CartoVista tiling system.

This dialog can be accessed by choosing Tile Window > Settings from the main menu, clicking on the Settings tool button in the Tile Window's Map Toolbar  or by right clicking in the map window and selecting Tile Window Settings from the popup menu.

Size

In the CartoVista Publisher, the map size is defined in pixels.

To enter a specific map size in pixels, enter values in the map size width and height text boxes.

NOTE 1: If you resize the map window in the CartoVista Publisher, the width and height in pixels also change. To prevent accidentally resizing the window, you can Lock the Size of the Map Window.

The Lock Size option fixes the map dimensions when enabled. By default, CartoVista does not lock the map size. When you resize the map window in the publisher, the size of the map in pixels changes. When the Lock Size option is enabled, you will not be able to change the size of the map window.

Window

The Window section allows you to edit the settings that apply to the Tile Window in general.

Map Window Display Units

This defines the units used to display linear information such as the map width. Choices are: inches, feet, miles, meters, kilometers.

Background Color

This defines the color that is in the background of the map. Choose a color with the color picker. The default background color can also be specified in the Tools and Preferences Dialog - Map Window Settings Tab

Show Scalebar in Map Window

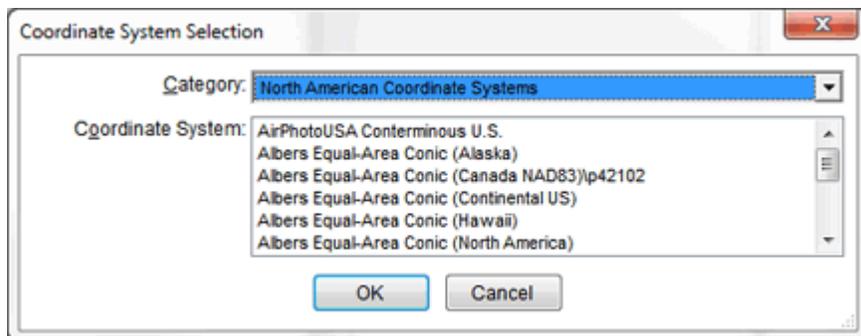
This checkbox allows you to display a scale bar in the bottom left corner of the Map Window. The scale bar will only show inside the Tile Window.

Projection

The Projection section displays the currently selected coordinate system for the Tile Window.

The coordinate system information is dependent on the Publisher application settings. (see [Tools and Preferences - Projection Settings](#)) There are three ways that the information could be presented: Well Known Text (WKT), PROJ4, or a User Name.

If you want to change the map coordinate system, you can click on the Set... button to display the Coordinate System Selection dialog and choose a new coordinate system.



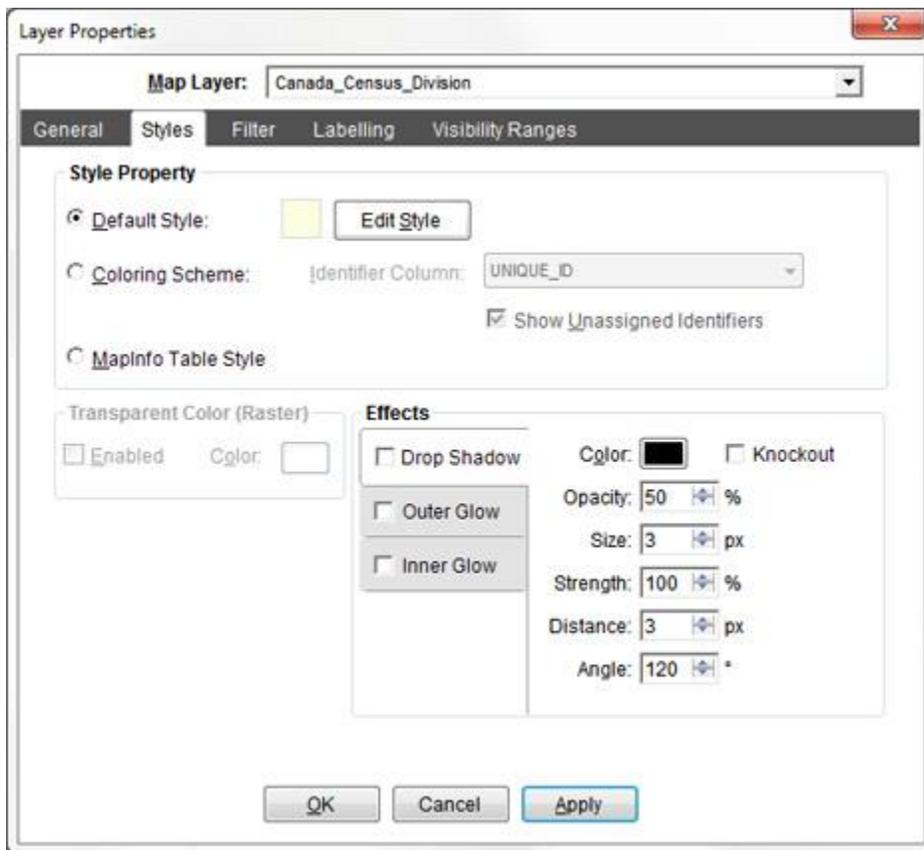
NOTE 1: You can also change the coordinate system by dragging a coordinate system from the Coordinate System Manager and dropping it directly onto the Tile Window.

NOTE 2: You can only change the projection if you are using the CartoVista Tiling System.



Tile Window Layer Glow Effects

Special glow effects have been added to Polygon and Polyline layers in the Tile Window. These effects supplement the stroke of the geometry, and provide additional effects. The settings are in the Layer Properties dialog in the Style tab.



With no effect, the polygon will look as shown below:



Drop Shadow: Check to enable a drop shadow around all the geometries in the layer.



Outer Glow: Check to enable a glow effect around all the geometries in the layer.



Inner Glow: Check to enable a glow effect around the inside of a geometry's border. For Polylines, the effect is more noticeable with thicker stroke widths.



The following parameters apply to one or more of the effect types:

Color: Defines what color the effect should be drawn with.

Opacity: Controls the opacity of the effect when it is composited

Size: Sets width of the pen used to draw the effect when it is being drawn

Strength: Configures the amount of blur to apply to the pen being drawn

Knockout: Instructs the compositor not to fill the polygon area. This should be left disabled unless working with transparent fill or stroke patterns (Not applicable to inner glow)

Distance: The number of pixels the drop shadow should be displaced relative to the source geometry (Only applicable to drop shadow)

Angle: The angle the shadow should be moved relative to the source geometry (Only applicable to drop shadow)



Understanding Tile Numbers



A tile number is a unique identifier for each a tile, composed of the zoom level, the column and row in the tile grid. When activated, the tile number is displayed in the upper left corner of each tile.

The tile number has a different meaning depending on if you are using the Spherical Mercator tile system, or the CartoVista Tile System.

If you are using the Spherical Mercator Tile System, the tile numbers (zoom level, column and row) are absolute. In this tile system, the tiles for a specific area always have the same number. The Spherical Mercator projection organizes the world into a square system where each hemisphere is a quadrant. The first zoom level shows the entire world on one tile. On the next levels, the first column is east of the longitude 180°W while the number grows eastbound (to the right of the map). The first row goes from latitude 90°N, the numbers increasing southbound (to the bottom of the map).

If you are using the CartoVista Tiling System, the zoom level, column and rows are relative. These are established from the Base View that the user has defined with the Tile Map. The first zoom level contains the entire base view in one tile and the first columns and rows are setup at the top left corner for zoom level 1 and beyond.

NOTE :

The first zoom level, the first column and the first row are numbered as 0 (zero). In the image above, the tile is then located

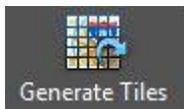
at column 1187 and row 1467.



Generating Tiles

Once you Tile Map has been created and is properly configured, you can start generating tiles.

You can access the [Tile Generation Dialog](#) by clicking on the button "Generate Tiles" in the tile window or by selecting from the top menu - >Tile Window - > Generate Tiles.



The [Tile Generation Dialog](#) is then displayed to configure the output (folder, zoom levels, etc.)



Tile Generation Dialog

Output Folder

The path (folder) where the tile images will be created and stored. This can be either local to the computer, or accessible via the network.

Zoom Levels

Defines which zoom levels the tile images should be created for.

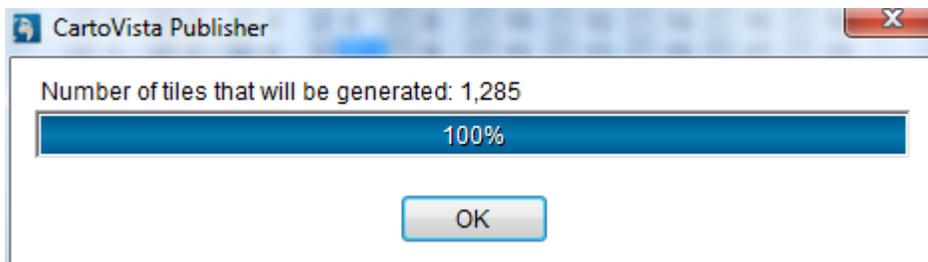
- The "All" and "None" buttons turn on or off all zoom levels with one click.
- The buttons in the toggle group change the state (on to off, or off to on) of specific zoom levels all at once. (0 to 3, 0 to 9, 0 to 15 and 0 to 19). Each time you click, the specified zoom levels are toggled. E.g. If all zoom levels are off, and you click 0-9, then zoom levels 0 through 9

will be toggled on. If you then click 0-3, zoom levels 0, 1, 2 and 3 will be toggled off, leaving only levels 4 through 9 toggled on.

- The check boxes from 0 to 20 allow you to manually turn on or off any zoom level. The zoom levels turned on to generate do not have to be consecutive.

Count Tiles Button

Calculates the number of tile images that will be created based on the selected zoom levels and the current coverage zone. The count is displayed in an information window.



Export Options

This zone allows to specify the last parameters before proceeding with the tile creation process per say.

Override Existing Tiles

When checked, overwrites any tile image that has the same tile number in the output folder.

Set Map Background as Transparent

Sets areas where there are no features to be transparent. When using this option, layers that are below the tiles can still be seen because of the transparency. Unless overridden by the Set Transparent Color option, the background color for the Tile Window is used as the transparent color.

Set Transparent Color

Enables the manual selection of the color used as the transparent background. Use the color button at the end of the line to pick the desired color.

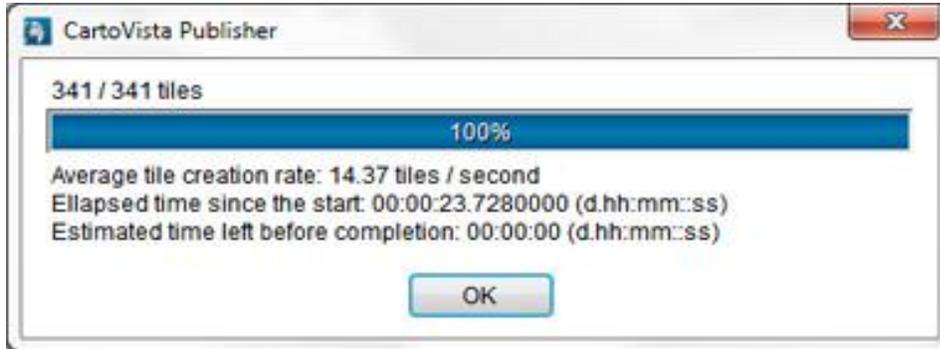
Create CartoVista Tile Set XML File

Enables the creation of a CartoVista Tile System XML configuration file. For more information see [Tile_System_Configuration_File](#)

Add Tile Layer to Map Source Manager

Automatically adds the Tile Set created to the Map Source Manager when tile generation is completed.

Generating Tiles



When all of your configurations are completed, you click on the "Generate" button to create the tile images. A progress dialog is displayed to indicate the status of the tile creation process. It is possible to cancel the process by clicking on the cancel button. At the end of the process, if the option "Add Tile Layer to Map Source Manager" was selected, a dialog is displayed to enter a name for the tile data set.

NOTE :

Generating map tiles can be a tedious process.

It can take a few minutes to several hours, depending on:

- *Your system performance*
- *The number and complexity of your map layers (number of features, labeling, rendering, etc.)*
- *The number of zoom levels (closer zoom levels generating a lot more tiles).*

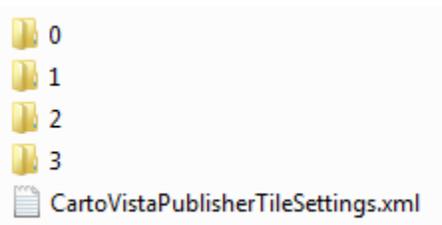


Tile Output Content

Output Folder

The folder you choose as the output for your tiles contains all you need to enable the display of the tile layer in a CartoVista application.

The output directory includes a sub-folder for each of the zoom levels you have created and the `CartoVistaPublisherTileSettings.xml` file.



The tile images are stored within each of these directories, in a folder structure that is optimized for data access.

Tile System Configuration File (XML)

When creating tiles, the tile output folder also includes an XML file at the root called ***CartoVistaPublisherTileSettings.xml***.

This important file includes the definition of the map tiling system, including:

- The map coordinate system (Proj4 format)
- The tile system extent (XMin, YMin, XMax, YMax)
- The tile system closest zoom (e.g. 12)
- The tile image extension (PNG, JPG, etc.)

This file is required by the CartoVista Viewer to load the tile data set and properly register your tile coordinate system.

The following is a sample `CartoVistaPublisherTileSettings.xml` file for a tile map in Canada (Lambert Conformal Conic Projection).

```
<CartoVistaPublisherTileSettings ver="1">
```

```
<Proj4><![CDATA[+proj=lcc +lat_1=49 +lat_2=77
+lat_0=49 +lon_0=-95 +x_0=0 +y_0=0 +ellps=GRS80
+datum=NAD83 +units=m +no_defs]]></Proj4>
<XMin>-11705489.2170051</XMin>
<YMin>-11938897.2470051</YMin>
<XMax>11323831.6570051</XMax>
<YMax>11090423.6270051</YMax>
<ClosestZoom>12</ClosestZoom>
<TileExtension>PNG</TileExtension>
</CartoVistaPublisherTileSettings>
```

Procedure to install on a server

You need to include the tiles in a zip file to deploy them on a web server. Unzip the files in a folder, named Tiles for instance.

You must then open the Internet Service Provider Manager (IIS) and do a right-click on Managing your website « Add a virtual directory ». You then need to add an « alias » (like CanadaTiles) and enter the path to the tiles: c:\Tiles\CanadaTiles.

The tileset can now be added in the publisher, using the following address
<http://mysite.com/CanadaTiles>.

To locally deploy the tiles on your computer, you just need to copy them in a local directory. You then use the path to the directory instead of the URL to add them in the publisher.

To add a Tileset in the publisher, see [Adding A Tile Provider in the CartoVista Publisher](#).



Displaying Your Tile Map in CartoVista

Once the tile base map is created, it can easily be added to the list of available tile providers to quickly create a CartoVista map output.

To add the custom tile base map you have created, see [Adding A Tile Provider in the CartoVista Publisher](#).

TIP :

When you generate your tiles, you can use the option "Add tile layer to map source manager" in the [Tile Generation Dialog](#) to complete this automatically.



Tools and Preferences

The tools and preferences of the CartoVista Publisher give you information on Bulk Publisher Dialog and allow you to setup your working environment by configuring the following:

Tools and Preferences

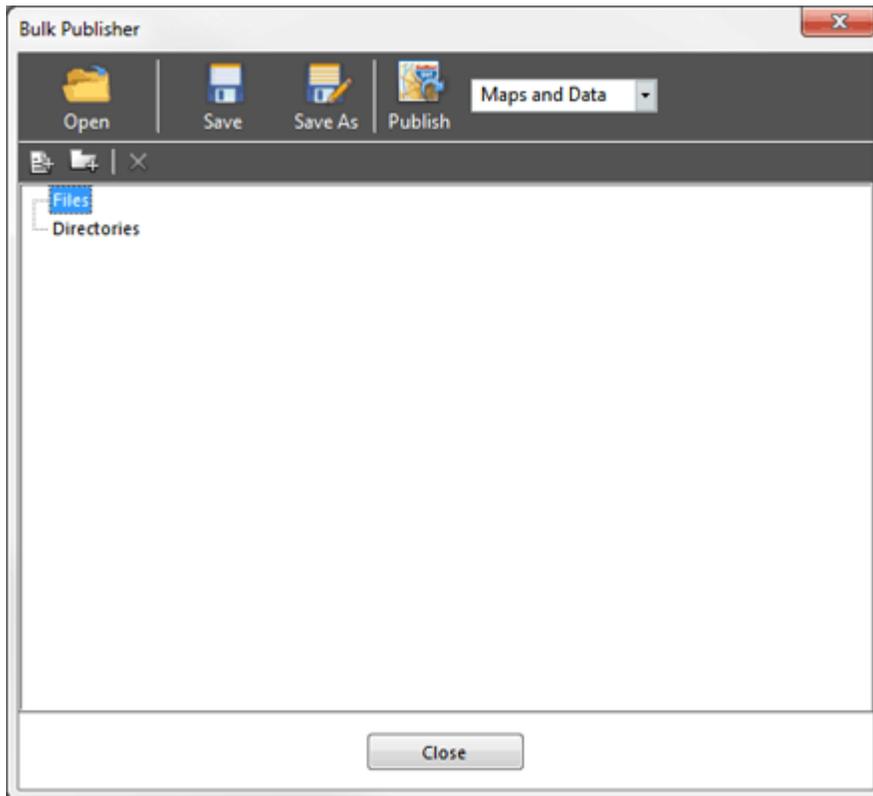
- [Bulk Publisher Dialog](#)
- [Packaging Maps](#)

Program Preferences

- [General](#)
- [Map Window](#)
- [Publish](#)
- [Projection](#)



Bulk Publisher Dialog



The CartoVista Bulk Publisher is a tool to help you automate your map and data publishing procedures.

Once your CartoVista maps (.cvm) and data views (.cvd) are setup and created, you can use the bulk publisher to publish all files in a single operation.

TIP: Only maps and data views that have been published at least once will be enabled in the bulk publisher.

The bulk publisher includes the capabilities to create a list of files and/or directories to publish. When adding directories, the process will publish all .cvd and .cvm that are inside the specified folder (including all sub-folders).

Specifying the job content

Adding Files

To add a file to the job you can either:

- Click on the file (+) icon in the toolbar, or right-click on the **files item** in the treeview and select the Add... menu item.
- Browse and select the file (.cvm or .cvd) to add

Adding Directories

- Click on the directory (+) icon in the tool bar, or right-click on the **directories item** in the treeview and select the Add... menu item.
- Browse and select the folder to add

Removing Files or Directories

To remove a file or directory, select it from the treeview list and click on the Delete (X Button) from the toolbar.

Publishing

To run a bulk publishing job, click on the **Publish button**.

You can also define what to publish by selecting from the list box one of the option:

- Maps and data (default): Publishes both maps and data (.cvm and .cvd)
- Maps only: Only publishes maps (.cvm files)
- Data only: Only publishes data views (.cvd files)

Saving Bulk Publisher Jobs

The bulk publisher jobs can be saved in a file (CartoVista Bulk Publisher File with the extension .cvb). To save, click on the Save or Save As Button from the tool bar.

The Bulk Publisher Jobs (.cvb) can be opened again in the tool to regenerate the map and data as needed.



Packaging Maps

The Package Map tool allows you to transfer a Map that you have created to another machine or to another user. The package process creates a .ZIP file that contains the .CVM and all the source Map Files that you need. It will also include any images that you have used as symbol point style or label backgrounds.

When the .ZIP file is extracted to a local directory, the .CVM will be able to find all the data it needs to recreate the map on the new machine.

There are two ways to Package a map:

1. Package an existing .CVM file

From the main menu, select the Tools > Package Map menu option. A dialog will prompt you to locate the .CVM file that defines the map. Once you have selected a .CVM file, the map will be packaged into a .ZIP file with the same name as the original .CVM file.

2. Package an open Map Window

From the main menu, select the File > Package menu option. This option will show only if a Map Window is open. A dialog will prompt you to locate and name the .ZIP file for the package. Once you have chosen the output location and name, the map will be packaged into a .ZIP file.

If you have changes that you have not saved, you will be prompted to save the Map Window prior to the packaging operation commencing. If you do not save a Map Window at all, the package will be created, but it will not contain a .CVM file.

In order to use the packaged map on another computer, simply unzip all the files into the same directory. The package command may create additional sub-folders within the .ZIP file. Maintain the same directory structure in order to ensure the .CVM can find all the required files.



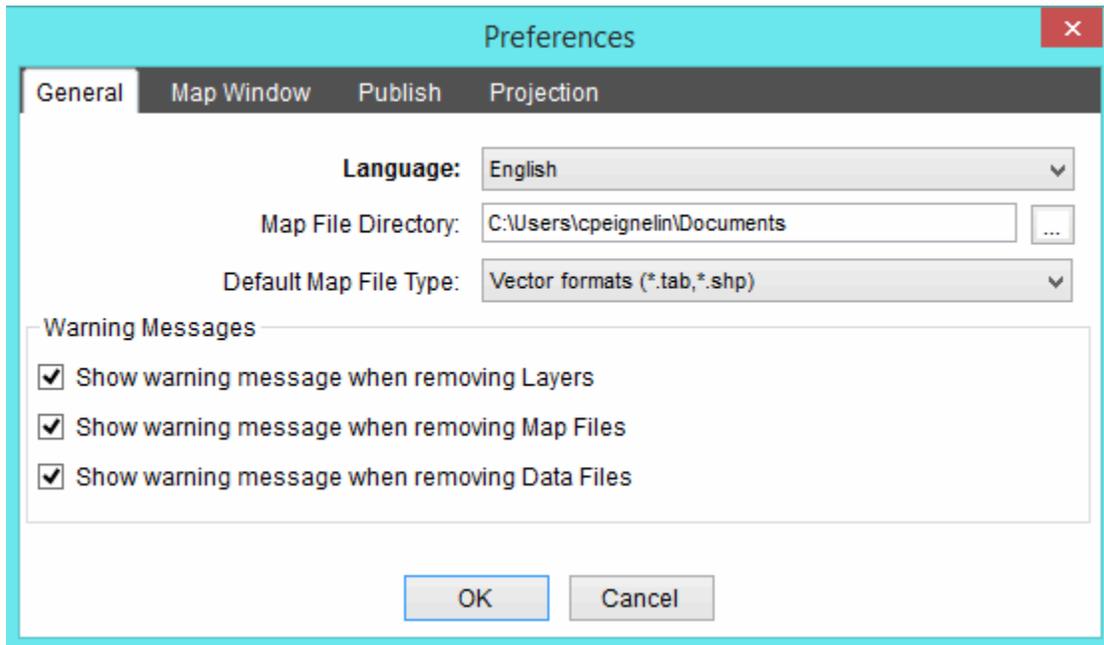
Program Preferences

This Chapter explains the following items:

- [General](#)
- [Map Window](#)
- [Publish](#)
- [Projection](#)



General



Language

The CartoVista Publisher is available in the following languages:

- English
- French

To change the language, you just need to select one from the drop down list.

Map File Directory

This directory setting is used as the *default* folder opening and adding map files.

Default Map File Type

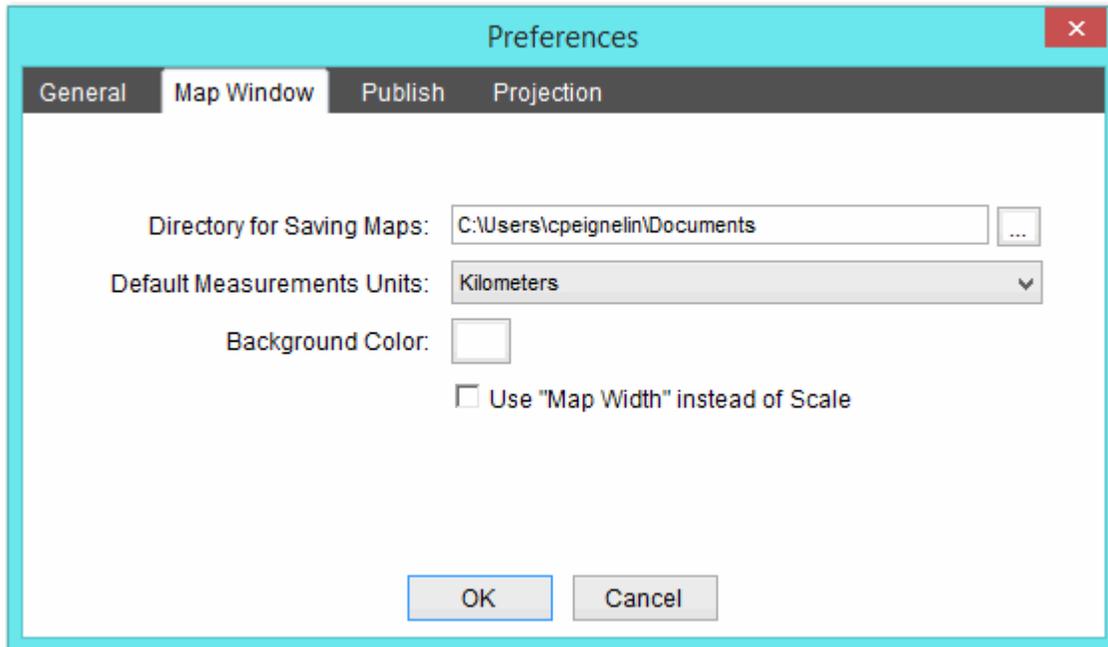
Choose the default map *file* type from the list box when opening map files.

Warning Messages

Warning messages are now available to get delete confirmation from users. 3 checkboxes are available to enable or disable those messages.



Map Window



Directory for Saving Maps

The directory specified is the *default* folder where the CartoVista Publisher saves maps (. *cvm* files).

Default Measurement Units

This option allows to choose the default *measurement units*. Simply select an item from the list to change the units.

Background Color

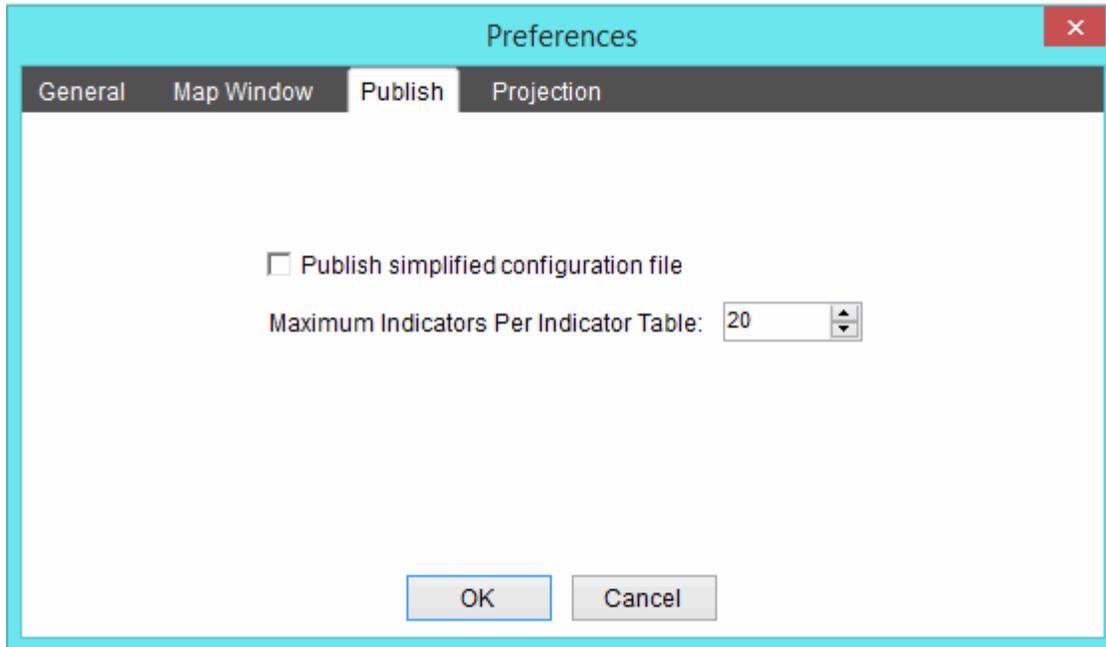
This option sets the default background color when creating maps.

Use "Map Width" instead of Scale

This option allows to choose what reference to use when specifying *scale* - dependant layers and labels. The CartoVista Publisher can work with scale values (e.g. 1: 25 000) or map window zoom width (e.g. 500 km).



Publish



Publish Simplified Configuration File

Each CartoVista Map that is published contains an XML configuration file. Some of the settings that are stored in this file are also stored in the map's SWF file. By checking this option, any optional settings in the XML configuration file are not created.

This setting is disabled by default.

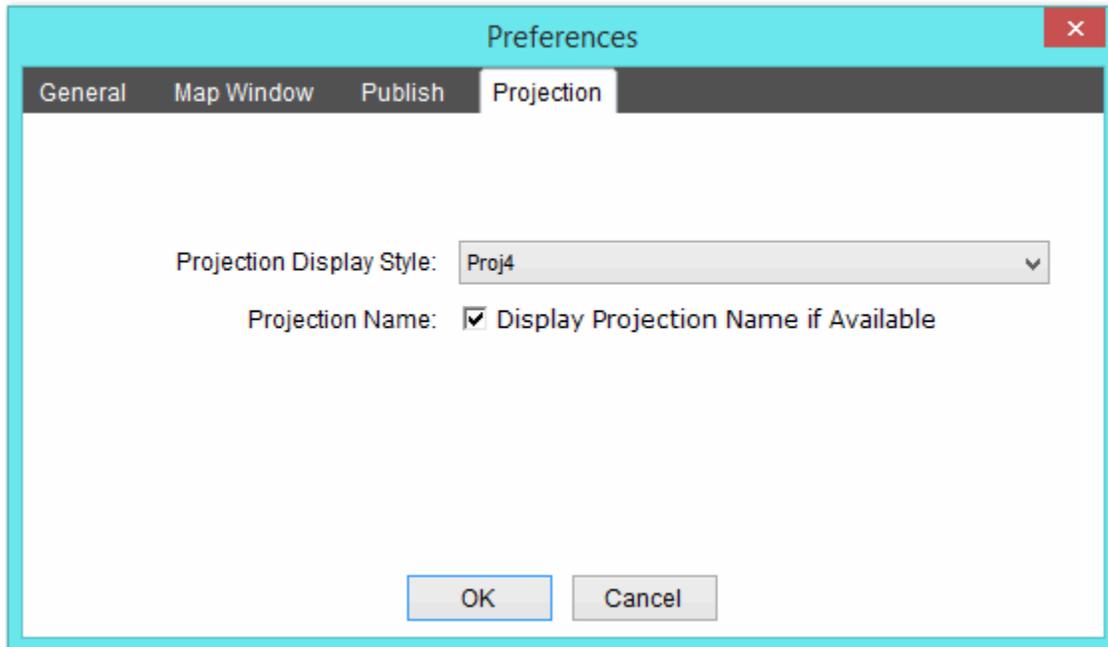
Maximum Indicator Per Indicator Table

When publishing data, there is a maximum number of indicators that can be set per Indicator Table. Use this setting to adjust the number to a value between 1 and 1000.

The more indicators you allow in an indicator table, the bigger the XML data file can get, and the longer it will take to download when viewed on the web. The default setting of 20 was calculated to allow for a fair number of indicators per table, while preventing the XML data file from becoming too large.



Projection



Projection Display

You can choose between PROJ and Well Known Text (*WKT*) display for the *coordinate system* parameters.

Projection Name

Check this option to display a "projection name". Projection names are user readable names that can be used to identify specific projections. Projection names are also assigned to user defined categories to aid in organizing the projections. The CartoVista Publisher comes with over 1400 projections "pre-named".

If your projection does not have a matching user-defined name, then either the WKT or PROJ4 coordinate system information will be displayed depending on the setting of the Projection Display drop down.



Deploying a CartoVista Solution

This Chapter will explain the following concepts:

- [Deploying a CartoVista Solution](#)
- [The CartoVista Viewer](#)
- [Deploying a Map Locally](#)
- [Deploying a Map on Media](#)
- [Deploying a Map on a Web Server](#)
- [Local & Media Browser Issues](#)
- [Configuring WMS Layers](#)



Deploying a CartoVista Solution

The CartoVista Publisher comes with a version of the CartoVista Viewer that you can use on the same computer that you installed the Publisher on. This allows you to view the published CartoVista solution on the same machine that you installed CartoVista Publisher on.

When the Publisher publishes a Map, it creates a directory in which to store the files needed by the Viewer. Publishing data adds additional files to that directory containing the data that was published.

In order to view the CartoVista Solution, the end user simply needs to point his browser at the HTML page. This can be a file on his local machine, a file on the network, an URL on an internal network or an URL on the internet.

The HTML page can be the default page created by the Publisher, or it can be an HTML page that has the CartoVista Solution embedded into it. This allows complete flexibility in how the final map is presented to the end user and the other elements on the HTML page along with the CartoVista Map.

Once the HTML page has been located by the browser, all of the files in the CartoVista Solution will be downloaded to the end user's computer. The map will be displayed by the end user's Flash Player. After the files have been downloaded, **all processing, updates and rendering are done on the end user's machine.**



The CartoVista Viewer

The CartoVista Viewer is installed locally on the computer when you install the CartoVista Publisher. This allows you to view published CartoVista solutions locally. By default, the CartoVista Viewer is installed in the following folder:

C:\Users\Public\Documents\CartoVista4\

NOTE : If you decide to publish your maps on a server (and not locally), you will need to manually copy the CartoVista Viewer on that server. The publisher will not do it automatically. This means that you will have to ensure you copy the most up to date version after each update or upgrade of CartoVista.

CartoVista Viewer Folder

This installation folder contains the following files and sub-folders:

 **Scripts:** Contains JavaScript files to integrate CartoVista in the default HTML page and manage the help system.

 **Maps:** Contains the maps generated by the Publisher. (SEE BELOW)

 **CartoVistaViewer.swf:** The CartoVista Viewer.

 **CartoVistaDrawingTool.swf:** The CartoVista Viewer drawing and annotation tools.

 **playerProductInstall.swf:** A Flash Player minimum version checking routine. If the version of Flash Player installed is less than the CartoVista Viewer's minimum required version, the user will be prompted to update the Flash Player automatically.

The following files can also be found in the Viewer Folder. These are all Flash Player signed framework libraries from Adobe. They will be downloaded only if the user does not have them downloaded already. They are stored in the Flash Player cache and will only ever be downloaded once by the Flash Player.

charts_4.5.1.213284.6.0.23201.swz

framework_4.5.1.214894.6.0.23201.swz

mx_4.5.1.214894.6.0.23201.swz

spark_4.5.1.214894.6.0.23201.swz

sparkskins_4.5.1.213284.6.0.23201.swz

textLayout_2.0.0.2322.0.0.232.swz

Maps Folder

Each map that is published by CartoVista is stored in a sub-folder of the Maps folder. By default, the Maps folder is expected to be a sub-folder within the CartoVista Viewer folder.

The Publish Map Options dialog will let you specify a different folder for the Maps folder. However, relative to the Maps folder, the CartoVista Viewer must be located in one of the following 3 directories:

1. The same directory
2. A sub directory called "CartoVista 4"
3. The parent directory

NOTE: When you publish a Map, the configuration file created and the default HTML page created will adjust their settings to properly identify where the CartoVista Viewer is located. If the Viewer is not located as specified in the configuration and HTML files, the HTML page will be unable to load the Viewer.

A published map's folder contains the following files and sub-folders:

 **ThematicData:** Contains the thematic data XML files generated by the Data Publisher.

 **<MapName>.html:** A default HTML page that can display the map.

 **<MapName>.swf:** The map SWF file.

 **<MapName>Config.xml:** An XML configuration file for the map.

 **<MapName>Thematic.xml:** (OPTIONAL) An XML configuration file for the thematic data. This file will not be present if data was not published with the map.



Deploying a Map Locally

If you have purchased a deployment license of CartoVista, you can make a CartoVista solution available from your computer.

- Setup your computer's web server to allow access to the HTML page in the Maps\<<MapName> folder as the URL you wish your solution to be available from.

OR

- Setup your computer to allow access to the HTML page in the Maps\<<MapName> folder on your computer.

Your CartoVista solution will now be available on your network. A user simply need to point his browser at the URL or folder you have created.



Deploying a Map on Media

If you have purchased a deployment license for the CartoVista Viewer, you can make your CartoVista solution available on a CD-Rom, DVD or even a USB drive.

When deploying to media, it is advisable to use the 3rd method for placing the CartoVista Viewer - a sub folder called "CartoVista4". This way the HTML page that hosts the CartoVista solution easily found at the top of your deployment.

You can deploy the CartoVista solution to the root folder of your media, or to any sub folder.

1. Choose the root folder of the deployment on the media.
2. Copy the files from the MAPS\<<MapName> folder to the root folder.
3. Copy the files from the CartoVista4 folder to a sub-folder called "CartoVista4" in the root folder.
4. Distribute your media.

In order to view your CartoVista solution, a user simply needs to point his browser to the HTML page in the root folder of your deployment.



Deploying a Map on a Web Server

If you have purchased a deployment license for the CartoVista Viewer, you can make your CartoVista solution available on a web server.

A CartoVista Solution can run on a Windows or Unix/Linux machine. There are no server side components to install!

- Copy the files from the CartoVista 4 folder along with the files from the Maps\<<MapName> folder to your web server. Keep the folder structure as defined when you published your map.

NOTE: You do not need to copy all of the folders in the Maps folder, just the ones containing maps you wish to make available on the web server.

- Setup the web server to allow access to the HTML page in the Maps\<<MapName> folder as the URL you wish your solution to be available from.

Your CartoVista solution will now be available at the URL you have created. There are no server side components to install. A user simply needs to point his browser to the URL you have created.

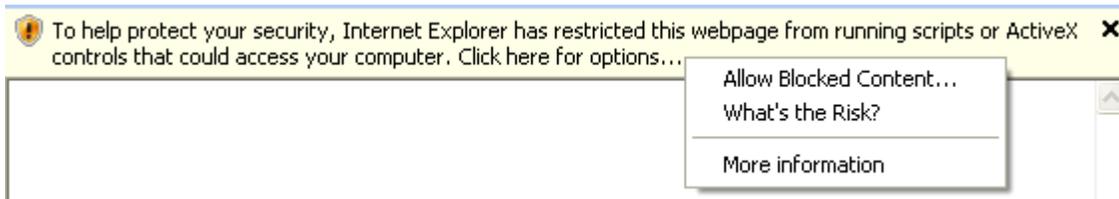


Local & Media Browser Issues

There are two issues that may arise when deploying locally or to media. These issues stem from your browser's and Adobe Flash's monitoring for dangerous content. In order to view a CartoVista Solution that is deployed locally, you may have to address one or both issues.

Internet Explorer - Blocked Content

When opening the solution in your browser, you may get the following warning:



To view the CartoVista Solution, simply click on "Allow Blocked Content".

Adobe Flash Security Rules: Flash Player Trust

The default Adobe Flash Player Security Rules do not allow you to mix local and internet content within the browser. If the CartoVista Map you have published contains Tile Layer(s) or WMS Layer(s), you will have indicate to the Flash Player that the path where the CartoVista solution is located is safe.

The Adobe Flash Player Trust is a set of files that list one or more directories that are "Trusted" by the Adobe Flash Player. By default, when you install the CartoVista Publisher, it adds the reference to the installation folder of CartoVista.

The Flash Player Trust file for CartoVista is installed in the following folder on a Windows workstation:

```
C:\Documents and Settings\\Application Data\Macromedia\Flash Player\#Security\FlashPlayerTrust\CartoVista.cfg
```

If you have mixed local and internet content, you will need to open the CartoVista.cfg file (or create a new one in a text editor) and add a reference to the folder of the CartoVista solution.



Configuring WMS Layers

Determining Available WMS Server Data

To see what map data is available on a WMS server, first make a call to the server with **request=GetCapabilities** using your web browser. The resulting file that is returned can be opened as a text file. This file provides a list of the supported image formats, coordinate system and layers available for that WMS server.

The following is an example of such request:

http://www2.dmsolutions.ca/cgi-bin/mswms_gmap?SERVICE=WMS&VERSION=1.1.1&REQUEST=GetCapabilities

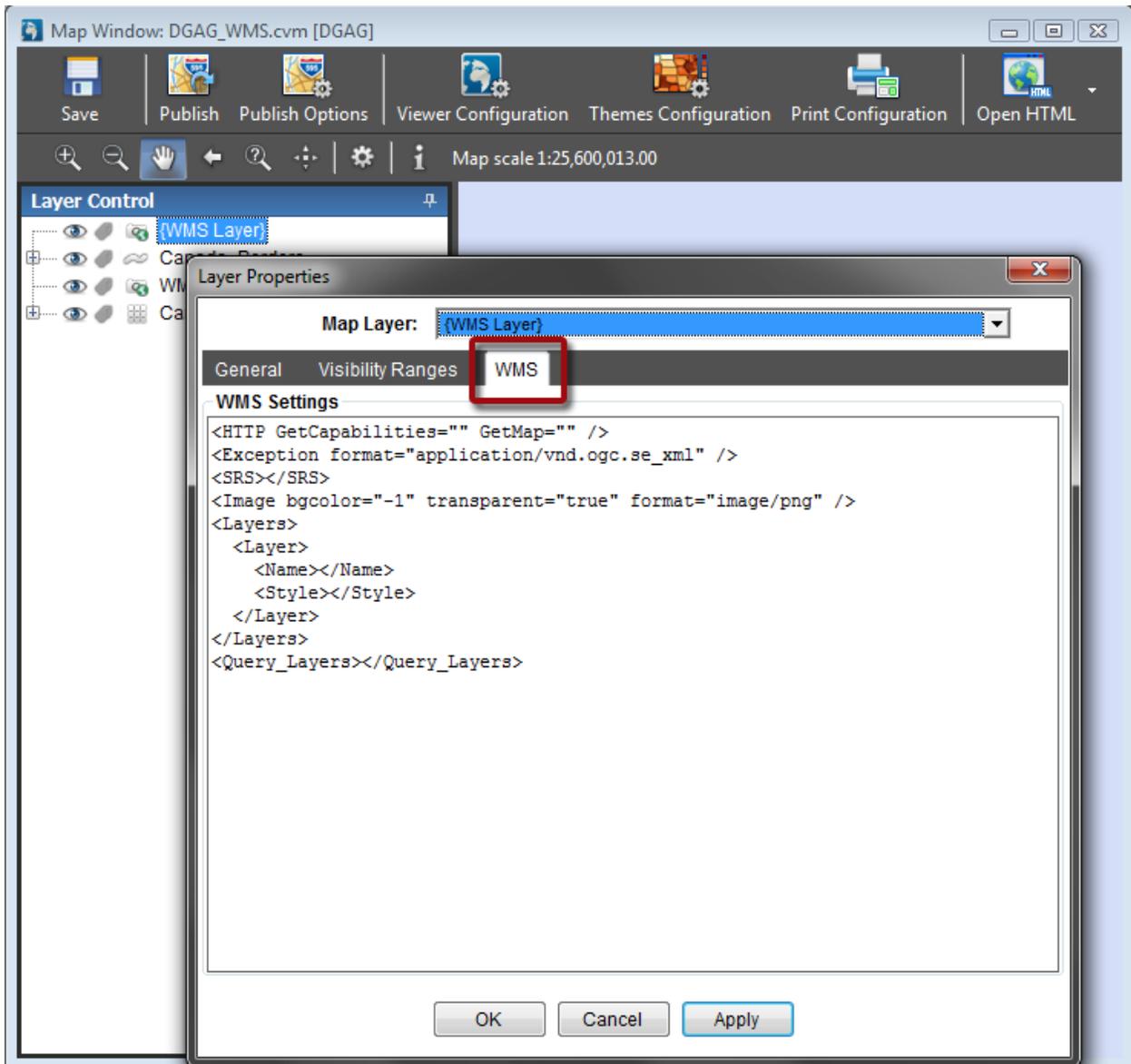
Configuration File

Configuration of a WMS layer

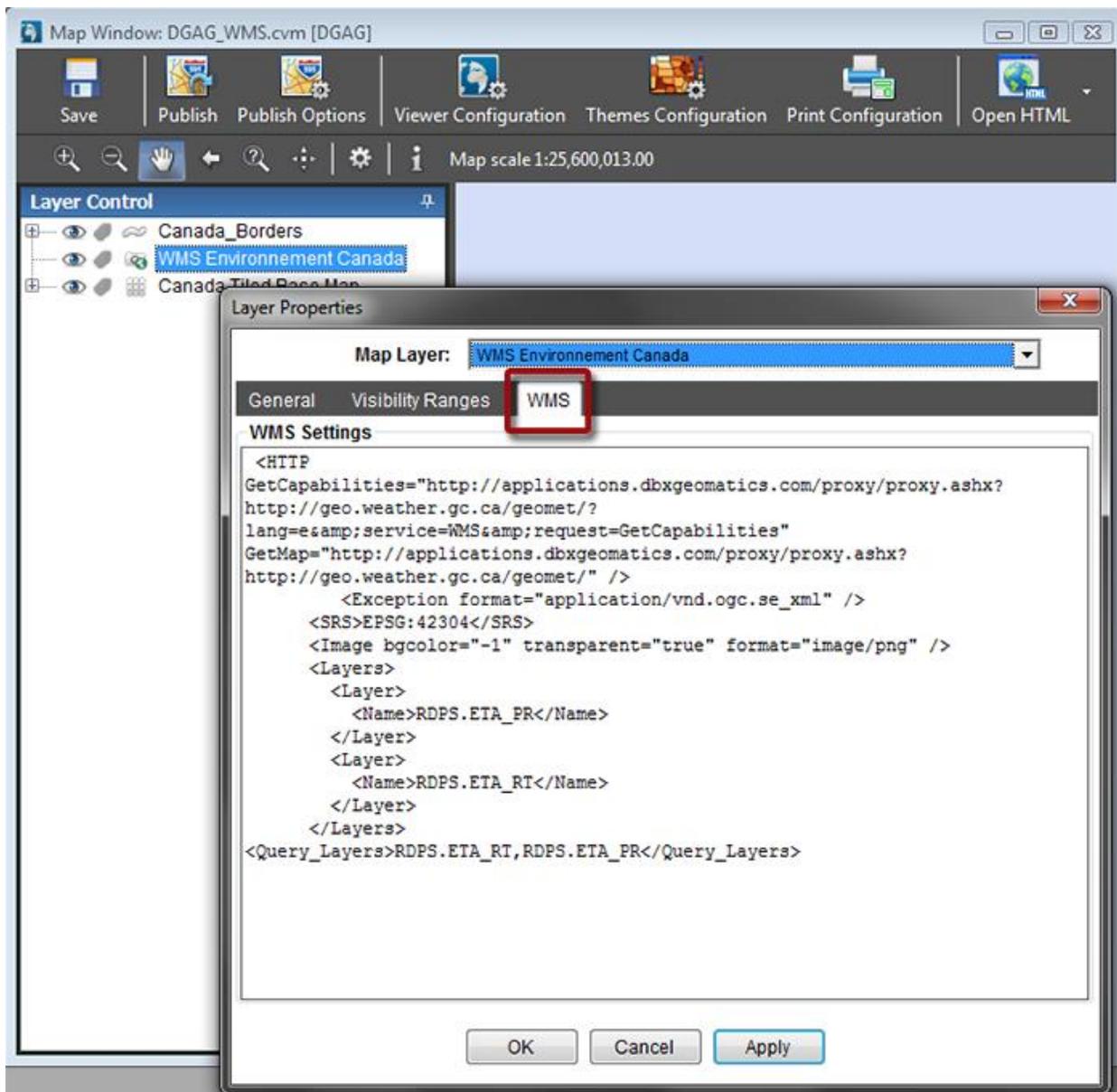
As of version 4.1.1 the WMS configuration is accessed and edited directly within the CartoVista Publisher via the WMS Tab in Layer Property dialog.

Default Configuration settings:

NOTE: You are required to edit the default XML structured text and complete the required empty elements with the correct information to properly enable your WMS Layer so it can be published and accessible in the CartoVista Viewer.



Sample WMS Layer Configuration:



In the above example, two layers determined from the <http://geo.weather.gc.ca> WMS Service were used and both these layers were query enabled. The SRS element was also set based on the information retrieved from the WMS Service. The default values for the optional Exception and Image elements were used.

WMS Layer Elements

HTTP Element (Required)

The HTTP element determines the WMS Server that will provide the information for the WMS GetCapabilities and GetMap services.

Example:

```
< HTTP GetCapabilities="http://atlas.gc.ca/cgi-bin/atlaswms_en?"
GetMap="http://atlas.gc.ca/cgi-bin/atlaswms_en?"/>
```

GetCapabilities Attribute

This attribute is used to identify the WMS map server that will provide responses to the GetCapabilities service request.

GetMap Attribute

This attribute is used to identify the WMS map server that will provide responses to the GetMap service request.

SRS Element (Required)

The SRS element specifies a coordinate system used by the Web Map Service you are calling.

Example:

```
<SRS>EPSG:4269</SRS>
```

EPSG Attribute

This attribute specifies the EPSG code (projection) of the SWF map created with the Publisher. To get information on the EPSG code of your CartoVista map, access the [Map Settings Dialog](#).

NOTE: The Reference System used in the Publisher must match the EPSG number of the reference system (SRS) selected from the WMS Service Data.

Exception Element (Optional)

The Exception element specifies the message format when the service is not working and an error occurs.

format Attribute

The message format for the exception.

Example (default value):

```
<Exception format="application/vnd.ogc.se_xml" />
```

Image Element (Optional)

The image element contains the parameters of the requested image from the WMS layer.

Example (default value):

```
<Image format="image/png" bgcolor="0xFFFFFFFF" transparent="true" />
```

format Attribute

The format (MIME type) of the image returned by the service. The format of the image must be one of the ones supported by the WMS server specified.

bgcolor Attribute

The background color in hexadecimal or in integer value of the image map returned.

transparent Attribute

Sets the image map's transparency, either "true" or "false". When set to true, the bgcolor element has no effect.

Layer Element (Required)

A WMS layer can contain a collection of layer elements. These elements correspond to the definition of the layers to be included in the map when requesting an image from the WMS server.

Example:

```
<Layer>  
  <Name>na_freshwat</Name>  
  <Style></Style>  
</Layer>
```

Name Element (Required)

This is the name of the requested layer on the WMS server.

Example:

```
<Name>na_freshwat</Name>
```

Style Element (Optional)

This is the style associated to the requested layer on the WMS server. It is a comma-delimited list. If specified it must have the same number of names as the layer list. For style names containing spaces, use the '+' sign instead of the space.

```
<Style> </Style>
```

Query_Layers Element (Optional)

To enable the CartoVista Viewer info tool on any of the included named layers you will need to complete the <query_layers> element.

Note:

If more than one named layer is required, they must be separated by a comma within the Query_Layers element.

Example:

```
<Query_Layers>na_freshwat</Query_Layers>
```