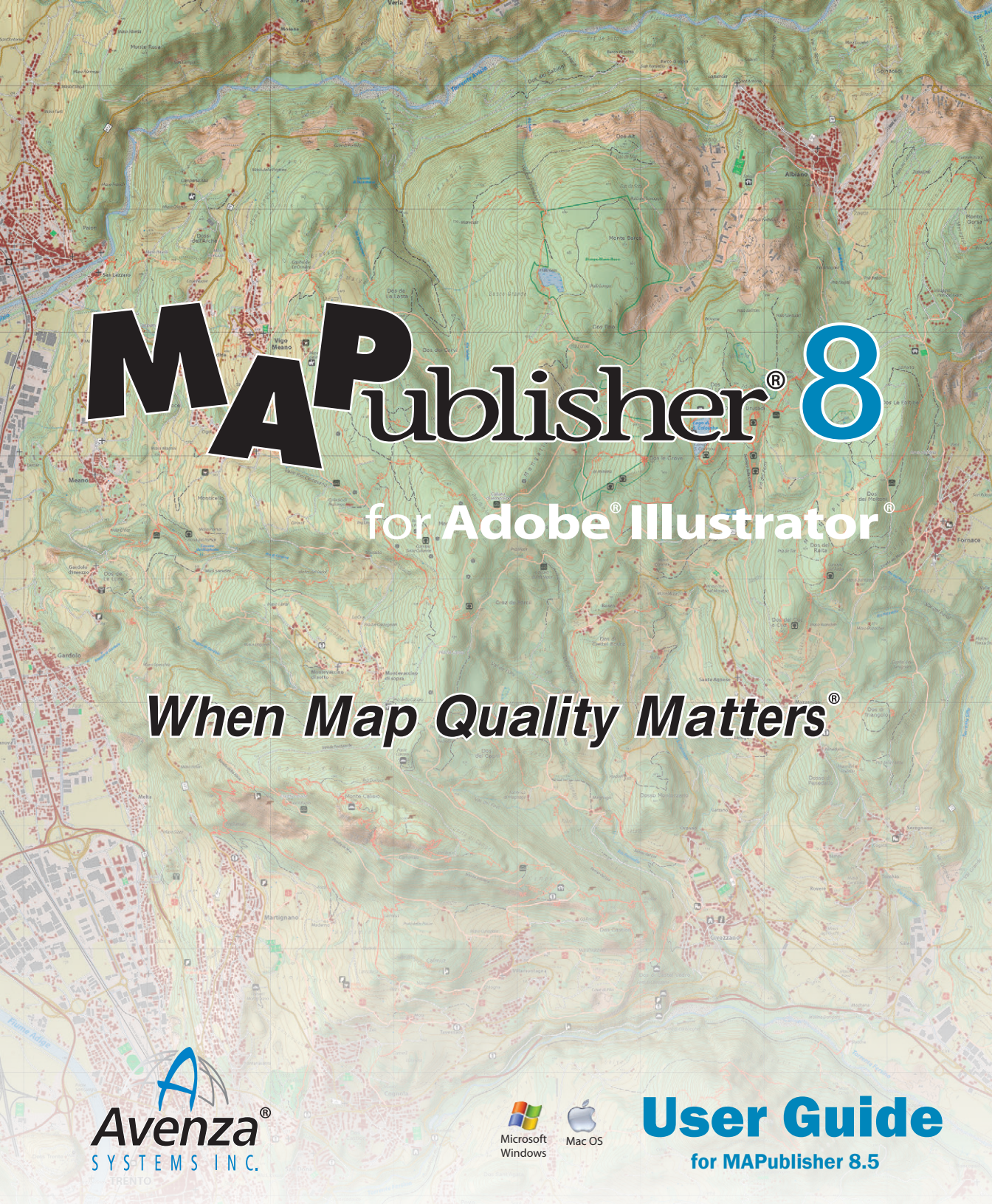


MAPublisher® 8

for Adobe® Illustrator®

When Map Quality Matters®

Avenza® SYSTEMS INC.

Microsoft Windows

Mac OS

User Guide

for MAPublisher 8.5

MAPublisher 8.5 User Guide

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Avenza Systems Inc.
124 Merton Street, Suite 400
Toronto, Ontario
Canada M4S 2Z2

Tel: (+1) 416 487 5116
Toll Free *(North America):* 1 800 884 2555
Fax: (+1) 416 487 7213
Email: *info@avenza.com*
Web: *http://www.avenza.com*
Support Tel: (+1) 416 487 6442
Support email: *support@avenza.com*

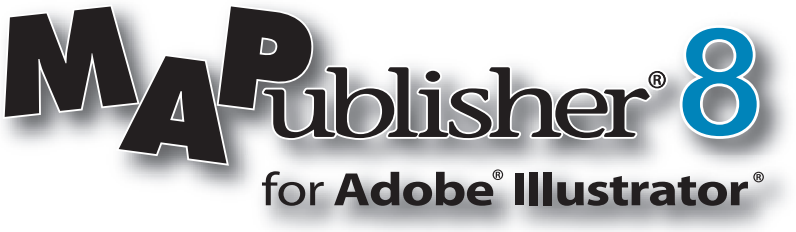
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When Map Quality Matters®

User Guide



Welcome

Avenza welcomes you to map-making in the 21st century!

Combined with Adobe Illustrator, MAPublisher has revolutionized the art of map-making by allowing spatial data files to be used to create maps inside a vector graphics program. MAPublisher allows all cartographic tasks to be performed where they should be done; in a powerful graphics environment.

This manual assumes that the user is familiar with Adobe Illustrator and has at least a basic understanding of geographic information systems (GIS) terminology and concepts. Please refer to the Adobe Illustrator user guide for more information on using Adobe Illustrator.

The *User Guide* explains the installation process and the many features of MAPublisher. All MAPublisher panels, functions and tools are thoroughly detailed together with the related concepts necessary to build map and perform fundamental cartographic and GIS tasks. Please refer to the document *Avenza Projections Guide.pdf* for more information on the projections supported in MAPublisher.

As a complement to these guides, the MAPublisher software installer includes tutorial documents (*MAPublisher 8 Tutorial Guide.pdf*, *MAPublisher 8 Quick Start Guide.pdf* and *MAPublisher 8 MAP LabelPro Tutorial Guide*) and associated GIS datasets. We encourage all users to go through these guides to gain additional experience with MAPublisher tools and functions.

MAPublisher and Adobe Illustrator together constitute an integrated cartographic design software system with state-of-the-art graphics tools and geographic functions.

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MAPublisher 8.5 User Guide

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Introduction

MAPublisher 8.5 is the newest version of a powerful suite of plug-ins for Adobe Illustrator CS4 and CS5 that bridges the gap between geographic information systems (GIS) and high-end graphic design software in order to facilitate the map creation process. MAPublisher offers additional panels, functions, tools and functions to the powerful Adobe Illustrator design environment that enable GIS data files to be used as a base for cartographic production destined for print or Web contents.

Working from a traditional Adobe Illustrator document, users create and edit their data organized through layers (either new or imported with MAPublisher). Users benefit from the Adobe Illustrator graphic tools as well as additional custom MAPublisher functions and panels to create, edit and query the map data.

MAPublisher **Simple** and **Advanced Import** functions allow the import of major GIS and CAD formats (ArcGIS, MapInfo, AutoCAD, MicroStation, KLM and more) into Adobe Illustrator, while retaining their native geometry (Point, Line, Text, Area), layer structure, geographic location and attribute data.

The cartographic workspace is managed through **MAP Views** that control the geospatial parameters: coordinate system, map anchor, map scale and rotation. Layers organized under the same MAP View share the same geographic frame of reference. A layer must reside within a MAP View to be managed by MAPublisher functions and keep its spatial and attribute information; however layers not related to a MAP View may still be used for presentation purposes (such as title, scale and legend). An Adobe Illustrator document may contain more than one MAP View. For example, a map with an inset map at a larger scale to represent a zoomed-in area of interest.

The **MAP Attributes** panel allows for creating, editing and querying attribute information. For example, for a line layer containing street data, each line segment may be linked to a table with information relative to the street name and street category. Using the MAP Attributes panel, this information can be viewed, queried, edited or additional columns of data may be appended.

MAP Themes make use of the attribute data to apply Adobe Illustrator graphic styles, symbols or character styles to map features, depending on a given object's attribute value. Choose from Stylesheet, Charts, and Dot Density themes.

MAPublisher also offers many functions and tools to manage GIS data from within Adobe Illustrator:

- Import major GIS and CAD formats (MAPublisher **Simple** and **Advanced Import, Spatial Database**)
- Plot a symbol by typing in its world coordinates (**MAP Point Plotter**)
- Draw objects with geographic dimensions (**MAP Area Tools**)
- Trim the geographic extents of the map (**MAP Vector Crop**)
- Join lines or points that share a same attribute value, simplify lines, create a buffer area around a line (**Buffer Art, Flip Lines, Join Areas, Join Lines, Join Points, Line Plotter, Simplify Lines**)
- Automatically label features based on attribute data (**MAP LabelPro**, **Label Features** and **MAP Tagger Tool**)
- Select features based on attributes (**MAP Selections**)
- Import and export geographically referenced images (**Register Image**)
- Create grids and indexes (**Grids and Graticules**)
- Create scale bars and north arrows (**Scale Bar, Create North Arrow**)
- Export to Geospatial PDF (**Export Geospatial PDF**)
- Export a map to Flash with populated Web tags (**MAP Web Author**)
- Export layers to major GIS and CAD formats (**MAP Views**)
- And much more...

MAPublisher Features

MAP Web Author

Export Adobe Illustrator documents with GIS data to interactive Flash maps, complete with callout bubbles, rollovers, layer control, pan and zoom controls, and with all the underlying GIS attributes intact. Export Flash maps without any additional coding or software requirements and embed them to any Web page. Further customization using advanced CSS and MAP Web Authort Javascript API is available for advanced users.

MAPublisher Spatial Database import

Import spatial data from Esri Personal Geodatabase (.mdb), File Geodatabase (.gdf), and ArcSDE servers. This function requires Esri software and a valid license installed on the computer and consequently it is only available on Windows operating systems. Supported feature types are Point, Polyline, Polygon, Circular Arc, Eliptical Arc, Bezier Curve, Annotations (text). The MAPublisher Spatial Database import allows for SQL queries and spatial filters.

MAPublisher LabelPro™

MAPublisher LabelPro™ revolutionizes the way users can label map data, including using symbols as labels and label conflict resolution with a high degree of customizable rule-based labeling options. The MAP LabelPro engine uses your map data attributes for labeling with styles, rules and controls configured through an intuitive, easy-to-use Graphical User Interface. This function is available as an optional add-on to MAPublisher 8.1 and higher.

Export to Geospatial PDF

Export map data to a geospatially enabled PDF. In this process, all objects and associated MAP Attributes information (when available) are ported to PDF, while also maintaining the map coordinate system. When a geospatial PDF is opened with Adobe Acrobat Reader 9, one can find locations, measure distances, add location markers as well as copy coordinates to the clipboard. Additionally, objects can be selected and queried and their MAP Attributes can be viewed in the Adobe Acrobat Model Tree.

MAP Themes

The former MAP Stylesheets has been completely revamped. Like the new name implies, MAP Themes creates dot density maps, charts and uses stylesheets to create choropleth maps. Use various classification methods to easily create data classes. In addition, create highly customizable MAP Theme Legends.

MAPublisher Panels

MAPublisher panels seamlessly integrate into the user interface and can be resized, moved, and docked just like native Adobe Illustrator panels.

MAPublisher Toolbar

The MAPublisher Toolbar allows you to easily launch all the main MAPublisher tools with a single click.

MAP Vector Crop Tool

Crop map documents only to the area of interest by drawing a box around an area of inteterest. Easily remove unwanted data while preserving attributes and styles. Perfect for creating inset maps.

MAP Point Plotter Panel

MAP Point Plotter places points (e.g. locations of towns or cities) based on user input locations onto any projected map in projected units or lat/long format (decimal degrees, or Degrees Minutes Seconds). MAP Point Plotter also offers the option to instantly plot centroids for line or area features.

Import and Export Data

Import data from mapping applications such as ArcGIS, MapInfo, MicroStation, Google Earth and other sources with all attributes and georeferencing intact. Make vector and database edits, data edits, additions and save your changes to a variety of GIS data formats. Newly supported formats are KMZ, GML and S-57 (import only).

MAP Views

The MAP Views panel controls the Adobe Illustrator layers organization into geographically referenced entities. It offers many ancillary tools: export to GIS format, layer lock and display control, Switch to MAP View, exchange MAP Objects between Adobe Illustrator documents.

Several geographical references can be maintained per document (e.g. main map and inset maps), stored as MAP Views. Each MAP View scale, transformation, position on the artboard is configured through the MAP View Editor — with many option for display, zoom, rescale, rotation, and so on.

MAP Attributes

The attribute table holds map attribute information for line, area and point data. Add and remove columns, edit schemas, join tables, calculate and apply expressions to customize map attributes. MAP Attributes are the base to many other MAPublisher tools (such as line functions, MAP Themes, and MAP Web Author). They can also be exported to text file for further usage.

MAP Themes

MAPublisher quickly and easily styles map features using Stylesheets, Charts and Dot Density themes. Specify rules and expressions to apply preset or custom symbols, graphic styles and character styles to artwork based on exisiting map attributes.

MAP Selections

Build, edit and apply multiple selection criteria based on the attributes and properties contained in MAP Layers using MAP Selections. Selection criteria are created in an expression builder and can be applied to any MAP layer, and can be saved so they can be edited or applied later.

MAP Measurement Tool

The MAP Measurement Tool measures straight distances (between two points), path distances (multiple points), azimuths, and the perimeter and area of closed paths — in page or map unit (real world distances). Furthermore, the measuring path can be converted to a line or area in the currently selected layer.

Geometry Operations

Join areas, lines or points and flip lines while keeping attributes intact. Use Simplify Line to reduce the number of vertices in a point (with preview and information on the number of filtered points). Create lines based on a series of point locations. Use Buffer Art to create buffer areas around line, area or point features. Join Areas can dissolve multiple areas into a larger area and still retain attributes.

Labeling

Create labels for map objects using values from the MAP Attributes panel. MAPublisher provides two methods of adding labels to your map: Label Features labels specified layers automatically; and MAP Tagger Tool labels features individually through user selection.

Register Image

Register images accurately to your vector data. MAPublisher determines the parameters of the raster image and the coordinate system of a selected MAP Layer in the registration process. A MAP Layer feature type called Image allows georeferenced images to be placed accurately. In addition, Simple and Advanced Import now supports image formats which simplifies the process of importing them into an Adobe Illustrator document.

Grids and Graticules

MAPublisher contains tools to easily create map grids and map indexes. Grids can be created for reference purposes, or to follow designated lines such as latitude and longitude, and can also be labelled for indexing. When a labelled grid has been established, MAPublisher is able to generate index files, containing the location of text objects in MAP Layers.

MAP Elements

Easily add customizable map elements such as scale bars, north arrows and map legends. Choose from preset designs or edit an existing one.

Split Layer

The Split Layer function splits a layer into new layers based on an expression or by unique attribute value. The qualifying features can either be copied or moved to a new layer, while maintaining all their attribute data.

MAPublisher License Management

The new MAPublisher License Management system helps users manage their licensing in a more streamlined and user-friendly manner. Users can now evaluate the product, register, retrieve their licenses and checkout a floating license, all in a single dialog box. Additionally, MAPublisher panels are now marked with a lock icon when the software is not licensed.

MAPublisher Preferences

The MAPublisher Preferences allow users to fully customize their MAPublisher experience. Control everything from the way layers are sorted to the font used to display attribute data or style of the MAP Selections panel. This includes several previously hidden options that used to be the domain of advanced users.

Web Feature Service and Web Map Service

Two new import features: Web Feature Service (WFS) and Web Map Service (WMS). Access these features through Simple or Advanced Import. WFS accesses web servers that deliver vector content in GML format. WMS access web servers that deliver raster content in a variety of formats.

Document Operations

Text Utilities performs many text actions such as correcting upside down text, separating multiline text into single line and cropping text path to text length. These actions can be applied to either all text layers or specific text on a layer. Right-to-Left Text is used to apply proper formatting to right-to-left languages such as Arabic and Hebrew.

What's New in MAPublisher 8.5

Adobe Illustrator CS5.1 Support

Layer notes are now included when a geospatial PDF is exported.

Geospatial PDF Import

A new ability to import geospatial PDF documents quickly and easily using MAPublisher. This import method can automatically assign the content in a geospatial PDF to appropriate MAP Layers and a MAP View.

Spatially Filter option in Make Index

A new feature that spatially filters art being indexed. Two separate options limit index creation to those entries that intersect the bounds of the art on the specified layer or an existing MAP Selection.

And many more enhancements...

Improved user interface changes and bug fixes.



Getting Started

Before using MAPublisher please read this section to ensure that you have a suitable hardware environment, are familiar with the installation and activation procedures, and have adequately prepared your system and workspace to make maps with Adobe Illustrator and MAPublisher 8..

Topics covered in this section:

System Requirements
Installation Instructions
MAPublisher Compatibility Notes
MAPublisher License Management
The MAPublisher Tools
The MAPublisher Toolbar
MAPublisher Preferences
Preparing the Workspace

System Requirements

Before installing MAPublisher, please ensure that these minimum system requirements are met (recommended requirements are mentioned as necessary):

WINDOWS

- Adobe Illustrator CS4 / CS5 / CS5.1
- 2 GHz or faster Intel Pentium 4 processor (Intel Core 2 Duo or better recommended)
- Windows XP / Vista / 7 (compatible with 64-bit versions)
- 2 GB of RAM minimum (4 GB of RAM or higher recommended)
- 500 MB of available hard-disk space

MAC OS X

- Adobe Illustrator CS4 / CS5 / CS5.1
- Intel processor (Intel Core 2 Duo or better recommended)
- Mac OS X 10.5 or higher
- 2 GB of RAM minimum (4 GB of RAM or higher recommended)
- 500 MB of available hard-disk space

Notes: Not all foreign language versions of Adobe Illustrator may be supported. Please contact *support@avenza.com* for more information.

Installing MAPublisher on a system that does not meet the minimum requirements may produce unexpected results or errors. These issues may not be supported by Avenza Technical Support.

Installation Instructions

MAPublisher is licensed for use on a single computer and, once activated, will be node-locked and will only function on that computer. Therefore, before proceeding with installation and activation, please ensure that MAPublisher is installed on the appropriate computer.

Different versions of MAPublisher can be installed on the same computer if different versions of Adobe Illustrator are present. For example, MAPublisher 7.6 for Adobe Illustrator CS2 and MAPublisher 8.5 for Adobe Illustrator CS5.

It is not recommended to do so, but different point releases of MAPublisher 8.x can be installed on the same machine. For example, MAPublisher 8.4 for Adobe Illustrator CS4 and MAPublisher 8.5 for Adobe Illustrator CS5.1. It is recommended to uninstall older versions of MAPublisher before installing the newest release. During the uninstall process, an option will be given to backup custom coordinates systems and MAPublisher LabelPro rules.

For users intending to use MAPublisher LabelPro, a system restart is recommended after installing MAPublisher. This ensures that included fonts are installed correctly.

WINDOWS

- Make sure that a compatible version of Adobe Illustrator is installed on the computer. If Adobe Illustrator is running, exit the program.
- **DVD version**: Insert the MAPublisher 8.5 DVD. If Autorun is disabled on the system, navigate to the MAPublisher 8.5 directory on the DVD, and double-click the Setup.exe file.
- **Electronic version:** Double-click the *mp85wi-e.zip* file to open the WinZip self extractor. When the files are unzipped, proceed to the *MAPublisher* directory and double-click the **Setup.exe** file.
- Proceed through the installation screens as instructed. Options are given to install documentation and tutorial data. If these components are selected, the files can be subsequently be found here: *Start > All Programs > Avenza > MAPublisher 8 > MAPublisher Tutorials*.
- Launch Adobe Illustrator. *Proceed to the section about Registration and Licensing.*

MAC OS X

- Make sure that a compatible version of Adobe Illustrator is installed on the computer. If Adobe Illustrator is running, exit the program.
- **DVD version:** Insert the MAPublisher 8.5 DVD. Navigate to the *MAPublisher 8.5* directory on the DVD, and double-click the **Install MAPublisher 8.5** icon.
- **Electronic version:** Unstuff the *mp85mi-e.dmg* file if this operation has not been completed automatically. Then proceed to the *MAPublisher 8.5* folder and double-click the **Install MAPublisher 8.5** icon.
- Proceed through the installation screens as instructed. Note that documentation and tutorial data will also be installed. After installation, these files can be found in the *Applications\Avenza\MAPublisher 8\ MAPublisher Tutorials* . An *Alias* to this folder will be created at the end of the installation process which will be placed on the desktop.
- Launch Adobe Illustrator. *Proceed to the section about Registration and Licensing..*

MAPublisher Compatibility Notes

MAPublisher 8.5 is compatible with Adobe Illustrator CS4, CS5 and CS5.1. Please read the following important compatibility information with respect to working with legacy MAPublisher and Adobe Illustrator documents.

BACKWARDS COMPATIBILITY

All MAPublisher documents are not backwards compatible with previous versions of MAPublisher.

Saving the Adobe Illustrator document to an older version (e.g. saving a CS5 document as CS4) may have unexpected results, such as loss of data attributes. It is recommended to save a copy of the file in the current Adobe Illustrator version before attempting to save to a legacy version.

MAPUBLISHER 5 (OR EARLIER) DOCUMENTS

Point Data

MAPublisher introduced new standards on dealing with point data in MAPublisher 6. Pre-MAPublisher 6 documents will have font based points converted to symbols on opening of the document.

MAPUBLISHER 6 (OR EARLIER) DOCUMENTS

Grids and Graticules

Grids and Graticules were redesigned in MAPublisher 7. Please note that grids created in previous versions of MAPublisher (6.x and earlier) will need to be recreated with the new tool if the generation of an index is required.

Legend to Stylesheet Conversion

Legend functionality (Assign Legend Info, Draw Legend etc) was ported into MAP Stylesheets in MAPublisher 7. Legend information held in legacy MAPublisher documents (6.x and earlier) will be converted into stylesheets on document open. Subsequently Graphic Styles (for line and area legends), Character Styles (for text legends) and Symbols (for point legends) will automatically be generated and added to the respective Adobe Illustrator panels.

To qualify for legend conversion, legend art in legacy documents must contain the following properties:

- Be of a valid art type: i.e. polygon, path, symbol or text
- Have a legend expression assigned (via Assign Legend Info or Auto Assign Legend Info)
- Have a target MAP Layer

During the conversion process you will be asked to set additional conversion preferences:

- Determine if target MAP Layers should be immediately assigned to the applicable stylesheet. Checking this option will immediately apply the new stylesheets to map art on target layers, whereas unchecking this option means the new stylesheets will not be applied on document open, allowing you to manually drag target layers into the applicable stylesheet later. Note auto assignment conversions are slower.
- Determine if you wish to merge similar converted stylesheets (i.e. stylesheets with a matching feature type and original map layer) into a single stylesheet. Note this option will be disabled if it is not applicable.

Tables

Table information held on table layers (i.e. MPTables layers) will be removed on document open. Therefore ensure that all tables have been joined to the vector art prior to opening the document in MAPublisher 8.

ALL MAPUBLISHER DOCUMENTS IN ADOBE ILLUSTRATOR 10 (OR EARLIER) FORMAT

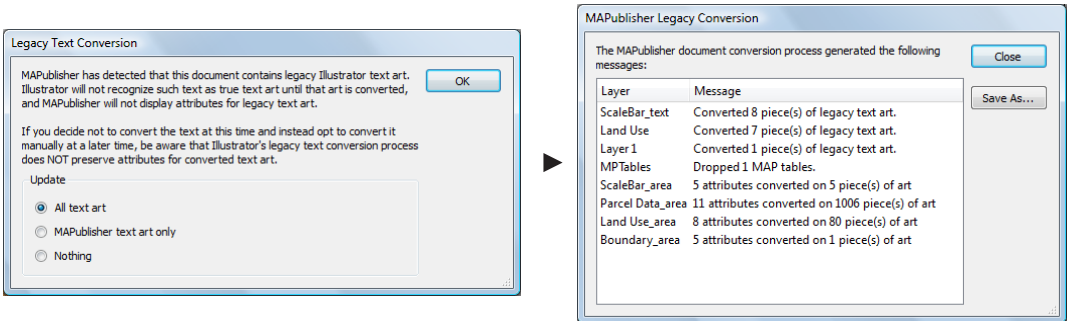
Legacy Text Conversion

Adobe introduced new methods for dealing with text art in Adobe Illustrator CS. Therefore files containing MAPublisher text objects must be converted using Adobe Illustrator and MAPublisher text conversion utilities.

If the Adobe Illustrator legacy text conversion message appears when opening a legacy document, click OK. This will allow MAPublisher to use its own conversion utility to update text items while maintain the text attributes. If you click Update, the document will be opened, however all attributes associated with this text will be lost.

At the MAPublisher Legacy Text Conversion dialog box, choose one of the following:

All text art	To convert both MAPublisher text and regular Adobe Illustrator text to the new Adobe Illustrator text format
MAPublisher text art only	To convert only MAPublisher text to the new Adobe Illustrator text format
Nothing	To open the file but lose attribute information associated with MAPublisher text elements



MAPublisher License Management

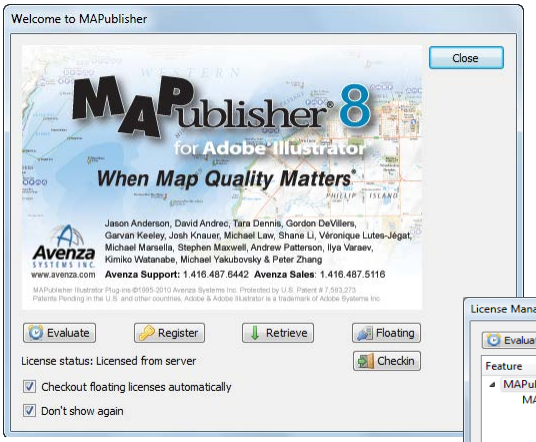
MAPublisher will not function until it is activated. MAPublisher is available in both single-user and floating license configurations. Floating licenses are designed to allow an organization to deploy a specific number of licenses that can be used and shared on any number of computers over a network. If you have purchased a floating license please refer to the floating license installation guide provided with your purchase. The instructions in this user guide are for the activation of single-user licenses of MAPublisher only.

IMPORTANT: Some peripheral components might interfere with the activation process. Before activating MAPublisher, users must temporarily unplug or disable: mobile phone, blue tooth, wireless or GPS systems. Laptop users with a docking station must activate MAPublisher in the **undocked** state.

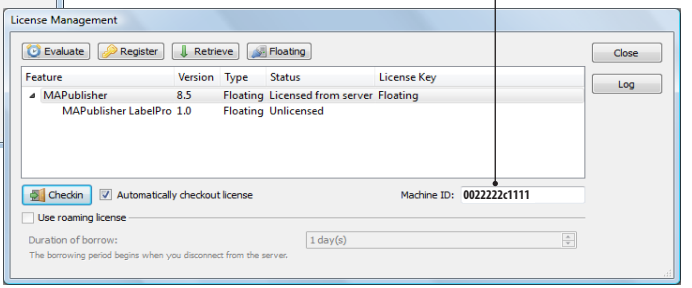
After installing MAPublisher, launch Adobe Illustrator. The Welcome to MAPublisher dialog box will appear. When an Internet connection is enabled and the lastest license is valid, MAPublisher will automatically activate from information provided by Avenza license servers.

This screen also provides several licensing options: Evaluate, Register, Retrieve and Floating.

Note: To continue to use Adobe Illustrator without MAPublisher, cancel this dialog box and activate MAPublisher license later by navigating to the *Help* menu in Adobe Illustrator and then to *MAPublisher Licensing > License Management*. MAPublisher panels are marked with a lock icon when the software is not licensed.



MAPublisher welcome dialog box



MAPublisher License Management

ACTIVATE AN EVALUATION VERSION OF MAPUBLISHER

1. After installation of MAPublisher, click the **Evaluate** button of the **MAPublisher Welcome Screen** or **MAPublisher License Management** dialog box. Complete the form and click Evaluate.
2. When you are ready to purchase the software you can open the *MAPublisher License Management* dialog box from Adobe Illustrator Help menu at *MAPublisher Licensing* > *License Management*, click **Register** button and follow the instructions in the next paragraph.

Note: A MAPublisher evaluation is fully functional. There are no limitations except that an evaluation license is only valid for 14 days from the day of activation.

REGISTER A PURCHASED COPY OF MAPUBLISHER

1. To register a purchased copy of MAPublisher, click the **Register** button in either the *MAPublisher Welcome Screen* or *MAPublisher License Management* dialog box. Enter the license key that was provided when the product was purchased. Complete the form and click Register.

Note: The license key for MAPublisher 8.x starts with "MP80-".

RETRIEVE YOUR MAPUBLISHER LICENSE

To retrieve an activated MAPublisher license, click the **Retrieve** button in either the License Management dialog box or Welcome Screen. The license file will be downloaded from the Avenza Systems licensing server.

CHECKOUT A FLOATING LICENSE

If you have purchased a floating license, please refer to the floating license installation guide provided with your purchase. Once the server license is fully operational, follow these instructions to checkout a license from the client machine (the computer running the actual MAPublisher application).

1. After installation of MAPublisher, click the **Floating** button of the *MAPublisher Welcome Screen* or *MAPublisher License Management* dialog box.
2. Enter the name or IP address of the server where the license manager resides.
3. Click the **Checkout** button to retrieve the one of the licenses from the server.

Notes: If you wish to use Adobe Illustrator without MAPublisher, then click the **Check in** button from the MAPublisher License Management dialog box (at *Help* > *MAPublisher Licensing* > *License Management*). This releases the license, so other users can use it.

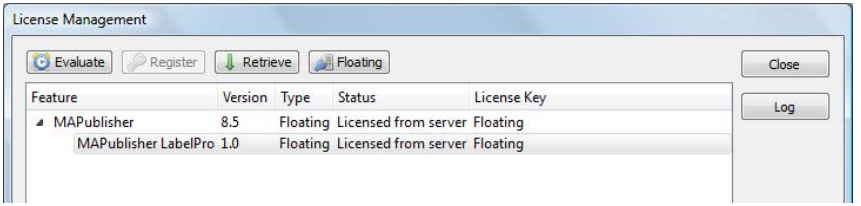
The link to the server is set once. The next time Adobe Illustrator is started, just click the Checkout button on the MAPublisher Welcome Screen or License Management dialog box.

MAPUBLISHER LABELPRO LICENSING

MAPublisher LabelPro is an optional add-on to MAPublisher (8.1 and higher). Purchased MAPublisher LabelPro licenses are added to the main MAPublisher license. During the registration process described earlier in this chapter, all valid licenses will be imported. When purchasing a new MAPublisher LabelPro license on top of an existing MAPublisher license, the existing license key will be tagged to support MAPublisher LabelPro and the new license must be retrieved (see instructions earlier).

To evaluate MAPublisher LabelPro, open the *MAPublisher License Management* dialog box from the Adobe Illustrator menu (*Help* > *MAPublisher Licensing* > *MAPublisher License Management*). Click the **MAPublisher LabelPro** branch and then click the **Evaluate** button as previously explained.

Click the Log button to see more system information about the license status.



The evaluation version of MAPublisher LabelPro scrambles the text of placed labels but preserves the case, spacing and punctuation. The results give a sense of how actual labels would be placed based on the rule settings. See chapter 17 for more details on MAP LabelPro functionality and usage.

Note: MAPublisher and MAPublisher LabelPro can only be both floating licenses or both local licenses (fixed or evaluation). A user on a floating license wishing to evaluate MAPublisher LabelPro will have their main MAPublisher and MAPublisher LabelPro licenses switched to a local evaluation license. At the end of the evaluation period, the settings for floating license can be reset as described above.

MOVE A LICENSE

To move a previously activated license to a new computer, use the following steps:

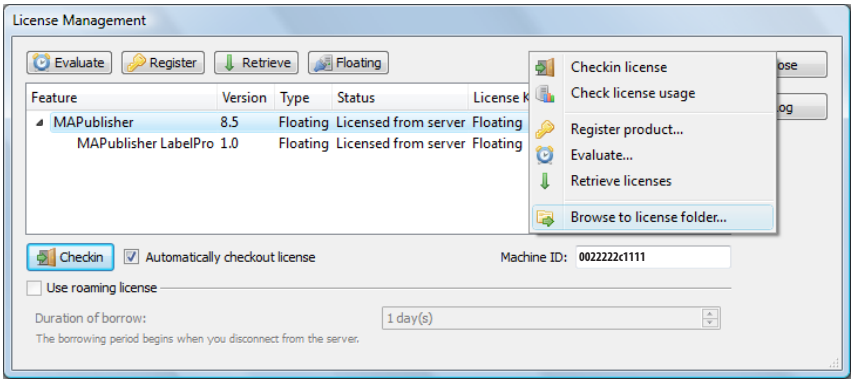
1. Uninstall MAPublisher from the current computer.
2. Install MAPublisher on the new computer.
3. Obtain the machine ID for the new computer (as found in the MAPublisher License Management dialog box started from the Adobe Illustrator Help menu at *MAPublisher Licensing* > *License Management*.)
4. Complete the on-line form at *http://www.avenza.com/support/rehost-license*. For offline users, call tech support.

LICENSE TROUBLESHOOTING

If you cannot register or retrieve an evaluation or purchased license from within MAPublisher (e.g. firewall limitations), visit the Avenza Systems website (*www.avenza.com/activation*) and provide the Machine ID displayed in the License Management dialog box. A zipped license file attachment will be sent to the registered email address on record. Unzip this attachment and save the .lic file to the appropriate folder:

Windows XP: *C:\Documents and Settings\All Users\Application Data\Avenza\MAPublisher 8*
Windows Vista / 7: *C:\ProgramData\Avenza\MAPublisher 8*
Mac OS X: *Applications/Avenza/MAPublisher 8/MAPublisher Plug-In*

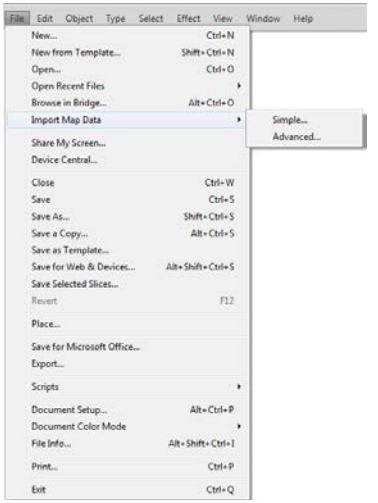
To quickly access the MAPublisher license file directory, right-click a row in the License Management dialog box and click *Browse to license folder*. Copy or move MAPublisher license files directly into this location.



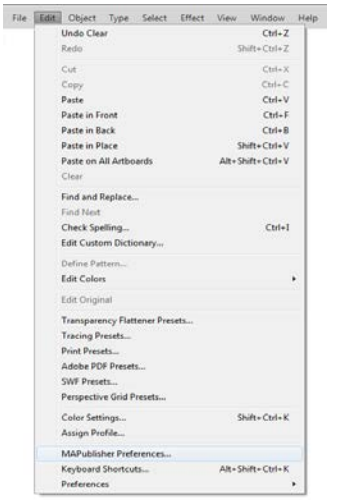
MAPublisher Tools

MAPublisher tools can be found in a number of locations in Adobe Illustrator.

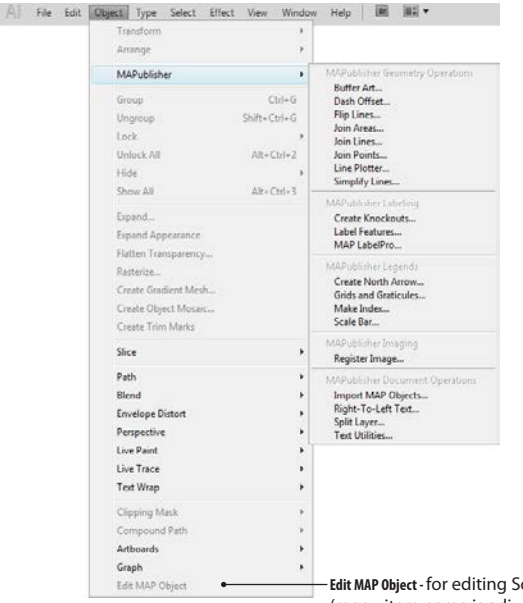
MAPublisher Import functions can be found in the **File** menu



MAPublisher Preferences can be found in the **Edit** menu.

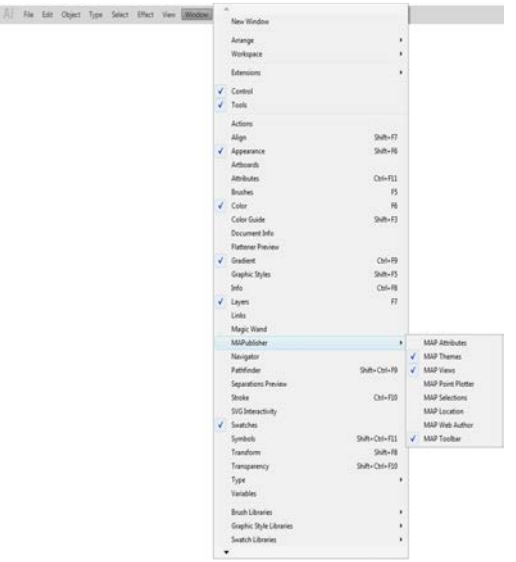


MAPublisher functions can be found under the **Object > MAPublisher** menu.
The Edit MAP Object function can be found under the **Object** menu.

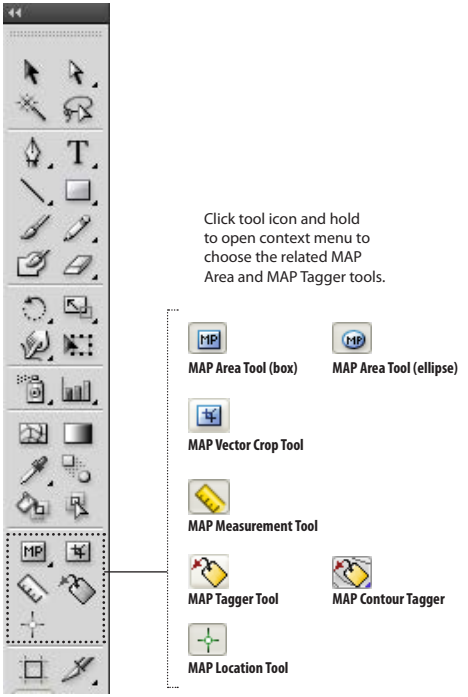


Edit MAP Object - for editing Scale Bars, Grids and Graticules (menu item name is adjusted accordingly)

The MAPublisher panels can be found under the **Window > MAPublisher** menu.



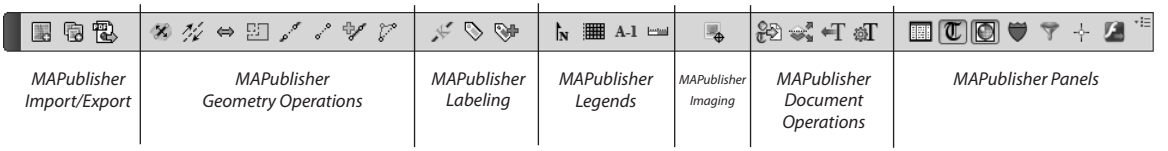
Seven MAPublisher tools can be found in the main **Adobe Illustrator Tools** panel.



MAPublisher Toolbar

Window > MAPublisher > MAP Toolbar

The MAPublisher Toolbar provides easy access to launch the MAPublisher tools and panels. The MAP toolbar is divided into seven sections: **Import/Export**, **Geometry Operations**, **Labeling**, **Legends**, **Imaging**, **Document Operations** and **Panels**.

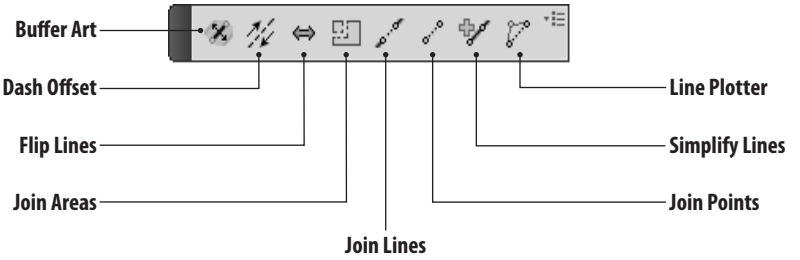


Note: MAPublisher Toolbar cannot be saved in a workspace (Adobe Illustrator main menu *Window > Workspace).*

MAPUBLISHER IMPORT/EXPORT



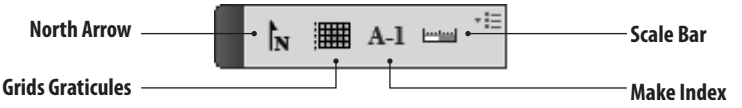
MAPUBLISHER GEOMETRY OPERATIONS



MAPUBLISHER LABELING



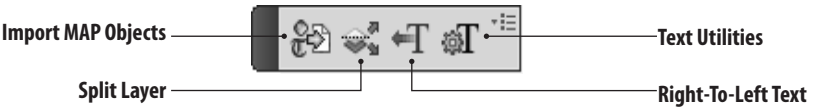
MAPUBLISHER LEGENDS



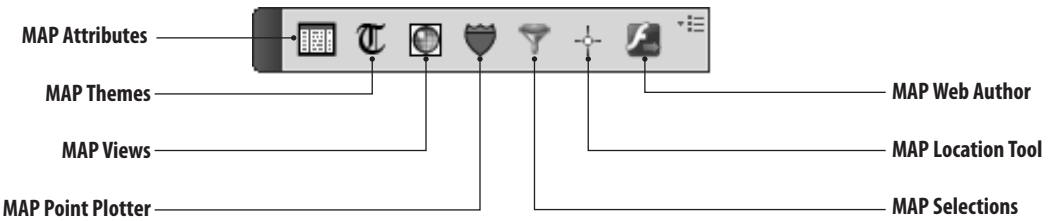
MAPUBLISHER IMAGING



MAPUBLISHER DOCUMENT OPERATIONS



MAPUBLISHER PANELS

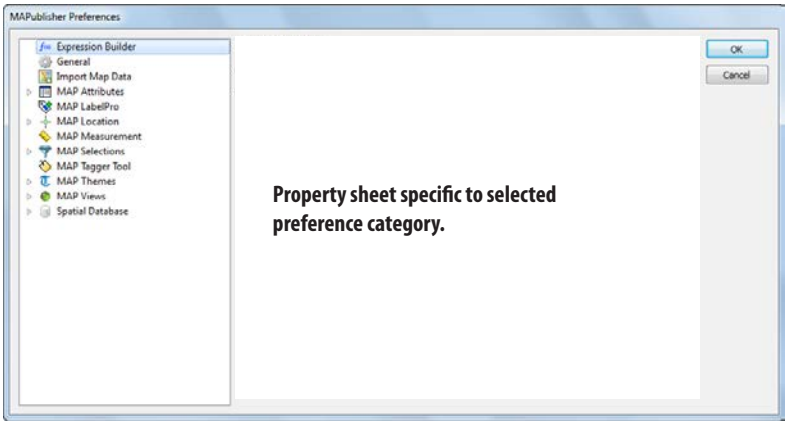


MAPublisher Preferences

Edit > MAPublisher Preferences (Windows)
Illustrator > MAPublisher Preferences (Mac)

MAPublisher Preferences are options that allow users to customize MAPublisher panels and editors, including those for layer ordering, font for attribute data display and panel style. Settings are available for the following categories:

- Expression Builder
- General
- Import Map Data
- MAP Attributes (panel)
- MAP LabelPro
- MAP Location (panel)
- MAP Measurement
- MAP Selections (panel)
- MAP Themes (panel and editor)
- MAP Views (panel and editor)
- Spatial Database (Basic Esri ArcSDE Server Editor, Esri Geodatabase Editor and General Spatial Database Editor). *Windows only.*



MAPublisher Preferences are saved within the Adobe Illustrator preference file called *AIPrefs* (Windows) or *Adobe Illustrator Prefs* (Mac), which is launched each time Adobe Illustrator is started. Therefore, MAPublisher Preferences are not file dependent.

The Adobe Illustrator preference file is located in following directory:

Windows XP: *C:\Documents and Settings\[user profile]\Application Data\Adobe\Adobe Illustrator CSX Settings\AIPrefs*
Windows Vista / 7: *C:\Users/[user]\AppData\Roaming\Adobe\Adobe Illustrator CSX Settings\AIPrefs*
Mac OS X: *Users/[username]/Library/Preferences/Adobe Illustrator CSX Settings/Adobe Illustrator Prefs*

OPEN MAPUBLISHER PREFERENCES

MAPublisher Preferences can be opened from the Adobe Illustrator main menu, **Edit > MAPublisher Preferences** (Windows) or **Illustrator > MAPublisher Preferences** (Mac), from the panel options menu of the following MAPublisher panels: *MAP Attributes, MAP Selections, MAP Themes* and *MAP Views*, and by double-clicking the tools buttons: *MAP Location* and *MAP Measurement*.

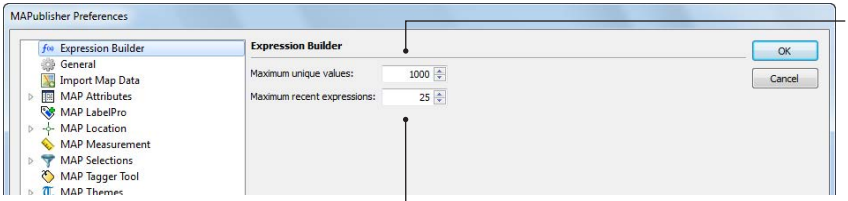
When opened through the Adobe Illustrator menu, MAPublisher Preferences opens up with no category selected. When started from a specific MAPublisher panel options menu, MAPublisher Preferences open on the current panel property sheet. All preferences shown here are the default settings.

MAPUBLISHER PREFERENCES SETTINGS

Clicking one of the MAPublisher category or sub-categories on the left hand list displays the corresponding property sheet displayed on the right.

Expression Builder Preferences

The Expression Builder property sheet shows the settings relative to the Expression Builder dialog box used with the MAP Attributes, MAP Themes and MAP Selections panels (see chapter 5 for more information).



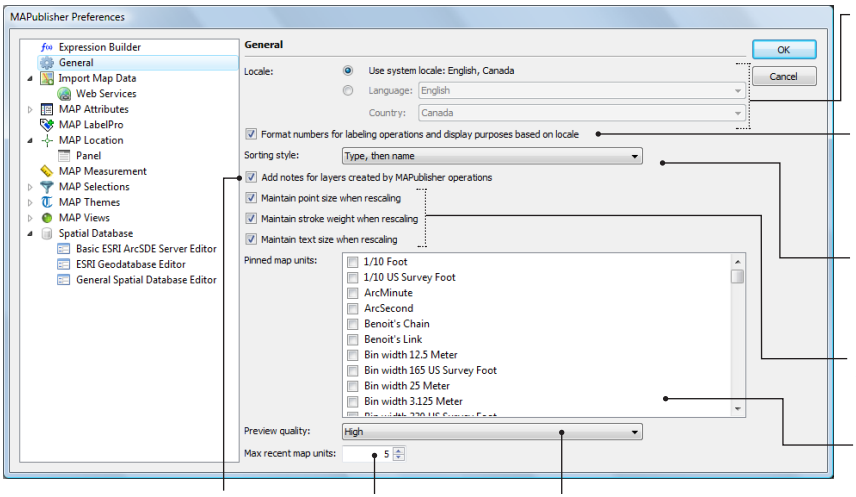
Maximum unique values - Set the maximum number of unique values visible in the Expression Builder (*Expression Components > Description*).

The default value is 1000, users with high performance computers can increase this number.

Maximum recent expressions: - Set the maximum number recent expressions displayed in the Expression Library (*Expression Components > Description*).

General Preferences

The General property sheet is used to change the layer ordering rule for all MAPublisher panels. By default, layers are sorted alphabetically only. The other option is to first group layers by data type first (Legend, Text, Point, Line and Area) and subsequently in alphabetical order for each group.



Locale - This option affects how MAPublisher formats numbers (e.g. use comma or point as a decimal separator). Use the operating system local settings or specify a different language and country.

Format numbers for labeling operations and display purposes based on locale
Enable to format how number labels are displayed based on country (e.g. 400.00 in USA compared to 400,00 in Norway)

Sorting Style - Set to *Name, then type* for an alphabetical sorting. Set to *Type, then name* to first sort the layers per data type (Legend, Text, Point, Line or Area)

Maintain point size/stroke weight/text size when rescaling - Scale changes (made in the MAP View Editor) that affect stroke, point and text sizes.

Pinned map units - The selected map units are listed first in the unit drop-down lists of MAPublisher (e.g. in Scale Bar or Buffer Lines dialog boxes)

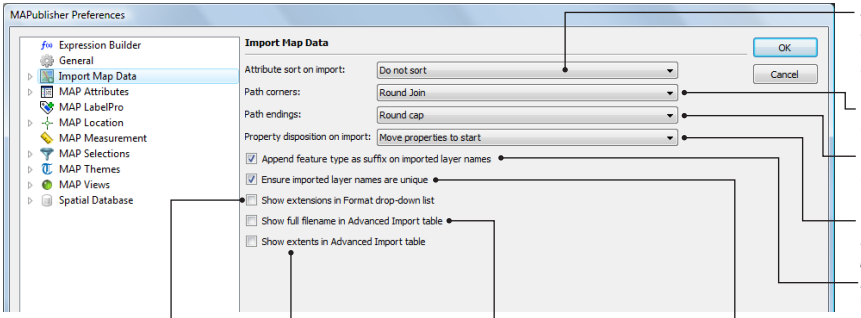
Add notes for layers created by MAPublisher operations
Enable to have layer notes created automatically when creating layer through MAPublisher operations (e.g. during import, plot centroid, buffer lines...).

Max recent map units
Maximum number of map units memorized by MAPublisher

Preview - Adjust the preview quality within various MAPublisher dialog boxes

Import Map Data Preferences

The Import Map Data preference category allows users to sort the order of the attributes columns upon import. By default, attributes are imported in the same order as in the source GIS data file and the MAPublisher #Property attributes are created in front of the imported attributes (see chapter 5 for additional information).



Attribute sort on import - Set to *Do not Sort* to maintain the attributes order of the source GIS file. Set to *Order attributes alphabetically* to apply this new ordering.

Property corners - Set to *Miter*, *Round* or *Bevel* join

Property endings - Set to *Butt*, *Round* or *Projecting* cap

Property disposition on import - Set to *Move properties to start* or *Move properties to end*

Append feature type as suffix on imported layer names - By default, the feature type is appended to the layer name (e.g. '_area' or '_point'). Clear this check box to prevent this behaviour.

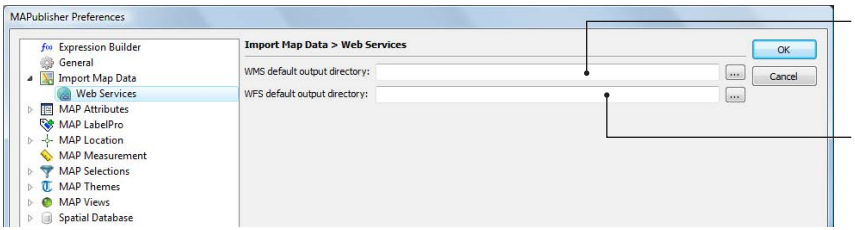
Show extensions in Format drop-down list By default, the Format drop-down list in the Simple and Advanced Import dialog boxes shows the format extensions (e.g. '.shp'). Clear this check box not to display format extensions.

Show extents in Advanced Import table - Check this option to display the data extents (lower left and upper right corners coordinates)

Show full file name in Advanced Import table - The Advanced Import table shows the list of selected files for import. By default, only the file name is displayed. Check this option to display the full path.

Ensure imported layer names are unique By default, MAPublisher appends a number 1, 2 etc... to an imported layer name if the layer name already exists. Clear this check box to prevent this behaviour.

Import Map Data > Web Services

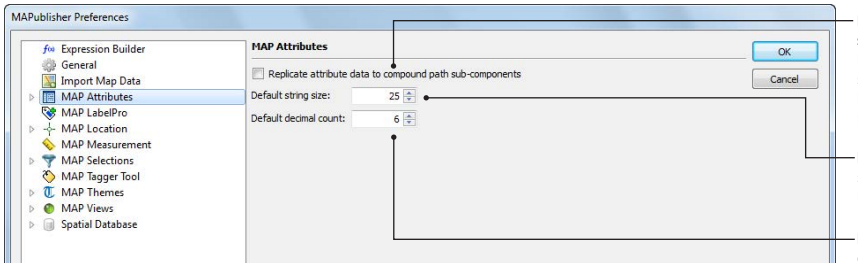


WMS default output directory
The default output directory for files generated by the Web Mapping Service import feature

WFS default output directory
The default output directory for files generated by the Web Feature Service import feature

MAP Attributes Preferences

MAP Attributes Preferences



Replicate attribute data to compound path sub-components - Enable this option before editing the attribute schema so that the attributes do not get broken when releasing a compound path (see chapter 5)

Default string size - Specify the default string size applied when creating a new attribute of type S String

Default decimal count - Specify the default number of decimals applied when creating a new attribute of type R Real

MAP Attributes > Panel Preferences

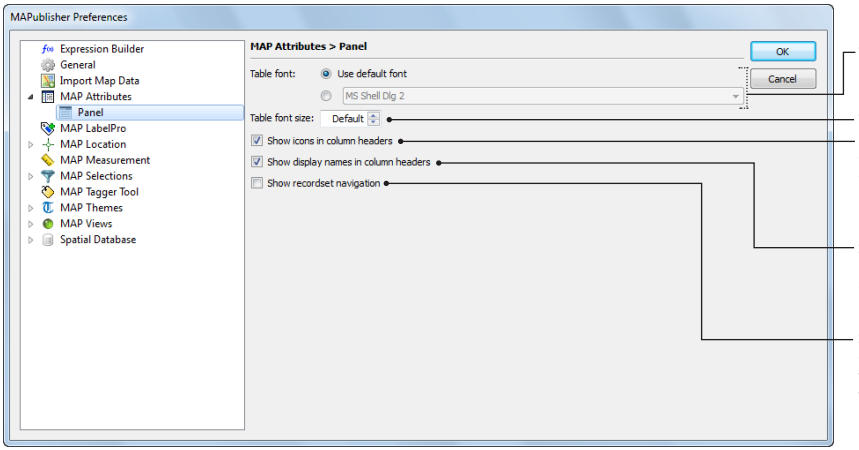


Table font – Set the text font for headers and attribute values

Table font size – Set the text font size

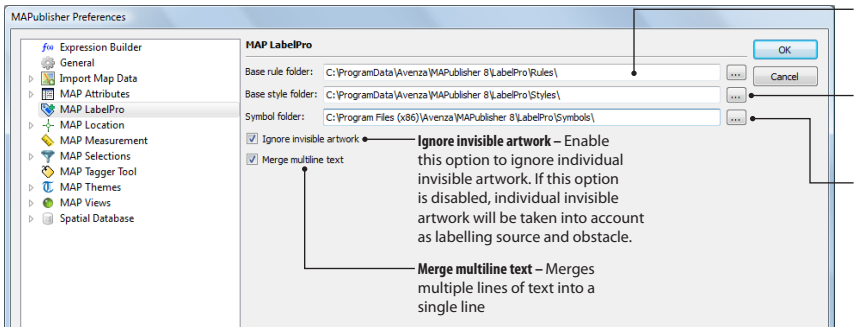
Show icons in column headers – Enable this option to display the data type in front of the attribute column name (B Boolean, I Integer, R Real, and S String)

Show display names in column headers Enable this option to show the display name of a column header instead of the actual column name

Show recordset navigation – Enable this option to show navigation buttons in the MAP Attributes panel. Use them to scroll through attribute records.

MAP LabelPro Preferences

The MAP LabelPro preference category contains general settings to save the path access to saved rules, styles and symbol folders (see chapter 17 for more information on MAP LabelPro).



Base rule folder – Directory path to the rule folder. Click the browse button ... to open a folder browser and change the path.

Base style folder – Directory path to the style folder. Click the browse button ... to open a folder browser and change the path.

Symbol folder – Directory path to the symbol folder. Click the browse button ... to open a folder browser and change the path.

Ignore invisible artwork – Enable this option to ignore individual invisible artwork. If this option is disabled, individual invisible artwork will be taken into account as labelling source and obstacle.

Merge multiline text – Merges multiple lines of text into a single line

Note: The default directories for the rule, style and symbol folders:

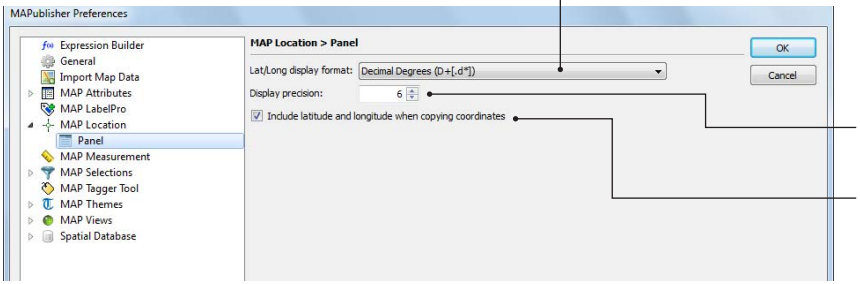
- Default rules and styles folders—respectively *Rules* and *Styles* subfolders in the directory:
  Windows XP: *C:\Documents and Settings\All Users\Application Data\Avenza\MAPublisher 8\LabelPro\..*
  Windows Vista / 7: *C:\ProgramData\Avenza\MAPublisher 8\LabelPro\..*
  Mac OS X: *Applications/Avenza/MAPublisher 8/MAPublisher Plug-In/LabelPro/..*

- Default symbol folder:
  Windows XP: *C:\Documents and Settings\All Users\Application Data\Avenza\MAPublisher 8\LabelPro\Symbols*
  Windows Vista / 7: *C:\ProgramData\Avenza\MAPublisher 8\LabelPro\Symbols*
  Mac OS X: *Applications/Avenza/MAPublisher 8/MAPublisher Plug-In/LabelPro/Symbols*

MAP Location Preferences

The MAP Location preference category does not contain general settings but has a sub-category for the MAP Location Tool panel (see chapter 4 for a full description of the MAP Location Tool).

MAP Location > Panel Preferences



Lat/Long display format- Set the latitude and longitude display format:

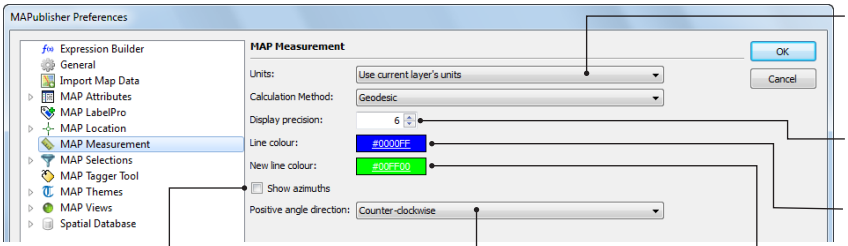
- *Decimal degrees*
- *Delimited Degrees Minutes Seconds*
- *Degrees.Minutes*
- *Degrees.MinutesSeconds*
- *Packed DMS with decimal point*
- *Packed DMS*

Display precision - Set the number of decimals shown on the MAP Location Tool panel

Include latitude and longitude when copying coordinates - Enable this option to copy the positions in both projected (WX, WY) and geodetic coordinates (longitude, latitude) when using Shift+click in the MAP Location Tool panel (see chapter 4)

MAP Measurement Preferences

The MAP Measurement category contains display settings for the MAP Measurement Tool (see chapter 7 for details).



Units - Choose to use the current layer's units or select a specific unit in the drop-down list

Calculation Method - Choose to calculate distance based on datum (geodesic) or map projection (Cartesian)

Display precision - Set the number of decimals shown on the MAP Measurement annotations

Line colour - Set the color of the digitized measurement path

New line colour - Set the color of the current segment (between last digitized point and current mouse position)

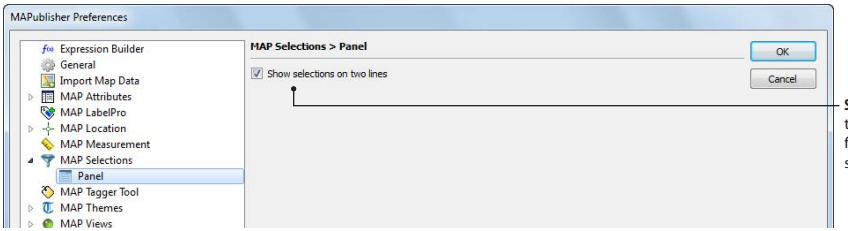
Show azimuths - Display forward and reverse azimuth when using the MAP Measurement tool

Positive angle direction - Set the positive angle direction as either counter-clockwise or clockwise

MAP Selections Preferences

The MAP Selections preference category does not contain general settings but has a sub-category for the MAP Selections panel (see chapter 11 for a full description of the MAP Selections panel).

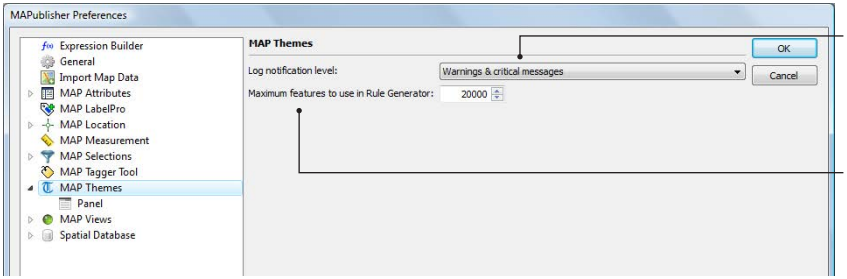
MAP Selections > Panel Preferences



Show selections on two lines - Enable this option to display the selection filter name and its expression on two separate lines.

MAP Themes Preferences

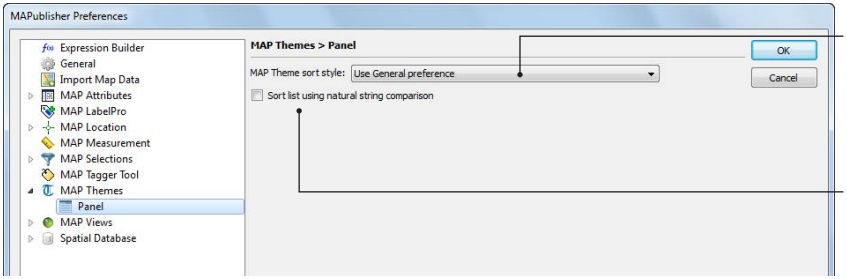
The MAP Themes preference category has a main property sheet and also contains a sub-categories for the MAP Themes panel (see chapter 9 for a full description of the MAP Themes editor and panel).



Log notification level – This option specifies what is recorded by the log. By default, Warnings & critical messages is chosen. If needed, choose No notification or Critical messages only.

Maximum features to use in Rule Generator This option specifies the maximum number of unique values that can be generated by the Rule Generator.

MAP Themes > Panel Preferences



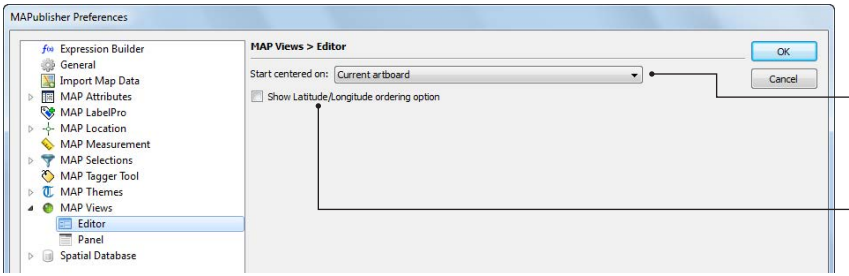
MAP Themes sort style – By default, the General sorting style is applied (option *Use General preference*). Set to *Name, then type* for an alphabetical sorting. Set to *Type, then name* to first sort the layers per data type (Legend, Text, Point, Line or Area).

Sort list using natural string comparison – Enable this option to use the natural sorting for layer and MAP Themes names using numbers (e.g. 1,2,10 instead of 1, 10, 2)

MAP Views Preferences

The MAP Views preference category does not contain general settings but has sub-categories for the MAP Views editor and panel (see chapter 4 for a full description of the MAP Views editor and panel).

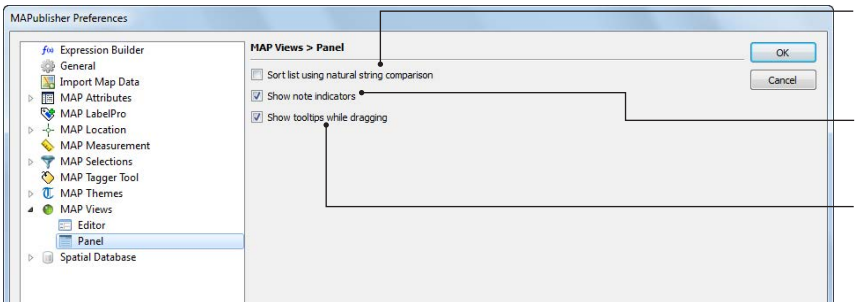
MAP Views > Editor Preferences



Start centered on - By default, the current artboard is centered in the preview area of the MAP Views dialog box. Change the option to have it centered on the current MAP View.

Show Lat/Long ordering option Enable this option to show the Latitude/Longitude ordering drop-down menu in the MAP Views dialog box. This effectively swaps the order of how latitude and longitude values are shown.

MAP Views > Panel Preferences



Sort list using natural string comparison Enable this option to use the natural sorting for layer and MAP View names using numbers (e.g. 1,2,10 instead of 1, 10, 2).

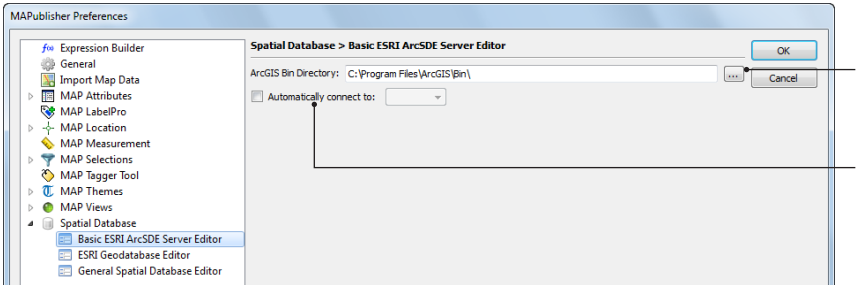
Show note indicators – When enabled, it displays the note icons next to the layer name in the MAP View panel

Show tool tips while dragging – When dragging a layer from one MAP View to another, a tool tip displays information on the destination MAP View. Clear this check box to prevent tool tips to be displayed.

Spatial Database Preferences

The MAPublisher Spatial Database preference category does not contain general settings but has three sub-categories: *Basic Esri ArcSDE Server Editor, Esri Geodatabase Editor* and *General Spatial Database Editor* (see chapter 3 for a full description of the MAPublisher Spatial Database).

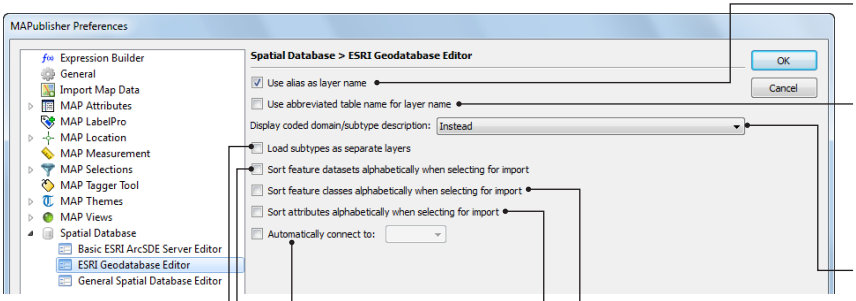
Spatial Database > Basic Esri ArcSDE Server Editor Preferences



ArcGIS Bin Directory – Specify the location where the ArcGIS Bin directory is installed. Click the Browse button to open a folder browser and change the path.

Automatically connect to – Check this option to automatically connect to a specific server connection, selected in the drop-down list

Spatial Database > Esri Geodatabase Editor Preferences



Use alias as layer name – Enable this option to use feature class' alias name rather than its true name

Use abbreviated table name for layer name ArcSDE geodatabases' tables are identified as *databaseName.userName.tableName*. The abbreviated version uses only the table name as layer name.

If this option is used in combination with the "use alias" option, the alias is applied first.

Display coded domain/subtype description Option to import attributes with coded values from subtypes and attribute domains as follow:

- *Instead:* replace the codes by their description (text)
- *Never*: import actual values—codes
- *In Addition:* create two attribute columns, one with coded values and one with descriptions

Load subtypes as separate layers Enable this option to use create new layers per subtype

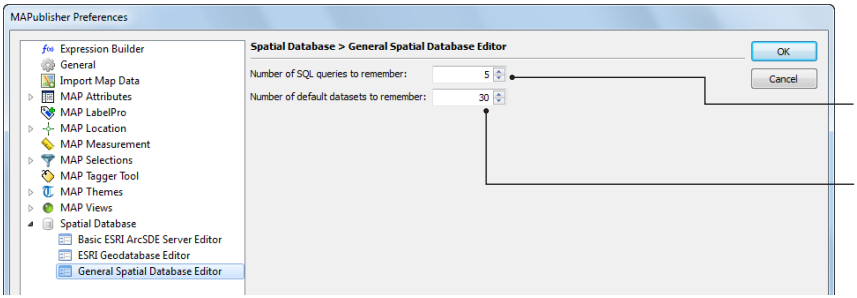
Sort feature datasets alphabetically when selecting for import – Enable this option to sort feature datasets alphabetically in the import dialog boxes

Automatically connect to – Check this option to automatically connect to a specific server connection, selected in the drop-down list

Sort attributes alphabetically when selecting for import – Check this option to sort attributes alphabetically in the import dialog boxes

Sort feature classes alphabetically when selecting for import – Enable this option to sort feature classes alphabetically in the import dialog boxes

Spatial Database > General Spatial Database Editor Preferences

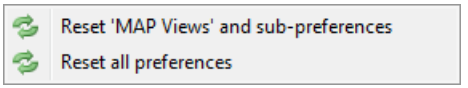


Number of SQL queries to remember
Select the number of queries memorized in the Recent category

Number of default datasets to remember
Select the number of default datasets saved in memory for later use

RESET MAPUBLISHER PREFERENCES TO DEFAULT SETTINGS

MAPublisher Preferences can be reset directly from the MAPublisher Preferences dialog box. A right click on a category will display the choice to reset the preference setting of this category or the entire MAPublisher Preferences.



MAPublisher Preferences will also be reset if the Adobe Illustrator preferences are reset or deleted. Adobe often recommends this to solve some problems with the application. Adobe Illustrator preferences are reset by doing one of the following:

- Press and hold **Alt+Control+Shift** (Windows) or **Option+Command+Shift** (Mac) as Adobe Illustrator is starting. The current settings are deleted.
- Remove or rename the *AIPrefs* file (Windows) or *Adobe Illustrator Prefs* file (Mac). New preferences files are created the next time Adobe Illustrator is restarted.

Preparing the Workspace

Before using MAPublisher, you must first set up your Adobe Illustrator document. It is at this point that you define your page size and units, set your print orientation and generally prepare your Adobe Illustrator workspace.

Establish the desired page size and orientation before importing map data as MAPublisher will establish georeferencing based on the current page. However editing page dimensions after import will maintain correct georeferencing based on the new page dimensions.

Note: If no document is open, MAPublisher Simple and Advanced Import initiate the New Document dialog box.

SETTING UP A DOCUMENT

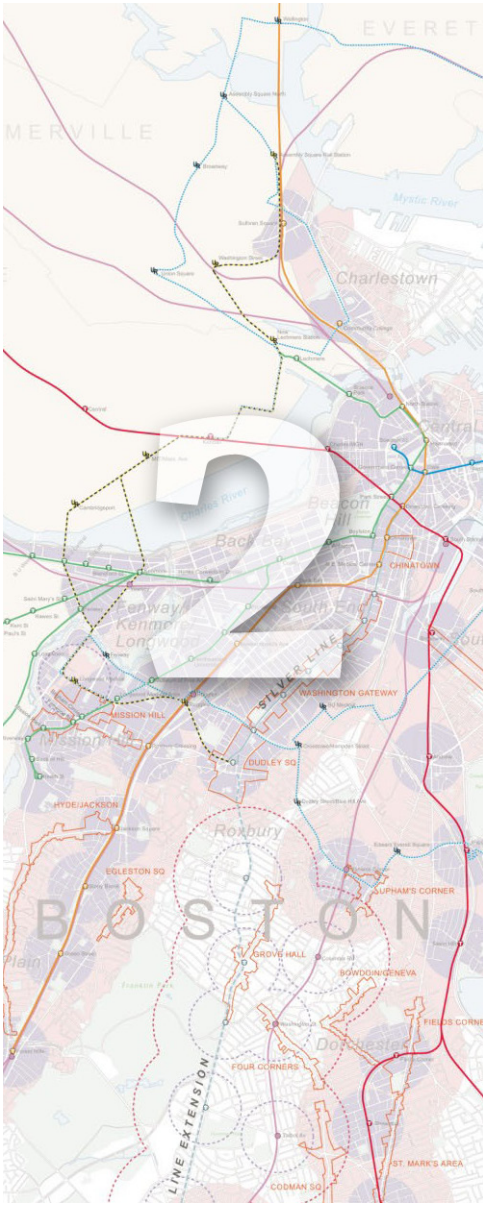
1. Create a new Adobe Illustrator document by selecting *File > New,* or Select *File > Document Setup* if you already have a blank document open - The Adobe Illustrator Document Setup dialog box appears.
2. Select the size to use for your page. Letter (8.5" x 11") is the default size*. You may wish to change the orientation to landscape for some files. For example, a map of Chile may be best displayed in portrait but a map of Indonesia may be best displayed in landscape.
3. Select your desired page units. The default unit type is Points.
4. Ensure the page origin is at 0,0. To do this, select *View > Show Rulers*. Double-click the top left corner of the rulers where the vertical and horizontal rulers intersect.

For more information and details regarding these operations please refer to your Adobe Illustrator User Guide.

** In step 2 the default page size of 8.5" x 11" is for North American versions of Adobe Illustrator. Other language versions of Adobe Illustrator may have different default page sizes. Consult your Adobe Illustrator User Guide for more information.*

Notes: Note that the maximum length and width dimension for an Adobe Illustrator document is 227.54 inches.

Adobe Illustrator CS5 introduces a new function to *Duplicate Artboard*. This new function should be used with caution because it also duplicates art and moves it on the page, but the duplicated art reference is the same geographic frame as the original art (they are contained in the same layer). Therefore the geographic position of the duplicated art will not be correct.



Map Data File Formats

MAPublisher 8 imports and exports many of the GIS industry leading file formats.

Import Formats

Adobe Geospatial PDF (*.pdf)
AutoCAD Drawing/Exchange (*.dxf, *.dwg)
Digital Line Graph (*.dlg, *.opt)
Esri ArcInfo Generate (*.gen)
Esri Interchange File (*.e00)
Esri Shapefile (*.shp)
Esri ArcMap Document (*.mxd)
GML (Simple Features 2.0 +) (*.gml)
GPX GPS Exchange Format (*.gpx)
Images (multiple formats)
MapInfo Interchange (*.mif, *.mid)
MapInfo Table (*.tab)
Microsoft Excel (*.xls)
MicroStation Design (*.dgn)
Delimited Text Data (*.txt, *.csv, *.tsv)
KML (*.kml, *.kmz)
S-57 (*.000)
Spatial Data Transfer Standard (SDTS) (*.ddf)
TIGER/Line (*.rt1, *.bw1)
Web Feature Service
Web Map Service
Basic Esri ArcSDE Server
Esri ArcSDE geodatabase
Esri File geodatabase (*.gdb)
Esri Personal geodatabase (*.mdb)
Basic Personal geodatabase(*.xls)

Export Formats

Adobe Geospatial PDF (*.pdf)
AutoCAD Drawing/Exchange (*.dxf, *.dwg)
Esri Interchange File (*.e00)
Esri ArcInfo Generate (*.gen)
Esri Shapefile (*.shp)
GML (Simple Features 3.1.1)
MapInfo Interchange (*.mif, *.mid)
MapInfo Table (*.tab)
Microsoft Excel (*.xls)
MicroStation Design (*.dgn)
Delimited Text Data (*.txt, *.csv, *.tsv)
KML/KMZ (*.kml, *.kmz)

Import and Export Supported Data Formats

This section provides an overview of the supported formats. For an in-depth analysis of further considerations when using these formats during Import, please see appendix A1.

DATA FORMAT DESCRIPTIONS

Adobe Geospatial Portable Document Format (*.pdf)

Import and Export
The geospatial PDF is considered an Adobe Acrobat Portable Document Format (following the PDF 1.7 specification) that contains information that is required to georeference location data. It is an open specification developed and maintained by Adobe Systems. See detailed specifications in Section 8.3 at *http://www.adobe.com/devnet/acrobat/pdfs/PDF32000_2008.pdf*.

AutoCAD Drawing (*.dwg) and Drawing Exchange (*.dxf)

Import and Export
These file types are most commonly created by Autodesk AutoCAD product, though other computer-aided design (CAD) programs such as Bentley MicroStation capable of creating them. Two formats are used by AutoCAD: DXF (drawing exchange format) files and ASCII representations of the binary DWG (drawing) files. Logically, both files are identical and MAPublisher treats both file types in the same manner. AutoCAD files consist of drawing settings and configurations, as well as a series of entities, or graphic elements, organized into layers. MAPublisher provides broad support for many AutoCAD entity types and options. Prior to import, set the colour mode of the Adobe Illustrator document to the same scheme used in the colour table of the CAD file (RGB or CMYK) to ensure colours are imported correctly. Note the hierarchy of layers in multi-feature imports is by feature type: text layers, then point, then line, then area layers. Annotation objects are converted to a point containing attribute information including the text value to be labeled and its angle. Certain symbols may import as "exploded" objects in MAPublisher.

Digital Line Graph (*.dlg, *.opt)

Import only
The USGS (United States Geological Survey) DLG file structure is designed to accommodate categories of spatial data represented on a conventional line map. Node (point), line, and area data types are accepted. The attribute coding scheme is designed to accommodate basic cartographic data categories such as hypsography, hydrography, or political and cultural features, as well as additional thematic data categories.

Delimited Text Data (*.txt, *.csv, *.tsv)

Import and Export
MAPublisher also supports the import of Delimited Text Data held in a variety of tabular file formats, as long as the data contains coordinate values. File types supported are Text (.txt), Tab Separated (.tsv) and Comma Separated (.csv) files. Import Settings dialog box: In order to import point data with MAPublisher the parameters must be set by clicking the Settings' button. This operation is required to choose the columns of the selected attribute file that will be used to derive the X and Y coordinates of the data, and ensure correct georeferencing. These and further settings are discussed in chapter 6 and in the Delimited Text Data Settings section in appendix A1.

Esri ArcInfo Generate (*.gen)

Import and Export

ArcInfo Generate files are created by Esri ArcInfo product, and have a simple ASCII *from x-y to x-y* format. Due to its simplicity you can also use a text editor such as Notepad to create text files and save them with a *.gen extension, which can then be imported with MAPublisher.

Esri Interchange File (*.e00)

Import and Export

Esri Interchange File files are created by Esri ArcInfo product. A single E00 file describes a complete ArcInfo coverage. The file itself is actually an archive of several smaller files, or sub files, which will have fixed names and follow a predefined data format. MAPublisher will reproduce these sub files as distinct Adobe Illustrator layers on import. Therefore importing a single e00 import can result in the generation of point, area, line and text layers.

Note the hierarchy of layers in multi-feature imports is by feature type: text layers, then point, then line, then area layers.

Esri Shapefile (*.shp)

Import and Export

Shapefiles are most commonly created by Esri ArcGIS or ArcView. Shapefiles store both geometry and attributes for features, and a single shapefile will consist of at least three physical files: the .shp portion contains the geometric data, the .dbf contains attributes for the geometric data, and the .shx contains the index information. There is often a .prj file, which stores coordinate system information and is automatically read by MAPublisher on import. If a shapefile folder does not contain a .prj file, a coordinate system should be specified in MAPublisher. The important things to remember when importing shapefiles are that the .shp file must be the one that is selected through the MAPublisher import filter and that all its component files must be in the same folder. You may also find that a shapefile directory includes two extra files, a .sbn and a .sbx, which hold the spatial index for the geometric data. These two files will not exist unless the shapefile was created with an Esri product, and are not necessary for successful import with MAPublisher.

Esri ArcMap Document (*.mxd)

Import

ArcMap Documents (.mxd files) contain information describing the map, page layout, layers associated with it, and any objects inserted into the map. The MAPublisher Simple and Advanced Import are used to import ArcMap Documents. Due to certain limitations, only the coordinate system, layer order and map data are retained when importing an ArcMap Document. Any styles, such as strokes, fills and patterns are not preserved. In addition, to import ArcMap documents, at least ArcGIS 9.x must be installed.

GML (Simple Features 2.0+) (*.gml)

Import and Export

The Geographic Markup Language (GML) was designed as a geographic interface language for the Geo-Web. It is currently in draft as an ISO standard (ISO 19136). The goal of the format is to provide users with a set of abstract base objects that can be built into working real world dataset. It uses an XML base to store geometry and feature information that can easily be transported across the Internet.

The *GML Simple Feature Profile* was created by the Open Geospatial Consortium (OGC) as a restricted but useful subset of the GML specification. It provides a reduced geometry and metadata profile that can be shared across many GIS tasks. This simple feature model can be used as a base to generate local application profiles for a specific work area. Since the GML models base abstract classes, these application profiles (schemas) are required for accessing and processing any GML datasets. GML data has a ***.gml** extension, and requires a attributes schema file ***.xsd**. Some GML files may have their .xsd file referenced to a URL path, we recommend to copy the xsd files locally, to avoid error messages upon import when no internet connection is available.
Users have two options to store their .gml and .xsd files: they can be both located in a same directory or the xsd files can be kept in the MAPublisher GML Schema directory found here:

Windows XP, Vista and 7: *C:\Program Files\Avenza\MAPublisher 8\Data Source Files\GMLSchema*
Mac OS X: */Applications/Avenza/MAPublisher 8/MAPublisher Plug-In/Data Source Files/GMLSchema*

The second option is the most practical if all the GML files are using a same schema (only one instance of the XSD file needs to be saved). Installed with MAPublisher are three default XSD files:

- *xml.xsd,* generic GML attribute schema.
- *nen3610.xsd* and *top10nl.xsd,* models standardized in the Netherlands (maintained by the Dutch topographic office Kadaster).

GML files with a missing XSD file or with an invalid attribute schema will cause a *GML validation error* upon import (see chapter 3). Users have the option to find the appropriate XSD file and copy it to the GML Schema directory or to the GML file directory. This option will assign a type string to all attributes. See chapter 3 *Importing Map Data* for more details on these settings.

MAPublisher supports the import of simple features (points, lines, polygons, donuts, and aggregates) in GML 2.0 and later versions. MAPublisher supports export to GML 3.1.1.

KML/KMZ (*.kml, *.kmz)

Import and Export

Keyhole Markup Language (KML) is an XML-based language for managing the display of three-dimensional geospatial data in the programs Google Earth, Google Maps, Google Mobile and WorldWind. The KML file specifies a set of features for display. Each feature always has a longitude and a latitude and can have other data, such as tilt, heading, and altitude. KML shares some of the same structural grammar as GML. KML files are very often distributed as KMZ files, which are zipped KML files with a .kmz extension. MAPublisher imports and exports both file type based on the KML version 2.2 specifications.

GPS Exchange Format (*.gpx)

Import only

GPS Exchange Format (GPX for short) is a light-weight XML-based data format designed for the interchange of GPS data. MAPublisher supports GPX schema version 1.1.

Image (*.png, *.jpeg, *.jpg, *.jpe, *.tif, *.tiff *, *.gif, *.jp2, *.jpf, *.jpx, *.j2k, *.j2c, *.jpc, *.psd, *.pdd, *.bmp)

Import only

Referenced raster files of the above mentioned formats can be imported and placed directly into a MAPublisher MAP View from the Simple and Advanced Import tools. These images have the option to be linked or embedded into Adobe Illustrator upon import. Images cannot be reprojected by MAPublisher in Adobe Illustrator. Use Geographic Imager or another third-party software to properly reproject geospatial images.

MapInfo Interchange (*.mif, *.mid)

Import and Export

Files of this type are most commonly created by the MapInfo product, though other products, including MAPublisher, are also capable of generating files in this format. These files exist in pairs where each file has the same name but ends in either a .mif or .mid file extension. The .mif portion contains the vector geometric data, and the .mid contains the associated attributes. Both files are required in order to successfully import a file of this format to Adobe Illustrator using MAPublisher. The important things to remember when importing MapInfo files are that the .mif file must be the one that is selected through the MAPublisher import filter and that both files must be in the same folder. MAPublisher will automatically locate and deal with the .mid file.

MapInfo Table (*.tab)

Import and Export

The TAB format is a simple, non-topological format for storing the geometric location and attribute information of geographic features, and is an integral part of the MapInfo product. The TAB format defines the geometry and attributes of geographically-referenced features in several files with specific file extensions that are stored in the same folder on disk. They are:

.tab: main file, table structure in ASCII format.
.map: the file that stores the feature geometry.
.id: the file that stores the index of the feature geometry.
.dat: the dBASE file that stores the attribute information of features.
.ind: table field indexes (if necessary)

The geometry of each feature is stored as a shape that comprises a set of vector coordinates. The attributes for each feature are stored as a record in a dBASE table (.dat) associated with the Shapefile (.map). There is one record in the dBASE table for each feature in the map file. Raster TAB files cannot be imported in MAPublisher.

To ensure successful import, select the .tab component in the MAPublisher importers.

Microsoft Excel file (*.xls)

Import and Export

Import geographic point data from an Excel spreadsheet (version 2007 and earlier only; *.xlsx is not supported) that contains latitude and longitude entries for each row. In order to import point data, click the Settings button in the Import dialog box to choose which columns will be used to as the X and Y coordinates of the data, and ensure correct georeferencing. Further settings including other types of are discussed in Appendix A1.

MicroStation Design (*.dgn)

Import and Export

MicroStation Design files (.dgn) are the native files created by Bentley Systems Inc. (and formerly Intergraph) MicroStation product. Design Files consist of a header, followed by a series of elements. The header contains global information including the transformation equation from design units to user coordinates, as well as the dimension of the elements in the file. Each element contains standard display information, such as its colour, level, class, and style, as well as a number of attributes specific to its element type. During the import process, MAPublisher will produce one layer for each Level that exists in the MicroStation Design File. Annotation objects are converted to a point containing attribute information including the text value to be labeled and its angle.

MAPublisher supports the import of MicroStation J (version 7 and 8) files, however attached raster file will not be imported (ignored). Prior to import, the colour mode of the Adobe Illustrator document should be the same scheme used in the colour table of the original file to ensure that the colours are interpreted correctly.

The hierarchy of layers in multi-feature imports is by feature type in the following order: text layers, then point layers, then line layers, then area layers. Raster files attached to DGN files are ignored during the import process. Files are exported from MAPublisher as MicroStation J files. Upon export, users may select a DGN seed file. All information in the seed file gets carried over to the output file, such as level (layer) definitions, units, colors, line styles definitions, etc. If an exported layer name matches a level name in the seed file, the data of that layer is appended to the existing level, if not, a new level is created.

S-57 (*.000)

Import only

S-57 is referring to the IHO (International Hydrographic Office) Special Publication number 57 related to the *IHO transfer standard for Digital Hydrographic Data* . Maintained by the IHO, S-57 format is intended for the exchange of digital hydrographic data between national hydrographic offices and for its distribution to manufacturers, mariners and other data users. It is used for the supply of ENC cells (Electronic Navigational Charts) to ECDIS (Electronic Chart Display and Information System). The objects spatial geometry can be of Point, Line or Area geometry, while object descriptions are categorized in object classes, organized in specific attributes schemas. To make full use of this format, refer to the online object catalog available on *www.s-57.com*.

MAPublisher imports non-encrypted S-57 data into MAP layers named per S-57 object acronym, of type Area, Line or Points. All S-57 Attributes are converted into MAP Attributes.

An Adobe Illustrator template is supplied to automatically style the map after import. The template contains a series of MAPublisher stylesheets linking S-57 imported features to nautical symbols and graphic styles (libraries provided by Avenza). This representation is non-exhaustive and meant to assist users with limited knowledge of the S-57 format to interpret the data contents more easily. The S-57 template and the symbols and graphic styles libraries can be found in the MAPublisher *Helpful Styles & Symbols* folder (see Appendix 4).

Spatial Data Transfer Standard SDTS (*catd.ddf)

Import only

Digital cartographic products of the USGS are available in the Spatial Data Transfer Standard format, and are generally distributed over the Internet as a means of promoting the standard. For SDTS import, select the catd file (xxxxcatd.ddf), which is the index file that contains a description of the other files in the SDTS transfer. Individual DDF files cannot be imported. Generally all SDTS downloads will contain the CATD file.

TIGER/Line (*.rt1, *.bw1)

Import only

TIGER is an abbreviation of T*opologically Integrated Geographic Encoding and Reference System*, and was developed by the U.S. Census Bureau. TIGER/Line files are a digital database of geographic features, such as roads, railroads, rivers, lakes, political boundaries, census statistical boundaries, etc., that cover the entire United States. The database contains information about these features such as their location in latitude and longitude, the name, the type of feature, address ranges for most streets, the geographic relationship to other features, and other related information. TIGER/Line files are the public product created from the Census Bureau TIGER database of geographic formation. TIGER was developed in order to support the mapping and related geographic activities required by the census and sample survey programs. More information on the TIGER/Line file format and data product can be found on the US Census web page at: *http://www.census.gov/geo/www/tiger/*

MAPublisher considers the .rt1 or .bw1 file as the TIGER dataset. Even though each county will consist of a series of files with a common base name, there may be a number of different extensions. Remember to select the .rt1 or .bw1 file when importing TIGER data.

Web Feature Service

Import only

Web Feature Service is an interface standard designed by the Open Geospatial Consortium (OGC) for GIS vector data transactions across the Web. The MAPublisher WFS import connects to servers that use versions 1.0.0 and 1.1.0 of the OGC standard. WFS servers provide GML files, which are read using the MAPublisher GML importer. The GML importer supports the GML simple features 2.0+ profile.

As the WFS importer is read-only, WFS-T is not supported. See Web Feature Service in Chapter 3 "Importing Map Data" for information on WFS parameters.

Web Map Service

Import only

Web Map Service is an interface standard designed by the Open Geospatial Consortium (OGC) for GIS raster data transactions through http protocol. The MAPublisher WMS import connects to servers that use version 1.1.1 of the OGC standard. WMS data formats include .png, .jpg, .tif, and GeoTIFF. See Web Map Service in Chapter 3 "Importing Map Data" for information on WFS parameters.

Basic Esri ArcSDE Server†

Import only

ArcSDE geodatabases are multi-user Esri spatial databases, that allow users to store, use, and manage their GIS data in one of the following commercial database management systems (DBMS): IBM DB2, IBM Informix, Microsoft SQL Server, or Oracle. They are available in three levels of flexibility: desktop, workgroup and enterprise. The *Basic Esri ArcSDE Server* import option allows users who have a free Esri desktop application called ArcReader to import feature classes from ArcSDE geodatabases, but with some limitations on the selection functions — see chapter 3 for more information on spatial databases.

† Basic Esri ArcSDE Servers are not supported on Mac due to limitations of the related Esri libraries.

Esri ArcSDE Geodatabase†

Import only

ArcSDE geodatabases are multi-user Esri spatial databases, that allow users to store, use, and manage their GIS data in one of the following commercial database management systems (DBMS): IBM DB2, IBM Informix, Microsoft SQL Server, or Oracle. They are available in three levels of flexibility: desktop, workgroup and enterprise. The *Esri ArcSDE geodatabase* import option allows users who have ArcGIS software and a valid license to import all ArcSDE geodatabase types with advanced options for the selection — see chapter 3 for more information on spatial databases.

† Esri ArcSDE geodatabases are not supported on Mac due to limitations of the related Esri libraries.

Esri File Geodatabase† (*.gdb)

Import only

A File geodatabase is a native Esri single-user spatial database. It is a collection of various types of GIS datasets held in a file system folder. This is the recommended native data format for ArcGIS. Importing this format requires ArcGIS software and a valid license — see chapter 3 for more information on spatial databases.

† Esri File geodatabases are not supported on Mac due to limitations of the related Esri libraries.

Esri Personal Geodatabase (*.mdb)

Import only

A Personal geodatabase is a native Esri single-user spatial database. This is the original data format for ArcGIS geodatabases stored and managed in Microsoft Access data files. Importing this format requires ArcGIS software and a valid license — see chapter 3 for more information on spatial databases.

† Esri Personal geodatabases are not supported on Mac due to limitations of the related Esri libraries.

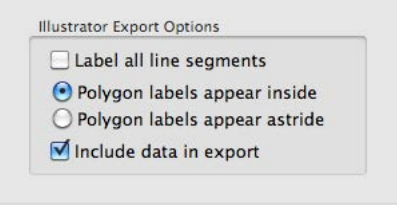
Basic Personal Database Reader (*.mdb) (Mac Supported)

Import only

The basic personal geodatabase reader can import basic feature class geometries and attributes on systems that do not have an Esri license. This makes it possible, for the first time, to open .mdb on Mac systems. The basic reader provides limited import capabilites supporting geometries and attributes not annotations or subtypes. Spatial Filters can be specified and SQL queries are supported on PC only.

OTHER SUPPORTED FILES

MAPublisher also supports Adobe Illustrator (*.ai) files created by Cartographica, a third-party GIS software. Cartographica users who wish to use files in MAPublisher must check the **Include data in export** option during export.



MAPublisher reads Adobe Illustrator files exported by Cartographica and extracts the geospatial information to convert it into layers and MAP Views—including projection, map scale and page position. However, there may be limitations when working with these files and it is recommended that they be saved as Adobe Illustrator CS4/CS5 files (this is required before exporting to geospatial PDF).

DATA CONSIDERATIONS

When obtaining GIS data for use with MAPublisher, whether from an online source, commercial vendor, government office or from a source within your organization, there are a number of important considerations to keep in mind.

First and foremost, obtain data in one of the formats supported by the MAPublisher. In cases where the file format native to a particular mapping application is not supported by MAPublisher, you can often request the data provider to export a file in one of the supported formats.

When obtaining data you should acquire as much metadata about the files as possible. MAPublisher deals with data in the following manner: Unprojected data will be imported by MAPublisher with latitude and longitude map anchors, which will therefore range from (x) -180 to 180, (y) -90 to 90.

If you receive projected data you should be aware of the following. MAPublisher will import projected data with a true scale and appropriate map anchors. Unlike unprojected data, these map anchors will not be in lat/long, but rather in a coordinate system appropriate for the particular projection. For most file formats the name of the projection, datum, and units will be recognized by MAPublisher. However if the program cannot find this information in the data, and you wish to subsequently reproject your data, you will be required to specify the coordinate system.

Additionally, please be aware that MAPublisher is a 2D mapping program. Therefore if you attempt to import 3D data with MAPublisher it will be converted to two dimensional artwork by the importers. Data provided in a generic latitude and longitude (unprojected) coordinate system will usually be recognized as a WGS 84 (World Geodetic System 1984 - EPSG = 4326) coordinate system by the MAPublisher importers.



Importing Map Data

The Import functions are the starting point for most users wanting to work with GIS map data in Adobe Illustrator. These functions are used to import GIS data, set the initial map scale and define your cartographic workspace to start making maps.

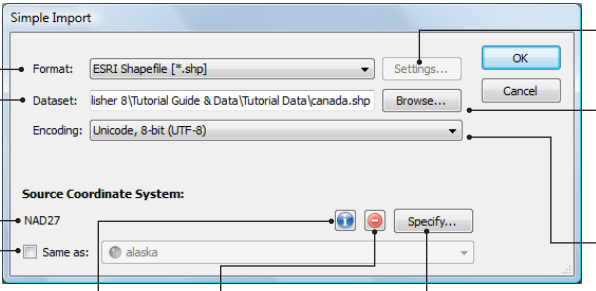
The topics covered in this section:

Simple Import
Advanced Import
Web Feature/Map Service
Spatial Databases
Geospatial PDF Import

See chapter 2 for detailed descriptions of formats that MAPublisher can import.

Simple Import

File > Import Map Data > Simple and *MAP Toolbar*



Format - Select the data type you wish to import. This drop-down list shows the names of all MAPublisher supported data types.

Dataset - Displays the directory path and filename for the currently selected file(s). You can also manually type in the dataset location here.

Source Coordinate System - Provides a description of the coordinate system and units detected in the data source.

Same as - Check this option in order to assign a coordinate system that matches that of an existing MAP View.

Settings - Opens a *Settings* dialog box if the file format requires the input of extra parameters, such as for the import of DGN, DXF, DWG, E00, GML, KML, MIF/MID, Tab and Delimited Text Data (see facing page).

Browse - Opens a Data Source browser to enable the selection of files for import.

Character Encoding - Assign a codec if the attribute information held in the selected dataset uses a double byte character set.

View Coordinate System Information Click to view more information about the current coordinate system

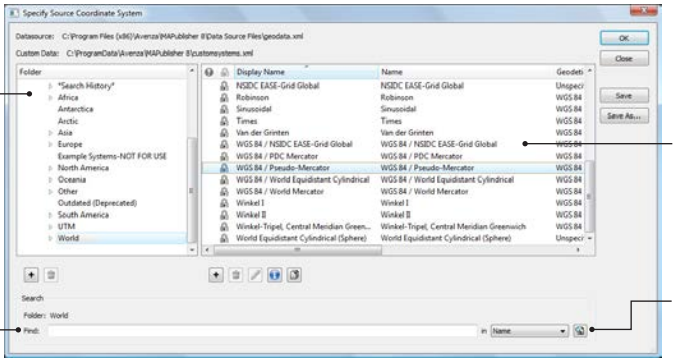
Clear - Click this button to clear the existing source coordinate system.

Specify - If the coordinate system of the selected file(s) is known, but it was not automatically detected by the program, click here. This will open the *Specify Source Coordinate System* dialog box (below).

RELATED TOOLS

Specify Source Coordinate System

Accessed via the **Specify** *button.*



Coordinate Systems - Choose a category appropriate to the data to be imported. To view all of the coordinate systems select *All*. For a list of the last 10 coordinate systems used, select *Recent*.

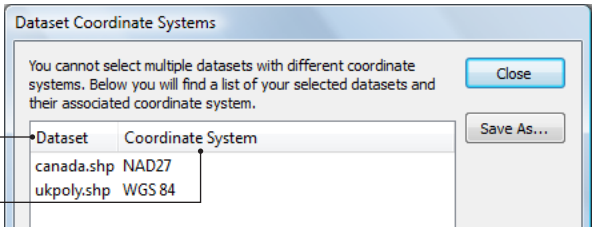
Search - Specify a text string to search the database for coordinate systems. Results are displayed in the *Search* category.

Coordinate System Information - This area shows information about the coordinate systems. (i.e. Name, Type, Envelope, EPSG Code). To choose a known source coordinate system select it from this list.

Search - Click this button and your search results will be populated

Dataset Coordinate Systems

Automatically opens if multiple datasets have been selected and they do not have a matching coordinate system.

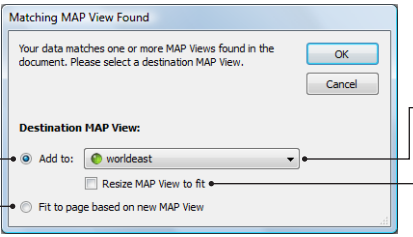


Dataset - List of all the datasets selected for import

Coordinate System - List the coordinate system of each individual dataset

Matching MAP View

Automatically opens if there is already a coordinate system in your document which matches the incoming data.



Add to - Add the incoming data file to a matching MAP View

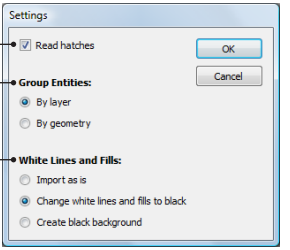
Fit to page based on new MAP View - Create a new MAP View for the imported data. Existing data and incoming data will be treated separately in terms of page scaling and position

MAP View list - Select the matching coordinate system that you wish to align the incoming data to.

Resize MAP View to fit - Check this box to rescale the matching data so that both the selected layer and the incoming data fit inside the page extents.

IMPORT SETTINGS

AutoCAD DXF/DWG Settings



Read Hatches - Check this box to read the hatch pattern on import

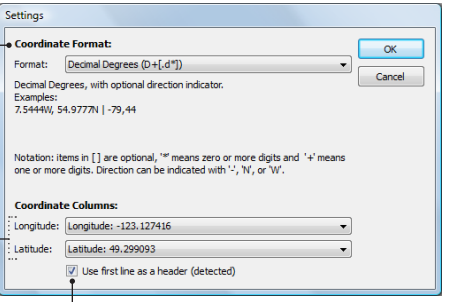
Group Entities - Group entities by layer name or geometry

White Lines and Fills - Set the option:

- *Import as is:* import the data true to the original colour settings contained in the file.
- *Change white lines and fills to black*: import black lines instead of the files native white lines.
- *Create black background:* incorporate a layer containing a black background, to mimic the AutoCAD environment.

Delimited Text Data Settings

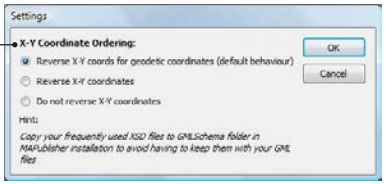
Coordinate Format - Select the coordinate format of the data to be imported (e.g. Decimal Degrees, Packed DMS... see chapter 6).



Use first line as a header - Check this box if the first line of the text file contains column headings.

Latitude/Longitude or **X/Y Columns** - These two drop-down lists hold the names of all the numeric columns in the selected file. Select the columns containing the coordinate information.

GML (Simple Features 2.0+) Settings



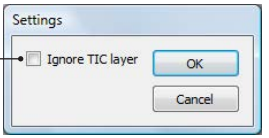
X-Y Coordinate Ordering Change the order of X and Y coordinates. This may help when an external program exports X-Y coordinates in reverse.

Web Feature Service Settings



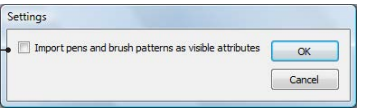
X-Y Coordinate Ordering Change the order of X and Y coordinates. This may help when an external program exports X-Y coordinates in reverse.

Esri Interchange File Settings



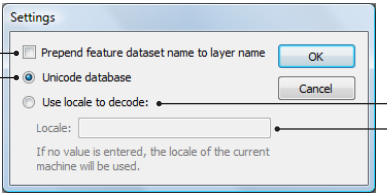
Ignore TIC Layer - Enable to suppress creating of *_tic_point* layer. Disable to create a layer holding the registration control points.

MapInfo TAB and MIF/MID Settings



Pen and Brush Patterns Enable this box to view the pen and brush pattern values in the imported attribute table.

Basic Esri ArcSDE Server, Esri ArcSDE Geodatabase, Esri File Geodatabase and Esri Personal Geodatabase



Prepend feature dataset name to layer name Select this option to prepend feature dataset names to layer names.

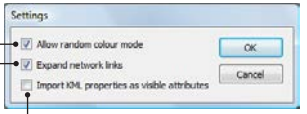
Unicode database - Unless specific issues importing converted geodatabases, keep this option as default.

Use locale to decode - This option might be required if the geodatabase was created by converting a file in a format not supporting unicode (e.g. Esri shapefile) and if it contains non-ASCII characters.

Locale - Specify the locale name (e.g. en-US), leave it as 0 to use the locale of the current machine.

Note: These are advanced settings. Contact Avenza Technical Support (*support@avenza.com*) for assistance.

KML/KMZ Settings



Allow Random Colour Mode Enable this option to generate random colour settings for the data

Expand Network Links Enable this option to use of network linked KML files

Import KML properties as visible attributes - Enable this option to import KML-specific attributes into the MAP Attributes panel as visible entities. When this option is disabled, these KML attributes are imported but are hidden in the MAP Attributes panel

The KML attributes are Description and Address which are displayed in the MAP Attributes panel as *kmlDescription* (object description) and *kmlAddress* (object address).

Image Settings

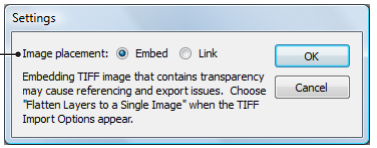
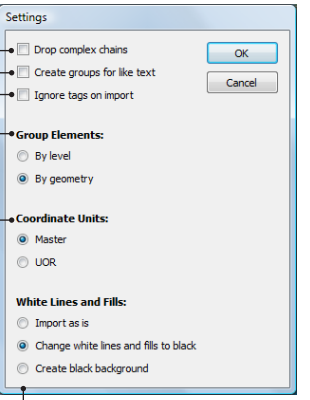


Image placement Embed the image into the document or Link to it. Please see note about transparency.

MicroStation Design Settings



Complex Chains - Component of a complex chain returned as its own feature. Otherwise all elements of the complex chain will be merged into a single linear feature.

Create groups for like text Text in the same graphic group or the same text node will be grouped in Illustrator

Ignore tags on import - Ignores any tags on import so that it does not affect spatial extent.

Group Elements - Choose how to group the elements. If elements are grouped by level, it may result in a large number of output files.

Coordinate Units - Specifies how feature coordinates will be interpreted and converted.

White Lines and Fills - Set the option:

- *Import as is:* import the data true to the original colour settings contained in the file.
- *Change white lines and fills to black*: import black lines instead of the files native white lines.
- *Create black background:*. incorporate a layer containing a black background, to mimic the Microstation environment.

SIMPLE IMPORT FUNCTIONALITY

The Simple Import function provides a fast, uncomplicated method of importing map data into Adobe Illustrator. Its purpose is to import a single piece of map data or several files sharing the same format and coordinate system.

PREREQUISITES

Use Simple Import either before or after an Adobe Illustrator document is created. If no document is open, Simple Import will initiate the New Document dialog box.

MAPublisher will interpret the artboard dimensions during the import process, and calculate a map scale for the document accordingly. If the document size is changed in the Adobe Illustrator document settings, the scale will have to be recalculated using the MAP View Editor (see chapter 4 for more information). Remember, a map of the world would fit well into a page with a landscape orientation, whereas a map of South America would fit best into a page with a Portrait orientation.

Some import options are specified in the **MAPublisher Preferences Import MAP Data** category, such as attribute order, layer naming convention or display of extents in the import dialogs. For a full description, please refer to chapter 1 on MAPublisher Preferences.

USING SIMPLE IMPORT

The MAPublisher Simple Import function is accessed from the Adobe Illustrator menu *File* > *Import Map Data* > *Simple Import* or from the MAPublisher toolbar button .

Overview

The dialog box itself is split into two sections. The upper section provides options to choose a file format, select the dataset to import, and choose any additional settings that may be required. The lower section displays the coordinate system of the selected file (if available) and provides an option to specify one manually.

Adding Files

First specify the format of the file to be imported. Set the **Format** drop-down list as *<Auto detect format>* or to a specific format. With the <Auto detect format> option, all supported GIS files will be displayed in the browser. Choosing the required format directly is recommended to ease navigation.

Once a format has been selected, click the **Browse** button to select the file(s) to be imported and then click **Open**. Alternatively type in the full path of the file(s) in the **Dataset** text box. Only files in a same format and sharing the same coordinate system can be imported at once with the MAPublisher Simple Import dialog box.

Notes: The import of multiple Delimited Text files is not supported.

Source Coordinate System

Once the **Dataset** text box has been populated with a valid path, MAPublisher will read the file(s) to determine if a valid coordinate system can be found and will display it in the **Source Coordinate System** section.

If the program returns the message [No Coordinate System Specified] for the coordinate system, click the **Specify** button to specify it. In the **Specify Source Coordinate System** dialog box, coordinate systems are separated into categories (geodetic or projected) to ease the process of choosing a coordinate system: under the Coordinate System category ***All*** will list all the coordinate systems in the database. For an overview of Geodetic and Projected systems and Datums see appendix A2. To view the parameters of a certain coordinate system, click the Info button.

Character Encoding

Extended and international character sets are supported as attributes on import. To assign a character codec suitable for your selected dataset, choose the appropriate value from the list box.

Format Specific Settings

Certain file formats offer additional configuration parameters which can be accessed by clicking the **Settings** button. These file formats are **Esri Interchange File**, **Esri geodatabases (ArcSDE, File and Personal)**, **CAD DWG/DXF**, **MicroStation DGN**, **MapInfo MIF/MID**, **MapInfo TAB**, **KML/KMZ**, **Delimited Text Data*** and **GML**. After selecting a file, if the format accepts additional settings, the **Settings** button will be enabled. See the import settings in this chapter for an overview of the meanings of these options.

**Additional Settings are mandatory only for importing Delimited Text Data.*

Delimited Text Data Settings

MAPublisher also allows for the import of delimited text files as point data provided they contain coordinate values. MAPublisher supports the following delimiters between data values: comma, return, end-of-line and tab.

To import delimited text data, first specify the Format: *Projected Units, Decimal Degrees, Delimited Degrees Minutes Seconds, Degrees.Minutes, Degrees.MinutesSeconds, Packed DMS with decimals* and *Packed DMS* (see chapter 6, for more details). In the **Coordinate Columns**, specify the fields in the source file that contains the coordinate information. The caption of the fields display **Longitude** and **Latitude** or **X** and **Y**, depending on the selected format. If the first line of the text file contains column headings, check the **Use first line as a header** option, although MAPublisher generally detects it automatically. If the file does not appear to contain column headers, MAPublisher will assign the default headers *Column1, Column2* to the attribute columns on import.

Importing Data

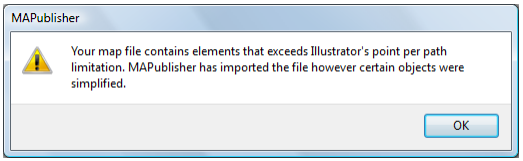
Once the files are selected and settings specified, click **OK** to start the import process. If the Adobe Illustrator document contains a MAP View with a coordinate system matching the incoming data, the **Matching MAP View** dialog box will open with the following options:

- **Add to:** choose the **MAP View** from the drop-down list in which to add the incoming data. Check the option **Resize MAP View to fit** to rescale all the data (existing and incoming) to fit on the artboard. If this option is not checked, the imported data may fall outside the page extents
- **Fit to page based on new MAP View**: the incoming data will be treated separately from the matching data, as if it was the first import. The incoming data will overlap with the existing data, use the MAP View Editor to rescale and move the data on the page (see chapter 4 on MAP Views).

RESULTS

The data is imported as individual Adobe Illustrator layers with appropriate feature type matching the original source data type. Layers are named based on the file name or on the layer name in the source file. By default, the appropriate feature type extension is appended (e.g. *name_area*), and a layer name is already present in the document, it appends a number (e.g. *name_area 1)* — but this may be disabled in the MAPublisher Preferences, *Import MAP Data* property sheet. The layers are automatically placed as sub-features of a MAP View (existing or new) that contains the geospatial, scaling and positioning information.

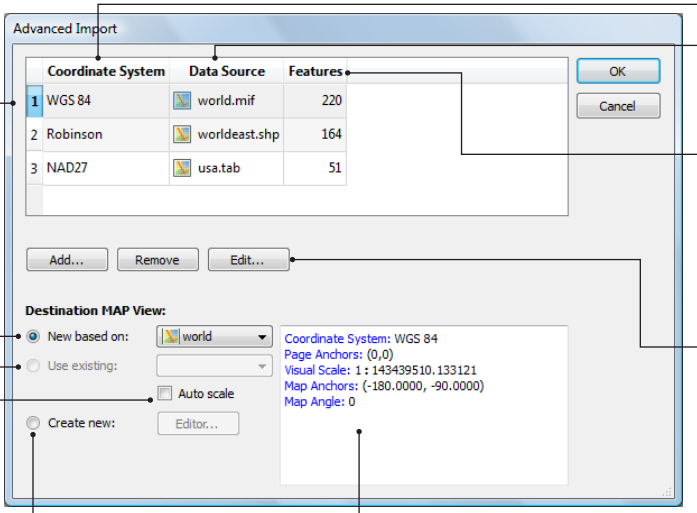
Notes: When importing data exceeding the allowable 32,000 points per path in Adobe Illustrator, MAPublisher automatically simplifies the imported object and shows the following warning message:



The simplification algorithm compares points in a line or polygon in groups of three. When the shortest segment is found, the center point is removed, and the total segment distances are recalculated. This removal process continues until the maximum allowable number of points is reached.

Advanced Import

File > Import Map Data > Advanced and *MAP Toolbar*



File List - This is a table where all files selected for import are listed

Destination MAP View

New based on - Imports all of the files to one of the coordinate systems in the File List

Use existing - Allows users to import all of the files in a coordinate system that already exists in a MAP View in the document

Auto scale - If multiple files are present in the File List, and *New Based On* or *Use Existing* is selected, check this box to ensure the imported artwork fits inside the page extents

Create new - Allows users to import all of the files in a new coordinate system. Click the **Editor** button to open the **MAP View Editor** (see chapter 4).

Details - Displays details of currently selected file: Coordinate System, Unit, Page Anchors, Scale, Map Anchors and Rotation.

Coordinate System - coordinate system of the data source

Data Source - Map file(s) to be imported (full path or just file name depending on MAPublisher Preferences - see chapter 1).

Features - Number of objects to be imported

(if enabled in Import MAP Data MAPublisher Preferences).
Extents - Displays the lower left (LL) and upper right (UR) coordinates (XY) of the dataset extents.

Add - Allows the selection of files for import by opening the **Advanced Import Data Source** function (see below).

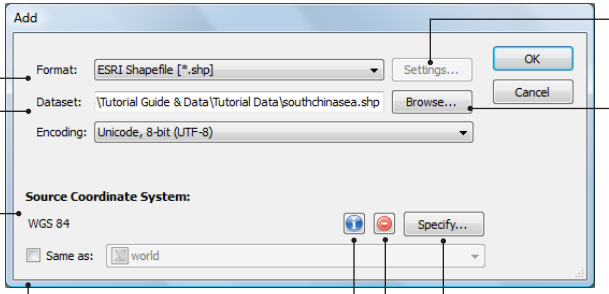
Remove - Removes selected files from the list

Edit - Allows editing of the selected file by re-opening the **Simple Import Data Source** function (see below)

RELATED TOOLS

Advanced Import Data Source

Accessed via the **Add** *or* **Edit** *button in Advanced Import.*



Format - Select the data type you wish to import. This drop-down list shows all MAPublisher supported data types.

Dataset - Displays the directory path and filename for the currently selected file(s). You can also manually type in the dataset location here.

Source Coordinate System - This section allows the manual selection of the coordinate system if this information is not held in the data source.

Same as - Check this option in order to assign a coordinate system that matches that of an existing MAP View

View Coordinate System Information Click to view the parameters of a selected coordinate system

Settings - Opens **Settings** dialog box for file formats that requires the input of extra parameters, such as for the import of DGN, DXF, DWG, E00, GML, KML, MIF/MID, Tab and Delimited Text Data (see chapter 2).

Browse - Opens a Data Source browser to enable the selection of files for import.

Character Encoding - Assign a codec if the attribute information held in the selected dataset uses a double byte character set.

Specify - Click to open the **Specify Source Coordinate System** tool (see Appendix 2), enabling you to search for coordinate systems by specifying a text string. Results are displayed in the *Search* category.

Clear - Click to clear the existing parameters of the source coordinate system.

Import Settings

See the *Simple Import* various Import Settings dialog boxes and options.

ADVANCED IMPORT FUNCTIONALITY

Advanced Import provides an alternative method of importing map data into Adobe Illustrator. This function can import files in multiple formats and coordinate systems. All files flagged for import are displayed in the dialog box with information relative to their coordinate system. All imported files are reprojected to match a selected coordinate system.

Note: Advanced Import is recommended when importing data that will require a coordinate system transformation that implies redrawing and path divisions (e.g. world data reprojected from European to North American aspect). Applying a coordinate system transformation during Advanced Import allows MAPublisher to split paths during transformation, which is not possible at a later stage. Divided paths are grouped as compound paths.

PREREQUISITES

Use Advanced Import either before or after an Adobe Illustrator document is created. If no document is open, Advanced Import will initiate the New Document dialog box. Please refer to the Simple Import *Prerequisites* section in this chapter.

USING ADVANCED IMPORT

The MAPublisher Advanced Import is accessed from the Adobe Illustrator menu *File* > *Import MAP Data* > *Advanced Import* or by clicking the MAPublisher Toolbar button  .

Dialog Box Overview

The top part of the Advanced Import dialog box provides a list of the selected files, their coordinate system information and the number of features they contain. The bottom part of the dialog box refers to the Destination MAP View settings.

The **Add** and **Edit** buttons open a dialog box similar to the *Simple Import* dialog box. Please refer to the previous section for information on the *Character Encoding, Format Specific Settings* and *Delimited Text Data Settings*.

Note: The dialog box displays the file name or the full path of the selected files depending on the settings specified in the MAPublisher Preferences for Import MAP Data (see chapter 1). Users can also choose to display the geographical extents of the file.

Adding Files

Click the **Add** button to select one or more files that share the same format and coordinate system. The Add dialog box is similar to the Simple Import dialog box, please refer to previous section for more information. Click OK to add the files to the Advanced Import list.

To import more files in a different format or coordinate system, use the Add dialog box again, as often as necessary.

Advanced Import File List

All selected datasets are listed in the **Advanced Import** dialog box. Listed features include the filename, the specified coordinate system and the number of features contained in the dataset.
Click a row in the file list to select a dataset. Then, click **Remove** to remove the dataset or click **Edit** to change the import parameters. The Edit dialog box provides the same options as the Add dialog box where users can modify the access path, settings or source coordinate system.

Note: It is not possible to import multiple files with a mix of unknown and known coordinate systems. Therefore the unknown coordinate systems will need to be specified before import.

Destination MAP view

Although the Advanced Import allows users to import files with multiple source coordinate systems, they have to be imported into a single coordinate system. This information is stored in the **Destination MAP View** section (for more information on MAP Views, please refer to chapter 4).

Users have three options to select the coordinate system of the Destination MAP View.

- **New based on** option: choose the coordinate system of one of the files selected for import.
- **Use existing** option: if the Adobe Illustrator document already contains map data, choose the MAP View with the desired coordinate system from the list of existing MAP Views in the document

With these two options, check the option **Resize MAP View to fit** to rescale all the data (existing and incoming) to fit on the artboard. If this option is not checked, the imported data may fall outside the page extents

- **Create new** option: specify the parameter for a new MAP View. Click the **Editor** button to open the **MAP View Editor**. In the *Destination Source Coordinate* system section, click the **Specify** button to select a coordinate system from a large list of existing system or to create a custom one. The MAP View Editor is explained in depth in chapter 4, in brief it allows for the edition of the scale, the position of the data on the page and rotation.

RESULTS

Once the files have been selected and properly set up, click **OK** to start the import process.

The data is imported as individual Adobe Illustrator layers with appropriate feature type matching the original source data type. Layers are named based on the file name or on the layer name in the source file. By default, the appropriate feature type extension is appended (e.g. *name_area*), and a layer name is already present in the document, it appends a number (e.g. *name_area 1)* — but this may be disabled in the MAPublisher Preferences, *Import MAP Data* property sheet. The layers are automatically placed as sub-features of a MAP View (existing or new) that contains the geospatial, scaling and positioning information.

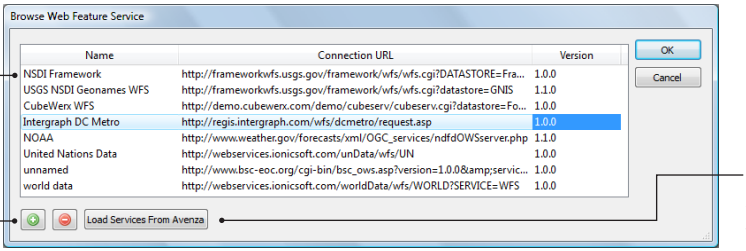
Web Feature/Map Service

Simple or Advanced Import (Format drop-down list)

WEB FEATURE SERVICE

Import vector data using the Web Feature Service (WFS). It accesses web servers that deliver vector content in GML format. To access WFS settings, choose Web Feature Service in the Format drop-down list of the Simple or Advanced Import dialog box and click the Settings button.

To manage servers used in the WFS, click Browse. The Browse Web Feature Service dialog box maintains a list of loaded map services. To add a new service click the Add button, then add the service URL and version number. This list can also be populated with a number of services aggregated by Avenza. To do so, click the Load Services From Avenza button. To remove a service, select one, then click the Remove button.

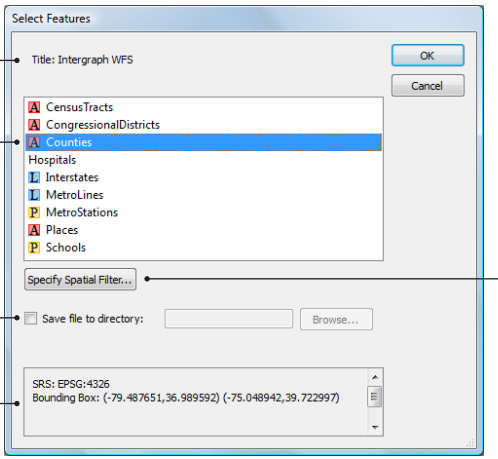


Saved Services
WFS title and map service abstract

Add/Remove WFS
Add a WFS by entering a name for the service and the connection URL. WMS import supports only version 1.1.1.

Load Services from Avenza
Loads an updated list of Web Feature Services from an Avenza server.

In the Select Features dialog box, choose map features in the layer tree to import them. The layer abstract at the bottom of the dialog box displays a descriptive field about the selected layer and its bounding box coordinates. Click the Specify Spatial Filter to specify four exact coordinates to limit the area being imported. See *Import Personal and File Geodatabases* for more information. Optionally, check the Save file to directory option and browse to a location to save it locally (not required to use the feature).



Title
The title of the current WFS

Layer Tree
Structured list of available layers. May or may not show geometry (Area, Point, Layer) type depending on server settings

Save file to directory
Check this and browse to a location to save the selected map features.

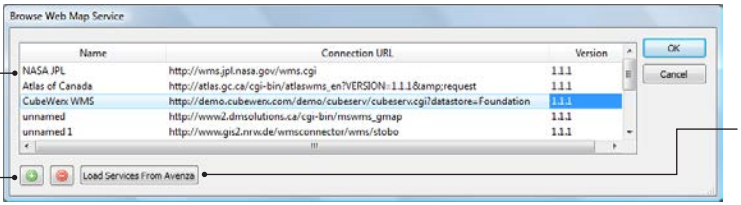
Layer Abstract
A descriptive field including layer metadata

Specify Spatial Filter
Define a bounding box to limit imported features

WEB MAP SERVICE

Import raster data with the Web Map Service (WMS). It accesses web servers that deliver raster content in a variety of formats. There are no format specific settings associated with this importer. To access WMS, choose Web Feature Service in the Format drop-down list in the Simple or Advanced dialog box.

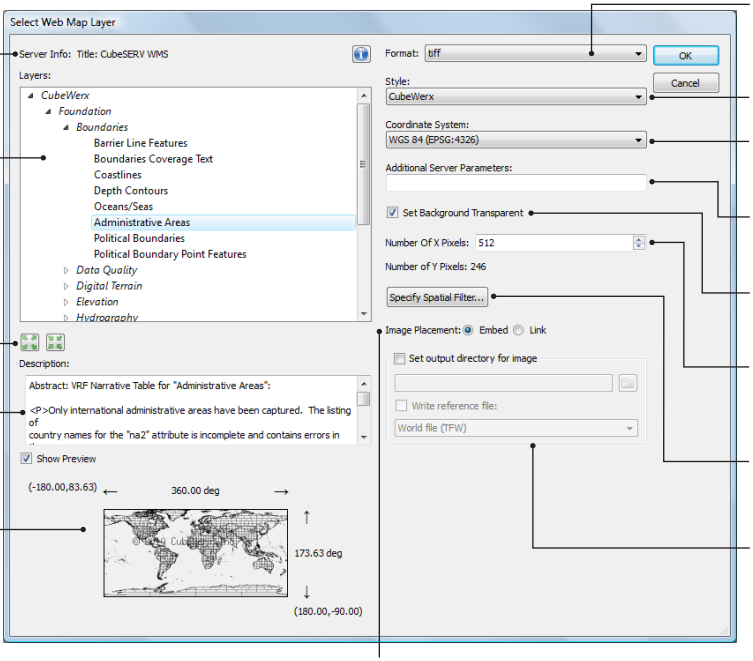
To manage web servers used in the WMS, click Browse. The Browse Web Map Service dialog box maintains a list of loaded services. This list can be populated with a number of services aggregated by Avenza. To add a new service click the Add button, then add the service URL. MAPublisher WMS importer only supports WMS version 1.1.1.



Saved Services
WMS title and map service abstract

Add/Remove WMS
Add a WMS by entering a name for the service and the connection URL.

Load Services from Avenza - Loads an updated list of Web Map Services from an Avenza server.



Server Info
WMS title and map service

Layer Tree
Structured list of layers available in the current WMS

Expand/Collapse Layer Items
Expand or collapse items in the layer tree

Description
An abstract of the layer that may include metadata definitions

Preview
Toggle thumbnail preview of WMS image. Spatial extents displayed around it.

Format
Available output formats

Style - Choose from rendering styles available for the selected layer

Coordinate System
Choose from available Spatial Reference Systems

Additional Server Parameters
Additional parameters as outlined in WMS abstract

Set Background Transparent
Toggle background transparency on import

Number of X Pixels
Input number of X pixels to change output image size. Image is resized proportionally.

Specify Spatial Filter - Import data based on a specified geographic bounding box.

Set output directory for image - Check to enable and browse to a location to save the image. Optionally, check *Write reference file* to include a reference file with the output image.

Image Placement
Choose to have the image embedded or linked in the document.

Spatial Databases

A geodatabase is a native Esri ArcGIS data format for storing geographic data. It is a collection of geographic datasets of various types and managed in either a file folder structure or a relational database, such as:

- Feature classes of points, lines, polygons and annotation for discrete features
- Feature datasets (group of feature classes)
- Descriptive attributes stored in tables
- Raster datasets and raster catalogs for imagery

MAPublisher can import several types of Esri geodatabases:

	File extension	User access	Size limit	RDBMS Technology	Esri Licensing (create)*	MAPublisher Import access
Personal geodatabase	.mdb	Single	2 GB	Microsoft Access (Jet Engine)	ArcInfo ArcEditor ArcView	Folder browser
File geodatabase	.gdb	Single	1 TB	No RDBMS - uses local file structure	ArcInfo ArcEditor ArcView	Folder browser
ArcSDE Desktop geodatabase (called Personal in 9.2)	-	Multiple (limited)	4 GB	SQL Server Express	ArcGIS Engine ArcInfo ArcEditor	ArcSDE server connection
ArcSDE Workgroup geodatabase	-	Multiple (limited)	4 GB	SQL Server Express	ArcGIS Server Workgroup	ArcSDE server connection
ArcSDE Enterprise geodatabase	-	Multiple (unlimited)	Depends on the server	DB2 Informix Oracle PostgreSQL SQL server	ArcGIS Server Enterprise	ArcSDE server connection

**For all geodatabases, an ArcEngine license is the minimum requirement for direct read of vector and raster data.*

MAPublisher has the capacity to import all types of geodatabases (categorized as Personal, File and ArcSDE geodatabases). The connection to an ArcSDE server requires server access, user account and versioning information to be provided by the database administrator. These parameters are exactly the same required to establish a connection using Esri ArcCatalog — with a small exception for SQL Server Express connections, explained later on in this chapter.

Once imported into Adobe Illustrator, data does not maintain a link with the original database and database functions are not valid (topology, table/feature class relationships, subtypes and attributes domains rules). However, MAPublisher can make use of the geodatabases spatial and non-spatial relationships, subtypes and attribute domains information during the import process (to populate layer names and attributes).

The following sections include how to:
Import Personal and File Geodatabases
Import Using Basic Personal Geodatabase Reader (Mac supported)
Import Esri ArcSDE Geodatabases
Import from Basic Esri ArcSDE server

SOFTWARE REQUIREMENTS

The MAPublisher *Basic Personal Geodatabase Reader* does require any ArcGIS licenses for Mac and Windows. However, this means that some import functions are limited in use (explained further in this chapter).

To be able to fully import Esri geodatabases or to fully access an ArcSDE server using MAPublisher Simple and Advanced Import, a valid Esri software must be installed and licensed—at minimum, ArcGIS Engine Runtime. More commonly, higher licenses that may be used are ArcView, ArcEditor and ArcInfo.

Direct access to feature classes on an ArcSDE Server only requires ArcReader, available for free. However, File and Personal geodatabases cannot be read using ArcReader. With this license configuration, access to files with a *Basic Esri ArcSDE Server* connection is limited compared to a *Esri ArcSDE Geodatabase* connections (explained further in this chapter). MAPublisher supports all ArcSDE server connections and SQL queries supported by Esri.

If ArcReader is not installed on the default installation directory, it might be necessary to edit the binary location in the MAPublisher Preferences, *Basic Esri ArcSDE Server Editor* (see chapter 1).

MAPublisher supports geodatabases from versions ArcGIS 9.2 and higher. However, there are some limitations to the direct connections from 9.2 clients to the ArcSDE 9.3 geodatabases. Please refer to Esri documentation on software requirements (service packs) and limitations.

To access geodatabases created by ArcGIS 10 in MAPublisher, an installation of ArcGIS 10 is required. Having a valid installation allows for backwards compatibility with geodatabases created by ArcGIS 9.2 and higher.

SUPPORTED FEATURES

Data Types

The following is a list of supported and unsupported geodatabase geometry types for import in MAPublisher:

Supported	Unsupported
Point	Raster
Polyline	Grids
Polygon	MultiPatch
Circular Arc*	Dimensions
Elliptical Arc*	
Bezier Curve	
Annotations	

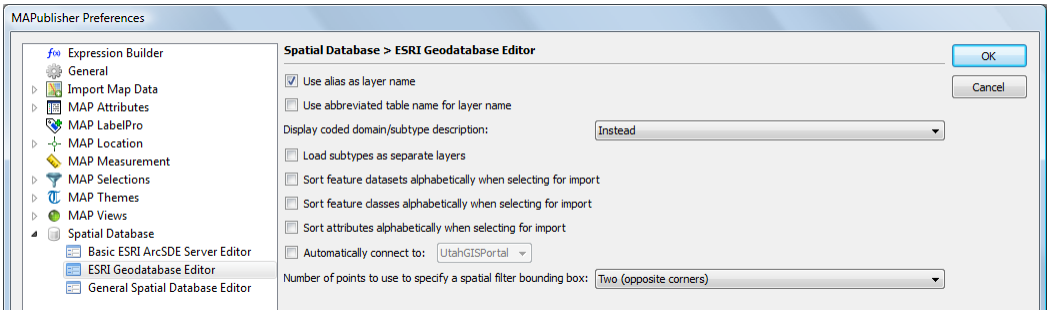
* *Upon import, MAPublisher converts an arc to a line where a series of vertices will maintain the geometry.*

Note: To import a geometry type that requires the use of a *Representation* in ArcGIS (such as Bezier curves), the *Behavior when Representation Geometry is Edited* must be set to *Change the geometry of the supporting feature*—option specified when creating a new *Representation* in ArcGIS.

Aliases

ArcGIS users can give the feature classes an alias that acts as an alternate name. Unlike feature class names, aliases can contain spaces, punctuations, and start with a number. In ArcMap, feature classes are referred to with their alias name. In ArcCatalog, feature classes are represented by their true names.

Specify to use aliases for layer names in the *MAPublisher Preferences* for *Spatial Database* > *Esri Geodatabase Editor*:



Note: Aliases for attribute field names are imported as *Display Name* and true field names as *Name* of MAP Attributes columns.

Subtypes and Attribute domains

Subtypes are particular attribute fields made to create groups of records in a feature class that share the same types of properties. The attribute fields designated as subtype fields contain numerical coded values and have a data type of short or long integer. Each coded value is associated with a description (textual). In the *MAPublisher Preferences* for *Spatial Database* > *Esri Geodatabase Editor*, users may choose to load subtypes as separate layers.

Attribute domains are used to constrain the values allowed in any particular attribute of a feature class (or subtypes). There are two types of attribute domain:

- A *range domain* limits the value of a numerical attribute in between minimum and maximum values — range domains are not relevant to MAPublisher.
- A *coded value domain* specifies a valid set of coded values for an attribute (of any type — text, numeric or date). Both coded values and their meaningful description are stored in the database.

In the *MAPublisher Preferences* for *Spatial Database* > *Esri Geodatabase Editor*, users can set the option to import attributes with coded values from subtypes and attribute domains as follow:

- *Instead:* replace the codes by their description (text)
- *Never:* import the actual values (code)
- *In Addition:* create two attribute columns, one containing the coded values and one containing the corresponding descriptions.

Spatial Filters

During the import process, users can enter two opposite corner coordinate points in any coordinates system unit to limit the geographic area for the data being imported (see next section).

Note: When importing a feature class that has no art it is considered to have invalid extents and a spatial filter cannot be created.

SQL Queries

During the import process, users can use SQL queries on feature classes and tables to limit the objects and attributes to be imported.

Multiple feature classes can be imported using multiple SQL statements as long as all classes share the same source coordinate system. SQL queries can also be used to import a feature class and the attribute information from a related non-spatial table. To apply SQL queries on multiple feature classes with different source coordinate systems, use Advanced Import and add the feature classes in several Add sessions (see chapter 3 for more information on the Advanced Import).

MAPublisher uses Esri libraries to run SQL queries. Please refer to Esri documentation for more information on supported SQL expressions and syntax — it may vary depending on the geodatabase and database server type.

Non-Spatial Relationships

MAPublisher supports non-spatial relationships between feature classes and tables during the import process using SQL queries. Here are some examples:

Query	Result
SELECT * FROM Feature_Class,Table WHERE FeatureClass.Id=Table.Id	Import and inner join a feature class to a related table (only features with entries in the related table are imported)
SELECT * FROM Feature_Class,Table WHERE FeatureClass.Id=Table.Id AND Table.Attribute='ABC'	Import and inner join a feature class to a related table and apply a query
SELECT * FROM Feature_Class WHERE FeatureClass.Id IN (SELECT Table.Id FROM Table WHERE Table.Attribute='ABC')	Import a feature class without joining to a related table, but use a table value to make a query

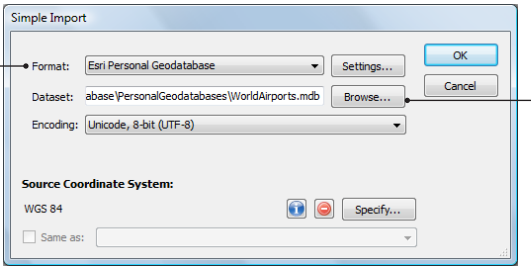
Note: SQL syntax may vary depending on the database server type.

Once vector data is imported into Adobe Illustrator, the database relationships rules do not apply anymore. It is however possible to use the MAP Attributes panel **Join Table** function to join geodatabase tables with MAPublisher vector data. For more information, please refer to chapter 5.

Note: When the non-spatial table information is imported together with the feature class using a SQL query, only the vector features that have a record in the related table are imported. Import first the feature class and use Join Table in a second step: all vector features are imported and the related table information is added where a record match is found. This second option might be recommended if the database is not well known.

IMPORT PERSONAL AND FILE GEODATABASES

Simple Import or Advanced Import > Add



Format - Select *Esri File Geodatabase* or *Esri Personal Geodatabase*. *<Auto detect format>* can only be used for Personal Geodatabases.

Browse - Opens a Select dataset browser. File Geodatabases have the extension *.gdb, Personal Geodatabases have *.mdb.

FUNCTIONALITY

Esri Personal and File geodatabase feature classes can be imported using Simple Import or Advanced Import. The file selection is done in two steps: 1) select the database (***.mdb** file for Personal geodatabase, a ***.gdb** folder for File geodatabase); 2) select feature classes directly or through an SQL query. Optionally, define a spatial filter to limit the geographic extents of the data being imported.

When feature datasets are present in the database, MAPublisher uses them to group feature classes per parent feature dataset to ease the selection process, but feature datasets are not imported as such. The feature dataset name may be prefixed to the name of the data layer created during import (using an import setting).

For each format, multiple feature classes sharing the same source coordinate system may be selected at once in the Simple Import or Advanced Import > Add dialog box. To import feature classes that do not have matching spatial reference, use *Advanced Import* and add the feature classes in several *Add* sessions (see chapter 3 for more information on Advanced Import functionality).

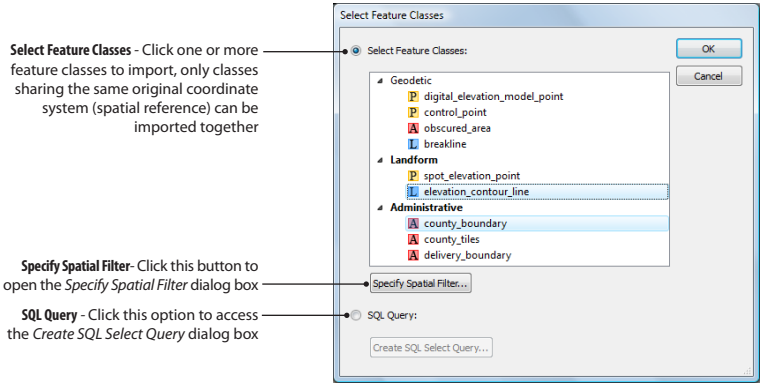
The feature classes (objects and attributes) are imported on separated MAP layers. The layer naming convention is set in the *MAPublisher Preferences* for *Spatial Databases > Esri Geodatabase Editor*.

USING IMPORT ESRI PERSONAL AND FILE GEODATABASES

In the Simple Import or Advanced Import > Add dialog box, set the Format drop-down list to **Esri Personal Geodatabase** or **Esri File Geodatabase**. Using *<Auto detect format>* only works with Personal geodatabases (File geodatabases cannot be detected because they are directories). The Settings are described in chapter 3. Click the Browse button and select a file with the extension ***.mdb** (Personal geodatabase) or a directory with the extension ***.gdb** (File geodatabase)— only one geodatabase can be accessed at a time. Click Open to open the **Select Feature Classes** dialog box where specific feature classes can be imported.

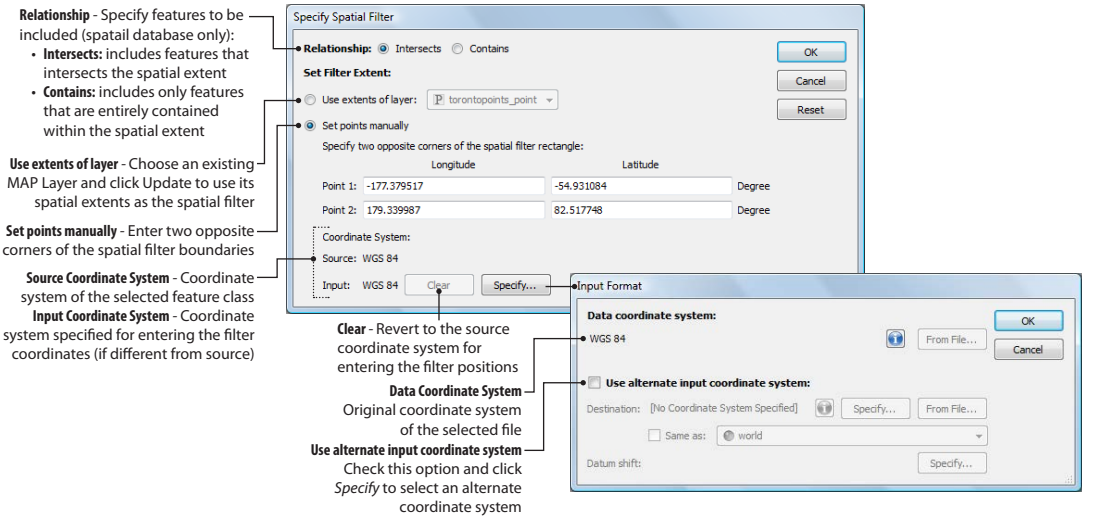
Select Feature Classes

In the **Select Feature Classes** dialog box, import one or more feature classes or build SQL queries to select subsets of feature classes. Click the names of the feature classes to select them for import—selected classes are highlighted. To deselect a class, click the selected name again.



Specify Spatial Filter

A spatial filter consists of a rectangle that defines the extents of imported data. When first opened, the **Specify Spatial Filter** dialog box displays the two opposite corner coordinates that represent the actual extent of the data. Use extents of an existing MAP Layer from the drop-down list or enter new coordinates values. Click the Specify button to use an alternate input coordinate system.



For spatial databases, choose whether or not to import objects that intersect with the spatial filter boundaries by setting the Relationship:

- **Intersects:** import objects that intersect the extents of the spatial filter
- **Contains:** import objects fully contained within the extents of the spatial filter

Create SQL Select Query

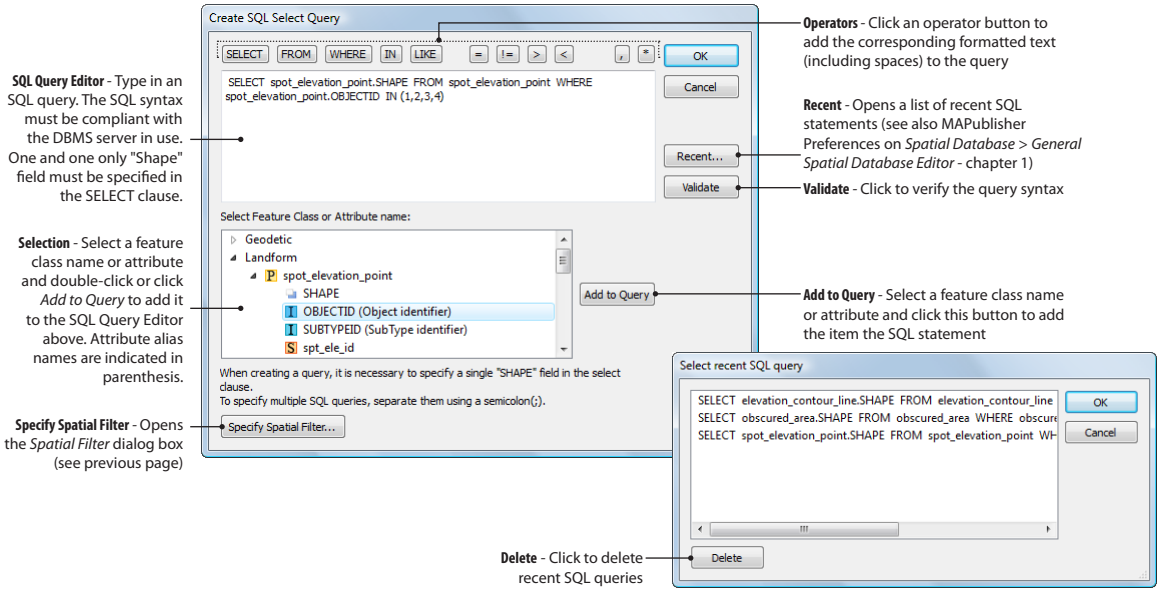
An SQL statement can be built to limit the number of objects and attributes imported from a single feature class. The SELECT clause should always contain one and one only "Shape" object (actual spatial feature). When possible, use the operator button to add formatted query statements (including spaces), to limit the typing errors.
For example:

- In feature class "FC_Point", import all points and the "Valve" attribute (other attributes are not imported).
  - *SELECT FC_Point.Shape, FC_Point.Valve_ID FROM FC_Point*
- In feature class "FC_Line", import lines (vector only) that have the attribute "Id" equals to 1, 2, 3 or 4.
  - *SELECT FC_Line.Shape FROM FC_Line WHERE FC_Line.Id IN (1,2,3,4)*

Use the **Validate** button in the *Create SQL Select Query* dialog box to verify the query syntax prior to import.

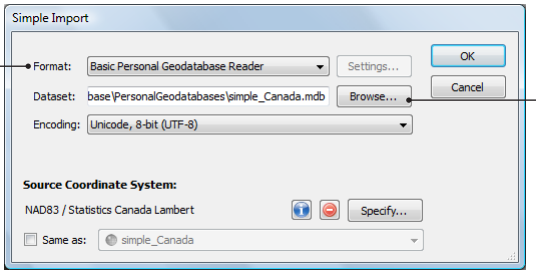
Multiple feature classes can be imported using multiple SQL statements separated by a semi-colon (;) as long as all classes share the same source coordinate system. SQL queries can also be used to import a feature class and the attribute information from a related non-spatial table (see previous section). To perform SQL queries on multiple feature classes with different source coordinate systems, use the *Advanced Import* and add the feature classes in several *Add* sessions (see chapter 3 for more information on the Advanced Import).

Recently used SQL queries are saved and accessed by clicking the **Recent** button. The number of recent queries saved is set in the *MAPublisher Preferences* on *Spatial Database* > *General Spatial Database Editor* (see chapter 1).



IMPORT USING BASIC PERSONAL GEODATABASE READER

Simple Import or Advanced Import > Add



Format - Select *Basic Personal Geodatabase* This works in both Windows and Mac without an ArcGIS license.

Browse - Opens a Select dataset browser. Only Personal Geodatabases with *.mdb extension can be chosen.

FUNCTIONALITY

Esri Personal geodatabase feature classes can be imported using Simple Import or Advanced Import. The main difference between this format and the *Esri Personal Geodatabase* format is that the Basic is available to users without an ArcGIS license and works on both Mac and Windows.

The *Basic Personal Geodatabase Reader* can only read the feature classes as tables (and referred to as tables). The file selection is done in two steps: 1) select the database (***.mdb** only); 2) select tables directly or through an SQL query. Optionally, define a spatial filter to limit the geographic extents of the data being imported.

Some limited functions are worth noting. The *Basic Personal Geodatabase Reader* doesn't support feature datasets, doesn't support relationship (intersect/contains) in spatial filters, and doesn't support domain or subtypes. Other than the listed differences, the *Basic Personal Geodatabase Reader* functions similarly to importing an *Esri Personal Geodatabase* (see previous section, *Import Personal and File Geodatabases*).

USING BASIC PERSONAL GEODATABASE READER

In the Simple Import or the Advanced Import > Add dialog box, in the Format drop-down list, choose **Basic Personal Geodatabase Reader**. Click the Browse button and select a file with the extension ***.mdb** (Personal geodatabase)—only one geodatabase can be accessed at a time. Click Open to open the **Select Feature Classes** dialog box where specific feature classes can be imported.

Select Tables

Feature classes are referred to as tables using the *Basic Personal Geodatabase Reader*. In the **Select Tables** dialog box, directly import one or more tables or build SQL queries to select attributes of tables. To directly select tables, click the names of the table to import—selected tables are highlighted. To deselect a table, click the selected name again.

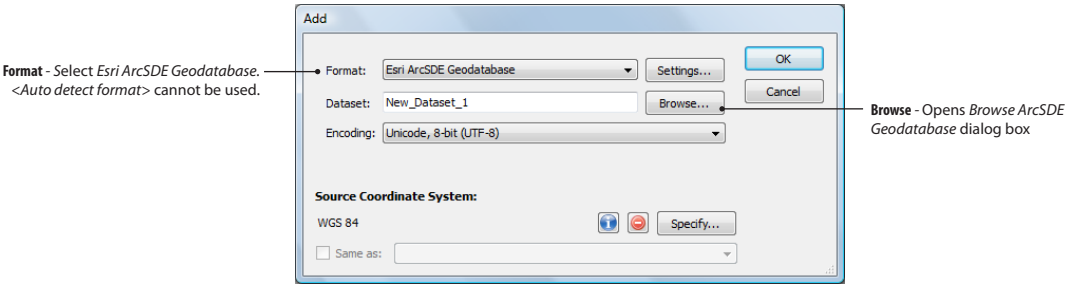
Note: Text layers in a geodatabase are seen as areas in the Select Tables dialog box, but are imported as text.

Specify Spatial Filter and Create SQL Select Query

The **Specify Spatial Filter** and **Create SQL Query** for *Basic Personal Geodatabase Reader* functions similarly to importing an *Esri Personal Geodatabase* (see previous section, *Import Personal and File Geodatabases*).

IMPORT ESRI ARCSDE GEODATABASES

Simple Import or Advanced Import > Add



Format - Select *Esri ArcSDE Geodatabase*. *<Auto detect format>* cannot be used.

Browse - Opens *Browse ArcSDE Geodatabase* dialog box

FUNCTIONALITY

Esri ArcSDE geodatabase feature classes can be imported using Simple Import or Advanced Import. Importing ArcSDE geodatabases requires users to create a connection to the database server containing the database. Once a connection is established, feature class selection is done in the same manner as Personal and File geodatabases—by direct selection or SQL query (see previous section) and using spatial filters.

The connection parameters to an ArcSDE server are saved with the application. The dataset selections (called MAP Datasets) are also saved. The maximum number of default MAP Datasets saved is set in the MAPublisher Preferences for *Spatial Database* > *General Spatial Database Editor*. MAP Datasets saved with a specific name (other than the default one given) are always saved.

Like the other geodatabase formats, multiple feature classes sharing the same source coordinate system may be selected all at once. To import feature classes that do not have matching spatial reference, use Advanced Import and add the feature classes in several Add sessions (see chapter 3 for more information on the Advanced Import).

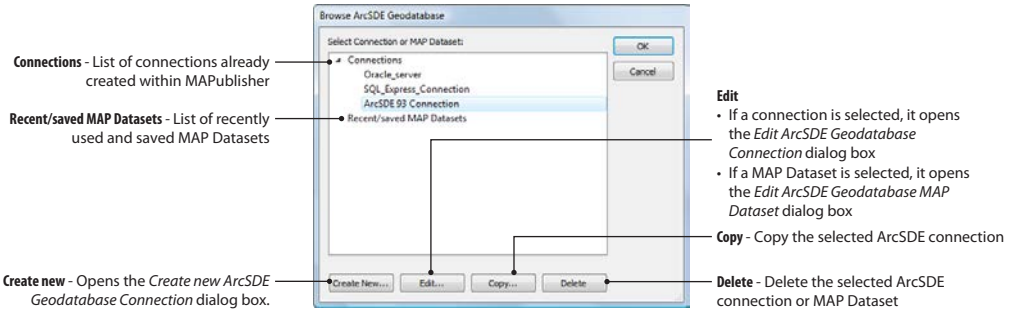
The feature classes (objects and attributes) are imported on separated MAP layers. ArcSDE geodatabase tables are identified as *databaseName.userName.tableName*. An abbreviated version using only the table name as layer name can be applied as a preference. This option and other layer naming conventions are set in the *MAPublisher Preferences* for *Spatial Databases* > *Esri geodatabase Editor* (see chapter 1 and previous section).

When feature datasets are present in the database, MAPublisher uses them to group feature classes per parent feature dataset to ease the selection process, but feature datasets as whole cannot be individually imported—only its individual feature classes can. An import setting allows the feature dataset name to be prepended to the name of the data layer created during import.

USING IMPORT ESRI ARCSDE GEODATABASES

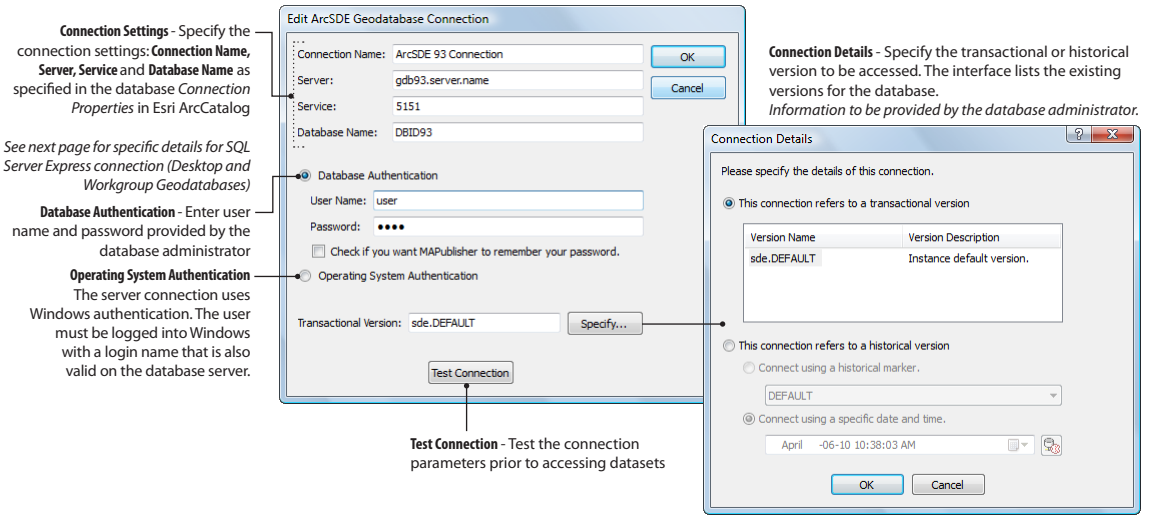
In the Simple Import or the Advanced Import > Add dialog box, set the Format drop-down list to **Esri ArcSDE Geodatabase**. *<Auto detect format>* does not detect Esri ArcSDE geodatabases. Click the Browse button to open the Browse ArcSDE Geodatabase dialog box.

The **Browse ArcSDE Geodatabase** dialog box has options to create, edit and delete connection parameters to ArcSDE servers. It also stores recently used and saved MAP Datasets.



Esri ArcSDE Geodatabase Connection

In MAPublisher, apply the same connection parameters as in an Esri application (such as ArcCatalog):



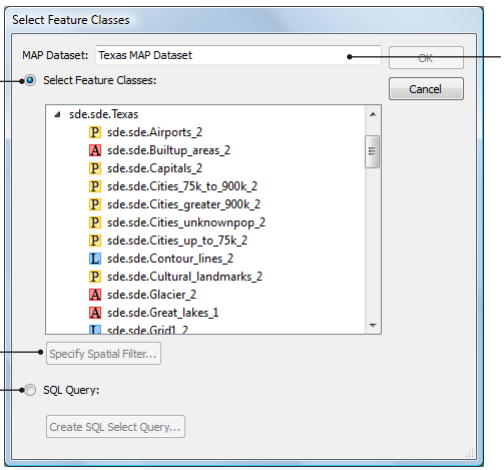
Important Note for SQL Server Express Users

There is an exception for connections to SQL Server Express servers — ArcSDE Desktop (called Personal in ArcGIS 9.2) and Workgroup geodatabases. In ArcCatalog, users set a "Database Servers" connection where only the server name followed by *\sqlexpress* is required to establish a connection. In MAPublisher, there is no specific interface for SQL Server Express connections, the same interface as for the other types of ArcSDE geodatabases must be used with specific settings:

Server	Name of the server followed by *_SQLEXPRESS*
Service	The server name must be preceeded by *sde:sqlserver* and followed by *\sqlexpress* (e.g. sde:sqlserver:ServerName\sqlexpress)
Database name	The name of the database must be known
Operating System Authentication	Must use this to authenticate SQL Server Express databases

Select MAP Datasets

To make a new selection of feature classes from an ArcSDE geodatabase, click a connection name on the **Connections** tree of the **Browse ArcSDE Geodatabase** dialog box and click OK. This opens the **Select Feature Classes** dialog box. This dialog box for ArcSDE geodatabases is very similar to the *Select Feature Classes* dialog box of Personal and File geodatabases described in the previous section: users can directly select one or more feature classes (provided that they share the same spatial reference) or build an SQL query to select a subset of some feature classes and apply spatial filters. The difference with ArcSDE geodatabases is that the feature class selection is saved as a **MAP Dataset.** Type in a MAP Dataset name for the selection at the top of the dialog box.



Feature classes - Click one or more feature classes to import - only classes sharing the same original coordinate system (spatial reference) can be imported together

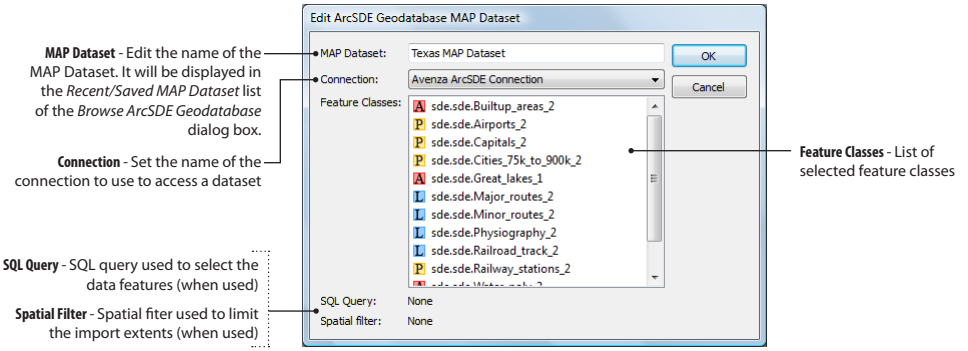
Specify Spatial Filter- Click to open the *Specify Spatial Filter* dialog box. See *Import Personal and File Geodatabases.*

SQL Query - Click to access the *Create SQL Select Query* dialog box. See *Import Personal and File Geodatabases.*

MAP Dataset - Type a name for the selected dataset (by direct selection or SQL query). This name will be displayed in the *Recent/saved MAP Dataset* list of the *Browse ArcSDE Geodatabase* dialog box.

The number of default recent MAP Datasets saved is set in the MAPublisher Preferences for *Spatial Database > General Spatial Database Editor.*

Click a MAP Dataset in the **Recent/saved MAP Datasets** tree of the **Browse ArcSDE Geodatabase** dialog box. The MAP Dataset name and connection can be changed in the **Edit ArcSDE Geodatabase MAP Dataset** dialog box.

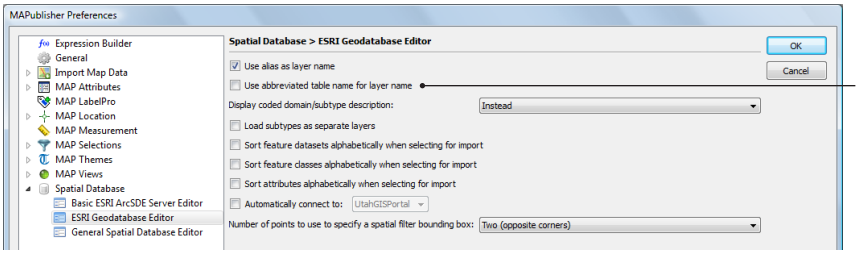


The maximum number of recent MAP Datasets saved with the default name is set in the MAPublisher Preferences for *Spatial Database* > *General Spatial Database Editor* (user named datasets are saved until deleted).

Settings

Spatial database parameters can by clicking the Settings button in the Simple Import or Advanced Import > Add dialog box. These settings are described in chapter 3. Optionally, prefix the feature dataset names to the layer name created on import.

Access it by going to *MAPublisher Preferences* > *Spatial Database* > *Esri Geodatabase Editor*:

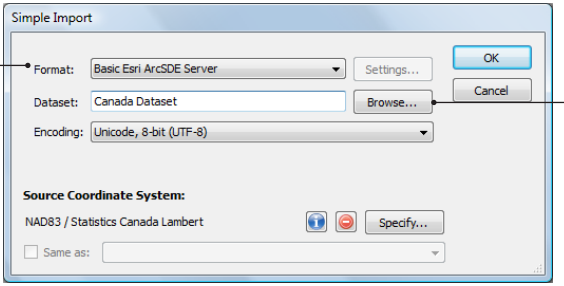


Use abbreviated table name for layer name ArcSDE Geodatabases' tables are identified as *databaseName.userName.tableName*. The abbreviated version uses only the table name as layer name.

If this option is used in combination with the "use alias" option, the alias is applied first.

IMPORT FROM BASIC ESRI ARCSDE SERVER

Simple Import or Advanced Import > Add



Format - Select *Basic Esri ArcSDE Server* <*Auto detect format*> cannot be used.

Browse - Opens the *Browse Basic Esri ArcSDE Server* dialog box

FUNCTIONALITY

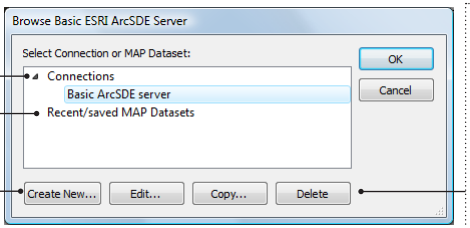
Users who do not have an ArcGIS license can install ArcReader, a free Esri desktop application *(www.esri.com*). Only ArcSDE geodatabases can be read, File and Personal geodatabases are not supported using this format. In addition, file access with a *Basic Esri ArcSDE Server* connection is limited compared to a *Esri ArcSDE Geodatabase* connection:

- Aliases, sub-types and attribute domains are not supported — only true names and actual values (codes) are imported.
- Feature datasets are not recognized. Feature classes are all listed on the same level, they are not grouped by feature dataset.
- Feature classes are referred to as "tables"
- Operating System Authentication is not supported.

USING IMPORT BASIC ESRI ARCSDE SERVER

In the Simple Import or the Advanced Import > Add dialog box, set the Format drop-down list to **Basic Esri ArcSDE Server**. <*Auto detect format*> does not detect Esri ArcSDE geodatabases. Click the Browse button to open the Browse Basic ArcSDE Geodatabase dialog box.

The **Browse ArcSDE Geodatabase** dialog box has options to create, edit and delete connection parameters to ArcSDE servers. It also stores recently used and saved MAP Datasets.



Connections - List of connections already created within MAPublisher

Recent/saved MAP Datasets - List of recently used and saved MAP Datasets

Create new - Opens the *Create new Basic ArcSDE Server Connection* dialog box.

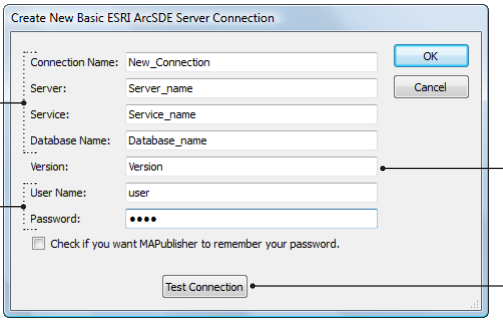
Edit
- If a connection is selected, it opens the *Edit Basic Esri ArcSDE Server Connection* dialog box
- If a MAP Dataset is selected, it opens the *Edit Basic Esri ArcSDE Server MAP Dataset* dialog box

Copy - Copy the selected ArcSDE connection

Delete - Delete the selected ArcSDE connection or MAP Dataset

Basic Esri ArcSDE Server Connection

In MAPublisher, apply the same connection parameters as in an Esri application (such as ArcCatalog):



Connection Settings *Connection Name, Server, Service and Database Name* as specified in the database *Connection Properties* in ArcCatalog

See next page for specific details for SQL Server Express connection (Desktop and Workgroup Geodatabases)

User Name / Password - Specify authentication information provided by the database administrator

Version - Enter the transaction version information provided by the database administrator.

Unlike ArcSDE Geodatabases, the ArcSDE server interface does not list the versions existing in the database.

Test Connection - Tests the connection parameters prior to accessing datasets.

Note: If ArcReader is not installed in the default installation directory, it may be necessary to edit the binary location in the MAPublisher Preferences > *Basic Esri ArcSDE Server Editor* (see chapter 1).

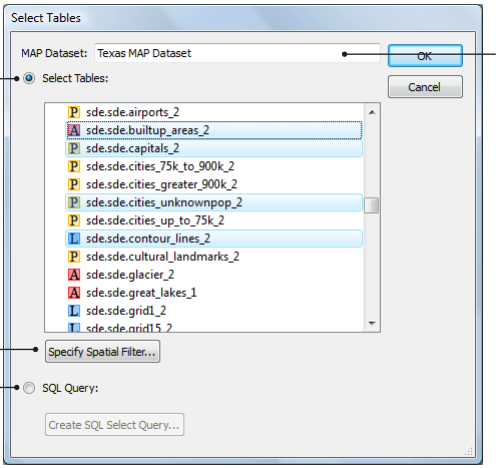
Important Note For SQL Server Express Users

Some specific settings are required for SQL Server Express connections. See Esri ArcSDE geodatabase connection.

Select Tables

Feature classes are referred to as tables using the *Basic Esri ArcSDE Server*. In the **Select Tables** dialog box, directly import one or more tables or build SQL queries to select attributes of tables. To directly select tables, click the names of the table to import—selected tables are highlighted. To deselect a table, click the selected name again.

Note: Text layers in a geodatabase are seen as areas in the Select Tables dialog box, but are imported as text.



Select Tables - Click one or more tables to import. Only tables sharing the same original coordinate system (spatial reference) can be imported together.

Specify Spatial Filter- Click to open the *Specify Spatial Filter* dialog box. See *Import Personal and File Geodatabases.*

SQL Query - Click to access the *Create SQL Select Query* dialog box. See *Import Personal and File Geodatabases.*

MAP Dataset - Type a name for the selected dataset (by direct selection or SQL query). This name will be displayed in the *Recent/saved MAP Dataset* list of the *Browse Basic ArcSDE Geodatabase* dialog box.

The number of default recent MAP Datasets saved is set in the MAPublisher Preferences for *Spatial Database > General Spatial Database Editor.*

Geospatial PDF Import

GEOSPATIAL PDF IMPORT FUNCTIONALITY

The Geospatial PDF Import is an easy way to import a geospatial PDF into Adobe Illustrator using MAPublisher. Its purpose is to import the map data and organize them into MAP Layers in a MAP View.

PREREQUISITES

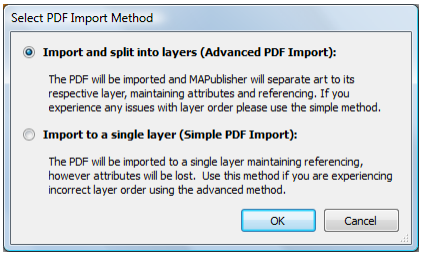
MAPublisher supports geospatial PDF documents generated from MAPublisher and Geographic Imager. It also supports third-party georeferenced PDF documents (e.g. ArcGIS and TerraGo).

USING GEOSPATIAL PDF IMPORT

Import a geospatial PDF from the *File* > *Open* menu. Browse for a geospatial PDF document and click Open. The Select PDF Import Method dialog box will open.

Select PDF Import Method

The Select PDF Import Method contains two options for import: Advanced and Simple.

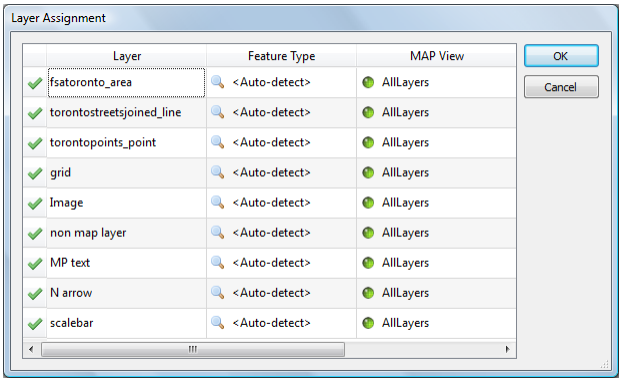


The Advanced PDF Import method is used to separate art to its respective layer. This method maintains attributes and referencing. It will open the Layer Assignment dialog box so that layers in the PDF can be assigned a MAPublisher feature type and a MAP View. In most cases, it is recommended to use Advanced PDF Import.

The Simple PDF Import method should be used if any layer order issues are caused by the Advanced import. This method imports features to a single MAP View and Adobe Illustrator layer. This method maintains referencing, however all attribute information will be lost.

Layer Assignment

When Advanced PDF Import is used, it will open the Layer Assignment dialog box. It is used to assign the data structure found in a geospatial PDF to the appropriate Feature Type and a MAP View. It contains three columns: Layer, Feature Type and MAP View. In the Feature Type column, the <Auto-detect> option automatically chooses the appropriate feature type (Area, Point, Line, Image, Text or Legend) to assign each layer. Alternatively, click a Feature Type cell to assign a layer to the appropriate feature type (or to None for no feature type). Layers can be assigned to the AllLayers MAP View or to a Non-MAP Layer. To assign nothing, click the Cancel button.





MAP Views and Georeferencing

The MAP Views panel is the hub from which many additional MAPublisher features may be accessed. This panel organizes Adobe Illustrator layers into sub layers of distinct coordinate systems known as MAP Views. Use this panel to specify coordinate systems for map layers, transform coordinate systems, edit scale and data placement, and export to GIS formats.

When importing data, an Adobe Illustrator layer is created for each feature type, and is by default appended with a *_point, _line, _area,* or *_text* suffix in the Adobe Illustrator Layers panel. Certain file types generate multiple layers, such as DGN or DXF, but are similarly split up by feature type. A single import of such files produces a single MAP View as an import can only take place into a single coordinate system. Custom MAP Views may be created in order to georeference existing Adobe Illustrator artwork.

The following pages deal with the creation and management of MAP Views, specifying and projecting a coordinate system, editing scale and data placement on the page, merging Adobe Illustrator layers, and exporting to GIS formats.

Topics covered in this section:

Georeferencing
MAP Views Panel
MAP View Editor
Export
Import MAP Objects
MAP Location Tool

Georeferencing

The workflow for georeferencing a non-georeferenced Adobe Illustrator file in MAPublisher can be separated into three steps:

1. A **Source Coordinate System** must be specified. The coordinate system gives a method to represent geographic points in relation to a world origin (these are also called map, geographic, real world or spatial coordinates).
2. A **Scale** (and sometimes a **Rotation)** is necessary to translate measurements on the ground to measurements on the Adobe Illustrator document artboard.
3. MAPublisher bases its georeferencing on a tie point within the Adobe Illustrator artboard. The relationship between **Page Anchor** and **Map Anchor** is defined below.

The **Source Coordinate System** and **Scale** have to be manually set. One should not estimate this information, it is usually provided as metadata by data vendors or indicated as text on the original map. Also, anchors have to be specified manually: **Map Anchor** information can be entered in any coordinate system unit (for example latitude and longitude in degree), **Page Anchor** are entered in the document units.

The most common way to set up an Adobe Illustrator page is to set the page origin (0,0) to coincide with the lower left corner of the map extents. If this information is not known, any point on the map can be used as long as its geographic location is known (e.g. a building or graticule grids on a scanned map—this information is usually given by the data provider if not obvious on the map itself). The position in page coordinates for the same point is found using the Adobe Illustrator Info panel.

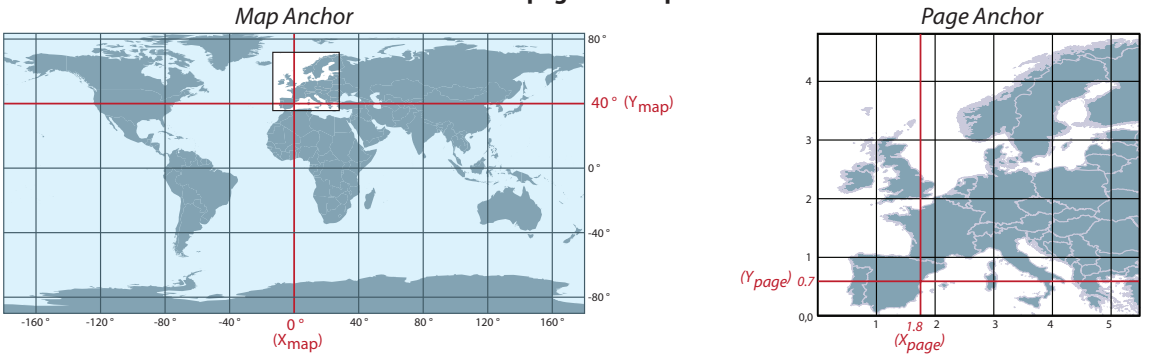
Once the relationship between the real world coordinates and the page coordinates is established, these two points are dynamically linked. MAPublisher uses this anchor point in subsequent data transformations, such as rescaling and transforming, as well as in the creation of grids and to maintain georeferencing on export.

During the import process, MAPublisher reads the coordinate system settings from the input file and calculates the scale to best fit the map data to the page. MAPublisher treats the point at (0,0) in the document (**Page Anchor**) as being coincident to the lower left corner of the data in real world coordinates (**Map Anchor**).

Note: When importing GIS data, if the coordinate system of the source data is not stored or was not saved, MAPublisher determines the scale and anchor automatically, only the **Source Coordinate System** must be set.

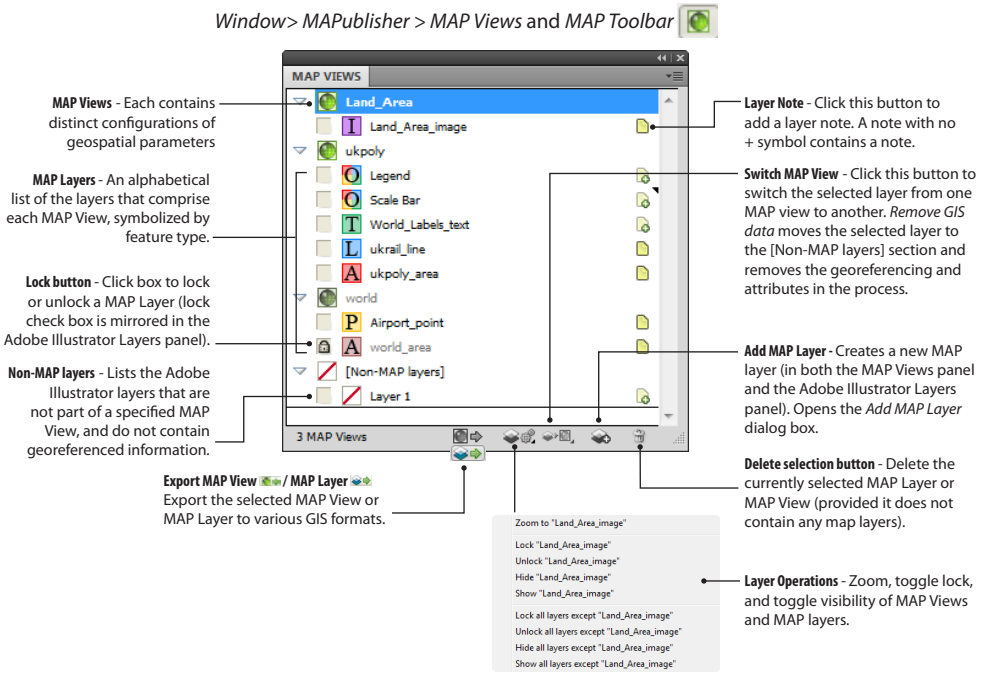
For further information, please refer to the appendices. See appendix A1 General Tips on *Georeferencing an Adobe Illustrator file*. Appendix A2 provides general information on the MAPublisher coordinate systems as well as customizing options.

Illustration of page and map anchors



MAP Views Panel

Window> MAPublisher > MAP Views and *MAP Toolbar*



MAP Views - Each contains distinct configurations of geospatial parameters

MAP Layers - An alphabetical list of the layers that comprise each MAP View, symbolized by feature type.

Lock button - Click box to lock or unlock a MAP Layer (lock check box is mirrored in the Adobe Illustrator Layers panel).

Non-MAP layers - Lists the Adobe Illustrator layers that are not part of a specified MAP View, and do not contain georeferenced information.

Export MAP View / MAP Layer Export the selected MAP View or MAP Layer to various GIS formats.

Layer Note - Click this button to add a layer note. A note with no + symbol contains a note.

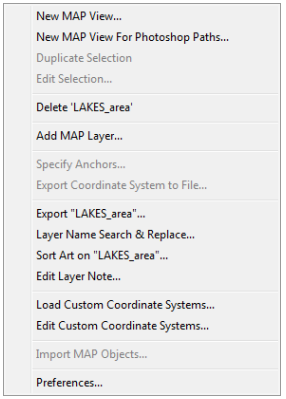
Switch MAP View - Click this button to switch the selected layer from one MAP view to another. *Remove GIS data* moves the selected layer to the [Non-MAP layers] section and removes the georeferencing and attributes in the process.

Add MAP Layer - Creates a new MAP layer (in both the MAP Views panel and the Adobe Illustrator Layers panel). Opens the *Add MAP Layer* dialog box.

Delete selection button - Delete the currently selected MAP Layer or MAP View (provided it does not contain any map layers).

Layer Operations - Zoom, toggle lock, and toggle visibility of MAP Views and MAP layers.

MAP Views Panel Options Menu



New MAP View - Create a new MAP View and specify its name and coordinate information.

New MAP View For Photoshop Paths- Specify a new MAP View based on paths exported from Geographic Imager/Adobe Photoshop.

Duplicate Selection - Create a duplicate of the currently selected MAP View.

Edit Selection - Open the MAP View Editor to edit the name and coordinate system of the currently selected MAP View.

Delete Selection - Delete the currently selected MAP View or MAP Layer provided it does not contain any Adobe Illustrator layers.

Add MAP Layer - Create a new MAP Layer through *Add MAP Layer* dialog box.

Specify Anchors - Manually establish the tie-in point between Map and Page Anchors (should only be used for new MAP Views or for the correction of georeferencing errors).

Export Coordinate System to File - Exports the selected MAP View coordinate system to a WKT definition (*.wkt) (see Appendix A2).

Export Selection - Enable the export of the selected MAP View or MAP Layer to various GIS formats.

Layer Name Search & Replace - Search for text within layer names and specify an alternative. Useful for multi-layer imports.

Sort Art on Layer - Sort art in ascending or descending order based on attribute.

Edit Layer Note - Add or edit the selected layer's note.

Load Custom Coordinate Systems - Load external coordinate systems in .xml format (see Appendix A2).

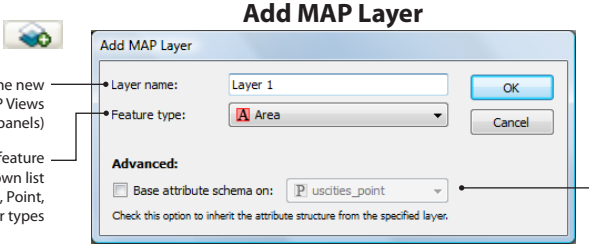
Edit Custom Coordinate Systems - Open the custom coordinate system editor to create new coordinate systems and edit the parameters of existing ones in the data source (see Appendix A2).

Import MAP Objects - Import MAP Views, MAP layers, MAP Themes (including Stylesheets) and MAP Selection Filters from other open documents.

Preferences - Opens MAPublisher Preferences on the MAP Views Panel property sheet (see chapter 1).

RELATED TOOLS

Add MAP Layer



Layer name - Type the name of the new layer (it will appear in both MAP Views and Adobe Illustrator Layers panels)

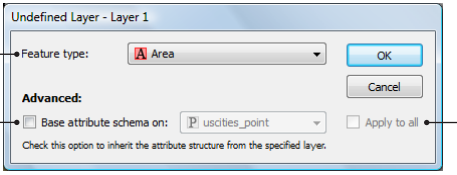
Feature Type -Select the type of feature of the new layer. This drop-down list presents a choice of Area, Line, Point, Image, Text or Legend layer types

Base Attribute Schema on - Check this option to copy the attribute schema from the existing MAP Layer selected in the drop-down list

Plot Centroids, Label Features, MAP Tagger Tool and MAP LabelPro tools make use of this option, see specific chapters.

Define Layer

Automatically opens when dragging a Non-MAP layer into a specified MAP View.



Feature Type -Select the type of feature that exists on the layer being dragged. This drop-down list presents a choice of Area, Line, Point, Image, Text or Legend layer types.

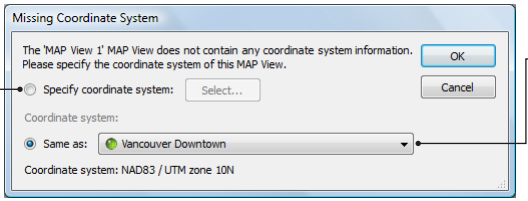
Base Attribute Schema on - Check this option to copy the attribute schema from the existing MAP Layer selected in the drop-down list

Plot Centroids, Label Features, MAP Tagger Tool and MAP LabelPro tools make use of this option, see specific chapters.

Apply to all - When multiple layers are switched at once to a specified MAP View, check this box to apply the same feature type to all

Missing Coordinate System

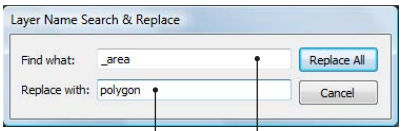
Automatically opens when dragging a MAP Layer to an alternate MAP View, and either the source or destination MAP View has an unspecified coordinate system.



Select custom coordinate system Choose this option and then click the **Select** button to specify the coordinate system of the named MAP View via the **Select Coordinate System** dialog box (see Appendix 2). Once selected, the coordinate system will be displayed below it.

Same as - Choose this option in order to assign a coordinate system to the named MAP View that matches that of an existing MAP View. The coordinate system of the selected MAP View will be displayed below.

Layer Name Search and Replace

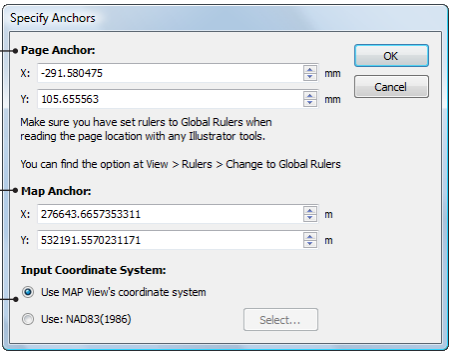


Replace with - Type in the variable you wish to change the layer names to

Find what - Type in the variable contained in the current layer names on which you wish to search

Specify Anchors

Should only be accessed when creating a new MAP View or correcting inaccurate georeferencing information. Caution: editing anchors can damage the accuracy of the data.



Page Anchor - The location of the Page Anchors in the units of the current document *(see File > Document Setup)*

Map Anchor - The location of the Map Anchors in the units of the selected coordinate system

Input Coordinate system - Specify the coordinate system in which the anchor position is entered. Use the current MAP View's coordinate system or specify a different one (by default, the geodetic system base of the projection or WGS84, in latitude-longitude format). Click the **Select** button to open the **Select Coordinate System** dialog box and choose an appropriate coordinate system.

OVERVIEW

The MAP Views panel displays a list of all the Adobe Illustrator layers in the current document and all MAP Views—defined configurations for geospatial parameters (coordinate system, anchors, map scale and rotation). Every MAP Layer is shown in this panel as belonging to a particular MAP View. Adobe Illustrator layers that do not have georeferencing information (e.g. non-map objects such as diagrams and supplemental art) are placed in the [Non-MAP layers] category.

Categories are symbolized in the following manner:

MAP View	*Contains layers with georeferenced and attribute information.*
[Non-MAP layers]	*Contains layers with no georeferenced or attribute information.*

Each layer that belongs to a MAP View is symbolized in MAPublisher panels and dialog boxes with an icon identifying its feature type:

Area layer	*(e.g. county boundaries, urban areas, country outlines etc.)*
Line layer	*(e.g. rivers, roads, railways etc.)*
Point layer	*(e.g. town and city symbols, railway stations etc.)*
Text layer	*(e.g. text labels)*
Legend layer	*(for MAPublisher Legend items: North Arrows, Scale Bars, Grids)*
Image layer	*(for referenced images)*

Note: Layers are sorted alphabetically or by data type, as specified in the MAP Views category in the MAPublisher Preferences (see chapter 1).

FUNCTIONALITY

MAP Views are designed to give easy access to settings for specifying and transforming coordinate systems, for editing scale and data placement on the page and for exporting to GIS formats. The MAP Views panel allows toggling Adobe Illustrator layers accessibility, georeferencing existing Adobe Illustrator artwork, changing multiple layer names and projecting data on the fly.

USING THE MAP VIEWS PANEL

Creating New MAP Views

To create a new MAP View, click **New MAP View** in the panel options menu. This opens the **MAP View Editor** (discussed in MAP View Editor section). Specify a coordinate system and enter values for scale, rotation, and page anchors. After creating a new MAP View, the **Specify Anchors** item from the MAP Views panel options menu must be used to define the tie-in point between Map Anchors and Page Anchors.

Note: Creating a new MAP View is only recommended when registering a non-referenced Adobe Illustrator document. To transform an existing MAP View to a new coordinate system and scale (e.g. to create an inset map), use the duplicate MAP View function and transform or rescale the copied MAP View.

Duplicate And Delete MAP Views

MAP Views can be duplicated. For example, to create inset maps make a duplicate and drag MAP Layers into the new MAP View. Then use the MAP View Editor to edit the placement, scale or coordinate system of the duplicate. Note that MAP Layers can only be duplicated in the Adobe Illustrator Layers panel.

Delete a MAP View or MAP Layer using the **Delete** button at the base of the panel or through the MAP Views panel options menu. To delete a MAP View, its MAP layers must first be deleted.

Create New MAP Layers

Create new MAP Layers to hold geospatial data or to generate artwork using MAPublisher tools (plot points, labels, legends, grids, scale bars and north arrows). Click the **Add MAP Layer** button  to create a new Adobe Illustrator layer which simultaneously places it into a selected MAP View. Specify the appropriate **Layer name** and **Feature type** for the new layer. Below are examples of the types of MAPublisher tools that require a specific MAP Layer type:

Area layer	**Join Areas, Line Plotter** (see chapter 8)
Line layer	**Buffer Art, Join Lines, Line Plotter** (see chapter 8)
Point layer	**MAP Point Plotter** (see chapter 6) **Join Points** (see chapter 8)
Text layer	**Label Features**, **MAP Tagger** (see chapter 10) **MAPublisher LabelPro** (see chapter 17)
Legend layer	**Grids and Graticules** (see chapter 13) **Scale Bars**, **North Arrows** (see chapter 14)
Image layer	**Import Image, Register Image** (see chapter 3 and 12)

Note: The Advanced option **Base attribute schema on** will copy the attribute schema from an existing MAP Layer (see chapter 5 for details). This option is required to enable the copying of attributes from source to destination layers in the MAPublisher labelling tools and Plot Centroids function. See respective chapters.

Reproject MAP Layers using the MAP Views Panel

The MAP Views panel can be used to move Adobe Illustrator layers from one MAP View to another; projecting vector* data-on-the fly. Alternatively, drag-and-drop layers or use the **Switch MAP View** button .
* *Raster imagery cannot be reprojected with MAPublisher.*

Alternatively, use the drag-and-drop method. For example, to reproject a layer that has a UTM projection into a Lat/Long projection, click it and drag it from the MAP View with the UTM projection and drop it into the MAP View with the Lat/Long projection. MAPublisher will automatically reproject and scale artwork on the layer to match the destination MAP View. The Missing Coordinate System dialog box appears when neither the origin nor destination MAP View contains a defined coordinate system. Two options are available in this dialog box:

1. **Specify custom coordinate system**: specify projection using the Source Coordinate System function.
2. **Same as***:* specify coordinate system based on an existing MAP View in the document.

Note: Many transformations will inherently cause the loss of precision by the very nature of the complex mathematical calculations that must be performed. Additionally there are differences in precision between MAPublisher and Adobe Illustrator. MAPublisher calculations are in 64-bit for accuracy, but the results must be stored in Adobe Illustrator as 32-bit. As a result, please be aware that some precision may be lost if layers are dragged repeatedly from one coordinate system to another. When determining a coordinate system to use via the drag method, we strongly recommend to use *Edit* > *Undo* to revert coordinate systems until the appropriate system is found.

Assign Georeferencing Information to Adobe Illustrator Layers

Existing Adobe Illustrator layers that do not contain georeferencing or attribute information also appear in this panel under the default MAP View entitled **[Non-MAP layers]**. Such layers can be moved into a specified MAP View with a matching geospatial configuration (coordinate system, scale, position on the page, etc.).

Note: Moving a non-MAP layer to a MAP View does not imply any transformation (the artwork is not redrawn). Users must ensure that the art on the non-MAP layer is positioned and scaled properly on the page with regard to the MAP View definition.

Moving a non-MAP layer into a specified MAP View prompts the **Define Layer** dialog box in order to specify the feature type of the layer. Multiple layers may be selected and moved together to a specified MAP View. Use the **Apply to all** option to assign the same feature type to all layers being moved. The Advanced option **Base attribute schema on** copies the attribute schema from an existing MAP Layer (see chapter 5 for details).

Specify Anchors

The Specify Anchors function should only be accessed when referencing a new MAP View (for example in the process of georeferencing an Adobe Illustrator file, see appendix A1) or to correct an inaccurate referencing.

The **MAP Anchor** is entered in the unit of the selected coordinate system. MAP Anchor coordinates must be known from information written on the map (e.g. graticules crossing) or from external sources (metadata, survey points or other). When the **Use Current MAP View's coordinate system** option is toggled, MAP Anchor coordinate values are entered in the current MAP units of the coordinate system of the MAP View. When the **Use: [coordinate system]** option is toggled, the **Select** button becomes enabled. Clicking the **Select** button opens the **Select Coordinate System** dialog box. Choose any coordinate system, the coordinates values entered will be in the unit (Point Style) of this coordinate system. When the selected or default coordinate system is projected, X and Y coordinates are entered in the unit (Point Style) of the coordinate system (e.g. metre, kilometre, feet). When the selected or default coordinate system is Geodetic, Lat and Long coordinates are entered in degrees.

Note: When the current MAP View coordinate system is a projected system, the default system specified in *Use: [coordinate system]* is set to the geodetic system base for the projection. For example, if the MAP View system is US State Plane *NAD83 / Colorado North (ftUS)*, the default alternative system is set to *NAD83* (to enter the latitude/longitude coordinates in degrees).

The **Page Anchor** is entered in the current unit of the document. This unit can be changed through the Adobe Illustrator menu *File* > *Document Setup*. Positions of points on the document in page coordinates are determined using the Adobe Illustrator Info panel (menu *Window* > *Info*).

Note: For CS5 users, Page Anchor values must be relative to Global Rulers. To use Global Rulers, choose *View* > *Rulers* > *Change to Global Rulers*.

Layer Name Search & Replace

To quickly change the names of multiple Adobe Illustrator layers, use the Layer Name Search & Replace function located in the MAP Views panel options menu. For example, MicroStation Design or CAD imports can contain a large number of similarly named layers and doing a name search and replace is more efficient than manually changing each of them..

Zoom to MAP Layer or to MAP View

To zoom to a MAP Layer, select one and click the Layers Operations button  at the bottom of the MAP Views panel. Click the **Zoom to "[Layer]"** in the context menu. When a MAP View is selected, this option becomes **Zoom to all layers in "[MAP View]"**. This is particularly useful for documents containing a large number of layers.

Layers Operations

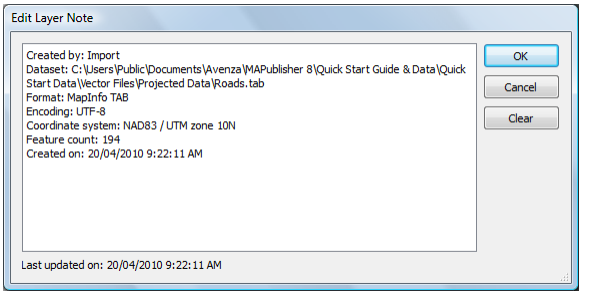
The Layer Operations button  will perform a variety of layer operations. If a MAP Layer is selected, use the context menu to **Lock, Unlock, Hide** or **Show "[Layer]"** or to **Lock, Unlock, Hide** or **Show all layers except "[Layer]".** If a MAP View is selected, the same options become for **all layers in "[MAP View]"** or **all layers except layers in "[MAP View]"**.

MAP Layer Note

MAP Layer Notes contain general information about the layer, such as how it was created or on its source data. MAP Layers that have layer notes attached to them are indicated with the icon . MAP Layers with no layer notes are marked with .

Layer notes can be automatically added when the layers are created through MAPublisher functions (e.g. MAP Data Import, Plot Centroids, Web Feature/Map Service, etc.). To do so, enable the MAPublisher *General Preferences* option **Add notes for layers created by MAPublisher operations** — see chapter 1 for details. The automatic notes show the function and parameters used to create it. For example a note of a layer created by import indicates information such as the path of the source data, format and date.

To add or edit a layer note, choose the MAP Views panel options menu **Edit Layer Note**. In the *Add/Edit Layer Note* dialog box, type new text or edit the existing information. Click the *Clear* button to clear all information.



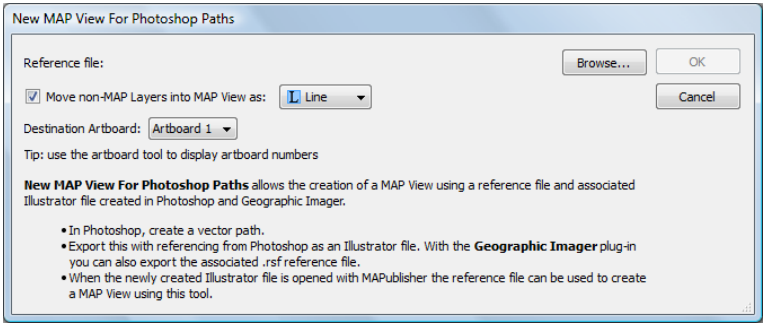
Export MAP Views and MAP Layers

The MAP Views panel offers the option to export a single MAP View  or a single MAP Layer  to a multitude of GIS formats. This function is explained later in this chapter.

New MAP View For Photoshop Paths

The New MAP View For Photoshop Paths function creates a new MAP View using a reference file and associated Adobe Illustrator file exported from Geographic Imager for Adobe Photoshop.

Adobe Photoshop offers a function to create vector paths and export them to Adobe Illustrator. Adobe Photoshop uses Geographic Imager to maintain the spatial reference and outputs it as an .rsf reference file. To import the paths into Adobe Illustrator using MAPublisher, use the **New MAP View For Photoshop Paths** from the MAP View panel options menu to create a new MAP View based on the .rsf file. After doing this, the Adobe Illustrator layers can simply be dragged from *[Non MAP Layers]* to the newly created MAP View to finalize the georeferencing. The vector data can now be used in a current MAPublisher project, edited, transformed or exported to any external GIS format.



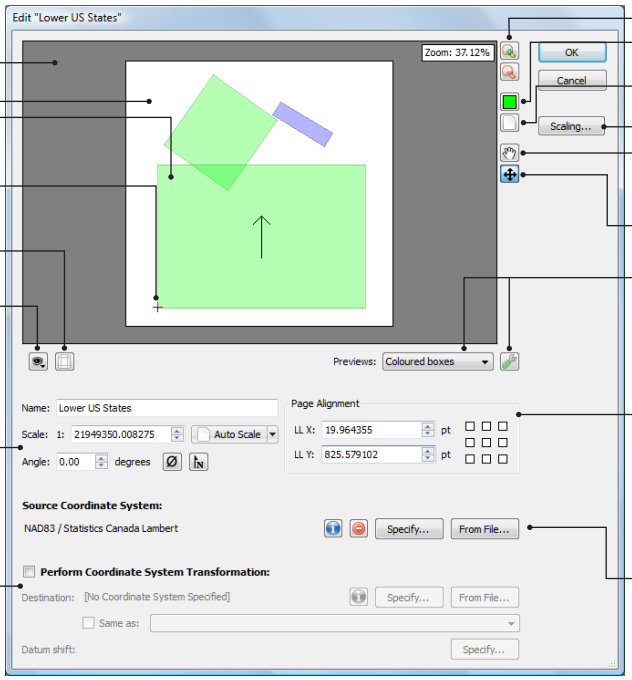
Remove MAPublisher Information

At the end of a project cycle, it may be useful to permanently remove all georeferencing and attribute information in the current document. This can be accomplished by switching all MAP Layer(s) to the *[Non-MAP layers]* category in the MAP Views panel via **drag and drop** or clicking the **Switch Map View** button  and the **Remove GIS data** option.

Note: This function should only be used as required and as a final step. Be sure to save a copy of the document before performing this operation as this will erase all attribute data.

MAP View Editor

MAP Views panel > Edit MAP View / New MAP View,
Advanced Import > Create New > Editor



Preview Pane - Displays the data extents of the MAP View:
White rectangle - Artboard extents
Colour rectangle - Data extents of the current MAP View

Crosshair - Location of the current Map and Page Anchors

Configure Margins - Adjust the artboard margins

Show/Hide Preview Details - Display or hide the Map and Page Anchors and artboard margins

Name - Name of the MAP View

Scale - Edit the MAP View scale relative to the page. Click *Auto Scale* to fit the data extents to the artboard or the margins.

Angle - Rotation angle of the MAP View. Click ⌀ to reset to zero; click to orient the MAP View north up.

Perform Coordinate System Transformation - Enable this option to transform the data to a new coordinate system

Same as - Check this option to transform to a coordinate system used by another MAP View in the document

Specify - Open the *Specify Destination Coordinate system* dialog box to select a coordinate system

From File - Load a destination coordinate system from an external file

Specify Datum Shift - Change the datum shift for the transformation

Zoom buttons - Zoom in/out

Center current MAP View extents on screen - Fit preview to the extents

Center active artboard on screen - Fit preview to the artboard extents

Scaling - Maintain point size, stroke width and font size when scaling

Pan Preview Mode - Pan around the preview pane

Move MAP View Mode - Move the position of the current MAP View

Previews and **Configure Previews** Select and configure how the previews are shown

Page Alignment - *Affects the position of the Page Anchor:*

- **LL X, LL Y** - Position of the lower left corner of the data in document units
- **Alignment Control** - Click a position on the grid to control the alignment of the data extent relative to the page (e.g. center middle, upper right...)

Source Coordinate System - Displays the current coordinate system assigned to the MAP View

From File - Load a source coordinate system from an external file

Specify - Open the *Specify Source Coordinate System* dialog box to select a new source coordinate system. To be used only if the source coordinate system is undefined or is not matching the data.

To apply a new coordinate system to a MAP View, use Perform Coordinate System Transformation.

Info - View the parameters of a selected coordinate system

Clear - Remove all references to a coordinate system

FUNCTIONALITY

The MAP View Editor displays and controls the geospatial parameters of the MAP View (coordinate systems and scale on the artboard), the position of the data extents on the page (alignment and rotation) and provides a way to change the MAP View name. A preview pane shows and allows users to move the current MAP View relative to the artboard and to the other MAP Views in the document.

The MAP View Editor is also where coordinate system transformations are performed. Transformations affect the data geometry on the page as map art is redrawn to match the new coordinate system properties.

USING THE MAP VIEW EDITOR

The MAP View Editor can be accessed as part of the **Advanced Import** dialog box or from the **MAP Views** panel:

- *Advanced Import:* click the **Create new** option in the *Destination MAP View* section, and then click the **Editor** button to open the MAP View Editor.
- *MAP Views panel*: select a MAP View, and then select **Edit** under the *Options* arrow in the upper right corner of the panel. Alternatively, double-click the MAP View name in the MAP Views panel.

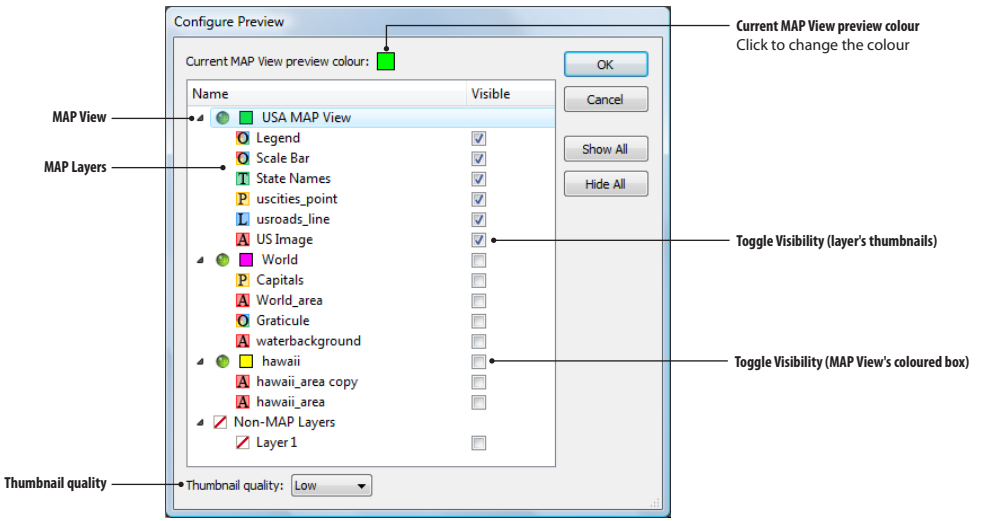
Preview Pane and Configure Previews

By default, the Preview Pane displays the data extents with a green rectangle and the MAP View orientation with an arrow pointing north. To move the data on the page, click inside the green rectangle and drag the data to a more suitable position relative to the page. Use the **Zoom In**, **Zoom Out** and **Center** buttons to set the magnification of the preview. To move the page within the Preview Pane, click outside the MAP View extent and drag to move the page.

The **Previews** drop-down list changes the preview to *Coloured boxes* (previews up to ten MAP views, each with different colours as specified in the Configure Previews settings), *Thumbnails* (preview a reduced image of the document contents, including all MAP views) and *Thumbnails & Boxes* (shows both thumbnails and coloured boxes of up to 10 MAP views in the document).

Note: Due to Adobe Illustrator rasterization limitations, thumbnails cannot be created for very large MAP Views.

To configure the previews, click the **Configure Previews** button . To adjust the colour of the current MAP View preview, click the colour chip and choose a colour in the colour picker dialog box. Layer visibility can be individually toggled under the Visible column. Use the Show All or Hide All buttons to toggle the visibility of the entire list. To toggle only the layers of a particular MAP View, right-click the MAP View to access a context menu that has the options to Show All or Hide All. Adjust thumbnail quality using the drop-down list at the bottom of the dialog box. Quality settings include: *Low*, *Medium*, *High*, and *Very High*.



Note: The *Auto-Scale* function will apply to the extent of the visible layers only.

MAP View Name

The current name of the MAP View is listed in the **Name** box, which is editable. MAP Views are ordered alphabetically in the MAP Views panel, so changing a MAP View name may change its position in the panel.

Scale

The scale of the current MAP View is shown in the **Scale** box. For MAP Views in a projected coordinate system, the scale value is a real world scale (exact ratio *linear distance on the page* over *distance on the ground*). For MAP Views in a geodetic coordinate system (i.e. Lat/Long format in angular unit), the scale value is approximated using the common formula 1°= 111.353m (metres per degree at the equator). This is not an accurate number because the formula is only valid at the equator, but it is more intuitive for cartographic considerations.

The scale can be edited by typing in a precise value or by using the Up and Down arrows to increase or decrease the scale by 10% of the starting value. The **Auto Scale** button applies the scale to fit the visible data in the preview to the artboard or margins and centers the map on the page (see *Preview Pane*). Click the Auto Scale drop-down arrow to use either the artboard or margins as the scale extent.

Rotation

A rotation figure can be applied or edited by specifying an angle in the entry field, or by using the arrow buttons. Notice that changes to rotation will be automatically previewed in the Preview Pane with the green rectangle and arrow depicting the new orientation of the data. Click  button to reset the angle to 0. Click  button to orient the MAP View True North up (True North is calculated at the center of the data extents).

Page Alignment

During the import process, MAPublisher sets the page and map anchors so that the lower left corner of the artboard coincides with the lower left corner of the map extents. Note that Adobe Illustrator CS4 and CS5 use different locations for the page origin, with (0,0) being located in the lower left corner in CS4 and (0,0) located in the upper left corner in CS5. Use the **Page Alignment** settings to precisely move the data on the page. In the **LL X/ LL Y** boxes, edit the position of the lower left corner of the data extents in document units. Alternatively, the alignment control provides pre-set positions of the map extents relative to the page (center-middle, lower-left, upper-right, etc.). Click one of the alignment control grid locations to align the MAP View.

Notes: Editing the lower left corner position does not affect data integrity. It simply means that the data is shifted on the page but the corresponding real world coordinates remain unchanged.

The Page Anchor does not always coincide with the lower left corner of the map extent. When manually registering an Adobe document, users can also enter a specific position using the MAP Views panel options menu *Specify Anchors* (see first section of this chapter).

Set Source Coordinate System

In most cases, the MAP View source coordinate system is initially assigned during the import process if the imported data file contains such information (see chapter 3). To view the properties of the source coordinate system, click the info button.

If no coordinate system is recognized during the import, the resulting MAP View source coordinate system is set to *[No Coordinate System Specified]*. In order to rescale, rotate or transform the MAP View, a coordinate system must be specified. To do so, click the **Specify** button to open the **Specify Source Coordinate System** dialog box (explained below). Alternatively, use **From File** to set the source coordinate system using an external file (e.g. .wkt, .map, .prj, or .tab).

Note: If you are referencing a non-georeferenced Adobe Illustrator file, it is not enough to specify the source coordinate system to reference your map, you'll also need to specify appropriate map and page anchors. See *Georeferencing an Adobe Illustrator file* in appendix A1 General Tips.

In some rare cases, the source coordinate system may have been wrongly assigned during the import process (due to a wrong manual selection or file issue). In this case, users may want to specify another coordinate system. This should be done with caution as data integrity may be lost if the current coordinate system is mistakenly overwritten. Changing the source coordinate system does not affect the data geometry on the page. To specify a new coordinate system for a MAP View, use **Perform Coordinate System Transformation**.

Coordinate System Transformation

To transform a MAP View to another coordinate system using the MAP View Editor, click the **Perform Coordinate System Transformation** check box (the MAP View must contain data and a source coordinate system for this option to be available). Users have three options to select the destination coordinate system:

- Select a coordinate system from the MAPublisher database: click the **Specify** button in the *Perform Coordinate System Transformation* frame to open the **Specify Destination Coordinate System** dialog box.
- Select a coordinate system used by another MAP View in the document: click the **Same as** check box and select the appropriate MAP View in the drop-down list. This does not affect the page position.
- Select a coordinate system from another file: click **From File** to set the destination coordinate system using an external file (e.g. .wkt, .map, .prj, or .tab).

The **Preview Pane** displays the new data extents for the transformed MAP View, however the thumbnails view is not available until the transformation is finalized by clicking the OK button in the MAP View Editor.

Some coordinate system transformations require a datum shift. When this is the case, MAPublisher selects the most appropriate datum transformation. This can be edited by clicking the **Specify** button in the datum shifts frame and selecting another datum transformation (see appendix A2 and *Avenza Projections Guide.pdf* for more information).

Note: Coordinate system transformations can also be performed in the MAP Views panel. Simply drag a MAP layer from one MAP View to another MAP View of a different coordinate system.

Specify Coordinate System

The **Specify Source/Destination Coordinate System** dialog box allows users to select, copy and edit coordinate systems and associated parameters from the MAPublisher coordinate systems (Geodetic Data Source). The MAPublisher Geodetic Datasource is explained in depth in Appendix A2.

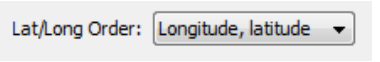
Coordinate systems are divided in two categories: Geodetic and Projected. For convenience, they are sorted in sub-folders by continent > country > sub-division (e.g. state or county). The ***All*** category lists all systems with no sorting; the ***Recent*** category lists the last 10 systems recently selected; the ***Search*** category lists the result of a coordinate system search. The MAPublisher coordinate systems may also contain custom systems.

New MAP Views

After clicking the **New MAP View** button, the MAP View Editor opens for users to set the name, coordinate system and page scaling of the new MAP View. After a new MAP View is created, the **Specify Anchors** option from the MAP Views panel must be used to define the tie-in point between Map Anchor and Page Anchor. Map Anchor coordinates can be entered in any chosen coordinate system (for example, latitude and longitude in degree for projected map). This functionality is explained in detail in *Georeferencing an Adobe Illustrator file* in appendix A1 General Tips.

Long/Lat Order (optional)

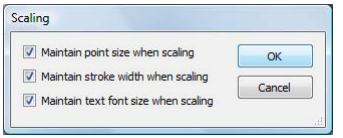
Enable the **Show Latitude/Longitude ordering option** in the MAPublisher Preferences for *MAP Views* > *Editor* (see chapter 1) to see an additional item in the **Lat/Lon Order** drop-down list:



The latitude/longitude order—*Longitude, latitude* or *Latitude, longitude*—applies to the following tools or panels: **MAP Location Tool**, **MAP Point Plotter** and **Line Plotter**.

Scaling

When the map scale changes, the point size, stroke and text font are maintained by default. To alter how scaling affects these options, click the **Scaling** button in the MAP View Editor dialog box. In the Scaling dialog box, uncheck the preferred options.

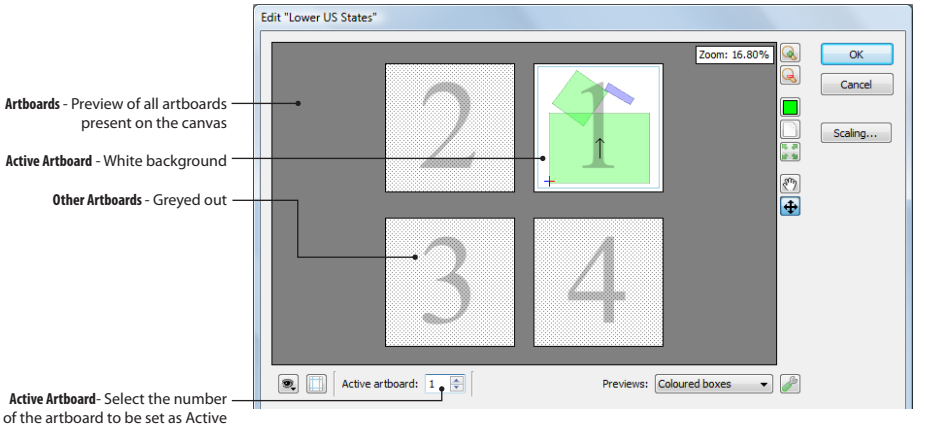


Multiple Artboards

Adobe Illustrator CS4 introduced the concept of multiple artboards (up to 100). MAPublisher uses this new feature in the MAP View Editor.

When a document contains multiple artboards, the MAP View Editor dialog box has an additional option to select the **Active Artboard**. When choosing the Active Artboard, the Preview Pane displays the number of each artboard. The current active artboard is shown in white, while the others are greyed out. The **Page Alignment** and **Scale** calculations are based on the Active Artboard dimensions.

To move the data extent (green box in the Preview Pane) from one artboard to another, change the Active Artboard number to the artboard where the data is to be moved, then click the Auto Scale button or one of the Page Alignment grid positions.

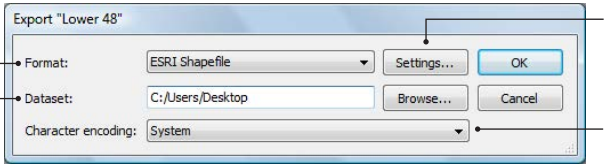


Note: Adobe Illustrator CS4 and CS5 allows users to move artboards. However, this action does not preserve the georeferencing (same effect as moving art on the active artboard). Instead of moving the artboard, users must do the following:

- Create a new artboard at the desired position on the canvas
- Open the MAP View Editor and move the MAP View from the initial artboard to the new one
- Delete the initial artboard

Export

MAP Views panel > *Export* and buttons *(MAP View)* *(MAP Layer)*



Format - Select the export format for the selected layer or MAP View

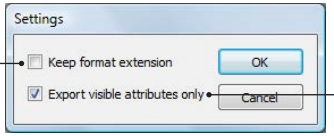
Dataset - Displays the directory path for the export of the currently selected layer or MAP View

Settings - Opens a Settings dialog box for the input of extra parameters (see below)

Character Encoding - Assign a codec if the attribute information held in the selected layer or MAP View uses a double byte character set

EXPORT SETTINGS

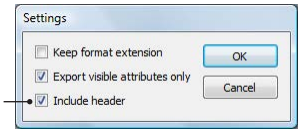
General Settings



Keep format extension - Check this option to export layers with their feature extension (_area, _line, _point, or _text) which may have been appended to layer names during import

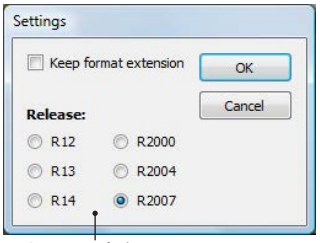
Export visible attributes only - Check this option to export only the attributes that are currently visible in the MAP Attributes panel

Delimited XY Text Data / Microsoft Excel



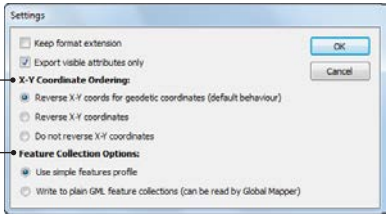
Include header Add the column headers at the first line of the exported text file

AutoCAD Settings



Release - Specify the AutoCAD version number to export to

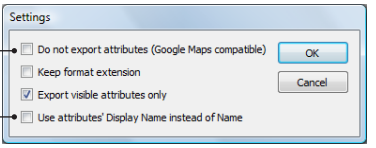
GML Settings



Feature Collection Options - Select output GML schema

X-Y Coordinate Ordering - Set the X-Y coordinate ordering for GML files. This may help in third-party software.

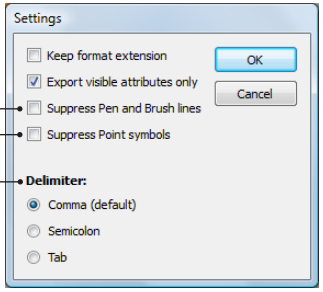
KML/KMZ Settings



Use attributes' Display Name instead of Name - Check this option to export the Display Name from attributes

Do not export attributes - Check this option for export to KML to be used in Google Maps (which does not support KML files with attribute values)

MIF/MID Settings

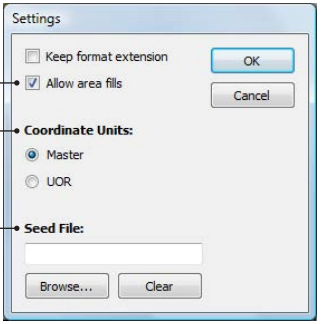


Delimiter - Set the field delimiters to either comma, semicolon or tab

Suppress Point symbols - Check this option to remove point symbols in the output MapInfo MID/MIF files

Suppress Pen and Brush lines - Check this option to remove all pen and brush styles in the output MapInfo MID/MIF files

MicroStation Settings

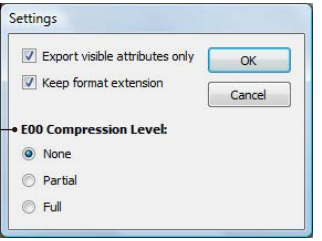


Seed File - If required, select a seed file to be applied to the exported dgn file . Click Clear to remove the seed file selection.

Coordinate Units - Specifies how feature coordinates will be interpreted and converted (Master, Sub or Units of Resolution).

Allow area fills - Controls whether or not fill linkages will be written out for ellipses, shapes, and solids.

E00 Settings



E00 Compression Level - Set the compression of the exported E00 file (default is *None*)

FUNCTIONALITY

MAPublisher supports the export of single MAP Layers or whole MAP Views to various GIS and table formats, maintaining all georeferencing and attribute information. The following export formats are supported:

AutoCAD Drawing/Interchange (*.dwg, *.dxf)
Delimited Text Data (*.csv, *.tsv, *.txt)
Esri ArcInfo Generate (*.gen)
Esri Interchange File (*.e00)
Esri Shapefile (*.shp)
Image (*.tif with reference file, see chapter 12)
Microsoft Excel (*.xls)
GML (Simple Features 3.1.1) (*.gml, *.xsd)
KML/KMZ (*.kml, *.kmz)
MapInfo MIF/MID (*.mif, *.mid)
MapInfo TAB (*.tab)
Microstation Design (*.dgn)

Notes: Exporting a MAP View to CAD or MicroStation format will assemble all hosted layers into a single file.

Exporting a MAP View to Flash map or Geospatial PDF is explained in chapter 15 and 16, respectively.

Only Point MAP Layers can be exported to Excel and delimited text data formats.

PREREQUISITES

The Export function exports a single selected Adobe Illustrator layer contained in a MAP View or all layers contained in a selected MAP View. Both imported and user created MAP Views that contain MAP Layers are suitable for export to GIS formats.

USING MAP EXPORT

Export a MAP View

To export all the MAP layers within a single MAP View, select the MAP View to be exported in the MAP Views panel, then click the **Export MAP View** button . Alternatively, click **Export "[MAP View name]"** in the panel options menu.

Export a MAP Layer

To export a single layer, select the MAP Layer to be exported in the MAP Views panel, then click **Export MAP Layer** button . Alternatively, click **Export "[MAP View name]"** in the panel options menu. In the Export layer dialog box, choose the required export **Format**. Click the **Settings** button for additional options.

Note: Only a single MAP View or a single layer can be exported at one time.

Keep Format Extension

The name of the MAP Layer or MAP View selected for export is the default name of the exported file. However the feature type text (i.e. _area, _line, _point, or _text) appended to Adobe Illustrator layers by MAPublisher in the Import process, are removed during the export process, unless the **Keep format extension** option is checked.

Export Visible Attributes

Enable this option to export only the attributes that are currently visible in the MAP Attributes panel. If this option is not checked, all attribute columns (including MAPublisher #Property attributes) are exported.

Format Specific Settings

Depending on the selected export format, additional specific settings may be available. This is the case for the following formats: AutoCAD, Delimited XY Text Data, MicroStation, MID/MIF, E00 and KML/KMZ. See the Export Settings above. When exporting to KML/KMZ, specify the format extension (*.kml or *.kmz) in the **Select Export File** dialog box (**Save As Type** drop-down list).

Note: KML/KMZ format only supports WGS84 geodetic coordinate system. Export to KML/KMZ will automatically transform the vector data from the MAP View's coordinate system to this system as part of the export process.

Choose a Destination Folder

Most of the export formats require the selection of a destination folder only. For export to **Esri** or **MapInfo** formats, click the **Browse** button to specify a destination folder. Click the OK button to export your MAP Layer.

When exporting to **AutoCAD** format, it is required to specify a name for the exported file, and select the file extension (*.dxf or *.dwg) to be used. For **MicroStation** formats, it is required to specify a name for the exported file. To export to either of these formats, click the **Browse** button to name the export file, and then choose the file format from the **Format** drop-down list.

ADDITIONAL NOTES

Valid Area Direction (Area Layer Exports)

When exporting area layers to GIS formats, polygon outlines must have a positive *Area* value, whereas holes contained inside compound paths (or complex shapes) must have a negative *Area* value. If some polygons in the *#Area* property column of the MAP Attribute table contradict these guidelines, use the following tools to convert the MAPublisher area calculation from a negative to a positive value or vice versa:

- **Flip Lines** tool (chapter 8) to convert multiple areas.
- Create a **Selection Filter** (chapter 11) to select all elements that have an *#Area* of less than zero (to select negative values) or greater than zero (to select positive values). Then use the *Flip Lines* tool.
- Edit the *#AreaDirection* property value (chapter 5) to convert areas one by one: select the area to edit and then choose the alternate value for *#AreaDirection* in the MAP Attributes panel.

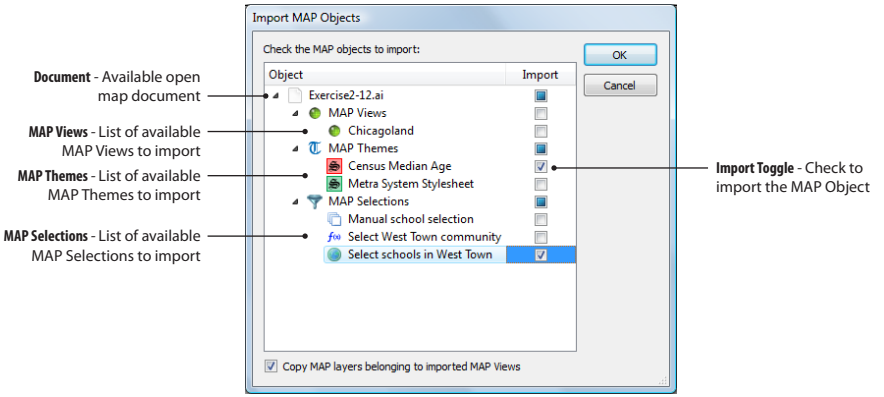
Text Exports

It is not possible to export values in the *#Text* property column. An alternative is to create a new string attribute column and assign it an expression of *#Text*. See **Edit Schema** in chapter 5 on MAP Attributes.

Texts on a path are exported as point text with an angle (main direction of the original path).

Import MAP Objects

MAP Views panel > Import MAP Objects or *MAP Toolbar* 



FUNCTIONALITY

MAPublisher Import MAP Objects copies MAP objects from one document to another, including all MAP Views and the layers that are within them, MAP Themes, and MAP Selections. This can be a useful tool when merging parts of several documents into a single document. For example, it might be useful to import a commonly used inset map.

PREREQUISITES

At least two documents must be open to use Import MAP Objects. The active document does not need to contain any MAP View, but the second document must contain at least one MAP View.

Note: Import MAP Objects imports all the layers contained in the selected MAP View. To choose specific MAP layers to import, in the source document, make a duplicate of the MAP View and copy or move only selected layers to it. Then proceed to import the duplicate MAP View.

USING IMPORT MAP OBJECTS

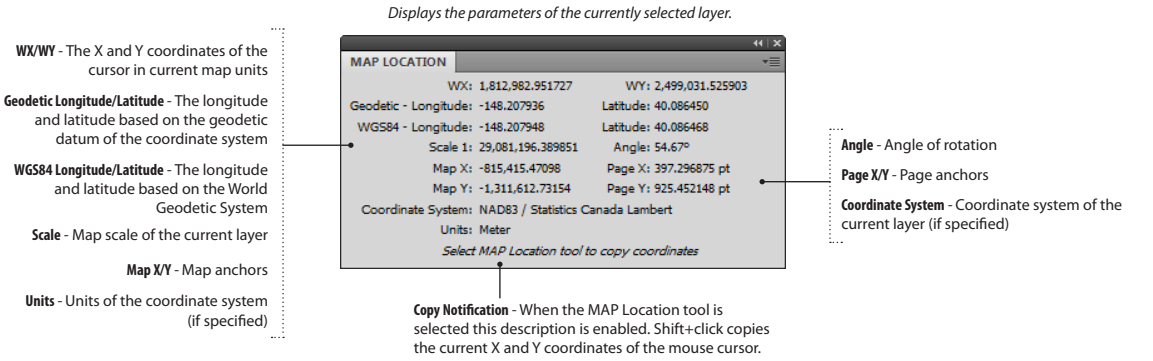
To access the function, click **Import MAP Objects** in the MAP Views panel options menu or click the Import MAP Objects button  on the MAPublisher Toolbar.

The Import MAP Objects dialog box shows all other documents currently open, along with all the MAP Views, MAP Themes and MAP Selections they contain. Select at least one MAP object to be imported into the current document and click OK to import it.

Note: Import MAP Objects can also be accessed from the MAP Themes and MAP Selections panel options menus.

MAP Location Tool

MAP Toolbar or *Tools* > *MAP Location Tool*  or *Window* > *MAPublisher* > *MAP Location*



FUNCTIONALITY

The MAPublisher Location Tool panel displays the coordinates of the mouse cursor on the selected map layer, in current **Map Units** and in **Degrees**. Geodetic latitude and longitude values are in reference to the geodetic datum set in the coordinate system definition. The WGS84 latitude and longitude values are in reference to the World Geodetic System. Ungeoreferenced layers display its coordinates in **Page Units.** The panel also displays the **Map** and **Page Anchors**, the **Scale**, **Angle** of rotation and the **Coordinate System** and **Units** of the MAP Layer.

The MAP Location Tool also enables the X and Y position of the cursor in the current map units (WX and WY) to be copied to the clipboard. An example of a use for this function is to build point files in an external text editor; files which can be imported with MAPublisher. Coordinates are copied with the X value first and Y value second, and are delimited by a comma. For example: `-79.396527,43.631979`.

USING THE MAP LOCATION TOOL

To use the **MAP Location Tool**, click the  button in Adobe Illustrator Tools panel, in the MAP Toolbar or open the panel through *Window* > *MAPublisher* > *MAP Location*. The map coordinates update in the panel with every change of the location of the mouse cursor.

The map units correspond to the units of the currently selected layer. If the selected layer is a MAP Layer, the units are taken from the MAP View's source coordinate system. If the selected layer in a Non MAP Layer, the units of the Adobe Illustrator documents are used (see *File* > *Document Setup*).

Notes: The map coordinates update even when other tools are selected.

When the cursor is placed outside of the MAP View extent of the selected layer, positions' values are indicated as *Unavailable*.

When the MAP Location Tool button is enabled in the Adobe Illustrator Tools panel, users are able to copy the coordinates of a specific location (position of the cursor). The appropriate layer must be selected in the MAP Views panel as the MAP View containing the layer will determine the MAP units and coordinate system used to display the geographic position. To copy the position to the clipboard:

- Position the cursor at the desired location
- Hold the Shift key and click the mouse

The X and Y position are copied to the clipboard and can be pasted into any text editor. Latitude and Longitude values are also copied if this is enabled in the MAP Location Tool preferences (see below). Only one set of coordinates can be copied at once. When Shift+click is used again, the values previously copied will be overwritten.

MAP LOCATION TOOL PREFERENCES

The MAPublisher Preferences for the MAP Location Tool can be accessed from the menu *Edit > MAPublisher Preferences* or by double-clicking the MAP Location Tool button in the Adobe Illustrator Tools panel.

In the MAPublisher Preferences dialog box, specify the latitude/longitude display format and number of decimals. Enable the option *Include Latitude and Longitude values when copying coordinates* to copy both the X/ Y and Lat/Long positions when using Shift+Click (see above).

The order of the *Longitude* and *Latitude* captions can be swapped by changing the **Long/Lat Order** option of the layer's MAP View. See the MAP View Editor Preferences in chapter 1.



MAP Attributes

MAPublisher can import GIS files into Adobe Illustrator while maintaining both geographic referencing and attribute information. This makes it very easy to produce high quality maps.

Attribute information can be used in many powerful MAPublisher functions such as MAPublisher labeling engines, MAP Themes, MAP Selections and MAP Web Author.

This section explains the principles of attribute information and how they are manipulated within MAPublisher.

Topics covered in this section are:

Attributes Foreword
MAP Attributes Panel
Edit Schema
Expression Builder
Find & Replace Attributes
Apply Expression
Join Table
Export Attributes

Attributes Foreword

ATTRIBUTE INFORMATION

The attribute table that forms part of a GIS map file is one of the most important parts of the data set. It is in the attribute table that we find important information such as street names for lines, zoning or zip code numbers for areas and elevations for points to go along with our line, area or point vector data. Along with line, area and point vector data imported as explained in the previous sections, MAPublisher also imports the attribute data table associated with any vector map file that it supports.

MAP LAYERS

All MAP Layers contain attribute information (except Legend MAP Layers). Each MAP Layer is symbolized in MAPublisher panels and dialog boxes with an icon depicting its feature type:

A	Area layer	*(e.g. county boundaries, urban areas, country outlines)*
L	Line layer	*(e.g. rivers, roads, railways)*
P	Point layer	*(e.g. town and city symbols, railway stations)*
T	Text layer	*(e.g. city labels)*
I	Image layer	*(e.g. background terrain shading, orthoimagery)*

MAPUBLISHER #PROPERTY ATTRIBUTES

In addition to the attribute values that were imported into a work session, Area, Line, Point, Text and Image MAP Layers are also assigned a number of additional MAPublisher attribute columns. These property columns (prefixed with a #) are designed to indicate the physical properties of map art on the Adobe Illustrator canvas. Art can be modified directly from the attribute table by making edits to values in these columns. The following property columns are attached to valid map layers in this version of MAPublisher:

A Area layers

#LayerName	*The name of the containing layer. This property cannot be set.*
#ID	*The internal unique ID to refer to Adobe Illustrator artwork within the document. Read-only.*
#Name	*The name of the polygon. Editing this property will change the name in the Layers panel.*
#AreaDirection	*The direction as clockwise or counter-clockwise. Editing it will reverse the direction.*
#VertexCount	*The number of points in the art. This property cannot be set.*
#Style	*The Graphic Style in use. Editing this property will apply the selected style to the art.*
#StrokeWeight	*The stroke weight of the path. Editing this property will alter the stroke weight of the art.*
#Perimeter	*The perimeter of the area in world units. This property cannot be set.*
#PathClosed	*Describes whether or not the path is closed (yes or no). Editing this value will open/close the path.*
#ArtScale	*The scaling of the line stroke. Editing this value will scale the stroke weight.*
#Area	*The area of the path in world units. This property cannot be set.*
#Opacity	*The opacity level of the polygon. Editing this property will change the opacity of the art.*

Line layers

#LayerName	*The name of the containing layer. This property cannot be set.*
#ID	*The internal unique ID to refer to Adobe Illustrator artwork within the document. Read-only.*
#Name	*The name of the polygon. Editing this property will change the name in the Layers panel.*
#VertexCount	*The number of points in the art. This property cannot be set.*
#Style	*The Graphic Style in use. Editing this property will apply the selected style to the art.*
#StrokeWeight	*The stroke weight of the path. Editing this property will alter the stroke weight of the art.*
#PathClosed	*Describes whether or not the path is closed (yes or no). Editing this value will open/close the path.*
#Length	*The length of the path in world units. This property cannot be set.*
#ArtScale	*The scaling of the line stroke. Editing this value will scale the stroke weight.*
#Opacity	*The opacity level of the polygon. Editing this property will change the opacity of the art.*

Point layers

#LayerName	*The name of the containing layer. This property cannot be set.*
#PageX	*The x-coordinate in the document units of the current point.*
#PageY	*The y-coordinate in the document units of the current point.*
#ID	*The internal unique ID to refer to Adobe Illustrator artwork within the document. Read-only.*
#Name	*The name of the point. Editing this property will change the name in the Layers panel.*
#HorizontalScale	*The horizontal scaling of a point object. Editing this value will scale the symbol in the X axis.*
#VerticalScale	*The vertical scaling of a point object. Editing this value will scale the symbol in the Y axis.*
#Rotation	*The rotation in degrees of the art around its anchor point. Editing this value will rotate art.*
#Style	*The Symbol in use. Editing this property will apply the selected symbol to the art.*
#MapX	*The x-coordinate in the world units of the current point.*
#MapY	*The y-coordinate in the world units of the current point.*
#Opacity	*The opacity level of the polygon. Editing this property will change the opacity of the art.*

Text layers

#LayerName	*The name of the containing layer. This property cannot be set.*
#PageX	*The x-coordinate in the document units of the current point text. For text-on-a-path or text-in-a-path, this will be the x-coordinate of the first vertex on the associated path.*
#PageY	*The y-coordinate in the document units of the current point. For text-on-a-path or text-in-a-path, this will be the y-coordinate of the first vertex on the associated path.*
#ID	*The internal unique ID to refer to Adobe Illustrator artwork within the document. Read-only.*
#FontSize	*The font size used by the text.*
#FontFamily	*The font family used by the text.*
#Name	*The name of the text field. Editing this property will change the name in the Layers panel.*
#Text	*The contents of the text. Editing this property will edit text on the page.*
#TextLength	*The number of characters in the contents of the text art. This property cannot be set.*
#Rotation	*The rotation in degrees of the art around its anchor point. Editing this value will rotate art.*
#Style	*The Character Style in use. Editing this property will apply the selected style to the art.*
#MapX	*The x-coordinate in the world units of the current point.*
#MapY	*The y-coordinate in the world units of the current point.*
#HorizontalScale	*The horizontal scaling of a point object. Editing this value will scale the text in the X axis.*
#VerticalScale	*The vertical scaling of a point object. Editing this value will scale the text in the Y axis.*
#Opacity	*The opacity level of the polygon. Editing this property will change the opacity of the art.*

Image layers

#LayerName	*The name of the containing layer. This property cannot be set.*
#ID	*The internal unique ID to refer to Adobe Illustrator artwork within the document. Read-only.*
#Name	*The name of the text field. Editing this property will change the name in the Layers panel.*
#PixelWidth	*The number of pixels across the width of the image.*
#PixelHeight	*The number of pixels across the height of the image.*
#Opacity	*The opacity level of the image. Editing this property will change the opacity of the image.*

Warning: The #ID property is not persistent. This means that if a document is saved and re-opened, the #ID value might change. The value will usually not change over the life of a document session, but there are Adobe Illustrator operations that can cause the value to change.

IMPORTANT ADOBE ILLUSTRATOR COMPATIBILITY NOTES

Some Adobe Illustrator functions may cause the link between artwork objects and their attributes to be broken, resulting in possible data loss. These functions are:

- Compound path (Make)
- Pathfinder
- Live Paint
- Gradient mesh
- Blob brush (Adobe Illustrator CS4)
- Shape-builder tool (Adobe Illustrator CS5)

By default, releasing a compound path also breaks the link between released paths and the attributes. To avoid this behaviour, users may enable the option **Replicate attribute data to compound path sub-components** in the MAPublisher Preferences for MAP Attributes. This option must be enabled *before* the attribute schema is created or updated for the attribute data to be copied to the compound path components. To fully enable this option, follow the simple steps below:

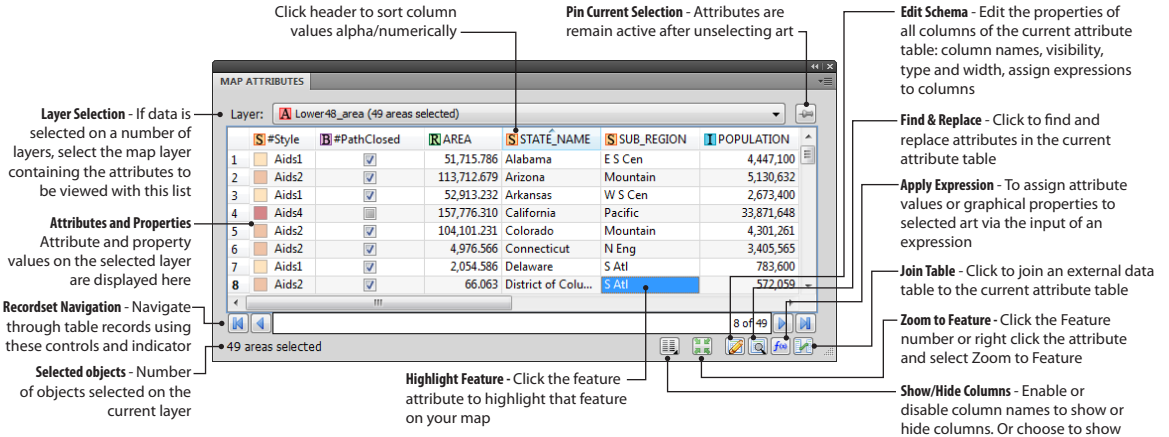
1. Enable **Replicate attribute data to compound path sub-components.**
2. Change the visibility status of one attribute column to force the attribute schema to update itself.
3. Release the compound path.

Note: This option has an impact on performance, so it should only be enabled if necessary.

If required, users should first duplicate their working layer in the Adobe Illustrator Layers panel before using these functions. The original layer can be kept for labeling (see chapter 10 and 18) or for information purposes.

MAP Attributes Panel

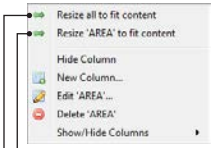
Window > *MAPublisher* > *MAP Attributes* and *MAP Toolbar*



Context menus

Right-click (Windows) or Ctrl-click (Mac) to display the menus:

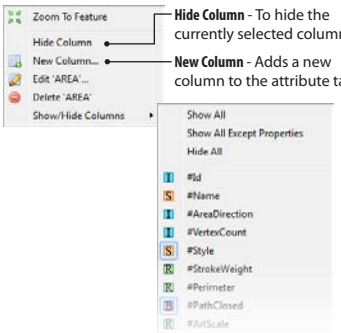
In column header:



Resize [column] to fit content Resize only the selected columns

Resize all to fit content Resize the width of all columns to fit the longest value

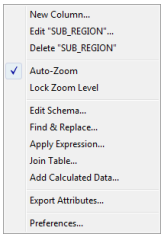
In a row:



Hide Column - To hide the currently selected column

New Column - Adds a new column to the attribute table

Panel options menu:



Edit Column - Edit the properties of the selected column

Delete Column - Delete the currently selected column

Auto-Zoom - When enabled, the map document will zoom to the selected attribute automatically

Lock Zoom Level - When enabled, locks the zoom level

Add Calculated Data - Add or edit an attribute column with calculated data

Export attributes - Export all selected attribute information to a delimited text file

Preferences - Opens the MAP Attributes panel preferences (see chapter 1)

FUNCTIONALITY

The MAP Attributes panel displays the map attribute and property attribute records for a map layer, which are linked to the graphic elements of the map, and makes them available for editing. This panel is also the hub from which you can edit column schemas, toggle visibility, add or delete columns, join tables, find and replace attributes, and apply expressions to selected art. Only the visible attributes of selected map features will be displayed in the dialog box.

USING THE MAP ATTRIBUTES PANEL

Viewing Attributes

Selected features are sorted by layer. The Layer drop-down list shows all the layers that currently have features selected, as well as the number of selected map objects for each layer (also reported at the base of the panel). The attribute values displayed in columns in the MAP Attributes panel can be sorted in ascending or descending order by clicking the column header. The widths of the columns may be changed by clicking the column separator and manually dragging it to resize as desired. Use the recordset navigation controls to scroll through table entries.

The type of attribute is indicated by an icon preceding the column name :


Boolean: column contains True or False values


Integer: column contains only whole numbers (limited to 10 digits)


Real: column contains numbers carrying decimal values


String: column can contain attributes that are both alpha and numeric

Edit Attributes

MAPublisher MAP Attributes panel is a fully editable spreadsheet environment. All attribute values may be edited except for certain MAPublisher Property attributes (see earlier in this chapter). To change the value of a cell, double-click it and enter the new value. Keep in mind that entered values must correspond with the column type (i.e. only enter numbers into a column of type Real or Integer). The edits will be immediately reflected in the map documents database records. Existing attribute records may also be edited or modified by performing a find and replace operation on them.

Column Visibility

Click the **Show/Hide Columns** button (or right-click [Windows] or Ctrl+click [Mac] on a column in the dialog box) to edit the column visibility, either toggling visibility for individual columns or for all columns. It is also possible to edit the visibility of attribute columns with the **Edit Schema** tool.

This function will also **Show All**, **Show All Except Properties** (show only attributes that are non-property attributes, consequently hiding any visible property attributes) or **Hide All**.

Zoom to Feature and Auto-Zoom

To zoom into a specific feature in the attribute table, select a single attribute and click the **Zoom to Feature** button. This will automatically fit this feature to the screen and highlight it—useful for closer examination or to simply locate it on the map. To highlight a specific feature on the page maintaining the current zoom level, click another attribute of that feature.

To automatically zoom to a selected feature, enable **Auto-Zoom** in the panel options menu. As long as it is enabled, the zoom will change every time a different feature is selected. Use **Lock Zoom Level** to maintain the same zoom level for all features selected afterwards.

Property Attributes

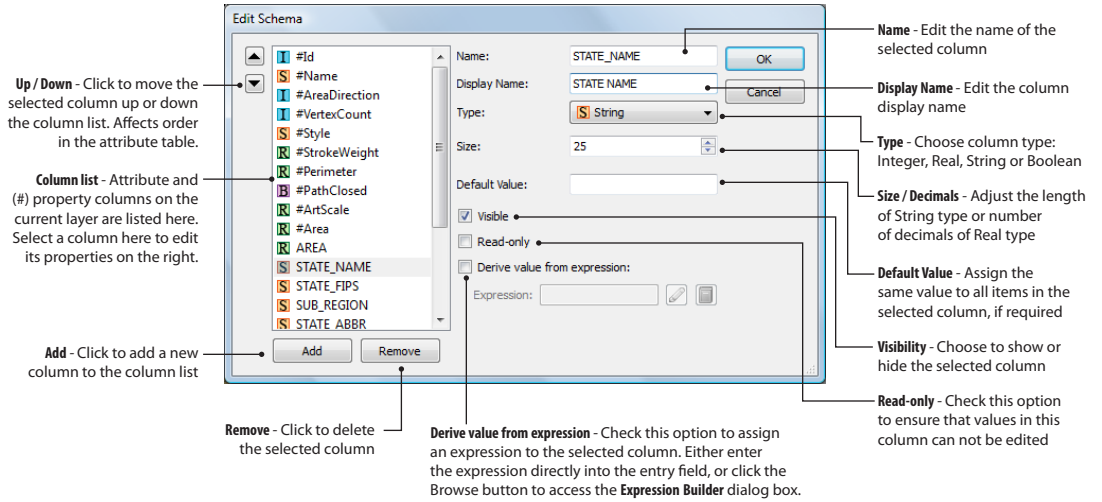
The attribute table can also be configured to display property attributes for datasets. These attributes describe the current assignment of graphical properties such as the stroke weight, style, rotation and scale. Some of these fields can be edited and provide the ability to modify a map object's graphical properties directly within the context of the MAP Attributes panel.

Pin Attributes

Click the Pin button to keep selected attributes active even after the artwork is unselected. This may be helpful during attribute editing when accidentally unselecting artwork may occur. To unpin attributes, click the Pin button again. When attributes are pinned, attribute values can be manually edited but the functions at the bottom of the panel are disabled except for *Zoom to Feature* (*Show/Hide columns*, *Edit Schema, Find and Replace, Apply Expression, Join Table* and *Add Calculated*). The *Export Attributes* function is also disabled.

Edit Schema

MAP Attributes panel > Edit Schema / Edit Column / New Column



In MAPublisher, the term **schema** is used to define the structure of the MAP Attributes table.

FUNCTIONALITY

The Edit Schema function provides settings to edit and manage the attribute structure of datasets, create, edit and delete columns, set visibility preferences and assign expressions. Any changes made to the schema will instantly be reflected in the MAP Attributes panel.

USING EDIT SCHEMA

Select map artwork containing attributes to populate the MAP Attributes panel. Click the **Edit Schema** button or menu item in the MAP Attributes panel options menu to open the Edit Schema dialog box.

Note: Edit Schema can also be accessed via the **Edit Column** context menu. Within the MAP Attributes panel, select the column to be edited, right-click the column heading or cell and click **Edit [column name]**. **Edit Schema** opens with the same column immediately selected in the column list.

Edit Schema lists all of the columns which currently exist in the MAP Layer attribute structure, including MAPublisher Property attributes (see previous section). By default, imported or created attributes will be visible, whereas property columns will not be shown by default. Please note some #Property column structures cannot be edited (read-only).

Edit Column Format

Each column has a name and display name. The name is used in the expression builder and for export. The display name is used when exporting to geospatial PDF (see chapter 16) and is shown by default in the column name in the MAP Attributes panel (see MAPublisher Preferences in chapter 1).

Punctuation characters are not supported in column names in order to avoid potential conflicts when exporting to external formats. The following illegal characters are replaced with an underscore '_' upon data import or join table:

```
space ` ~ ! @ # $ % ^ & * ( ) - + = { } [ ] | ; : " ' \ , < . > / ?
```

To rename a column enter new text directly into the **Name** field. All expressions referring to this attribute name are updated instantaneously.

Note: Some external file formats have limits on the number of characters allowed for field names. Therefore, during the export from MAPublisher, some field names may get truncated to comply to the chosen external file format. For example, Esri shapefiles are limited to 10 characters (confirmed up to ArcGIS 9.3), Esri Interchange File (.e00) to 16 characters, and MapInfo to 30 characters.

Once the name is set, specify a data type by making the appropriate selection in the **Type** list.

To modify the amount of characters or decimals, enter a value into the **Size/Decimal** text box (the maximum string size is 28000). A **Default Value** can be assigned for all new objects placed on the selected layer by entering text accordingly. Check or uncheck the **Visible** option to edit a column's visibility. Check or uncheck the **Read-only** option to edit a column's read/write status.

Check the **Derive value from expression** option to assign an expression to the selected column. Enter a valid expression in the Expression field or click the **Browse** button to enter and edit expressions via the **Expression Builder** dialog box. The **Expression Validity** icon will report if the expression entered is valid. Otherwise it will report and include additional warning notes. This function is useful, for example, to populate the column values based on the contents of other columns and/or mathematical formulas.

Note: Values derived from expressions are dynamically linked to the attributes used in the expression. Therefore, they are read-only. Use the **Apply Expression** function to generate values that can be modified.

The following are some examples of basic expressions that can be assigned to columns in *Edit Schema:*

Basic expression	Result
"Ontario" *(applied to column = NAME)*	*All items are assigned the value "Ontario" in the NAME column.*
"MAP Area 01" *(applied to column = #Style)*	*All area items are assigned the value "MAP Area 01" in the #Style column and are assigned the Graphic Style "MAP Area 01" on the page.*
45 *(applied to column = #Rotation)*	*All point items are assigned the value 45 in the #Rotation column and are rotated to 45° on the page.*

Note: String values are case-sensitive and must be entered between quotation marks ("...").

Add, Delete and Re-Order Columns

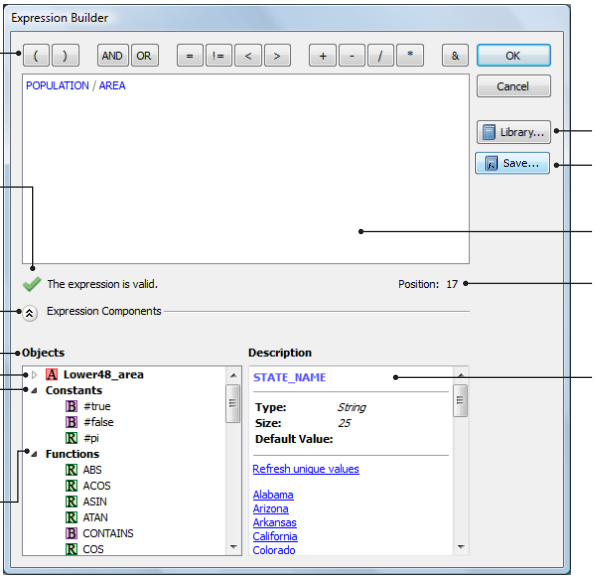
Columns display in the MAP Attributes panel according to the display order established in Edit Schema. The display order of attribute columns in the MAP Attributes panel can be set by reordering the existing column list. Any column may be moved up or down the list by selecting it and clicking the Up or Down buttons.

To create a new column, click the **Add** button and input the desired column properties. To delete an existing column, choose it from the column list and click the **Delete** button. Click **OK** to confirm the edits to the schema. These edits will be immediately visible in the MAP Attributes panel.

Expression Builder

Accessed from Edit Schema, Apply Expression, New/Edit MAP Selection, Edit Chart Theme, Edit Stylesheet Theme, Rule Generator

Expression Builder



Operator buttons - Click to insert an operator into the expression at the current cursor position

Expression Validity - Indicates if the expression is valid or invalid. If invalid, additional info is reported.

Advanced toggle - Click to show or hide the Expression Components section

Objects - List of attribute and property columns, constants and functions for use in the expression. Double-click items to insert into expression.

Layer attributes - List of the attribute and property columns

Constants - List of constants for use in the expression if required

Functions - List of functions for use in the expression if required

Library - Access all expressions for the document including recently used, attribute filters, named expressions

Save - Save the current expression to a named expression.

Expression Entry - Area to compose expressions

Cursor Position - Position of the current text entry point

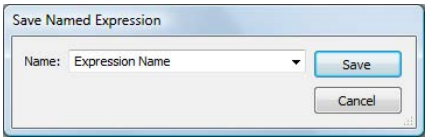
Description - Displays information about the selected item in the Objects panel, i.e. a description and example of the function or constant, or information regarding the format of the MAP layer along with its attribute values.

When selecting an attribute, click the link **Display unique values*** to display the attribute values of the selected attribute column.

**Display unique values only lists up to a maximum set in the MAPublisher Preferences for the Expression builder (see chapter 1 for more information)*

Save Expression

This dialog box appears when the Save button is clicked



FUNCTIONALITY

The MAPublisher Edit Expression tool is used for the entry and editing of expressions. It is used in a number of locations such as creating new attribute values and properties, making selections or apply styles. Expressions are built using a combination of names, operators and functions.

Edit Expression provides functionality for a number of tools:

Edit Schema: To create or edit an expression for the generation of values in an attribute or column.
(MAP Attributes panel > Edit Schema > Derive value from expression)

Apply Expression: To apply an expression to an attribute or property column for selected art only.
(MAP Attributes panel > Apply Expression)

New/Edit MAP Selection *(chapter 11)*: To create or edit expression criteria for use in selecting map data.
(MAP Selections panel > New/Edit MAP Selection)

Edit Stylesheet Theme *(chapter 9)*: To create or edit an expression for use in styling map data.
(MAP Themes panel > Edit [Stylesheet Theme name] > Advanced Expression mode

ENTER EXPRESSIONS

Expressions can be built by typing or by clicking the operator buttons and items in the **Objects** list (attribute name and values, constants and functions). These items are colour coded for easy identification: attribute names in purple, string values in orange, operators and numerical values in grey, constants in green and functions in black. Click any of the operator buttons or double-click an item from the **Objects** list to insert it into the expression.

It is recommended to use the interface rather than the keyboard to build expressions, to guarantee functions are formatted correctly (e.g. with brackets and appropriate case) and for attribute values of type strings, quotations marks are added automatically. Note that expressions are case-sensitive. For string comparison, all strings values can be converted to a same case using the appropriate function (*LOWER("string")* or *UPPER("string")*).

Validity

The validity of the expression will be displayed below the Expression Entry text area and will be updated as the expression is built. The **Expression Validity** icon will report if the expression entered is valid. Otherwise it will report and include additional warning notes.

Operator Buttons

Click to insert an operator at the current cursor position. Available operators are as follows:

(	*Open clause operator*	**<**	*Logical less than comparator*
)	*Close clause operator*	**>**	*Logical greater than comparator*
AND	*Logical AND operator*	**+**	*Mathematical addition operator*
OR	*Logical OR operator*	**-**	*Mathematical subtraction operator*
=	*Logical equal to comparator*	**/**	*Mathematical division operator*
!=	*Logical not equal to comparator*	*****	*Mathematical multiplication operator*
		&	*Text concatenate operator*

Expression Components

Items in the *Objects* list are divided into three function categories: math, string and miscellaneous. Information on a selected item is displayed in the Description panel. Double-click to insert an object at the current cursor position.

<MAP Layer>*

List of attribute columns†

List of #property columns

Constants

#false	*Boolean false value*
#true	*Boolean true value*
#pi	*π numerical value (3.141592)*

* Layer may vary depending on tool. For Edit Schema, Apply Expression and New/Edit MAP Selections, the current layer is displayed. In Edit Stylesheet Theme, all layers hosted by the stylesheet are displayed.

† Unique values contained in each attribute column can be viewed in the Description panel.

Notes: String values are case-sensitive and must be entered in double quotes ("...").

For functions using indexes for text position (*MID, SEARCH* and *SPLIT*), the first index number is 0.

Function	Description
ABS	*Absolute value of a number*
ACOS	*Inverse of the cosine of an angle*
ASIN	*Arcsine of an angle*
ATAN	*Arctangent of an angle*
CONTAINS	*True if source string contains search string*
COS	*Cosine of an angle*
DEGREES	*Converts values from radians to degrees*
ENDSWITH	*Returns true the source string ends with the suffix string*
FIXED	*Numbers as string values*
FROM_HEX	*Returns the decimal value of the hexadecimal string*
IF	*Conditional statement*
IF_CASE	*Conditional statement based on multiple cases*
LEFT	*Extracts the first N characters of a string*
LENGTH	*Returns the number of characters in a string*
LIKE	*Searches the source string using wild cards*
LOG	*Gets the logarithm of the value (base 10 log)*
LN	*Gets the natural logarithm (base e log, e = 2.718281828)*
MAX	*Returns biggest attribute value*
MAX_COLNAME	*Returns name of attribute which has biggest value*
MIN	*Returns smallest attribute value*
MIN_COLNAME	*Returns name of attribute which has smallest value*
LOWER	*Converts string to lower case*
MID	*Extracts N characters of a string from a specified location*
NUMBER	*String values as numbers*
POW	*Base to the power of an exponent*
PROPER	*Strings converted to capital case*
RADIANS	*Converts values from degrees to radians*
RAND	*Generates a random value between zero (min) and value (max)*
REGEX	*Searches the source string using a regular expression*
RIGHT	*Extracts the last N characters of a string*
ROUND	*Rounds to specified decimals of precision*
ROUNDDOWN	*Rounds down to specified decimals of precision*
ROUNDUP	*Rounds up to specified decimals of precision*
SEARCH	*Returns the position of a character in a string*
SIN	*The sine of an angle*
SPLIT	*Splits a string and extracts the indexed part of it*
SQRT	*Square root of a value*
STARTSWITH	*Returns true if the source string starts with the prefix string*
SUBSTITUTE	*Replaces a set of characters by another in a string*
SUBSTITUTE_RX	*Replaces a regular expression by characters in a string*
TAN	*Tangent of an angle*
TO_HEX	*Returns hex string version of value*
TRIM	*Removes all spaces in a text (except single ones between words)*
UPPER	*Converts string to upper case*

Examples of Basic Expressions

APPLY EXPRESSION

Expression	Result
"Ontario" *(applied to column = NAME)*	*All items are assigned the value "Ontario" in the NAME column.*
"MAP Area 01" *(applied to column = #Style)*	*All area items are assigned the value "MAP Area 01" in the #Style column and are assigned the Graphic Style "MAP Area 01" on the page.*
45 *(applied to column = #Rotation)*	*All point items are assigned the value 45 in the #Rotation column and are rotated to 45° on the page.*

MAP SELECTIONS

Expression	Result
NAME = "Ontario"	*All items with the value "Ontario" in the NAME column are selected.*
POPULATION < 1000000	*All items with values less than one million in the POPULATION column are selected.*
NAME = "Ontario" OR NAME = "Alberta"	*All items with the value "Ontario" OR "Alberta" in the NAME column are selected.*
NAME = "Ontario" AND POPULATION < 1000000	*Only the items containing the value "Ontario" in the NAME column AND values less than one million in the POPULATION column are selected.*

MAP THEME STYLESHEET

Expression	Result
NAME = "Ontario"	*All items with the value "Ontario" in the NAME column are assigned the selected style.*
POPULATION < 1000000	*All items with values less than one million in the POPULATION column are assigned the selected style.*
NAME = "Ontario" OR NAME = "Alberta"	*All items with the value "Ontario" OR "Alberta" in the NAME column are assigned the selected style.*
NAME = "Ontario" AND POPULATION < 1000000	*Only items containing the value "Ontario" in the NAME column AND values less than one million in the POPULATION column are assigned the selected style.*

EDIT SCHEMA

Expression	Result
LOWER(NAME) *(applied to column = name)*	*All items in column name are assigned the value of the column NAME in lower case (e.g. "ontario" for "Ontario")*
PROPER(name) *(applied to column = Proper_name)*	*All items in Proper_name are assigned the value of the column name in proper case (or capital case) (e.g. "Ontario" for "ontario")*
TRIM(JOINING_COLUMN)	*All items are trimmed with all spaces except single ones between words (e.g. " Route 66 " becomes "Route 66"). This is particularly useful prior to using the Join Table function because extra spaces at the beginning, end or in between words will cause the join to fail.*

Examples of Complex Expressions

MAP SELECTIONS or MAP THEME STYLESHEET

Expression	Result
LIKE (NAME, "*New*")	*All items with the string of letters "New" in the NAME column are selected (e.g. "New Brunswick" and "Province of Newfoundland")*
STARTSWITH (NAME, "o")	*All items that starts with the letter "o" ("Ontario") are selected.*

EDIT SCHEMA

Expression	Result
ROUND((POPULATION/ AREA),3) *(applied to column=density)*	*All items are calculated as "population divided by area", rounded to three decimals.*
IF_CASE("null", VALUE>0,"positive",VALUE<0, "negative")	*A default status of "null" is assigned unless the value is strictly greater than or less than zero.*
SUBSTITUTE_RX(ROAD_NAME,"\D","")	*All non digit characters (\D is the regular expression for non-digit character) are replaced by nothing (two double-quotes indicate that the new string is blank), therefore only numerical values are kept. For example, if the ROAD_NAME equals "Route 66", the result is "66". This can be useful to prepare an attribute table prior to labeling roads with road number rather than road names.*
SPLIT(GEOLOGIC_UNIT,"(",0)	*All items containing one or more open parenthesis are split in several text blocks (as many as there are open parenthesis, plus one), and returns the first block found (index 0). For example, if GEOLOGIC_UNIT equals "Qmw(Qc)", the result is "Qmw".*
SUBSTITUTE(SPLIT(GEOLOGIC_ UNIT,"(",1),")","")	*Removes all closing parenthesis (i.e substitute all closing parenthesis with nothing) in the result of the same SPLIT as above, that returns the second text block found (index 1). For example, if GEOLOGIC_UNIT equals "Qmw(Qc)", the result is "Qc": first the SPLIT function returns "QC)" and then ")" is removed with a SUBSTITUTE.*

More examples of each individual function can be found in the *Expression Builder* dialog box. Expand the *Expression Components*, choose a function or constant on the *Objects* list and the *Description* tab is updated with explanations and examples.

EXPRESSION LIBRARY

Expressions already entered in the MAP Attributes panel, MAP Themes stylesheets (see chapter 9) or MAP Selections panel (see chapter 11) can be reused by selecting them from the **Expression Library**.

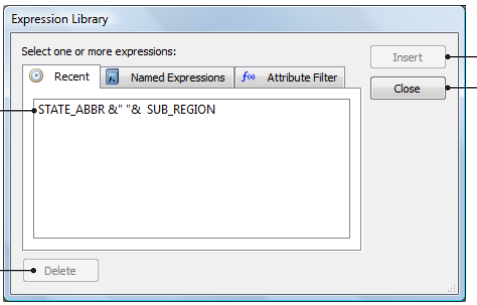
Expressions are sorted in three categories: *Recent, Named Expressions* or *Attribute Filter*. One or more entries can be selected per category. Click the Insert button to add the selection to the Expression Builder—multiple selections are concatenated with the AND statement.

Note: It is not possible to insert multiple expressions from different categories at once.

Recent Expressions

Expressions in the **Recent** tab of the Expression Library are expressions saved in memory for the time of the Adobe Illustrator session (they are reset if the document is closed). They correspond to expressions recently typed in the Expression Builder from the MAP Attributes panel or MAP Themes stylesheets but were not saved as a Named Expression.

To delete a recent expression, select it in the Expression Library dialog box and click the **Delete** button.

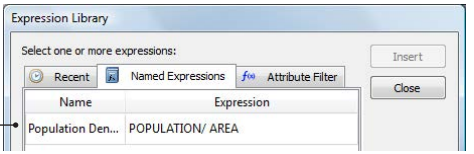


Note: In the MAP Attributes panel, expressions are saved in the recent list only when the Edit Schema dialog box is closed.

Named Expressions

Expressions entered in the Expression Builder can be saved as a *Named Expression* by clicking the **Save** button. Unlike the Recent expressions, named expressions are saved within the Adobe Illustrator document. They are listed in the **Named Expressions** tab of the Expression Library. To delete a named expression, select it in the Expression Library dialog box and click the **Delete** button.

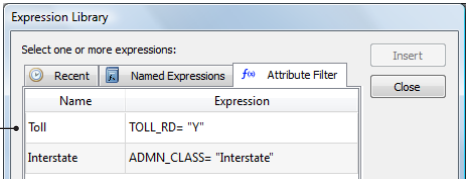
Named Expressions - Lists all the expressions saved through the *Save Named Expressions* dialog box. Select one or more entries in the list.



Attribute Filter Expressions

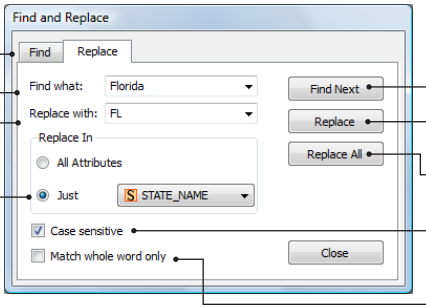
The **Attribute Filter** tab of the library lists the expressions in use in the MAP Selections of type *Attribute Filter*. See details on the MAP Selections panel in chapter 11. Attribute Filter expressions cannot be deleted from the Expression Library (only the the MAP Selections panel).

Attribute Filter Expressions Lists the Attribute Filter expression saved in the MAP Selections Panel (see chapter 11). Select one or more entries in the list.



Find & Replace Attributes

MAP Attributes panel > Find & Replace



Find / Replace - Choose to Find variables, or to Find and Replace variables simultaneously

Find what - Enter a variable on which to perform a search in the current attribute table. Note this list will also contain previous criteria.

Replace with - Enter a variable on which to replace found items. Note this list will also contain previous criteria

Find/Replace All Attributes / Just in Column - Perform the Find or Find & Replace on all attributes in the current layer or only in a specified column

Find Next - Move to the next value matching the *Find what* variable

Replace - Replace the selected value with the *Replace with* variable

Replace All - Replace all occurrences matching the *Find what* variable

Case sensitive - If checked, only values matching the case of the *Find what* variable will be found

Match whole word only - If checked, only words matching the *Find what* variable will be found (words containing the variable will be ignored)

FUNCTIONALITY

The Find & Replace tool provides settings to search and/or replace attribute values and properties contained in the MAP Attributes panel. Note that only values in visible columns can be found and/or replaced.

USING FIND & REPLACE 

Click the *Find & Replace* button at the bottom of the MAP Attributes panel or choose it from the panel options menu.

Find Only

Click the **Find** tab and enter the search criteria directly into the **Find what** entry field (previous criteria can be selected from the list). A search may be performed on all attributes by default, or only on specific columns contained within the MAP Attributes panel by enabling the **Just** option and choosing a column from the list. Criteria may be further refined by enabling the **Case sensitive** and **Match whole word only** options.

Click the **Find Next** button to perform the search. Search results can be seen in the MAP Attributes panel; the column header and row number containing the first matching record will be displayed in bold text. At this point, a search for individual records can be done again by clicking the Find Next button.

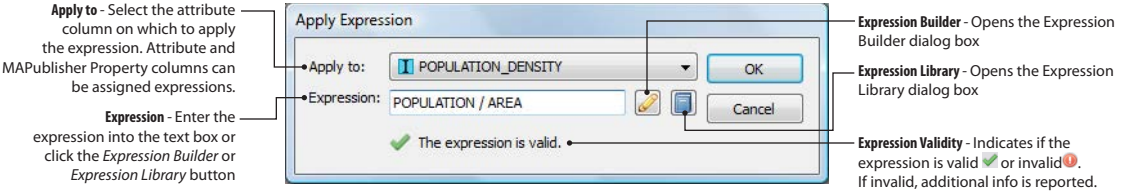
Find & Replace

To replace records selected through the *Find* operation click the **Replace** tab. Find & Replace criteria can be typed directly into the **Find what** and **Replace with** entry fields (previous criteria can be selected from the lists). A *find and replace* may be performed on all attributes by default, or only on specific columns contained within the MAP Attributes panel by enabling the **Just** option and choosing a column from the list. Criteria may be further refined by enabling the **Case sensitive** and **Match whole word only** options.

There are two methods to replace values. The first method requires approving each replacement manually by clicking the **Replace** button so that each instance of the attribute located via the search parameters is successively replaced in the map attribute table. The second method allows for the replacement of all found records simultaneously, accomplished by clicking the **Replace All** button.

Apply Expression

MAP Attributes panel > Apply Expression



FUNCTIONALITY

Use the Apply Expression function to assign new values or edit attribute properties. For example, it can be used to compute attribute values based on the values in other columns, to assign a style by editing the *#Style* property attribute, or to rotate symbols by assigning a fixed value to the *#Rotation* property attribute. Read-only attributes cannot be edited with Apply Expression.

Note that property attributes are dynamic. Changes made to them in the map attribute table are reflected immediately in the graphical properties and on-screen display of the data to which they are linked. Expressions can be generated and applied to data based on the values found in an existing attribute column, providing a one-step process to transform a vast number of different objects in a single operation.

Note: Unlike the **Derive Value From Expression** option in **Edit Schema**, values computed through **Apply Expression** are not tied to the original attributes constructing the expression and can be edited later on. Only currently selected artwork is affected by the changes.

APPLY EXPRESSIONS

Ensure the data required for the application of the expression is selected and appears in the MAP Attributes panel. Click the **Apply Expression** button or choose it from the panel options menu.

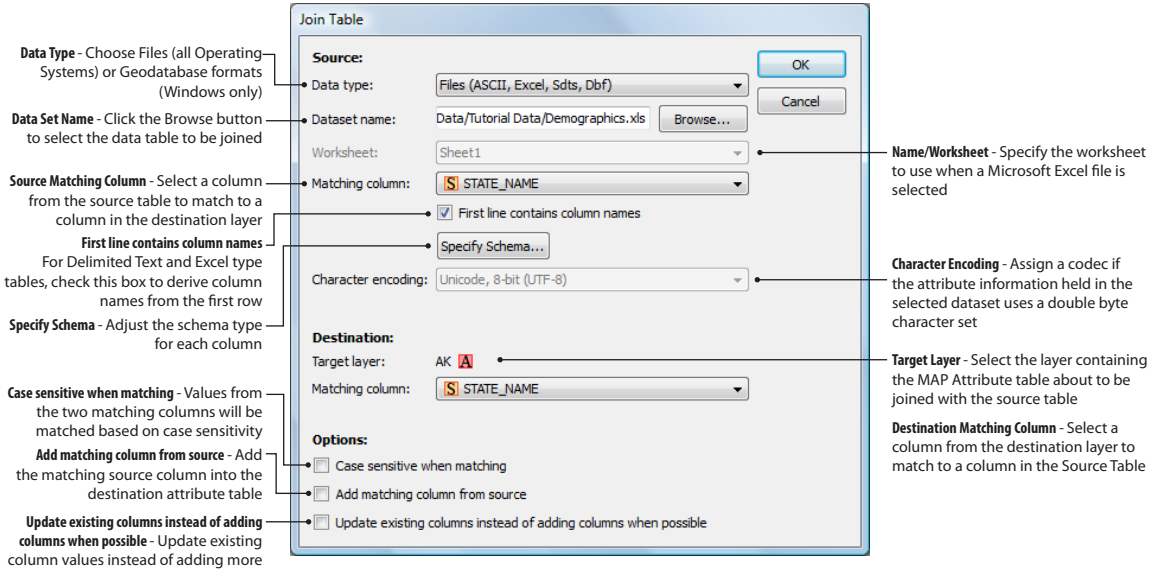
First specify a column from the **Apply to** list to specify which attribute column the expression will be applied to. The columns listed here are representative of the attribute structure unique to the data layer currently displayed in the attribute table as well as the standard MAPublisher property attributes.

To assign an expression to a column, enter a valid expression in the Expression text box. Alternatively, click the **Expression Builder** button to open the Expression Builder dialog box. To access other expressions saved in the map document, click the **Expression Library** button to open the Expression Library dialog box.

The **Expression Validity** icon will report if the expression entered is valid. Otherwise it will report and include additional warning notes.

Join Table

MAP Attributes panel > Join Table



FUNCTIONALITY

Join Table provides the ability to merge external data tables directly into an existing MAP Layer attribute schema in order to create a single extended attribute table. Four of the most common table formats are supported:

dBase (*.dbf)	**Delimited Text** (*.csv, *.tsv, *.txt)
USGS SDTS (*.ddf)	**Microsoft Excel** (*.xls)

When exporting tables from spreadsheet applications for use with MAPublisher the preferred format to use is Delimited Text (*.csv).

Note: dBase tables created or edited in Microsoft Excel must have a proper data type assigned to each column through cell formatting before being saved as dbf. For example, numerical values specified in a cell set with a format "General" will import as an Integer type by default, therefore loosing all decimal values.

Windows users with licensed Esri software can join tables with feature classes and non-spatial tables of geodatabases (ArcSDE, File and Personal). For information on Esri software requirements for this option, please refer to chapter 3.

PREREQUISITES

In order to join a table into an existing attribute schema, both MAP Layer and data table must share at least one common attribute column with matching values. The column must be of a matching type (i.e. String, Real, Integer, Boolean) in both the Source and the Destination table. If not, the join may not be successful.

USING JOIN TABLE 

Click the **Join Table** button or choose Join Table in the MAP Attributes panel options menu.

Source Data (Files)

Click the **Browse** button to select the data table for import. If a Microsoft Excel file is selected, use the **Worksheet** drop-down list to specify the sheet to be used for joining. Select a column in the **Matching Column** drop-down list. This is the source attribute column to join on.

In MAPublisher, double-byte characters are supported in attributes on import, allowing such attributes to be used for labeling and export. To assign a codec suitable for the selected dataset, choose an appropriate entry from the **Character Encoding** drop-down list.

If the table contains column names as headers, check the **First line contains column names** option. If it does not contain headers, do not check this option and each column will be assigned a default heading name: *Column1, Column2*, etc.

Source Data (Esri geodatabases)

Windows users with licensed Esri software can join tables with feature classes and non-spatial tables of geodatabases (ArcSDE, File and Personal are supported but not the multi-OS *Basic Personal Geodatabase*).

If the **Data type** drop-down list is set to *Esri ArcSDE Geodatabase,* click the **Browse** button to select the ArcSDE server connection and then select the appropriate feature class or non-spatial table. If the **Data type** drop-down list is set to *Esri File Geodatabase* or *Esri Personal Geodatabase*, click the **Browse** button to select a feature class or non-spatial table. Please refer to chapter 3 for information on ArcSDE server connection and feature class selection.

The attribute selection is the same as for *Files* source data.

Destination

The Target Layer is specified under the Destination section. Choose an attribute from the **Matching Column** drop-down list. This column must match the format and values as the column chosen as the Source Matching Column.

Additional Option

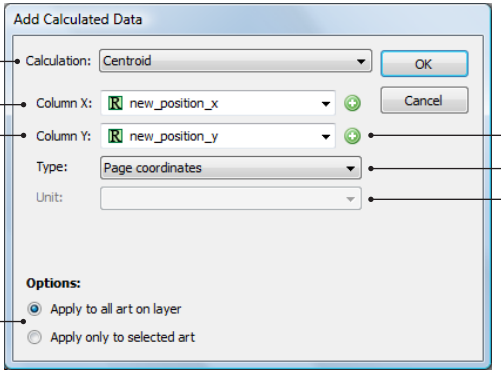
If the **Case sensitive when matching** option is checked, the column entries from the two matching columns will only be matched by case. If the **Add matching column from source option** is checked, the source column is also imported and the column name is appended with the number 1. The **Update existing columns instead of adding columns when possible** option attempts to update attributes instead of appending more columns to the table.

Note: Attribute names can not contain all numbers. If a source column name contains all numbers the column is joined but the attribute column name is changed to *Attribute1, Attribute2*, etc.

Add Calculated Data

MAP Attributes panel options > Add Calculated Data

Add Centroid / Position Data



Calculation - Set the type of calculation:
- *Centroid* (area and line layers)
- *Position* (point layers)
- *North Angle* (point layers)
- *Statistics* (all layers)

Column X - Select or add the attribute column to receive the x position value

Column Y - Select or add the attribute column to receive the y position value

Options - Apply the calculation to all art or only selected art

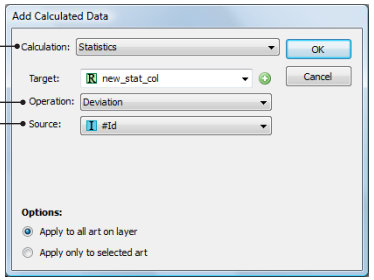
Status - icon indicates that a new column is created, icon indicates that an existing column is being updated

Type - Select the type of coordinates:
- *Page coordinates*: position in Adobe document page units
- *Projected coordinates:* available if the coordinate system of the MAP View is projected
- *Geodetic coordinates*: Longitude/ Latitude position
- *WGS84 coordinates*: Longitude/ Latitude position

Unit - Set the unit when *Projected coordinates* or *Geodetic coordinates* is selected as Type

Not available for text layers

Add Statistics Data

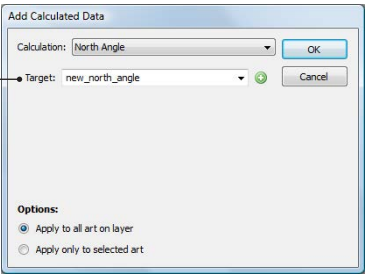


Target - Select or add the attribute column to receive statistic values

Operation - Specify the operation to be performed: *Distribution, Deviation, Sum, Mean* or *Standard Deviation*

Source - Select the attribute column to be used as source for the calculations

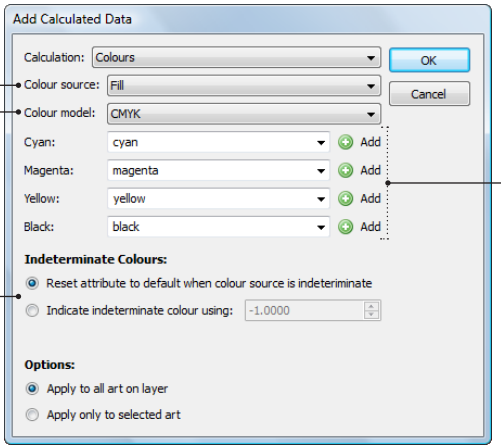
Add North Angle Data



Target - Select or add the attribute column to receive north angle values

This option only available when point data is selected

Add Colour Data



Colour source - Choose the colour source as the fill or the stroke of the layer or objects

Colour model - Choose the colour model: CMYK or RGB

Indeterminate Colours - Colours that cannot be determined (such as gradients) are reset or a specific value can be specified

Colour attribute labels - Specify attribute labels to the associated CMYK or RGB colours. Labels must be unique.

Not available for point layers

FUNCTIONALITY

The **Add Calculated Data** function populates existing or new MAP Attribute columns with values calculated from the art geometry or from another column of numerical values. The calculation options are:

- Geographic information: *centroid* position for lines and areas or *position* and *north angle* for points .
- Perform statistic calculations based on the overall attribute data of a specified column.

Calculated values are not updated automatically when the source column changes. *Add Calculated Data* must be run again for updates to be applied.

For single polygons, the centroid can be assimilated to the center of mass of the surface. For single lines, the centroid is the mid-point of the line. For polygons or lines grouped into a compound path, the centroid of the largest polygon or line is used.

Note: The centroid of a Bezier polygon (smoothed path) may not be completely accurate because only the anchor points are used to calculate the centroid's position. If necessary, use the Adobe Illustrator **Add Anchor Points** function (*Object* > *Path* > *Add Anchor Point*s) before running Add Calculated Data.

Calculated data can be added or updated to all art on a layer or only to the selected art, however statistical calculations are based on the entire dataset.

PREREQUISITES

Add Calculated Data can populate new or existing attribute columns. Only attributes of type Real can be updated, so users should make sure that the proper data type is applied to these columns.

For statistics calculations, the source column must be numerical (Integer or Real type). Users may need to use the *Join Table* function to import appropriate numerical data beforehand (e.g. election results per county). See *Edit Schema* in this chapter.

USING ADD CALCULATED DATA 

Make a selection on the MAP layer concerned and click **Add Calculated Data** from the MAP Attributes panel options menu.

Calculate Centroid or Position

If the selected data is on a *Line* or *Area* MAP Layer, choose *Centroid* from the **Calculation** drop-down list to calculate the x and y position of the line or area centroids. If the selected data is on a *Point* MAP Layer, choose *Position* from the **Calculation** drop-down list to calculate the x and y position of points in a specific coordinate format.

Note: Centroids positions are calculated using the low accuracy method (see chapter 6 on Plot Centroids for details).

In the **Column X** and **Column Y** drop-down lists, users have the option to keep the default new column names (*new_position_x* and *new_position_y*), type names of their choice, or select an existing column. Only existing columns of data type Real are listed.

The positions coordinate format is set in the **Type** drop-down list. The options are:

- **Page coordinates**: x and y positions relative to the Adobe Illustrator page reference, in page units (as specified in the Adobe Illustrator document setup).
- **Projected coordinates**: x and y positions in the source coordinate system of the MAP View containing the selected layer (if this system is projected).
- **Geodetic coordinates**: longitude and latitude positions — calculated from x and y positions if the source coordinate systems of the MAP View containing the selected layer is projected.
- **WGS84 coordinates**: longitude and latitude positions — calculated from x and y positions if the source coordinate systems of the MAP View containing the selected layer is projected.

The **Unit** drop-down list shows a selection of linear or angular units if the coordinate type is set to *projected* or *geodetic* respectively.

Finally, set the option to calculate the centroid or position to the selected art only or to all art on the current layer.

Calculate Statistics

To calculate statistics based on a source attribute column, choose *Statistics* from the **Calculation** drop-down list.

The following statistical operations are available:

- **Deviation**: for each row, difference between the current value and the mean.
- **Distribution**: for each row, current value divided by the sum.
- **Mean:** sum of all the row values divided by the number of rows in the source column (same for all rows).
- **Standard Deviation**: measure of the variability or dispersion of the row values in the source column. A low standard deviation indicates that row values are very close to the mean, whereas high standard deviation indicates that row values are spread out. Calculated as the square root of the sum of all deviations squared, divided by the number of rows in the source column (same for all rows).
- **Sum**: addition of all the row values in the source column (same for all rows).

In the **Target** drop-down list, users have the options to keep the default new column name (*new_stat_col)*, type a name of their choice, or select an existing column. Only existing columns of data type Real are listed.

Then, select the required function in the **Operation** drop-down list. *Deviation* and *Distribution* calculate a value specific to each row; *Mean, Standard Deviation* and *Sum* create a single value for all rows.

In the **Source** drop-down list, select the source column from within all numerical attributes of the current layer. Users have the option to add calculated data to all art on a layer or only to the selected art, however statistical calculations are based on the entire dataset of the source column

Note: To obtain a distribution in percents, first use *Add Calculated Data* with the *Distribution* operation, then use the *Apply Expression* function to multiply the column values by 100 (e.g. COLUMN = COLUMN * 100).

Calculate North Angle

To calculate north angles of points on a *Point* layer, , choose *North Angle* from the **Calculation** drop-down list.

Calculate Colours

To calculate colours of layers or objects, choose *Colours* from the **Calculation** drop-down list.

In the **Colour source** drop-down list, choose from either *Fill* or *Stroke* of the current layer or objects. This will be the source of which MAPublisher retrieves the colour values from.

In the **Colour model** drop-down list, choose from either *CMYK* or *RGB*. This will change the available colour attribute label boxes below it and set the colour attribute values. When CMYK is chosen, colour values in the attribute table are populated with Real numbers. For example, a cyan value of 0.2562 is equivalent to 25.62 in the Adobe Illustrator Color panel. When RGB is chosen, colour values in the attribute table are populated with Integer numbers.

By default, the colour attribute label boxes are populated with the name of the colour. These are the attribute column heading names and can be edited, however, they must remain unique. An indicator to the right of the box displays either "Add" or "Update". When calculating new colour attribute values and a new label is entered, the indicator will display "Add". It is possible to update the values in the attribute table when the colour of the layer or objects are changed. When using the same attribute labels, the indicator will display "Update". This overwrites the existing colour values in the attribute table.

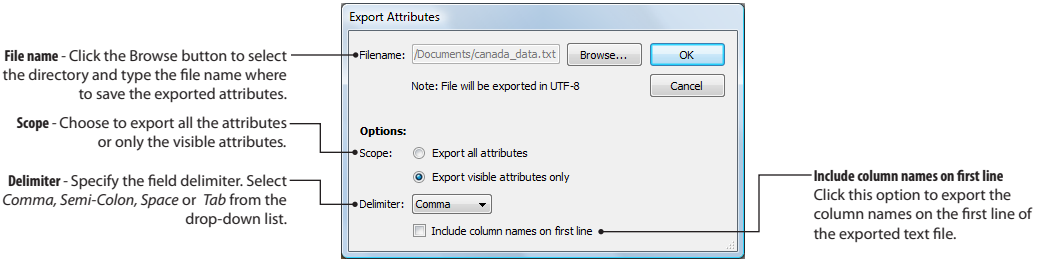
Indeterminate colours are colours that MAPublisher cannot determine for a layer or object. The colour value will not be calculated if:

- objects do not have fill or stroke
- objects have gradient colour
- objects have patterns or hatches
- objects have colors not in CMYK or RGB (e.g. Pantone)
- colourrs are applied to the layer group (not object level)

In the Indeterminate Colours section, two options are available to deal with these situations. *Reset attribute to default when colour source is indeterminate* sets the attribute values to 0 (zero). The *Indicate indeterminate colours using* option allows you to specify a specific value. The default is -1.0000.

Export Attributes

MAP Attributes panel options > Export Attributes



FUNCTIONALITY

The Export Attributes function exports all selected attribute information from the current MAP Layer to a delimited text file—comma, semi-colon, space or tab separated.

PREREQUISITES

Attributes will be exported as they are in the MAP Attributes panel. For example, users can change the number of decimals for attributes of type Real prior to exporting (see **Edit Schema** in this chapter), to limit the size of the exported file—or to turn on/off the visibility of some attributes, with **Edit Schema** or the MAP Attributes panel **Show/Hide** function.

USING EXPORT ATTRIBUTES

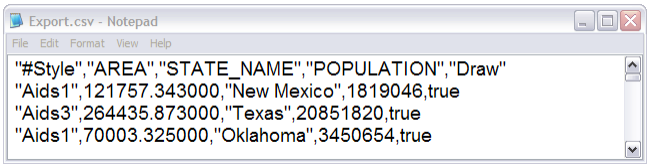
Export attributes is accessed from the MAP Attributes panel options menu.

In the Export Attributes dialog box, click the **Browse** button to navigate to the directory where the exported file will be saved and type a file name. By default, the exported file will be appended a .txt extension—to export in another delimited text format, type another file extension (*.csv or *.tsv) in the file name (e.g. world.csv).

Users have the following options to set:

- Export all attributes or visible attributes only.
- Set field delimiter in the exported text file to *Comma, Semi-Colon, Space* or *Tab.*
- Export or not the column names on the first line.

The result is a delimited text file. Text attributes (type String) are exported in double quotes ("...") and are separated by commas in example below.





Plotting Points

The ability to accurately place points onto a map is basic to cartography. Points can represent the locations of towns and cities, shops and malls, airports and train stations and more. MAPublisher provides the functionality to create or plot points in vector format.

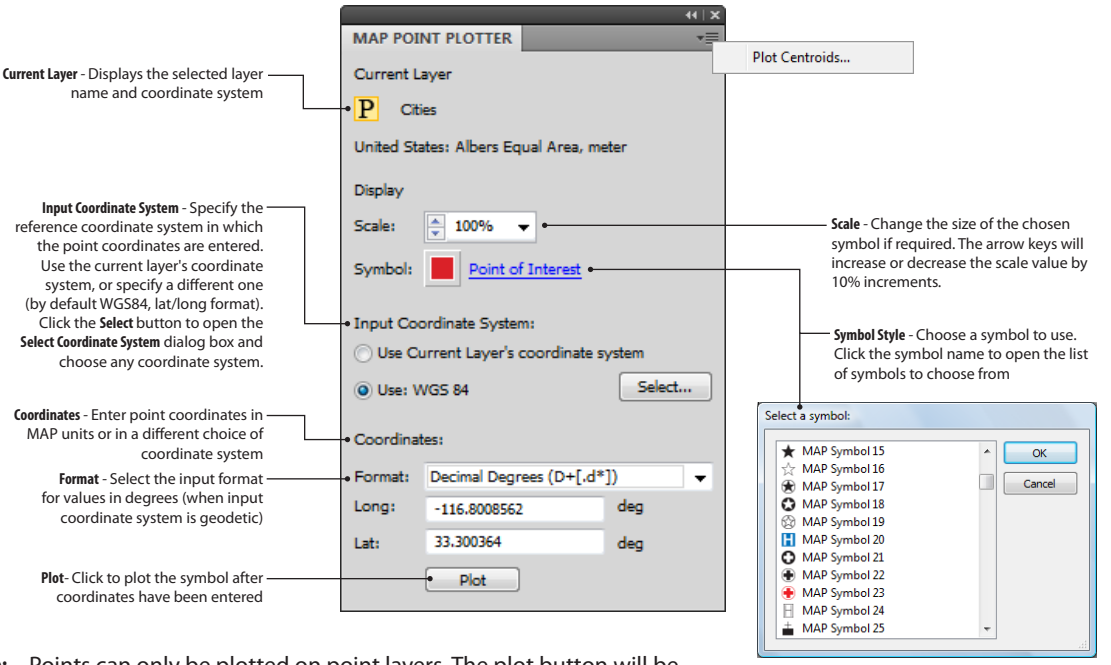
There may be times when you wish to quickly add a point or a small group of points to your map but you do not have a GIS or ASCII file containing these points ready for import. Alternatively your map may be in a projection that holds coordinates in linear units, yet the coordinates of your point locations are in angular units (i.e. degrees).

Provided you have a fully specified MAP View, and know the coordinates (coordinate system and unit can be specified) for the locations you wish to plot, you can use the MAPublisher Point Plotter to have your points placed at their correct locations.

Topics covered in this section:
MAP Point Plotter
Plot Centroids

MAP Point Plotter

Window > *MAPublisher* > *MAP Point Plotter* and *MAPublisher Toolbar*



Note: Points can only be plotted on point layers. The plot button will be disabled if another map layer type is the active layer.

PREREQUISITES

In order to plot points using the Point Plotter, a fully georeferenced MAP View must be chosen, as this function will use the coordinate system in order to generate points. Use an existing Point layer or create a new Adobe Illustrator layer as the destination layer to plot the points. Remember to drag a new layer into the desired MAP View and specify it as **Point** in the Define Layer dialog box.

USING POINT PLOTTER

Enter Coordinates

When the **Use Current Layer's coordinate system** option is selected, coordinate values can be entered in the current MAP units of the coordinate system of the MAP View containing the selected layer.

When the **Use: WGS 84** option is selected, the **Select** button will become enabled. Clicking the **Select** button will open the **Select Coordinate System** dialog box and choose a coordinate system as required.

When the selected or default coordinate system is projected, X and Y coordinates are entered in the unit (Point Style) of the coordinate system (e.g. metre, kilometre, feet). When the selected or default coordinate system is Geodetic, Lat/Long coordinates can be entered in degrees in the following formats:

- Decimal degrees (D+[.d*])
- Delimited Degrees Minutes Seconds (D+ MM SS[.s*])
- Degrees.Minutes (D+.MM[m*])
- Degrees.MinutesSeconds (D+.MMSS[s*])
- Packed DMS with decimal point((D)DDMMSS[.s*])
- Packed DMS ((D)DDMMSS[s*])

Notes: Items in [ ] are optional, * means zero or more digits, + means one or more digits.

Lines of latitude run East-West (the Equator is an example), whereas lines of longitude run North-South (the Greenwich Meridian is an example). Positive degree values represent north latitudes and east longitudes. Negative degree values represent south latitudes and west longitudes. Directions can be entered either with positive/negative values or using the N, S, E or W letters preceding or following the numerical values, separated or not with a space.

Valid delimiters for *Delimited Degrees Minutes Seconds* format are:

→ *space, hyphen* (-), *colons* (:) or *underscore* (_), e.g. 43 41 48.98N, 43-41-48.98N, 43:41:48.98N or 43_41_48.98N

→ *d* (degree), *single quote* (minute), *double quote* (second), e.g. 43d41'48.98"N

Packed formats require the use of two digits for degrees of latitude (e.g. 1°N must be written 01) and 3 digits for degrees of longitude (e.g. 1°E must be written 001).

Examples of Latitude/Longitude values

Formats		Decimals Degrees	Delimited Degrees Minutes Seconds	Degrees.Minutes	Degrees. MinutesSeconds	Packed DMS with decimal point	Packed DMS
Avenza Office: **43°41'48.98"N 79°23'32.38"W** (= 48°41.8163'N | 79°23.5396"W) (= 48.6969°N | 79.3922°W)	Lat	43.6969N	43d41'48.98"N	43.418163N	43.414898N	434148.98N	43414898N
	Long	79.3922W	79d23'32.38"W	79.235396W	79.233238W	0792332.38W	079233238W
	Lat	43.6969	43 41 48.98	N43.418163	N 43.414898	434148.98	N 43414898
	Long	-79.3922	W 079 23 32.38	W79.235396	W 79.233238	-0792332.38	W 079233238
	Lat	N 43.6969	N 43-41-48.98	43.418163	43.414898	N 434148.98	43414898N
	Long	-079.3922	W 79:23:32.38	-079.235396	-079.233238	W 0792332.38	-079233238

Warning - *Double-quotes (") are supported in MAP Point Plotter, but not in the import of Delimited Text.*

Set up the Symbol Selection

The symbols used by Point Plotter are a direct reproduction of those that exist in the Adobe Illustrator **Symbols** panel. To open the Adobe Illustrator Symbols panel, click the menu *Window* > *Symbols*. To add symbols to the Symbols panel, create symbols as closed Adobe Illustrator objects and drag them into the panel. Alternatively, open the Symbols panel, click the panel options menu > *Open Symbols Library* > *MAP Symbols* > *MAP - Symbols*. The **MAP - Symbols.ai** file from the *Helpful Styles & Symbols* folder is installed with MAPublisher (see Appendix 4).

Choose a Symbol and Scale

After entering coordinate values select an appropriate symbol to use by clicking the symbol name link. Again the symbols displayed are the symbols that currently exist in the Adobe Illustrator Symbols panel. To scale the symbol used, edit the **Scale** entry field. Clicking the **Up** and **Down** arrows will increase or decrease the value by 10%.

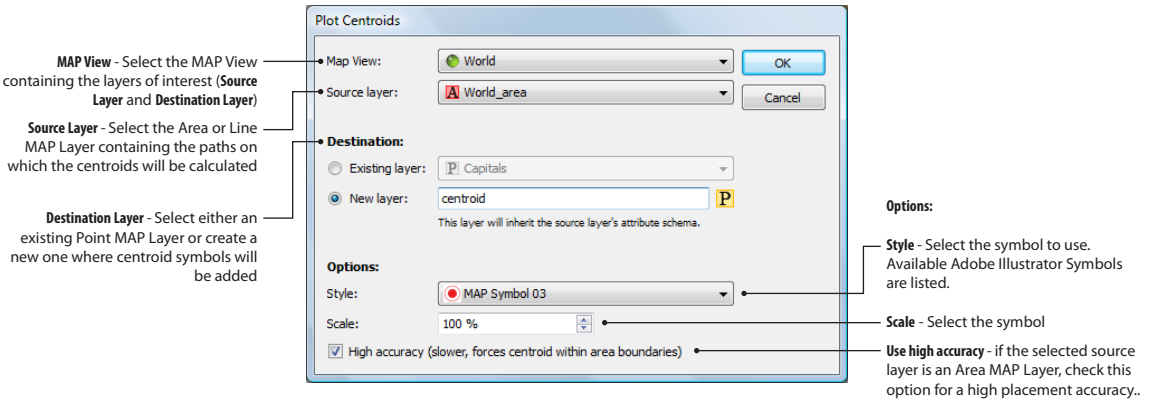
Note: When a MAP Themes stylesheet is assigned to a Point layer, it will override the map symbol chosen in the MAP Point Plotter panel.

Plot Points

Click **Plot** to plot the point in the designated MAP layer. To plot subsequent points, edit the coordinates, and also choose different symbols if required and click Plot again.

Plot Centroids

MAP Point Plotter panel > Plot Centroids



FUNCTIONALITY

The **Plot Centroids** function adds point symbols at the center of polygons or line, while copying the attributes from the source MAP layer when the *New Layer* option is selected. This function is useful for cartographic generalization purpose (e.g. replacing small island area by a symbol), or to simply add a meaningful symbol at the center of areas. For single polygons, the centroid can be assimilated to the center of mass of the surface. For single lines, the centroid is the mid-point of the line. For polygons or lines grouped into a compound path, the centroid of the largest polygon or longest line is used.

Note: The centroid of a Bezier polygon (smoothed path) may not be completely accurate because only the anchor points are used to calculate the centroid's position. If necessary, use the Adobe Illustrator **Add Anchor Points** function (*Object* > *Path* > *Add Anchor Point*s) before running Plot Centroids on Bezier polygons.

PREREQUISITES

The document must contain a fully georeferenced MAP View that includes a MAP layer of type Area or Line that contains art. An existing Point layer may be used as destination layer (*Existing Layer* option), in which case this layer must be included in the file before running the function. Furthermore, the desired symbol must be present in the Adobe Illustrator Symbols panel.

USING PLOT CENTROIDS

Plot Centroids is located in the Point Plotter panel options menu.

- Select first the **MAP View** that contains the layers whose centroids are to be plotted..
- Select the **Source Layer** containing the polygons or lines for which the centroids will be plotted (MAP Layer of type Area or Line).
- Select the symbol **Style** and **Scale** to apply.
- Choose the **Destination Layer** in which the centroids will be added: select an existing Point layer or create a new one.

The high placement accuracy option makes more advanced calculations for the centroid positions so as to force them to fall within the area boundaries (useful for areas with strange shapes, for example some S shape islands).

Note: When the *New Layer* option is enabled, the attributes from the source MAP layer are copied to the new Point layer. However, when using an existing point layer, attributes do not get transferred unless the Point layer was created with its attribute schema based on the same source MAP Layer (see chapter 4 for more information on the *Base attribute schema on* option when creating new MAP layers).

RESULTS

Symbols are added to the specified Point MAP Layer. Depending on the type of polygon or line (single or compound path), symbols are located on the center of the polygons/lines or at the center of the biggest polygon/longest line of a group.

Example: result of plotting centroids on a Canadian provincial Area layer.





Drawing Tools

MAPublisher benefits from Adobe Illustrator drawing tools. Any artwork created on a specified MAP layer is incorporated into the map data and can be scaled and projected. If the new artwork is of the same feature type as the MAP Layer, it will automatically be added to the attribute table.

Similarly, objects can be deleted and moved between layers with basic Adobe Illustrator tools which makes it very easy to quickly add and delete features to MAP Layers.

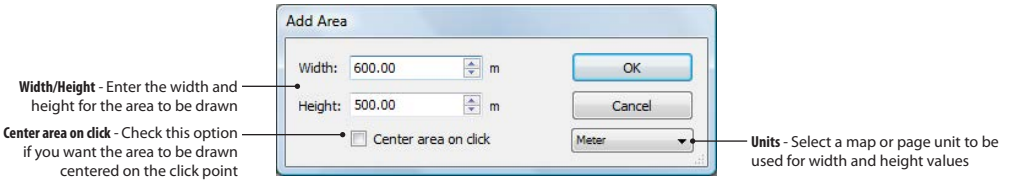
In addition, MAPublisher provides its own tools for creating and managing artwork. **MAP Area Tools** are designed to draw rectangular and elliptical areas of specified dimensions in MAP Units. The **MAP Vector Crop Tool** trims all the vector data (on all active layers) falling outside of a crop area. The **MAP Measurement Tools** allows users to measure distances in page or world units and to save the measuring path as an art.

Topics covered in this section:

MAP Area Tool
MAP Vector Crop Tool
MAP Measurement Tool

MAP Area Tools

Tools > MAP Area Tool (Box) / *MAP Area Tool (Ellipse)*



FUNCTIONALITY

Use the **MAP Area Tools** to quickly add areas of exact map dimensions to any MAP Layer and its related attribute table. Whenever an area is created using the MAP Area Tools, any art objects that are fully contained in or intersect the new area are automatically selected.

USING THE MAP AREA TOOLS

Click and hold the MAP Area Tools button to select either the **Ellipse** or **Box** area tool. There are two methods of using the MAP Area tools: click and drag or enter specific dimensions.

Draw using Click and Drag

To draw shapes at unspecified sizes, click and drag in the MAP document while holding down the left mouse button until the desired area has been outlined. Use the **Alt** key (Windows) or the **Option** key (Mac) to draw from the centre and/or the **Shift** key to constrain the proportions. Release the left mouse button to finish drawing the area.

Enter Specific Dimensions

To draw shapes at specified sizes, single-click at a point in the MAP document at the desired location to plot the shape. In the MAPublisher **Add Area** dialog box that opens, enter specific dimensions for the area to be drawn. To have the area centered over the click point, simply check the **Center area on click** check box. If the check box is not checked, the shape will be drawn from its upper left corner. Click OK to draw the shape.

RESULTS

Drawing an area using either of these methods will select the features that are fully contained in or intersect the new area. Therefore, these tools can be also useful for selecting features that are within designated distances away from a central location.

MAP Vector Crop Tool

Tools > MAP Vector Crop 

FUNCTIONALITY

Use the MAP Vector Crop Tool, to trim a map (vector data only) to a rectangular area of interest. Typically, the tool is meant to crop imported vector data that might be covering a larger area than the intended map extents. Used on a copy of the full original MAP View, MAP Vector Crop can also be utilized to create map insets (smaller maps centered on specific areas)—see example below.

PREREQUISITES

Before using the **MAP Vector Crop Tool**, ensure that the layers to be trimmed are visible and unlocked in the Adobe Illustrator Layers panel (invisible and locked layers are not cropped). Similarly, layers that are not supposed to be cropped should be locked or invisible. The extent of the map that will remain after cropping must be visible on the screen**,** so make sure to zoom out sufficiently prior to starting the vector crop tool.

Users should save a copy of the Adobe document prior to performing a crop. Due to some Adobe Illustrator limitations, text typed on a path might not return to their prior state after an undo.

USING THE MAP VECTOR CROP

Click the **MAP Vector Crop Tool** button  in the Adobe Illustrator Tools panel, then click and drag a rectangle over the artboard. Upon release of the mouse button, the crop function is completed.

If the remaining map is too large, the MAP Vector Crop can be run again on the remaining data.
If the remaining map is too small, the MAP Vector Crop can be undone (menu *Edit* > *Undo*) and run again.

RESULTS

On all visible and unlocked layers:

- Text objects that have their anchor outside of the cropping rectangle are deleted. Text objects with their anchor inside the cropping rectangle are retained completely.
- Points falling outside of the cropping rectangle are deleted (the position of the center of the symbol is relevant). Symbols that have their center inside the cropping rectangle are maintained as a whole.
- Lines are clipped at the boundary of the cropping rectangle.
- Areas (polygons) that are completely out of the cropping rectangle are deleted. Areas intersecting with the cropping rectangle are clipped and closed following the edge of the rectangle.

The overall result is a map coverage reduced to the cropping rectangle outline. Subsequently, the MAP View can still be transformed, rescaled, and so on. See examples on the next page.

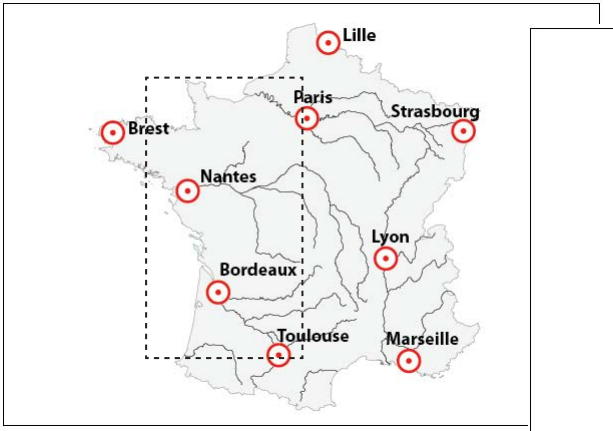
Note: The purpose of the MAP Vector Crop is to cut vector data types (points, lines and polygons). Some Adobe Illustrator specific objects might not be cropped properly using this tool, for example:

- Blend and Live Paint objects.
- Any art using effects that have been rasterized.
- Custom art such as scale bars, grids/graticules, north arrows *(expand custom art to crop)*.
- Images cannot be cropped with this tool.
- Legacy Text

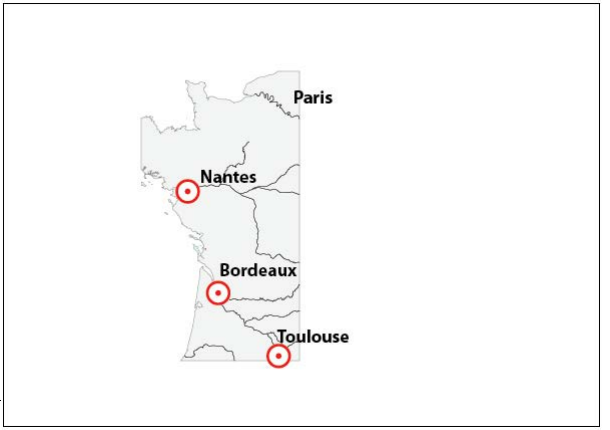
Note: Due to an Adobe Illustrator limitation, text on a path may flip after a crop operation. This is corrected by checking the **Flip** option from **Type on the Path Options** dialog box (choose *Type* > *Type on a Path* > *Type on a Path Options*).

Examples

Crop vector data



Original map

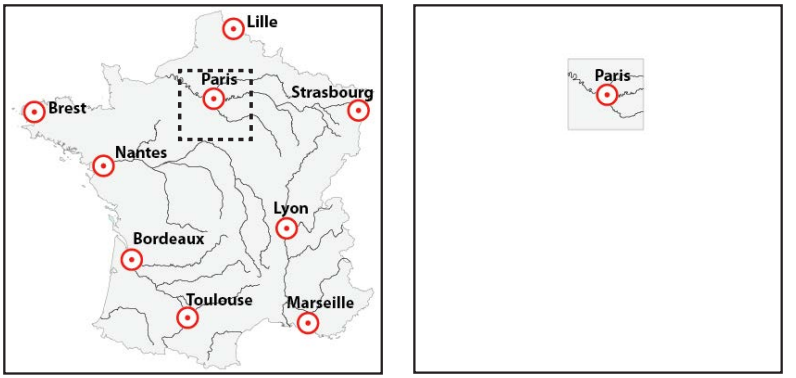


Crop result: lines and area are clipped, text with 1st letter within the cropping rectangle and symbol with center point in rectangle are maintained. The MAP view can be re-scaled to fit better to the document size

Create Inset

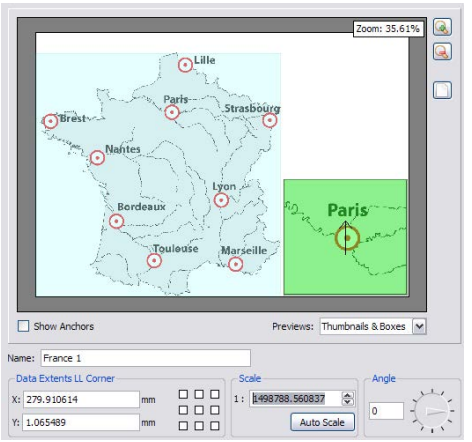
Create a map inset using MAP Vector Crop:

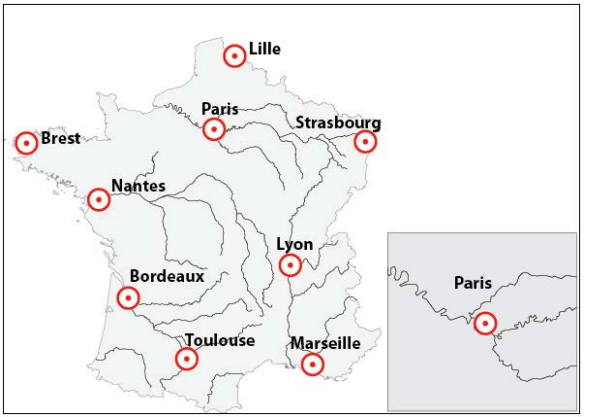
- Open any map, and make a copy of it (choose *File > Save a Copy*). Leave the original map open, make the copy the active document.
- Use MAP Vector Crop to crop the area of special interest.
- Make the original map active. In the MAP Views panel, select the option menu *Import MAP View from document*. Select the MAP View from the copy .



Original *Copy and Crop*

The map now contains two MAP Views (at least). Their relative position can be managed from the MAP View Editor, as well as the scale of the inset map.





MAP Measurement Tool

Tools > MAP Measurement Tool

FUNCTIONALITY

The MAP Measurement Tool measures distances (between two points), path distances (multiple points), azimuths, and the perimeter and area of closed paths in page or map units. Furthermore, the measuring path can be converted to a line or area in the currently selected layer.

PREREQUISITES

To measure ground distances (great circle distance in map units), the Adobe Illustrator file must contain at least one MAP View with an assigned coordinate system.

The **map units** used by the MAP Measurement Tool are set in **MAPublisher Preferences**. Use the current layer's map units or select alternative units. The layer's map units are defined in the coordinate system definition of the selected MAP View and can be viewed in the MAP View Editor by clicking the information button of the *Source Coordinate System* (called Point Style in the Definition tab)—see chapter 4 and Appendix A2 for details.

The Adobe Illustrator **page units** can be accessed and changed in the **Document Setup** dialog box (Adobe Illustrator menu *File* > *Document Setup* > *Units drop-down list*).

To use vector snapping while measuring, enable the Adobe Illustrator **Smart Guides** (Adobe Illustrator menu *View* > *Smart Guides*). The snapping tolerance is set in the Adobe Illustrator Preferences for Smart Guides (Adobe Illustrator menu *Edit* > *Preferences* > *Smart Guides*).

USING THE MAP MEASUREMENT TOOL

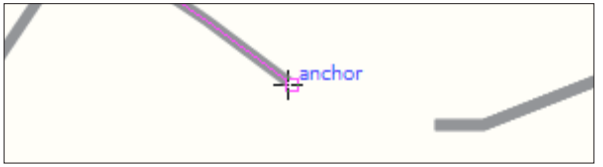
Click the **MAP Measurement Tool** button in the Adobe Illustrator **Tools panel**. The mouse cursor becomes a cross .

MAP Layers are measured in map units (great circle or real world distances). Select a MAP Layer and then click to measure. The units of the layer's parent MAP View will be used in the measurements.

Non-MAP Layers are measured in page units (distances on the page). Select a non-MAP Layer and then click to measure. The units of the document will be used in the measurements.

Note: While the MAP Measurement Tool is enabled, users can change the selected layer in the Adobe Illustrator Layers panel. If the new selected layer is contained in a different MAP View, the distance values are updated accordingly on the screen automatically without having to start a new measurement — e.g. if the MAP View scale is different, the measurement will significantly change.

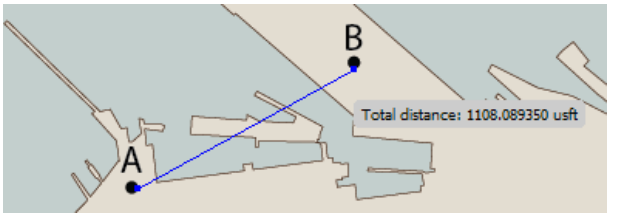
When Adobe Illustrator Smart Guides are enabled, the MAP Measuring Tool can snap to existing anchor points. When the mouse cursors is near enough a point, Adobe Illustrator highlights it as shown in the image below.



Measure Distance

By default, the MAP Measurement Tool measures distance between two points.

Click a starting point to begin measuring. As the mouse moves on the artboard, a distance label indicates the distance (and azimuths, if enabled in MAPublisher Preferences) from the starting point to the current mouse position. A second click digitizes the end point. As soon as the second point is clicked, the measurement is ended and the total distance is displayed.



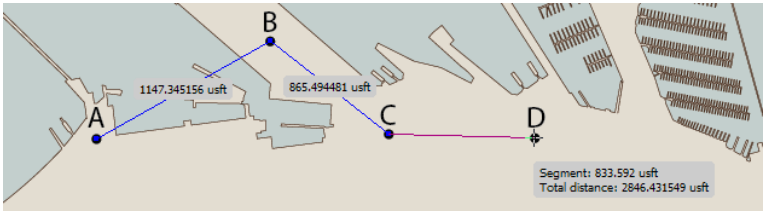
Measure Path Distance

Click a starting point to begin measuring. Before clicking a second time, hold down the Shift key. The cursor changes from  to . A new point is added on the path, but the measurement does not end.

Keep holding the **Shift** key while adding more points along the path. As the mouse moves on the artboard, a total distance label indicates the length of the path already digitized and the distance from the last added point to the current mouse position.

While digitizing the measuring path, hold the **Alt** key (Windows) or **Alt/Option** key (Mac) to display the length of each digitized path segment.

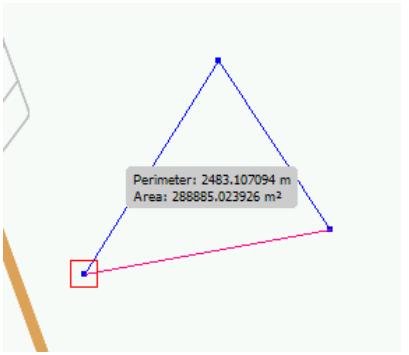
Before adding the last point, release the Shift key. As soon as the last point is clicked, the measurement is ended and the total distance is displayed. Hold the **Alt** key (Windows) or **Alt/Option** key (Mac) while clicking the last point to display all annotations (segment lengths and total distance).



Measure Perimeter and Area

To measure the perimeter and area of a closed path, follow the same steps as measuring the distance of a path. When digitizing the last point, release the Shift button and place the mouse cursor over the start point — a box is drawn around the starting point — click to close the path and end the measurement.

Hold the Alt key (Windows) or Control key (Mac) while digitizing to display the length of each segment.



Note: Holding down the Shift key while clicking the start point again prevents the path from being closed and the measurement can continue.

Convert Measurement Line to Art

When any of the above measurement methods are finished, two options are available:

1. Click anywhere on the artboard once to clear the measurement line and label
2. Hold the Shift key and click anywhere on the artboard once. This converts the measurement line to an Adobe Illustrator art object, adds it to the current layer and applies the current stroke settings.

A new click on the page starts a new measurement. To exit the MAP Measurement Tool, select another tool in the Adobe Illustrator Tools panel.

MAP Measurement Tool Preferences

Access the MAP Measurement Tool Preferences by double-clicking the MAP Measurement Tool button  on the Adobe Illustrator Tools panel or from the menu *Edit* > *MAPublisher Preferences* > *MAP Measurement*.

Set the number of decimals for the measurement values, enable display of azimuths, and change the digitized path and new segment colours. See chapter 1 for more information on MAPublisher Preferences.



Geometry Operations

The Adobe Illustrator environment offers lots of flexibility when working with vector art. To enhance Adobe Illustrator functionality, MAPublisher introduces many geometry operations designed specifically for cartographic purposes.

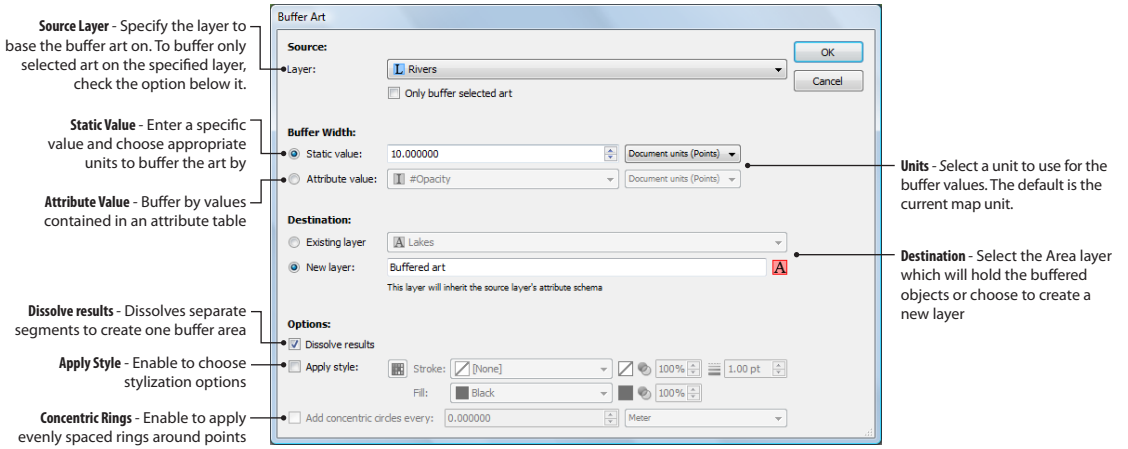
Create a proximity around lines using the Buffer Art tool. Change the direction of lines using the Flip Lines tool; useful for road mapping applications. Easily join points, lines and areas to create seamless datasets. In addition, simplify lines to reduce the amount of vertex points, while retaining spatial referencing.

Topics covered in this section:

Buffer Art
Line Plotter
Flip Lines
Join Lines
Join Points
Simplify Lines
Join Areas

Buffer Art

Object > *MAPublisher* > *Buffer Art* or *MAP Toolbar*



FUNCTIONALITY

MAPublisher **Buffer Art** creates Area objects around points and lines. This may be useful when attempting to calculate distances on each side of a road or creating proximity around city points. For example, this tool could be used in the planning of new roads, where the actual width of a highway is a major consideration.

PREREQUISITES

To use Buffer Art, the artwork must be on a **Line** or **Point** layer.

USING BUFFER ART

If required, select the art to buffer and choose *Object* > *MAPublisher* > *Buffer Art* or the MAPublisher toolbar button . Buffers are added to all art on the specified layer, unless the option to only buffer select art is checked.

The buffer width can be entered as a fixed value or by selecting an attribute column that contains numeric values. With the **Static Value** option checked, a buffer is created by the specified value. With the **Attribute Value** option checked, a buffer is calculated and created based on the value related to the selected object in the attribute table. Set the buffer value units in the **Units** drop-down list. For example, a value of 10 map units would create a buffer of 5 map units around a point or line.

Choose an existing **Area** layer as the destination for the new buffer. Alternatively, specify a new layer name to create a new layer where the buffer areas will be stored. Click **OK** to generate the buffers.

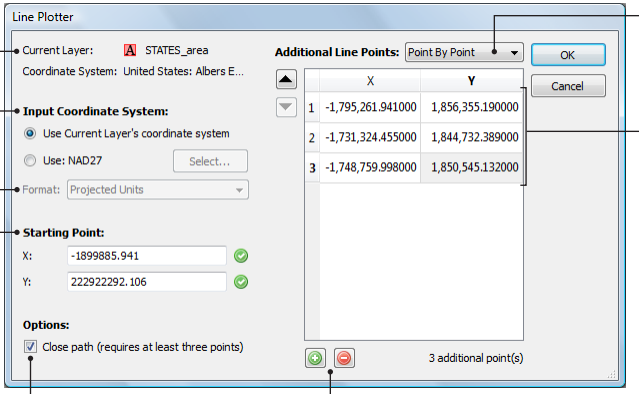
Buffer Options

Enable the **Dissolve results** option to remove any compound path segments and create one resulting buffer area.
Enable the **Apply Style** option and choose a preset Graphic Style or Custom stroke, fill and transparency.
Enable **Add concentric rings** and a specify interval distance between rings to create equally spaced rings around points.

Line Plotter

Object > *MAPublisher* > *Line Plotter** or *MAP Toolbar* 

Line Plotter (Point By Point)



Current Layer - Indicates the currently selected layer (can be area or line layer) and its coordinate system

Input Coordinate system - Specify the coordinate system in which the starting point coordinate is entered. Use the current layer's coordinate system, or specify a different one (by default, the geodetic system base of the projection, in latitude-longitude format). Click the **Select** button to open the **Select Coordinate System** dialog box and choose any coordinate system.

Format - Select the input format for values in degrees (when input coordinate system is geodetic)

Starting Point - Enter the coordinates of the first point of the line. Valid coordinates are marked with ✓, invalid ones with ✗

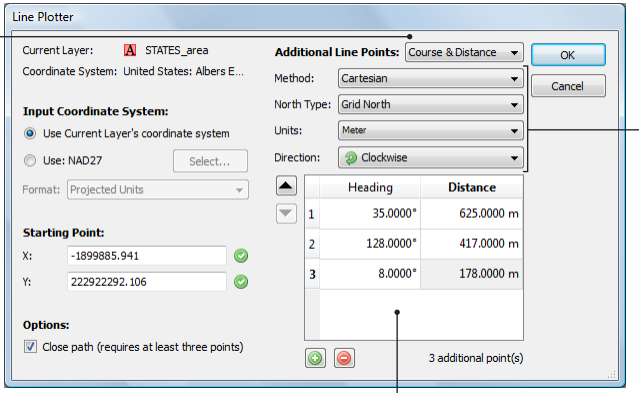
Close Path - Check this option to automatically close the path (recommended when using the Line Plotter on Area layers)

Add/Remove - Click ⊕ to add a new row. Select a row and click ⊖ to remove it.

Additional Line Points - Choose *Point By Point* to enter the consecutive vertices of the line by their coordinates

Line vertices - Enter here the point coordinates of each line vertex

Line Plotter (Course & Distance)



Additional Line Points - Choose *Course & Distance* to enter a series of heading and distance values

Heading/Distance - Enter here a series of heading and distance to define the consecutive vertices of the line

Method - Choose the distance method:
- *Cartesian:* distance in the map projection
- *Geodesic:* shortest distance along the Earth's curvature
- *Rhumb Line:* distance along the Earth curvature at constant heading

North Type - In the *Cartesian* method, choose one of the north options which headings are measured from:
- *Grid North:* north along the map projection (straight up on the map)
- *True North:* actual north direction (as given by a north arrow)

Unit - Select the linear unit for distances

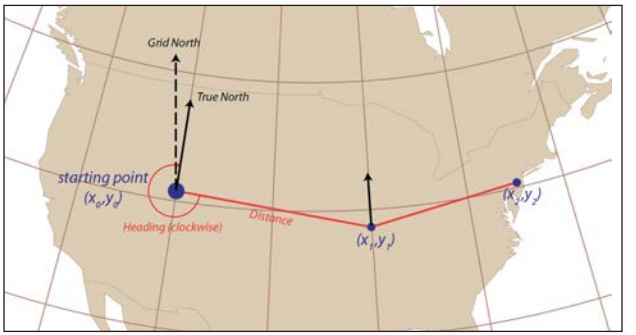
Direction - Choose *Clockwise* or *Counter-clockwise* for the direction of the heading value

FUNCTIONALITY

The MAPublisher Line Plotter creates a new path to a **Line** or **Area** layer. Enter line vertices using two options:

- **Point by Point:** enter a starting point and consecutive point coordinates.
- **Course & Distance:** enter a starting point and a series of headings (angles) and real-world distances. Each consecutive vertex is defined at an angle and distance from the previous point. Additional options are available for angle and distance definitions (see hereafter).

The created path is made of straight segments connecting the points.



PREREQUISITES

A **Line** or **Area** layer must be selected before starting this operation. As required, first create a new MAP Layer of type Line or Area, or use one of the existing MAP layers of the appropriate type.

USING LINE PLOTTER

Select a **Line** or **Area** layer in the MAP Views panel or Adobe Illustrator Layers panel. Then choose *Objects* > *MAPublisher* > *Line Plotter* or click the Line Plotter button on the MAPublisher toolbar.

The name of the selected layer and its source coordinate system are displayed under **Current Layer**.

Input Coordinate System

The *Input Coordinate System* sets the system in which the starting point coordinates are entered. It also applies to the coordinates of each vertex when the **Point by Point** option is selected.

When the **Use Current Layer's coordinate system** option is selected, coordinate values can be entered in the current coordinate system of the MAP View containing the selected layer.

When the **Use: [coordinate system]** option is selected, the **Select** button becomes enabled. Click the **Select** button to open the **Select Coordinate System** dialog box and choose a coordinate system as required.

When the selected or default coordinate system is projected, X and Y coordinates are entered as the unit of the coordinate system (e.g. meter, kilometer, feet). When the selected or default coordinate system is Geodetic, Lat/Long coordinates are entered as degrees. The degree format is selected from the **Format** drop-down list—see chapter 6 for details on the supported formats.

Note: The *Input Coordinate System* is not applied to the distance settings when plotting a line by *Course & Distance*. In that case, the layer's coordinate system applies.

Starting Point

Enter the coordinates of the first point of the line in the X, Y or Long, Lat fields.

Options

The **Close Path** option controls if the path will be closed automatically or not. When using *Line Plotter* on a **Line** layer, this option is disabled by default. On an **Area** layer, the *Close Path* option is enabled by default—it is not recommended to create open paths on an area layer.

A minimum of three vertices are required to create a closed path. If less points are entered, the path is left opened by the Line Plotter.

Plot Line Point by Point

The *Point by Point* option in the **Additional Line Points** drop-down list provides a method to add consecutive line vertices (or nodes) by typing in the coordinates of each point. This option is typically used to create a line from a list of known locations.

Note: Alternatively the *Join Points* operation could be used to connect points already plotted on the map.

To add a new point, click the button. Then enter the new point coordinates based on the selected *Input Coordinate System* and *Format* (if the coordinate system is geodesic). To remove a point, select a row and click the button.

Plot Line by Course and Distance

The *Course & Distance* option of the **Additional Line Points** drop-down list allows to define each consecutive line vertex by its heading (azimuth or angle relative to the north direction) and real-world distance from the previous point.

The **Method** drop-down list offers three options to define the real-world distances:

- **Cartesian:** Distances in the map projection. They represent the distances as measured on the map and multiplied by the scale. This option is only available if the layer's coordinate system is projected.
- **Geodesic:** Shortest distances along the Earth's curvature. Geodesic distances are also known as *Great-Circle distances* and are typically used for navigational purpose maps. They represent the actual covered distance while walking or in a moving vehicle.
- **Rhumb Line:** Distance along the Earth curvature at constant heading. They are typically used for navigational purpose maps to represent routes of constant direction.

Note: Once the next vertex position is calculated on the map, the path segment is the straight connection between the points. The paths are not drawn curved to follow geodesic or rhumb lines

The **North Type** drop-down list contains two options to define the north direction when the method is set to *Cartesian*:

- **Grid North:** Refers to the northward direction of the map projection grid lines—Grid North is constant throughout the map.
- **True North:** Refers to the actual direction to the geographic North Pole. The True North direction can vary depending on a point position on a map. Similarly, graticule longitude lines are pointing to True North as well as MAP North Arrows (see chapter 14).

Note: The *Geodesic* and *Rhumb Line* methods are by definition using the True North as northward direction. The North Type drop-down list is therefore disabled in these cases.

The **Units** drop-down list allows to select a linear unit for the distance. By default, the Units list is set to the *Point Units* of the current layer's coordinate system, if it is projected. If the current layer's coordinate system is geodesic, the Units list is set to *Meters*.

The **Direction** drop-down list indicates the direction of the heading angles. Typically, navigational headings (or azimuths) are given in **Clockwise** direction. However, the natural angle direction in Adobe Illustrator is **Counter-clockwise**, which may be preferred for simple drawing purpose.

Once all options are set, click the  button to create a new entry of heading and distance. To remove an entry, select a row and click the  button.

Flip Lines

Object > MAPublisher > Flip Lines or MAP Toolbar* 

FUNCTIONALITY

MAPublisher **Flip Lines** reverses the endpoints of a line or an area (open or closed path).

Adobe Illustrator *Brushes* and *Type on a Path* tools are designed to position patterns and text depending on the direction of the endpoints. Two consequences of this are:

- Labels are placed upside down and backward when using the MAPublisher labeling tools (*MAP Tagger* tool and *Label Features,* see chapter 10 - Labeling).
- When applying graphic styles with a brush pattern to paths (manually or using MAPublisher *MAP Themes*), patterns are not applied at the right side of the line or in the expected orientation.

In order for the labels or patterns to be consistent for a group of lines, flipping lines may be necessary.

PREREQUISITES

Lines can be flipped on  **Line** and  **Area** layers.

USING FLIP LINES

To flip lines, select the lines and then choose *Object > MAPublisher > Flip Lines* or click the Flip Lines button  on the MAPublisher toolbar.

Notes: Flip Lines is a discrete operation. It may not be apparent that the lines are flipped.

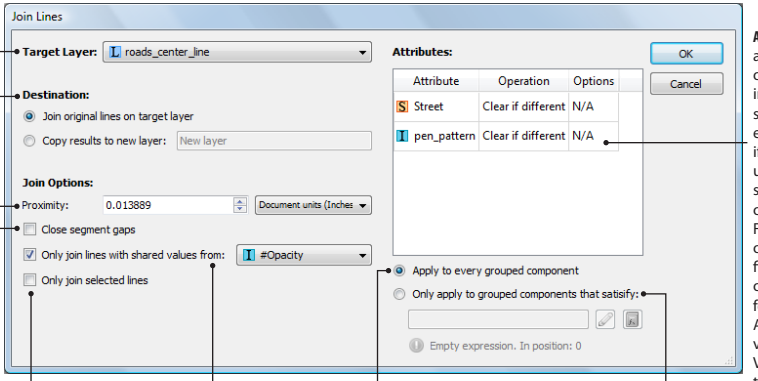
When exporting Area layers to GIS formats, polygon outlines must have a positive #Area value in the MAP Attributes panel. If some values in the #Area column are negative (and #AreaDirection is equal to *Counter Clockwise*), **Flip Lines** can then be used to reverse the #AreaDirection and convert the #Area to a positive value.

For compound paths, the #AreaDirection property is always equal to *Indeterminate*, even though compound paths can be flipped.

The MAPublisher *MAP Tagger* tool and *Label Features* have an option to enable **Flip upside-down labels** to create text in a consistent orientation, without requiring the use of the Flip Lines operation (see chapter 10).

Join Lines

Object > MAPublisher > Join Lines or MAP Toolbar* 



Target Layer - Layer on which the join will be performed

Destination - Defines line features to be joined. Join original lines on target layer or copy results to a new layer.

Proximity - Assign a proximity value to determine how close together (in map units) the lines must be in order to be joined. Optionally, choose appropriate units.

Close Segment Gaps - If two line segments are separated by a distance less than the Proximity value, checking this option will create a line segment that connects the two lines. Otherwise a compound path is created.

Only join selected lines: Check to only join selected lines (before this dialog box is opened)

Only join lines with shared values from: - Check to join lines that have shared attribute values

Apply to every grouped component - Choose to apply Join Lines options to every grouped component

Only apply to grouped components that satisfy: Use an expression to define which joined lines the above attribute field options will apply to

Attributes - Determines how attributes will be handled once features are joined into a single object. For string fields choose to either Clear the field, Clear if different (two or more unique values are found), sort Least Alphabetical (Z-A) or Most Alphabetical (A-Z). For Integer or Real fields options include Clear the field, Clear if different (two or more unique values are found), return the Sum or Average of the grouped values or enter the Largest Value or Smallest Value of the grouped fields.

FUNCTIONALITY

Join Lines allows a group of line features to be joined based on a common attribute. For example, it may be desirable to join all segments of a particular street by the common attribute of street name in order to create a single line element representing that street. When Join Lines is completed, a new map layer is created that contains the joined lines. These lines contain an attribute column based on the column used to join them.

Join Lines can be very useful for reducing the size of a data file by joining related lines and thus reducing the number of segments and associated data present in the file. It is also very useful to run Join Lines prior to labeling with **Label Features** in order to reduce the occurrence of duplicate labels (see chapter 10 Labeling).

PREREQUISITES

Join Lines can be executed on selections on **Line** layers.

USING JOIN LINES

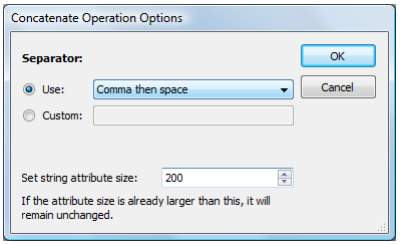
To use Join Lines, click the Join Lines button on the MAPublisher toolbar or choose *Object > MAPublisher > Join Lines* or. In the **Target Layer** drop-down list, select the **Line** layer where the join will be performed. In the **Destination** options, choose either to perform the join on the original target layer or specify a name for the new line layer that MAPublisher will create to hold the joined lines.

Under Join Options, a **Proximity** value should be entered and proximity **Units** assigned. Units can be specified in map units or page units. A proximity value of zero will only join line segments that are touching. If the distance between

the end of a segment and the start of another is greater than the set proximity value, these lines will not be joined. If two line segments in the selection are separated by a distance less than the set proximity value, check the **Close segment gaps** option to create a line segment that connects the two lines. When not selected, a compound path will be created. By default, the **Only join lines with shared values from** option is checked. Specify an attribute which the join will be based on. It is noted in the Operation column as *Join on*. For example, when joining streets, join based on a common identifier or street name. To further narrow down which lines should be joined, check the **Only Join selected lines** option. These lines should be selected prior to opening the Join Lines dialog box.

When lines are joined, many attributes that were valid to the original lines may no longer be valid. For example, after joining street line data, an attribute that contains address ranges will no longer be valid because values will not be unique anymore. Thus, operations can be set to determine how each attribute field is handled. By default all attribute operations are set **Clear if different**, meaning that the attribute is cleared if there are more than two unique values present after the join. Depending on the attribute type (string, boolean, integer or real) other operations include **Clear**, **Sum**, **Average**, **Smallest Value**, **Largest Value**, **Least alphabetical**, **Most alphabetical** and **Concatenate**. The last three operations can only be applied to string attribute types. Alphabetical sorting returns either the first or last item from an alphabetized list of attributes. Concatenate joins string values together and separates them with a separator.

The Concatenate operation has options to adjust the separator. When Concatenate is chosen in the Operation column for an attribute, the text *Using defaults; double-click to edit* appears in the Options column. Double-click the text to open the Concatenate Operation Options dialog box. Choose a separator from the Use drop-down list or specify a custom one.

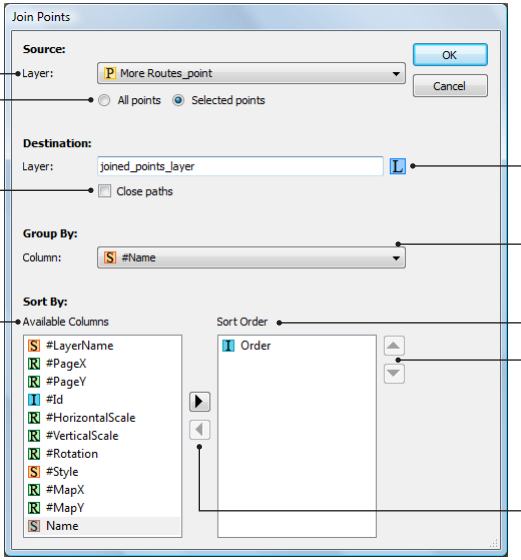


String attribute sizes may become lengthy due to a join. Adjust the set string attribute size setting to increase or decrease the maximum number of characters of which the attribute field can store.

There are two options to apply attribute operations to grouped components. Choose **Apply to every grouped component** option to apply all. Alternatively, choose **Only apply to grouped components that satisfy** to enable the expression builder to enter an expression that will only apply the attribute operations to values of the object where the expression condition is met. All other values that aren't satisfied will be cleared. For example, the expression "Street = Main St" would only apply the operations to attributes of the object that has the attribute "Street" and value of "Main St". All attributes for this art object will maintain its attributes.

Join Points

Object > MAPublisher > Join Points or MAP Toolbar* 



Input Layer - Use this drop-down list to select the Point layer containing the symbols you wish to join.

All Points / Selected Points You can choose to join only those points that have been selected or all points on the selected MAP Layer.

Close paths - Check this option to generate an Area layer. If unchecked, a Line layer will be generated.

Sort By Available Columns - Select an attribute column containing ascending values to sort by. Then click the Add button to add the column to the Sort Order.

Destination Layer - Enter the name of the output layer. This new layer will contain the generated lines.

Group By - Specify the attribute column containing similar values to determine each group of points

Sort Order - Contains a hierarchical list of the columns specified to sort by. To remove a column from the Sort Order, click the Remove button.

Move Up / Move Down - You can move columns up and down the Sort Order hierarchy by clicking the appropriate button .

Add / Remove buttons - Click to add or remove attributes from the lists

FUNCTIONALITY

Join Points allows a group of point symbols to be joined to form a line, based upon attribute values used as sorting criteria. For example, it is common to form a line based on points collected by a GPS device. When Join Points is completed, a new map layer is created that contains the line art. The generated line layer contains the same common attribute column that was used to group the points together.

PREREQUISITES

Join Points can only function on **Point** layers, and can be used on both currently selected point symbols or all the point symbols on a specified layer. There must be at least two attribute columns on the specified point layer in order to use Join Points. To open the dialog box, choose *Object* > *MAPublisher* > *Join Points* or click the Join Points button  on the MAPublisher toolbar.

USING JOIN POINTS

From the **Source Layer** drop-down list, select the **Point layer** containing the points to be joined. Then choose a join that is based on either **All Points** or only **Selected Points**.

Specify a name for the **Destination Layer** that this operation will generate. By default, the program will generate a **Line** layer. To generate an **Area** layer (by linking the line end to the start) check the **Close paths** option.

In the **Group By Column** drop-down list, select the attribute column containing the common attributes used to join the point together. For example, to join points based on a unique ID, select the column containing the common ID names. This will result in point symbols containing the same name being joined together.

A logical order by which the points are being joined must be specified because each point will be represented by a node in a line string. To properly join points, a sort order must be chosen based on an attribute columns. These should be attribute columns which contain rising alphabetical or numerical values. For example, GPS data may contain an attribute that specifies the order in which the points were collected (first node, second node, etc).

In the **Sort By Available Columns** list, select the primary sorting column. This should be the attribute column that contains the best fit for rising alphabetical or numerical values. For example if points have rising values from 1–10, the point with a value equal to 1 will be at the start of the generated line, and the point with a value equal to 10 will be at the end of the line. Select a column and then click the **Add** button to place the column into the **Sort Order** list. If all the values contained in the first *Sort By* column are unique,it is not required to set a secondary column.

If the first *Sort By* column contained any similar values, a secondary column must be specified. Again, click a column in the **Sort By Available Columns** list, and then click the **Add** button to place the column in the **Sort Order** list. Similarly third, fourth and fifth *Sort By* columns can be specified in the same manner if previous columns contain similar values. Note that the *Sort By* columns are a hierarchy with the topmost specified column being used for the primary sort, then the second, then third, etc.

To move columns up or down the hierarchy after they have been specified, simply select the appropriate column in the Sort Order list and click either the **Up** or **Down** button.

To remove any *Sort By* columns from the hierarchy, select the column in the **Sort Order** list and click the **Remove** button.

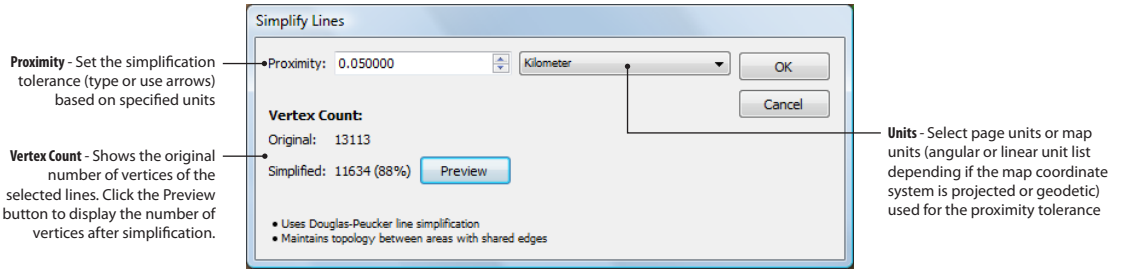
Note that a maximum of five columns can be used to sort points into a logical order. If the columns specified to sort by do not distinguish an ordering between certain points, the order of these points in the attribute table will be used to determine the order of the nodes in the generated line string.

RESULTS

When all the options have been set click **OK** to join the points on the specified layer. An **Area** or **Line** layer will be generated, depending on the specified output layer type, which will be placed in the same MAP View as the Input Point layer which has been joined.

Simplify Lines

Object > MAPublisher > Simplify Lines or MAP Toolbar*



FUNCTIONALITY

Simplify Lines allows for the simplification or generalization of vector line and area data. It uses the popular Douglas-Peucker algorithm for removing nodes and vertices during simplification. For more information about this algorithm, see Appendix A1.

Simplify Lines is used to reduce the number of points required to represent a vector-encoded line where the lines are approximated by a stream of X-Y coordinates. The operation can be used on **Line** or **Area** layers and removes nodes based upon a proximity value in either **Page Units** or **Map Units**. The list of **Map Units** depends on the MAP View coordinate system—e.g. angular units (page units, degrees, etc) for geodetic coordinate systems; linear units (such as metre, feet) for projected coordinate systems.

The **Proximity value** or simplification tolerance is based on the vertical difference between the begin/end line and points off a line, *not* the distance between anchor points on the line. The Douglas-Peucker algorithm takes the proximity value and iterates through the line vertices to determine the points that fall within the specified proximity distance off the line and removes those vertices. Once all vertices are determined to be greater than the proximity value, the line processing ends. A smaller proximity value will usually result in a fewer number of nodes being removed.

USING SIMPLIFY LINES

To use Simplify Lines, choose *Object* > *MAPublisher* > *Simplify Lines* or the MAPublisher toolbar button . Enter a proximity value in **Page Units** or **Map Units** by making a selection from the **Units** drop-down list. Page Units are the units of the current document. Enter a proximity value in the unit specified by typing a value or by using the arrows.

Click the **Preview** button to see the simplification result before committing to it. The Vertex Count shows how many vertices are in the simplified result (and calculates a percentage of overall simplification). Adjust the proximity as necessary in order to achieve the desired results particular to the scale and coverage area. Click **OK** to perform to complete the simplify operation.

RESULTS

All selected lines or areas are simplified according to the settings. Simplified lines or areas will not be simplified again unless the tolerance value is increased. For example, if a line has been simplified with a proximity of 1.5 km., then it will not be simplified again until the tolerance is set to a value larger than 1.5 km.

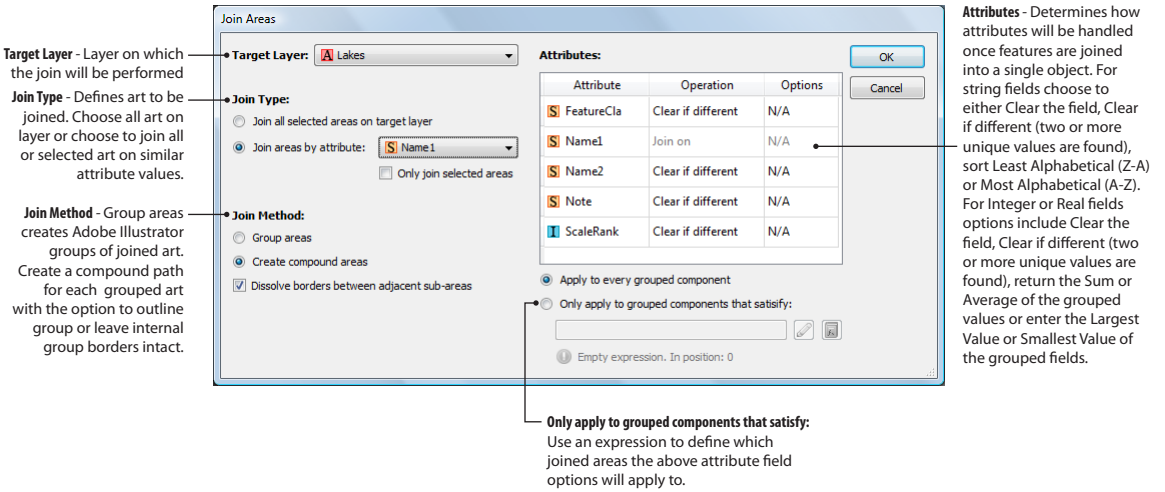
In practice, it means that simplified lines can be selected again with non-simplified lines to run the operation again, when the **Simplify Lines** operation is run only the new lines will be simplified (unless the proximity value is increased).

Notes: It is a good idea to perform simplify lines on artwork before exporting a Flash map. This will reduce the file size and improve performance and loading times.

To smooth the appearance of paths using Bezier curves, use the Adobe Illustrator Simplify tool located in the menu *Object* > *Path* > *Simplify*.

Join Areas

Object > MAPublisher > Join Areas or MAP Toolbar* 



FUNCTIONALITY

Join Areas groups art objects based on a specified similar attribute value. An attribute field is defined and a new object is created for each unique value within that field. Options can be set to create Adobe Illustrator groups or compound paths, while either maintaining the outlines of the original features or dissolving sub-areas into the larger area.

USING JOIN AREAS

To use Join Areas, choose *Object* > *MAPublisher* > *Join Areas* or click the MAPublisher toolbar button . Choose the **Target Layer** on which Join Areas should be performed. Specify the Join Type to either **Join all selected areas on target layer** or **Join areas by attribute**. Specify an attribute which the join will be based on. It is noted in the Attributes section Operation column as *Join on*.

Select the Join Method type to either Adobe Illustrator **Group areas** or **Create compound areas**. For the latter option, choose to **Dissolve borders between adjacent sub-areas**. Not checking this option will maintain the borders of individual areas. For example, when grouping the countries of the world by its Continent field attributes, the Continent field will result in five new objects, one for each continent. Dissolving borders between adjacent sub-areas will leave the continent outlines. Choosing not to dissolve, the outline of each country will remain. In both cases, there will be one object for each continent in the attribute table.

When areas are joined, many attributes that were valid to the original lines may no longer be valid. For example, after joining the countries of the world on the Continent field, the field containing country capitals will no longer be valid, as each continent does not have one capital. Thus, operations can be set to determine how each attribute field is handled. By default all attribute operations are set **Clear if different**, meaning that the attribute is cleared if

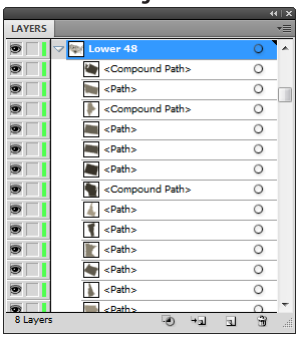
there are more than two unique values present after the join. Depending on the attribute type (string, boolean, integer or real) other operations include **Clear**, **Sum**, **Average**, **Smallest Value**, **Largest Value**, **Least alphabetical**, **Most alphabetical** and **Concatenate**. The last three operations can only be applied to string attribute types. Alphabetical sorting returns either the first or last item from an alphabetized list of attributes. Concatenate joins string values together and separates them with a separator.

There are two options to apply attribute operations to grouped components. Choose **Apply to every grouped component** option to apply all. Alternatively, choose **Only apply to grouped components that satisfy** to enable the expression builder to enter an expression that will only apply the attribute operations to values of the object where the expression condition is met. All other values that aren't satisfied will be cleared. For example, the expression "Continent = Africa" would only apply the operations to attributes of the object that has the attribute "Continent" and value of "Africa". All attributes for this art object will maintain its attributes.

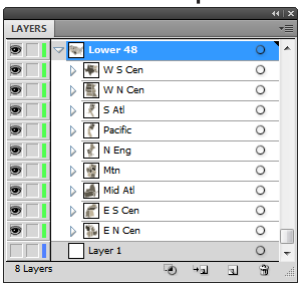
RESULTS

To tell if areas are joined after executing the Join Areas function, look for visual differences of the features on the map or look in the Adobe Illustrator Layers panel. Depending on the join method, compound areas or grouped areas, the Layers panel will display the results. In the example below, the original Lower 48 layer is shown and two join method possibilities. The Group areas method shows states grouped by the attribute Sub Region (W S Cen, Pacific, etc). The Create compound areas method shows states joined by compound path (and in this case, with the option *Dissolve borders between adjacent sub-areas* enabled).

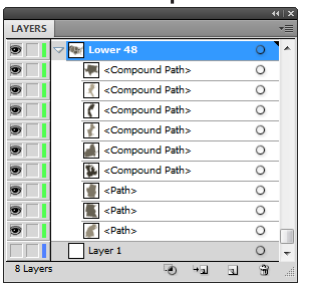
Original

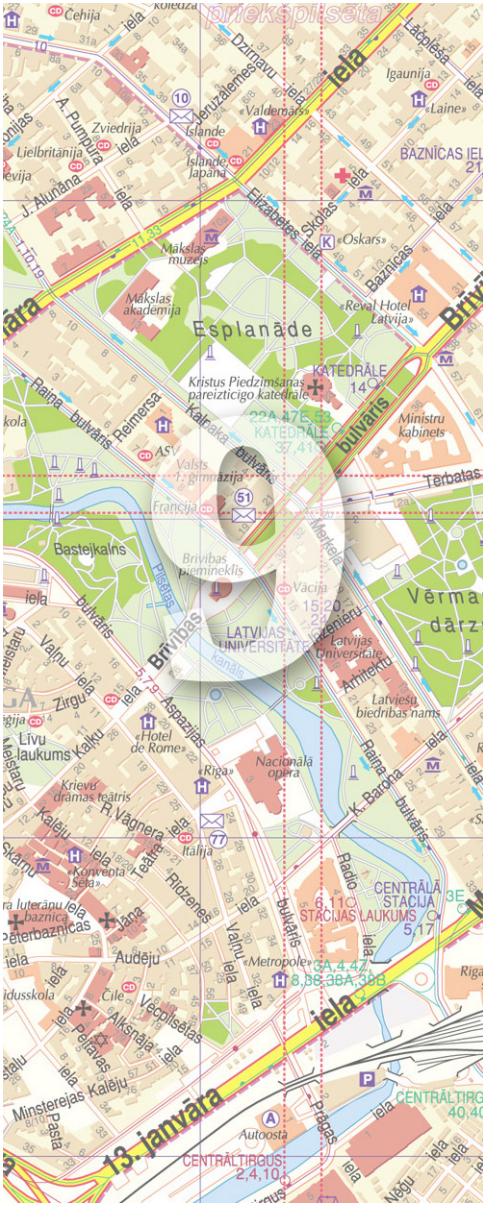


Join Method: Group Areas



Join Method: Compound Areas




Esplanāde
Brīvības piemineklis
Latvijas Universitāte
Nacionālā opera
Krievu drāmas teātris
Jāņa baznīca
Pētera baznīca
Mākslas akadēmija
Mākslas muzejs
Kristus Piedzimšanas pareizticīgo katedrāle
Ministru kabinets
Latviešu biedrības nams
Vērmanes dārzs
Centrālā stacija
Centrāltirgus
Autoosta
Hotel de Rome
Reval Hotel Latvija
Oskars
Laine
Metropole
Riga
Latvijas Universitātes kanāls
Brīvības
Elizabetes
Alberta
Raiņa bulvāris
K. Barona
Aspazijas
Kaļķu
Audēju
Vecpilsētas
Alksnāja
Pētersalas
Minsterejas
Pasta
Prāgas
Ģertrūdes
Dzirnavu
Lāčplēša
Skolas
Baznīcas
Tērbatas
Valnu
Zirgu
Rīdzenes
Teātra
Radio
Amatu
Ārmiekļu
Vāgnera
Lielbritānija
Francija
Itālija
Čehija
Igaunija
Islande
Zviedrija
Valdemāra
Jāņa
Cīles
Konventa sēta
Hospitāļu
Jaunielas
Jaunā
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MAP Themes

Window > *MAPublisher* > *MAP Themes* or *MAP Toolbar* 

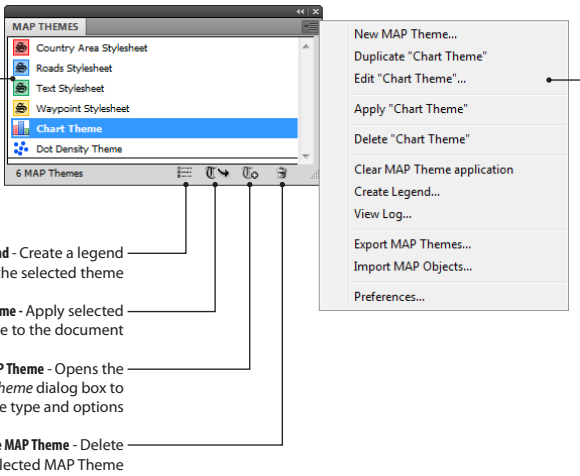
OVERVIEW

MAP Themes, new to MAPublisher 8.4, are a collection of thematic cartography tools designed to increase productivity by automating how styles and symbols are applied, chart production and data plotting. The former MAP Stylesheets have been integrated into MAP Themes and is now called **Stylesheet** theme. Two new types are the **Chart** theme and **Dot Density** theme.

The new **Stylesheet** theme offers enhancements over the previous version of MAP Stylesheets. Adobe Illustrator graphic styles can be assigned to stylesheet rules and stroke fill and opacity can now be assigned on a per rule basis within the Stylesheet dialog box. The Stylesheet dialog box now offers a **Rule Generator** where attributes can be automatically classified using a variety of common classification methods.

The **Chart** theme offers an interface for quickly generating individual bar and pie charts for a chosen attribute of selected features. The **Dot Density** theme provides a thematic mapping tool that assigns a unit value to Illustrator symbols and randomly distributes symbols throughout associated areas based on attribute values.

MAP Themes offer a lot of flexibility. They can be edited, applied, duplicated, exported and cleared without affecting the spatial referencing of map features.



MAP Theme List - List of MAP Themes in the current document. Displayed in order of Stylesheets first, organized and color sorted by Area, Line and Point Stylesheets, Chart Themes and Dot Density Themes.

Create Legend - Create a legend based on the selected theme

Apply MAP Theme - Apply selected MAP Theme to the document

New MAP Theme - Opens the *New MAP Theme* dialog box to specify theme type and options

Delete MAP Theme - Delete selected MAP Theme

New MAP Theme - Opens the *New MAP Theme* dialog box to specify theme type and options

Duplicate Selection - Create a duplicate of the selected MAP Theme

Edit Selection - Opens the *MAP Theme Editor* dialog box to edit the selected MAP Theme

Apply Selection - Apply selected MAP Theme to the document

Delete Selection - Delete selected MAP Theme

Clear MAP Theme application - Removes the application of the MAP theme from the document, not the theme itself

Create Legend - Create a legend from the selected MAP Theme

View Log - A log viewer that provides information on processes performed on individual MAP Themes

Export MAP Themes - Export MAP Themes to an Adobe Illustrator document

Import MAP Objects - Import MAP Themes from another open document

Preferences - Opens *MAPublisher Preferences* on the MAP Themes Panel property sheet (see chapter 1)

Load Symbols and Styles

The symbology used by MAP Themes are directly related to the symbols and styles which exist in several Adobe Illustrator panels. In order to correctly function, MAP Themes require that symbology or styles are established in the corresponding Adobe Illustrator panels:

For **Stylesheet** themes:

	Area stylesheets:	**Graphic Styles** panel *(Window > Graphic Styles)*
	Line stylesheets:	**Graphic Styles** panel *(Window > Graphic Styles)*
	Point stylesheets:	**Symbols** panel *(Window > Symbols)*
	Text stylesheets:	**Character Styles** panel *(Window > Type > Character Styles)*
	Fill/Stroke:	**Swatches** panel *(Window > Swatches)*

For **Chart** and **Dot Density** themes:

Appearance:	**Graphic Styles** *panel (Window > Graphic Styles)*
Labeling:	**Character Styles** *panel (Window > Type > Character Styles)*
Fill/Stroke:	**Swatches** *panel (Window > Swatches)*
Symbols:	**Symbols** *panel (Window > Symbols)*

Custom symbology can be added to the Adobe Illustrator Graphic Styles, Symbols and Swatches panels. Another great source of styles comes from the custom graphic style, symbol and swatch libraries installed by MAPublisher.

To open MAPublisher supplied graphic style, symbol and swatch libraries, navigate to the following panels:

Graphic Styles panel options menu > *Open Graphic Style Library > MAP Graphics*

Swatches panel options menu > *Open Swatch Library > MAP Swatches*

Symbols panel options menu > *Open Symbols Library > MAP Symbols*

These styles and symbols are stored in Adobe Illustrator documents in the Helpful Styles & Symbols folder. To create a style library, simply create your own Adobe Illustrator documents containing your symbols, graphic styles and character styles and save them to the appropriate Helpful Styles & Symbols subfolder. See Appendix 4 for more information.

Along with the ability to style map art using Adobe Illustrator Graphic Styles and Symbols, MAP Themes allow users to manually specify stroke, fill and scale properties on a per rule basis.

FUNCTIONALITY

Apply MAP Themes

There are several ways to apply a MAP Theme. Click the Apply button in any of the Edit Theme dialog boxes to immediately apply theme options to the map document. Another way is to click the Apply MAP Theme button in the MAP Themes panel. This method is useful for applying themes at a later time. Save the theme settings made in any of the Edit Theme dialog boxes and in the MAP Themes panel, select a MAP Theme and click the **Apply MAP Theme** button. Alternatively, choose **Apply "[theme name]"** in the MAP Theme panel options menu.

Clear MAP Themes

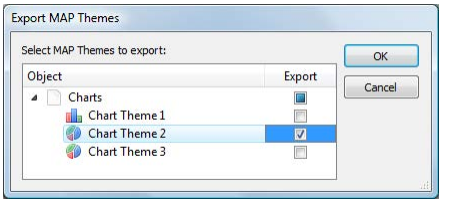
Click the Additional MAP Themes options button and in the context menu, click Clear [Theme]. This does not delete the MAP Theme, it only removes the style from the data.

Duplicate Themes

A document can contain as many MAP Themes as desired. Choose **Duplicate "[theme name]"** to create a copy of an existing MAP Theme. The rules and styles are preserved during a copy. This is useful when creating different styles for a map; each theme can have the same rules, but different visual properties. To apply the different themes, clear a previous theme and apply another one.

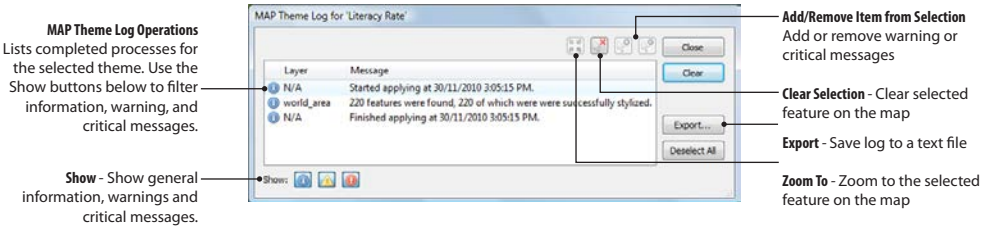
Export MAP Themes

To export MAP Themes, choose **Export MAP Themes** from the panel options menu. In the Export MAP Themes dialog box, click a check box beside each theme to select it for export. Click OK and a Save dialog box will prompt for a file name. MAP Themes are exported to an Adobe Illustrator document and are considered MAP Objects. They can be imported using the Import MAP Objects function. See chapter 4 for more information about Import MAP Objects.



MAP Theme Log

MAP Theme processes can be viewed in the log file associated with each type of theme. View the log through the Additional MAP Theme Option context menu. Logged theme processes include the start and finish time of theme processes along with the number of pieces of art found and the number of pieces stylized.



Stylesheet Themes

OVERVIEW

Stylesheet themes are able to read and work with the data found in the MAP Attributes panel and used to quickly style MAP Layers using Adobe Illustrator symbols, graphic styles and character styles.

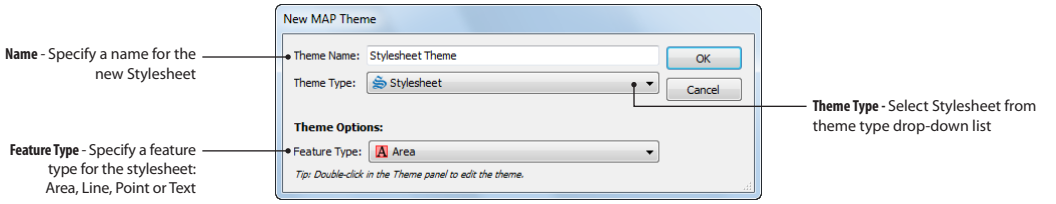
Theme rules can be created in two ways: manually (one by one) or generated using a data classification method. In addition, themes can be applied to data on a one-to-one basis, where specific attribute values are assigned with a specific style or symbol (e.g. each country its own distinct colour) or with attribute value ranges (e.g. a country's population growth that falls within a range of 2.9 to 4.6% and a colour used to represent it).

FUNCTIONALITY

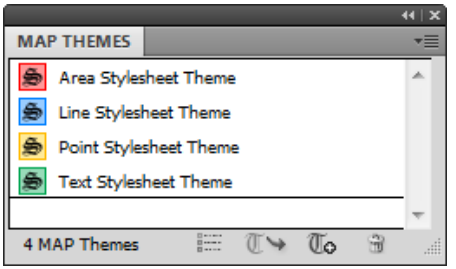
Create New Stylesheet

To create a new stylesheet, click the Create New Map Theme button in the MAP Themes panel. Alternatively, choose **New MAP Theme** from the MAP Themes panel options menu. This opens the New MAP Theme dialog box, where the theme name, theme type, and feature type for a new stylesheet is specified. With Stylesheet selected as the theme type, the Feature Type drop-down list contains a list of available feature types: Area, Line, Point and Text.

New Stylesheet MAP Theme

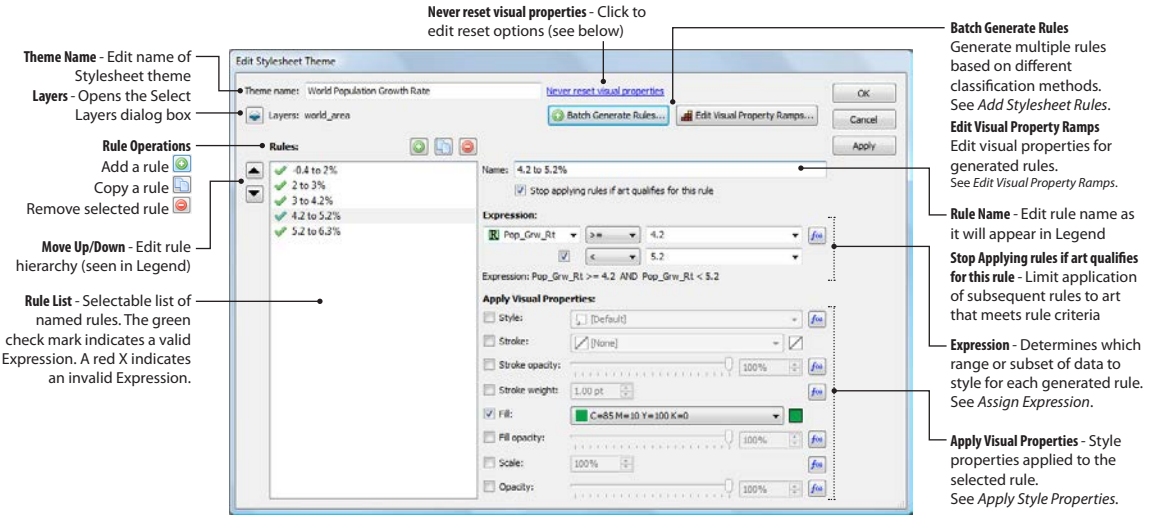


Stylesheet themes are displayed in the MAP Themes panel. To edit a Stylesheet theme, double-click a Stylesheet name or select Edit "*Theme Name*" from the MAP Themes panel option menu. This opens the Edit Stylesheet Theme dialog box



Stylesheet Theme Editor

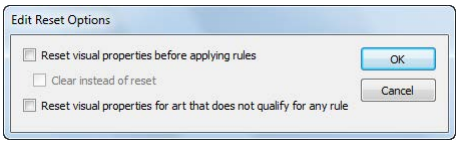
The Edit Stylesheet Theme dialog box is where rule generation and styling takes place.



The Theme name is reflected in the MAP Themes panel and can be edited.

At least one MAP Layer must be specified before generating rules. Click the Select Layers button to open the Select Layers dialog box to choose applicable layers. Multiple layers can be chosen, however, rules can only be generated on a per layer basis (meaning multiple rules can not be created across multiple layers simultaneously). Selected MAP Layers are listed beside the Select Layers button.

The Edit Reset Options setting is used to either reset visual properties before applying rules or reset visual properties for art that does not qualify for any rule. The *Clear instead of reset* setting removes all styles from art objects, sets fill and stroke to none and returns opacity to 100%.



Add Stylesheet Rules Manually

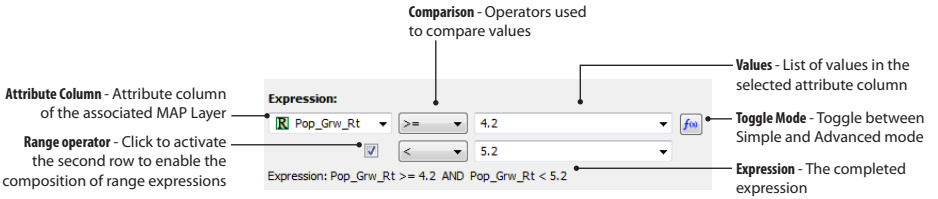
To add a single rule, click the Add Rule button. Rules are shown in the rule list on the left hand-side of the Edit Stylesheet Theme dialog box. When a rule is selected, the settings for it are active to the right where its **Name**, **Expression** and **Visual Properties** can be assigned.

Note: Use caution when assigning a Stylesheet theme to grouped objects or compound paths, the graphic styles may not apply universally.

Assign Expression

The Expression section provides options to define the criteria in which the data chosen will be styled. There are two modes to define an expression: simple and advanced.

By default, the **Simple Expression** mode is displayed and is intended to facilitate quick expression generation.



First, choose an attribute column from the drop-down list or manually type in an attribute name. Secondly, choose from a comparison operator from the drop-down list:

>	*Greater than*	>=	*Greater than or equal to*
<	*Less than*	<=	*Less than or equal to*
=	*Equal to*	!=	*Not equal to*

Finally, type or choose value against which the comparison will be applied. To create an expression based on a range, click the Range operator check box to enable an additional comparison and value input pair.

Property and read-only attributes cannot be selected in the Simple Expression mode. To use property and read-only attribute values, click the Toggle Mode button to switch to the **Advanced Expression** mode.

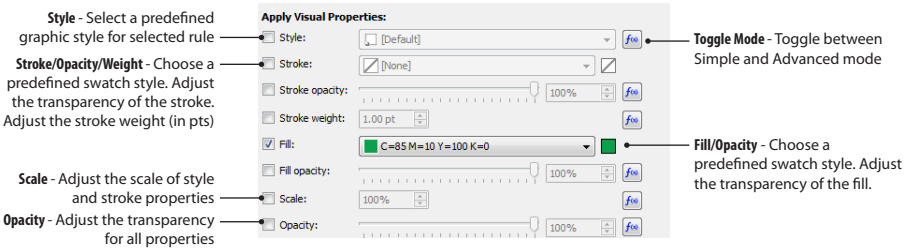


In Advanced Expression mode, construct more complex expressions and to use read-only and property attributes. The Expression Validity icon will report if the expression entered is valid. Otherwise it will report and include additional warning notes. Alternatively, use the Expression Builder to create and edit expressions. To use a saved or recent expression, use the Expression Library . See chapter 5 for more information on both.

Apply Visual Properties

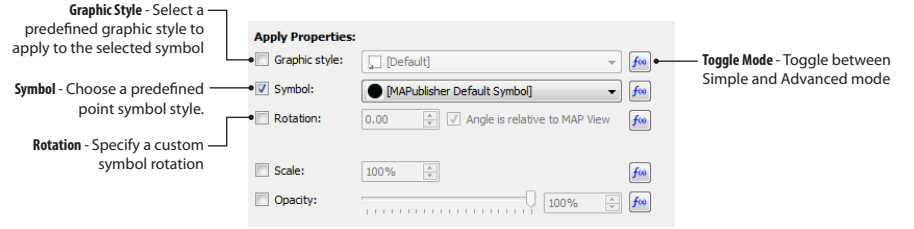
The Apply Visual Properties section provides many options to style data including graphic style, stroke, stroke weight, fill, scale and opacities. Depending on the type of stylesheet feature type, the style properties may differ:

For Area and Line feature types



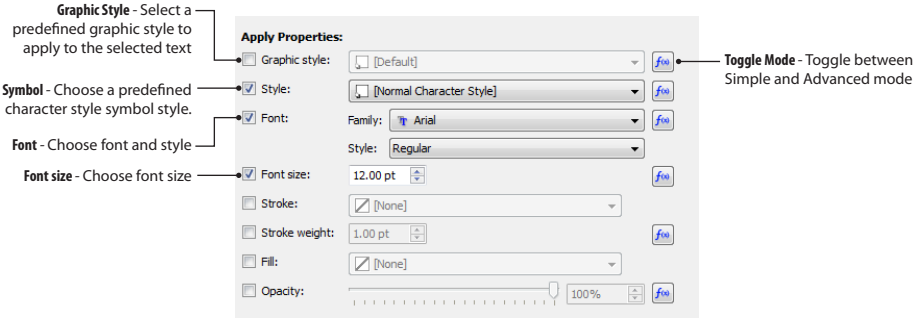
Click the check box beside each option to enable it. The Style option contains a drop-down list of styles that exist in the Adobe Illustrator Graphic Styles panel.

For Point feature type



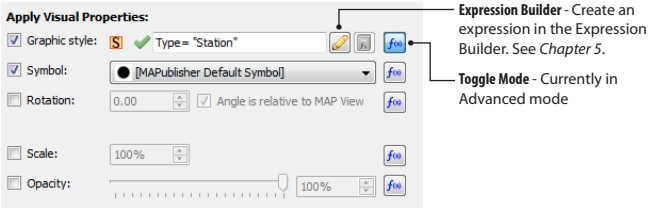
The Symbol option contains a drop-down list of symbols that exist in the Adobe Illustrator Symbols panel.

For Text feature type



The Style option contains a drop-down list of character styles that currently exist in the Adobe Illustrator Character Styles panel. Note that enabling the Font and Font size options will override the Style option.

Click the Toggle Mode button to toggle between Simple and Advanced mode for style properties. In the Advanced mode, an expression can be entered manually, created with the Expression Builder or chosen from the Expression Library. This essentially allows attribute information to be used as the basis for style properties.

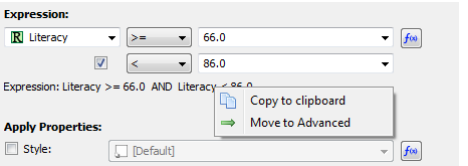


By default, the Scale is 100%. Editing the scale will alter the symbol size (points) or stroke weight (areas and lines). The maximum scaling factor is 1000%.

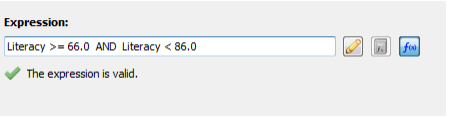
The Opacity setting adjusts the transparency of all visual properties. For area and line feature types, there are separate fill and stroke opacity settings. Combine with the Opacity setting to increase overall opacity.

Move Simple Expression to Advanced Expression

It is possible to move an expression from Simple Expression mode to the Advanced Expression mode. This may help when tweaking rule expressions to achieve optimal thematic results. To move a simple expression, right-click below the Simple Expression input settings (on the Expression line) and select **Move to Advanced** in the context menu.



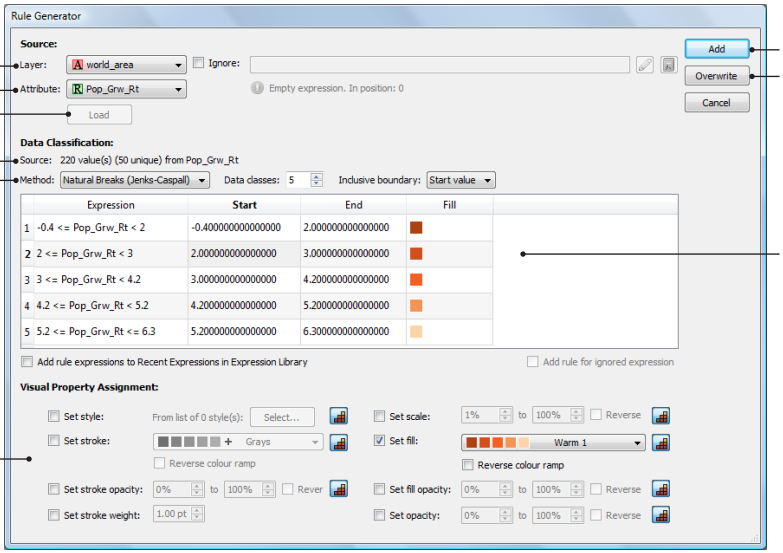
The expression will appear in the Advanced Expression mode.



Note: An advanced expression cannot be moved to a simple expression. Doing so will remove the expression from the Simple Expression mode.

Add Stylesheet Rules with Rule Generator

To generate multiple rules based on a classification, click the Batch Generate Rules button in the Edit Stylesheet Theme dialog box. This opens the Rule Generator dialog box:



Layer - Select source layer

Attribute - Select attribute to generate rules for

Load - Load the selected attribute values

Source - Displays number of values and unique values

Classification Method Equal Intervals, Quantiles, Natural Breaks (Jenks-Caspall) or Unique Values

Data Classes - Number of classes to classify by

Inclusive Boundary - Choose either start value or end value to include as class data boundary

Visual Property Assignment Set the style properties for the data classifications above. The styles are global and affect all of the rules.

Add - Add these rules to the Rule list

Overwrite - Overwrite and remove all existing rules in the Rule list

Data classification table Table that shows the expression, starting and ending range values and any of the visual property assignment settings.

The Rule Generator generates rules on a per layer, per attribute basis (however, if multiple layers share a common attribute, it can be chosen). Once a MAP Layer and attribute are chosen, click the Load button to populate the Data Classification table below it. The default classification method is Equal Intervals, but can be changed to any of the data classification methods described below. The classification is dependent on how many data classes are specified. In addition, set the start or end value as the inclusive boundary which determines whether the data range starts or ends on a boundary value. Enable the Ignore option and enter an expression (or use the Expression Builder or Library) to specify data values that will be ignored.

Stylesheet MAP Themes support four types of data classification methods:

Equal Intervals This classification method sets the value ranges in each category equal in size. The entire range of data values is divided equally into the number of categories chosen.

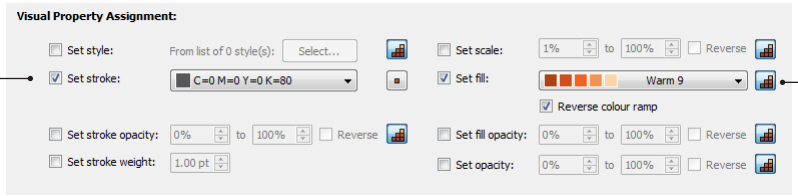
Quantiles This method classifies data into the number of categories chosen with an equal number of units in each category.

Natural Breaks (Jenks-Caspall) This classification method is based on the Jenks-Caspall algorithm. It uses an empirical approach based on minimizing the sum of absolute deviations around class means. Using arbitrary set of classes, it calculates a total error and attempts to reduce this error by moving observations between adjacent classes.

Unique Values This method creates a category for each unique value in the chosen data set. This method is most appropriately used when there are few unique values within a data set.

Use the Visual Property Assignment section to specify how the data classifications are styled. Each style property (except for stroke weight) can be set in two ways: as a ramp or as a single application. By default, the Ramp mode is enabled. This applies a style property to all data classes in a ramp manner (ascending to descending, or if the reverse option is checked, descending to ascending). When a style property is in Single Value mode, the options available change. This option applies the same style property to all data classes.

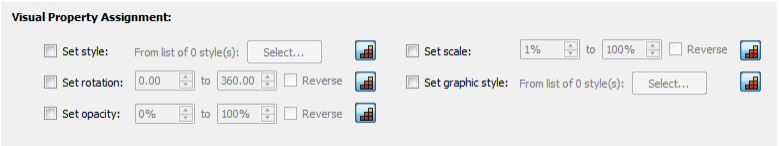
For Area and Line feature types



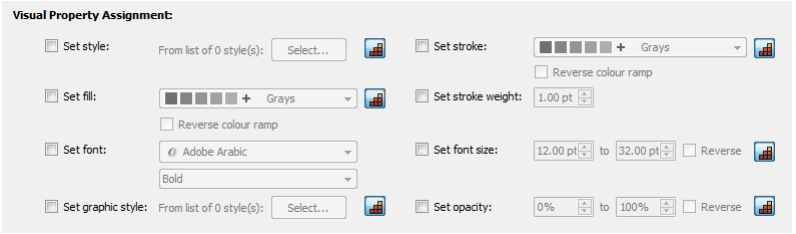
Single Value mode The style is in single value application mode. The same style applies to all data classifications.

Ramp mode - Style is in ramp application mode. The style ramp is applied to all data classifications in ascending (or descending) manner

For Point feature types



For Text feature types

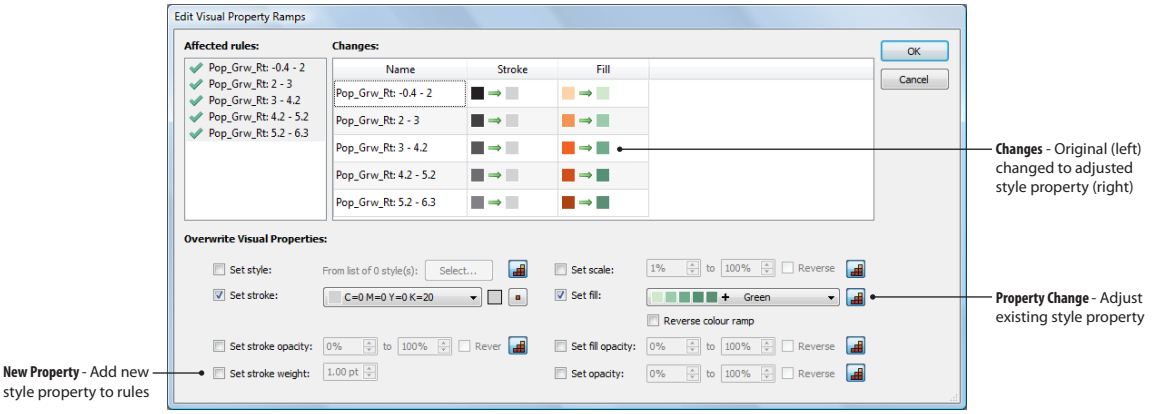


Any enabled style options are shown in the data classification table under its own column heading and each classification its respective style setting. When additional classes are added to the table, visual styles that are in Ramp mode will be adjusted proportionally. For example, a layer has an opacity ramp from 0% to 100% and each of its three classes has an opacity value of 0%, 50% and 100%. When a fourth class is added, the opacity for each class is proportionally changed to 0%, 33%, 66% and 100%. This works best for visual properties that may be continuously adjustable such as scale or colour gradients. A warning icon appears when there is a greater number of classes than colour swatches (groups) or styles. This will lead to colours or styles being repeated.

When the rules and style properties are set, click Add or Overwrite. Add adds more rules to the Rules list. Overwrite clears all existing rules in the Rules list and replaces it with the current rules and styles.

Edit Visual Property Ramps

Instead of overwriting rules just to change styles, click the Edit Visual Property Ramps button in the Edit Stylesheet Theme dialog box to edit existing applied styles.



Select (or deselect) existing rules from the Affected rules list and change style properties in the Overwrite Visual Properties section. Changes made to rules with existing styles are reflected in the Changes table where a green arrow indicates the new style changes. Similar to the Rule Generator, any new style properties added are reflected in the Changes table. All style changes to rules are updated in the Edit Stylesheet Theme dialog box. There is no need to recreate existing visual properties in order to maintain them.

Dot Density Themes

OVERVIEW

Dot density themes are sometimes called dot distribution maps because they show where particular data characteristics occur. It uses dots or other symbols to represent the number of occurrences of a given data characteristic in a particular location. Each dot or symbol used on the map may represent a single entity (one dot = one person) or as a one-to-many entity (one dot = 1000 people). The data is read from each MAP Layer and MAP Themes quickly styles the data using Adobe Illustrator symbols and graphic styles.

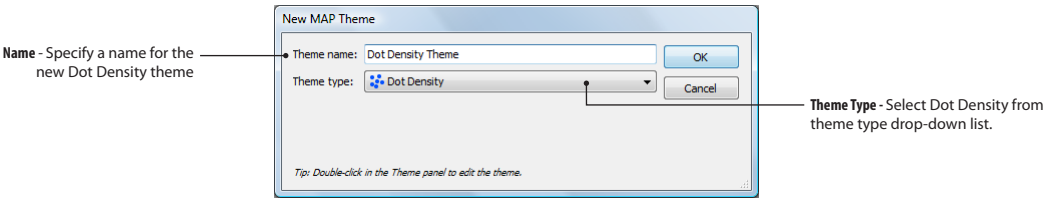
Since dot density maps are most useful for showing where particular data occur, they only work on area MAP Layers. Most often, symbols are used to represent data occurring within a bounding polygon such as a census tract, zip code or county. Use caution when analyzing dot density maps, it should be understood that the dots or symbols do not always indicate the exact location of the data.

FUNCTIONALITY

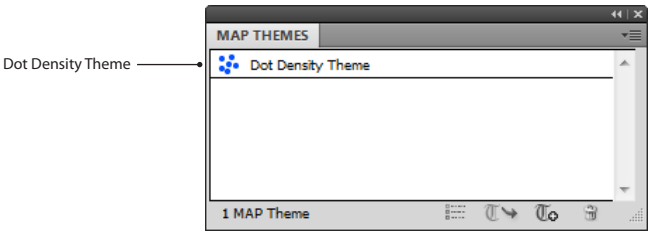
Create New Dot Density Theme

To create a new Dot Density theme, click the Create New Map Theme button in the MAP Themes panel. Alternatively, choose **New MAP Theme** from the MAP Themes panel options menu. This opens the New MAP Theme dialog box, where the theme name, theme type, and feature type for a new Dot Density theme are specified.

New Dot Density MAP Theme

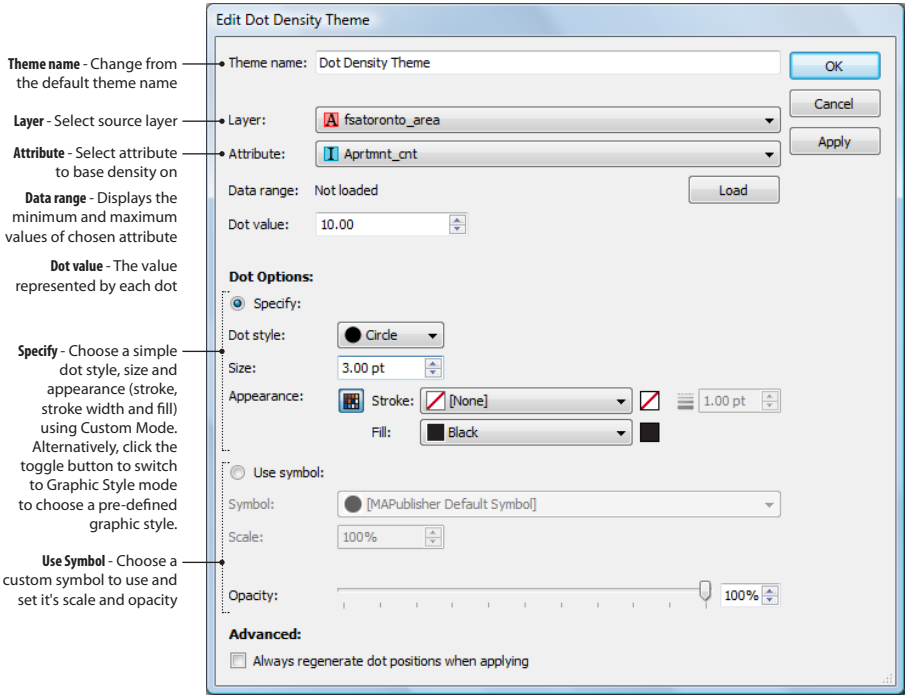


Dot Density themes are displayed in the MAP Themes panel. To edit a Dot Density theme, double-click it or select Edit "*Theme Name*" from the MAP Themes panel option menu. This opens the Edit Dot Density Theme dialog box.



Dot Density Theme Editor

The Edit Dot Density Theme dialog box is where attribute, density and symbols are chosen.



Dot density is created on a per layer, per attribute basis. When an attribute is chosen from the drop-down list, click the Load button. The data range displays the minimum and maximum values for that attribute. These values should be taken into account when determining a one-to-many dot density and dot value.

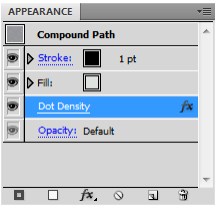
A dot value of 1.00 represents a single (one-to-one) entity. A dot value greater than 1.00 represents a group (one-to-many) entity. See *Considerations for Dot Density Maps*.

Dot Options

Choosing dot size is a subjective decision based on visual perception limits and aesthetics (see *Considerations for Dot Density Maps)*. There are two main options to style dots: simple and symbol. Choose the **Specify** option to use simple dot styles from the drop-down list. By default, the Appearance options are in Custom Mode. Click the toggle button to switch to Graphic Style mode, where a graphic style can be chosen from the drop-down list. Alternatively, choose the **Use symbol** option to use symbols sourced from the Adobe Illustrator Symbols panel. Adjust the scale and opacity as necessary. Check the **Always regenerate dot positions when applying** to randomize the dot positions when the Apply button or Apply MAP Theme button in the MAP Themes panel is clicked.

Note: Only basic appearances can be applied to dot density dots. Adobe Live Effects, graphic styles with opacity, multiple strokes and other non-basic appearances or effects cannot be used.

After a Dot Density MAP Theme is applied, the effect is listed in the Adobe Illustrator Appearance panel. Select an area containing the dot density effect and click Dot Density in the Appearance panel to open the Dot Density dialog box. This dialog box differs from the Edit Dot Density Theme dialog box. The Dot Density dialog box can be used to fine tune the dot density appearance of individually selected areas instead of making a global change.



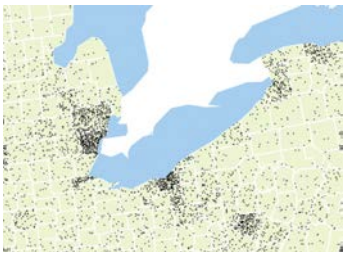
Considerations for Dot Density Maps

When creating one-to-many dot density maps, several considerations should be noted: enumeration units, dot size, dot value and dot placement. The scale, size, shape, and distribution of data across enumeration units (e.g. census tracts or block groups) can cause variations in how a dot density map is patterned. On average, smaller sized and more regularly shaped enumeration units result in a more realistic density map.

The dot value and dot size should be determined together to get an idea of how many dots will populate the map. Take into consideration the minimum and maximum values of the selected attribute. A rounded dot value should be chosen for easy approximation. There is a trial and error phase when choosing the most appropriate dot value and size. Generally, a medium sized dot should be chosen. Small dots produce a widely dispersed dot pattern and may convey disproportionate map accuracy. Large dots produce overly dense dot patterns and hide any noticeable map patterns. As a general rule when an appropriate dot value and dot size are chosen, two to five dots should be seen in enumeration units with the smallest values. MAPublisher allows for automated, random placement of dots.


Too sparse


Too dense


Optimal

When the value for a particular feature is lower than the "Dot value", a dot may not be assigned for that object. This happens because MAPublisher only accepts values that are greater than fifty percent of the dot value to be given a dot. For example, if an object has a value of 4,000 and the dot value is 5,000, it will be assigned a dot because it is greater than fifty percent (or 2,500) of the dot value. Alternatively, an object that has a value of 2,000 will not be assigned a dot because it is less than fifty percent (or 2,500) of the dot value.

Chart Themes

OVERVIEW

Chart themes come in two types: bar chart and pie chart. A bar chart is represented by rectangular bars with lengths proportional to the attribute values that they represent. A pie chart is comprised of a circle divided into sectors, showing attribute value proportion. These charts are generally placed near the center of the aggregation area (e.g. census tract or state).

Chart data is read from attributes from a MAP Layer and MAP Themes quickly styles the data using Adobe Illustrator symbols and graphic styles. Charts can plot both discrete and continuous data. Some examples of discrete data include voters or hair color. Some examples of continuous data would be temperature or height.

FUNCTIONALITY

Create New Chart Theme

To create a new Chart theme, click the Create New Map Theme button in the MAP Themes panel. Alternatively, choose **New MAP Theme** from the MAP Themes panel options menu. This opens the New MAP Theme dialog box, where the theme name, theme type, and feature type for a new Dot Density theme are specified.

New Chart MAP Theme

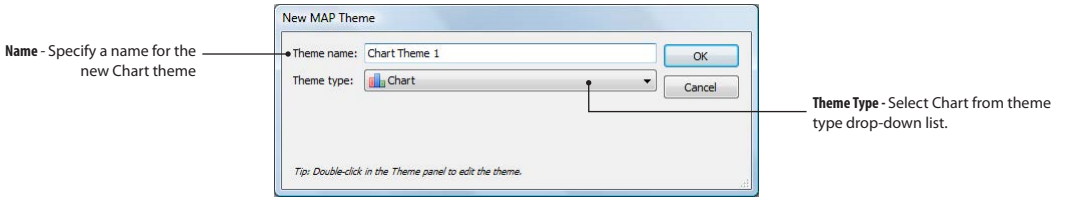


Chart themes are displayed in the MAP Themes panel. To edit a Chart theme, double-click it or select Edit "*Theme Name*" from the MAP Themes panel option menu. This opens the Edit Chart Theme dialog box.

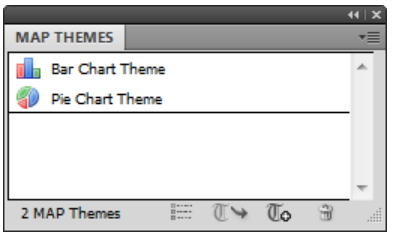
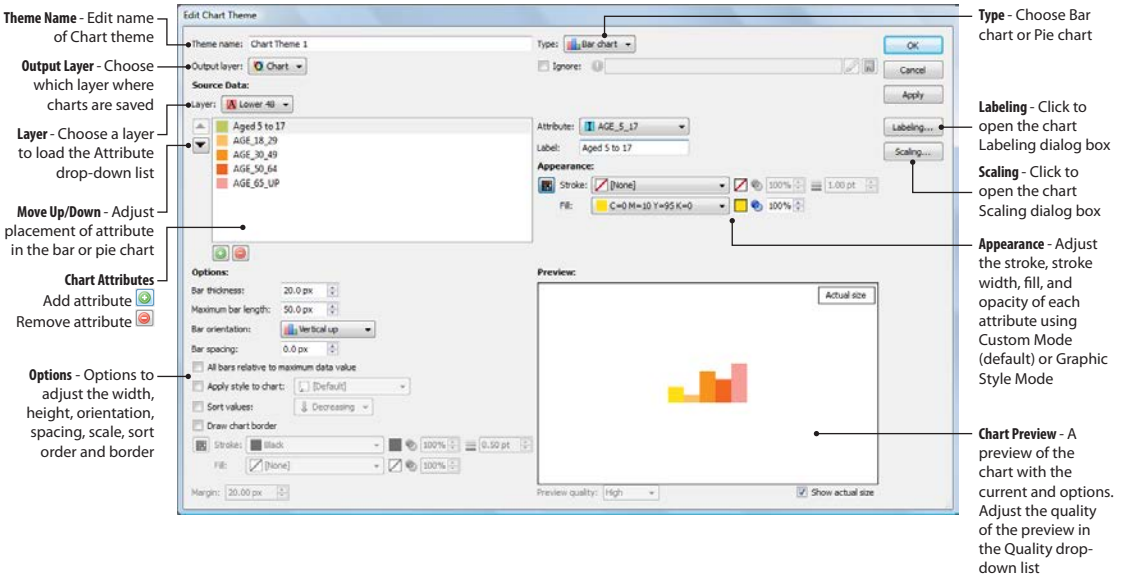


Chart Theme Editor

The Edit Chart Theme dialog box is where the chart type, style and its options are chosen:



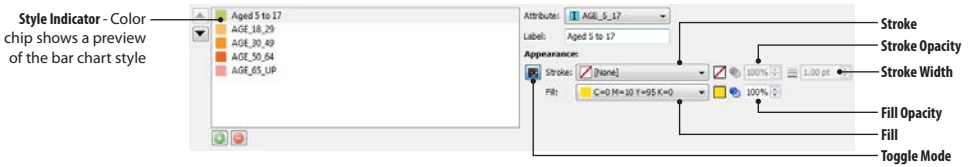
The Theme name is reflected in the MAP Themes panel and can be edited. Specify either Bar chart or Pie chart from the Type drop-down list. Depending on the type of chart chosen, several appearance and option settings will differ. Choose the appropriate Legend layer to store the charts from the Output layer drop-down list. Enable the Ignore option and enter an expression (or use the Expression Builder or Library) to specify data values that will be ignored.

Add Source Data

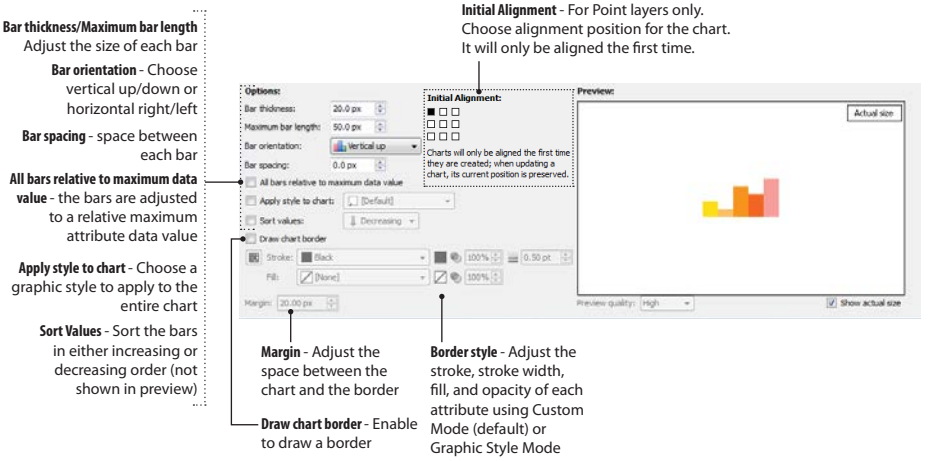
In the Source Data section, choose a MAP Layer to load its attributes from the Layer drop-down list (Text layers are not supported). Click the Select Layers button to open the Select Layers dialog box to choose applicable layers. Only the attributes of a single layer may be chosen at a time (meaning mixing layers and attributes is simultaneously is not possible). Click the Add attribute button to add an Unspecified attribute slot into the list. Select an <Unspecified> item in the list and choose an attribute from the Attribute drop-down list. The attribute name is automatically used in the Label box, however it can be edited and any change is reflected in the attribute list. To change the sort order, select an attribute in the list and click the Up or Down arrow.

Adjust Bar Chart Appearance and Options

To change the appearance of an attribute, select one from the list to enable its appearance properties. The Appearance section, in Custom Mode (default), has adjustments for stroke, stroke opacity, stroke width, fill and fill opacity. Alternatively, click the Toggle Mode button to switch to the Graphic Style Mode. In that mode, choose a predefined graphic style from the drop-down list (sourced from the Graphic Styles panel). Changes made are reflected in the style indicator in the attribute list as well as the chart preview at the bottom of the dialog box.



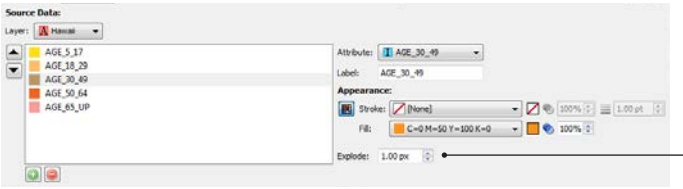
In the Options section, adjust basic bar chart settings—width, height, bar orientation and bar spacing. Other options include setting the bars relative to maximum data value. In this case, all the bar values are divided by the maximum value and then drawn as a relative proportion to it. The Scale by option is useful for instances where a chart size may be used to represent overall proportion in comparison with other charts. The scale value is determined by an attribute in the selected MAP Layer. The Sort Values option sorts (from left to right) increasing and decreasing values. It is not shown in the chart preview. The Draw chart border option is not enabled (default). Click the check box to enable it and adjust its appearance options. Choose from a low, medium, high or very high preview chart quality setting in the Quality drop-down list.



Note: For charts based on a point layer, the Alignment setting will only be applied the first time the chart is created.

Adjust Pie Chart Appearance and Options

The Pie Chart Appearance options differ slightly from the Bar Chart options. Only the options applicable to pie charts are shown here. The other Appearance options function identically as explained in the previous section. The Explode option creates separation of a selected attribute (slice) from the rest of the pie chart. To adjust the separation of all slices, use the Explode option in the Options section.



Explode - Adjust how far the selected attribute is separated from the pie chart

In the Options section, adjust basic pie chart settings—pie radius, hole radius, explode and rotation. The Hole Radius option creates a hole in the middle of the pie chart and results in chart that looks like a ring. The Explode option here is different than the attribute Explode option in that this applies to all the slices and not just a single slice. The Rotation (default at 0) starts at the top (12:00 o'clock position) of the pie chart and rotates clockwise (negative rotation values cannot be used) up 359 degrees.

The other chart options function identically as explained in the previous section.

Pie Radius - Adjust the size of the pie chart

Hole Radius - Adjust size of the hole in the pie chart

Explode - Adjust the separation of all slices

Rotation - Adjust the rotation of the pie chart from 0 to 359 degrees

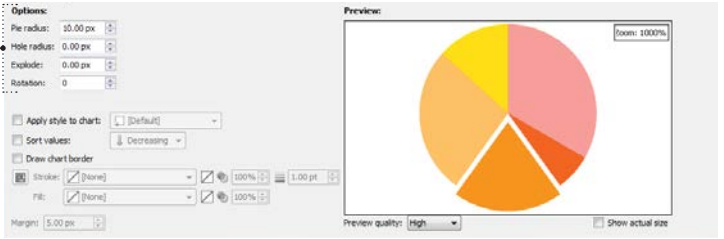


Chart Labeling

There are multiple options to label both bar and pie charts. In the Edit Chart Theme dialog box, click the Labeling button to access the Labeling dialog box. By default, all labeling options are disabled. Click the check box beside Show title, Show value labels and Show name labels to enable labeling options for each one. The Show name labels option only applies to bar charts. The labeling options are shown below with an example of what some of the settings do.

Appearance - Adjust the font and font size of the title. Specify a title in the box or choose from an attribute that contains text

Alignment - Align the title to the left, center or right

Shrink title to fit chart - Adjusts the title so that it is proportional to the overall size of the chart

Show title line - Add a line below the title. Adjust its style properties using Custom or Graphics Mode.

Offset - Adjust how far the label is from the chart

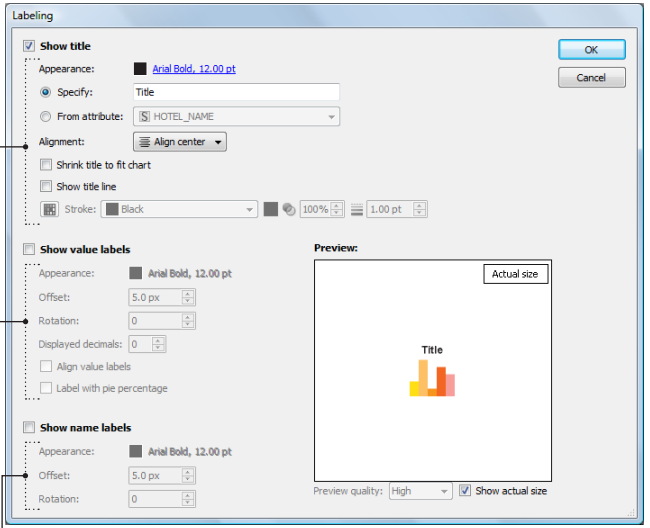
Rotation - Align the title to the left, center or right

Displayed decimals - Set how many decimal places are shown with each label

Align value labels - Align all chart values horizontally

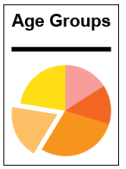
Label with pie percentage - Only for pie charts. Place percentage beside slice.

Show name labels - These options only applies to bar chart themes

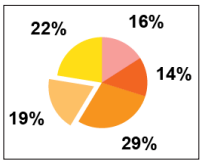


Examples

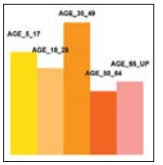
Show title



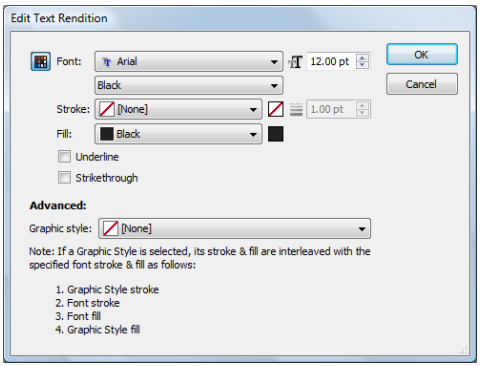
Show value labels



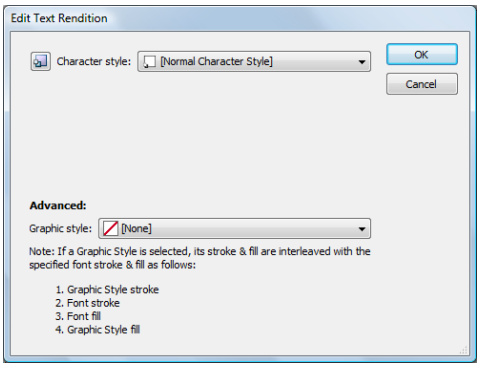
Show name labels



Click the Appearance text link to edit labels in the Edit Text Rendition dialog box. Click the Rendition toggle to choose a predefined **Character Style** in the Character Style mode or set appearance options in the Custom mode.



Custom mode



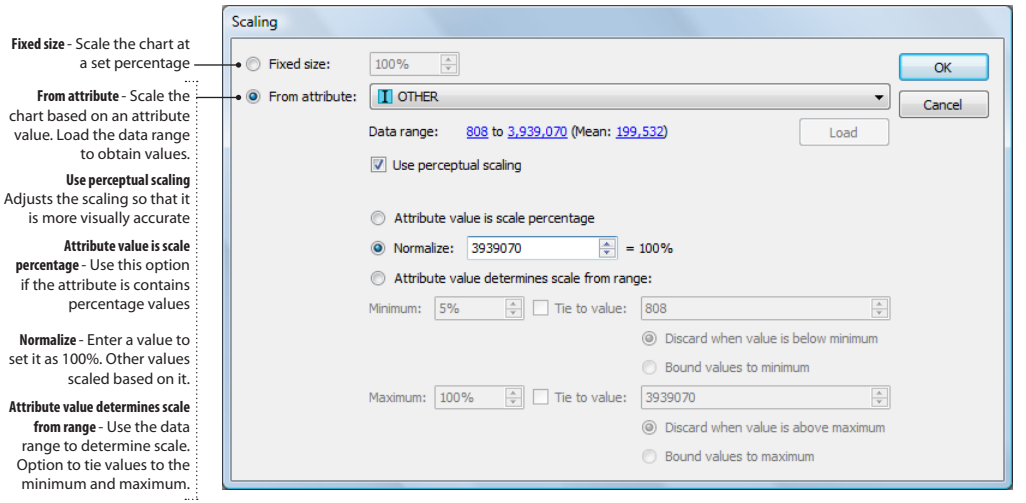
Character Style mode

Chart Scaling

There are multiple options to adjust how charts are scaled. In the Edit Chart Theme dialog box, click the Scaling button to access the Scaling dialog box. There are two options to scale charts: fixed size or use a value from an attribute. The fixed size option scales all the charts equally by the set percentage. From the initial size, a scale above 100% increases chart size and a scale below 100% decreases chart size.

To scale from attribute, click the attribute drop-down list and choose the appropriate attribute. Click the Load button to load the data range so that the Scaling dialog box knows which values to use. When the data range values are clicked, they populate the boxes below (Normalize and Tie to value).

Use the perceptual scaling option to create a more visually accurate depiction of the scale. Perceptual scaling modifies the scaling slightly in a way that tends to make users perceive the relationship between scaled symbols as intended. When checked, the scaling will not be mathematically accurate but should be viewed as visually accurate.



Use the Attribute value is scale percentage option to scale the charts directly using the values for the selected attribute. The maximum scale value allowed is 999 percent. Any values that do not conform will be marked by the MAP Themes Log as an error and the scale for that chart will not be applied.

Use the Normalize option to set a value as 100 percent. All other values are converted to a percentage based on the set value and used to scale the charts. For example, if an attribute has a value of 2000 to be normalized as 100 percent, that means a value of 1500 will be considered as 75 percent, effectively reducing the size of the chart.

The Attribute value determines scale from range option contains a number of setting to fine tune how the scale is set based on a range of values. The settings of the Minimum (default 5%) and the Maximum (default 100%) are based on the minimum and maximum of the data range. The Tie to value box specifically states which value in the range that is set as the Minimum or Maximum. It has two options available where any values below (minimum) or above (maximum) can be discarded or bound. This may be useful if there are extreme low or high values that could affect the scaling.

MAP Theme Legends

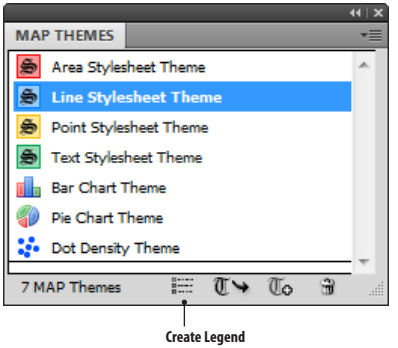
OVERVIEW

A legend can be created from any MAP Theme—Stylesheets, Dot Density and Charts. Each theme has its own options and settings to create a legend. A legend is composed of boxes to represent area layers, lines to represent line layers, point symbols to represent point layers and text for text layers.

FUNCTIONALITY

MAP Theme legends must be added to a **Legend layer**. One can be created first using the Add MAP Layer button in the MAP Views panel and choosing a *Legend* feature type (see chapter 4). Alternatively, MAP Themes will create one if no Legend layers are present.

To create a legend, select a MAP Theme and click the **Create Legend** button at the bottom of the panel. Alternatively, choose Create Legend in the panel options menu.



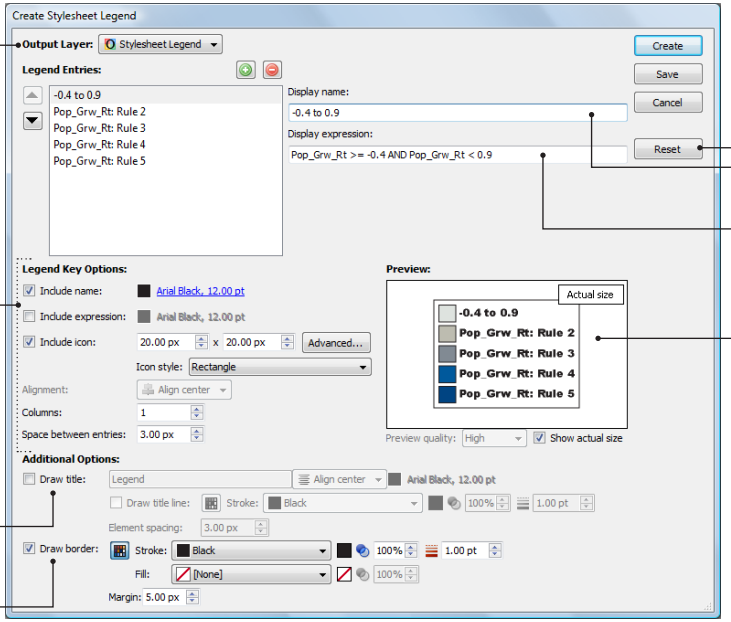
The Legend Editor dialog box will differ depending on the type of MAP theme chosen: Stylesheets open the **Stylesheet Legend Editor**, Dot Density opens the **Create Dot Density Legend**, and Charts open the **Create Chart Legend**.

Similar to other MAPublisher functions, the legend editors are dependent on several Adobe Illustrator panels including Swatches, Graphic Styles, and Character Styles to style legend symbol elements. Populate these panels with swatches and styles before creating legends.

Legends are not dynamically linked to the MAP Themes. When MAP Theme styles change, a new legend must be generated. Select a MAP Theme that already has an existing legend, click the Create Legend button and adjust the settings to create a new legend. It is most useful when tweaking a legend to make it match or fit a layout design. Furthermore, legend elements can edited freely using the Direct Selection tool, in isolation mode or if it is ungrouped (menu *Object > Ungroup)*.

Stylesheet Legend Editor

The Stylesheet Legend Editor is used to create legends from point, line and area Stylesheet MAP Themes.



Output Layer - Select a Legend layer as output

Include name - Check to include the legend entry names

Include expression - Check to include the legend rule expression

Include icon - Check to include the legend icon. Set the size, icon style or use Advanced to match legend entries to rules.

Alignment - Align the legend elements to the left, center, or right

Columns - Specify number of columns in the legend

Space between entries - The distance between each legend entry

Draw title - Check and specify a legend title in the box. Use options to align and style title

Draw border - Check to place border around legend entries. Use options to style border.

Reset - Reset legend entries to its original setting

Display name - Rule name displayed in legend (if enabled)

Display expression Expression displayed in the legend (if enabled)

Legend Preview - A preview of how the legend key looks with current settings. Choose from several preview qualities and actual size.

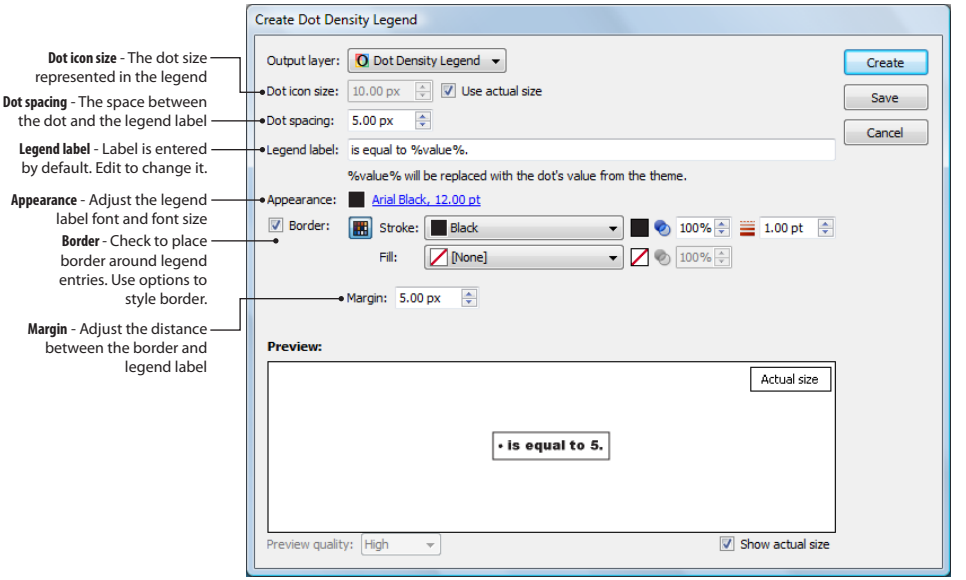
The Legend Entries list determines how many items are listed in the legend. Use the Add and Remove entry buttons to adjust how many entries are listed and use the Up and Down arrows to adjust the hierarchy. Select a legend entry and adjust the Display name and Display expression. These labels are used in the legend and are dependent on whether or not the Include name and Include expression options are enabled.

By default, the Include icon option is enabled. This is the legend icon to the left of an entry display name. Edit the size of the graphic using the vertical and horizontal size adjustments. Click the Advanced button to apply more than one rule style to a legend layer. This may be useful in cases where two styles such as one for a highway and one to represent high traffic volume, can be both chosen for one legend entry to represent a high trafficked highway. In addition, there are many shapes available in the Icon style drop-down list. The Icon style list is different for Line and Area Stylesheet themes (unavailable for Point Stylesheet themes). Use the Alignment option to align the legend entries left, center or right. Use the Columns option to adjust how many columns are in the legend. The minimum number of columns is one and the maximum number is dependent on how many legend entries exist. The Space between entries option determines the distance (in pixels) between each entry.

In the Additional Options section, use the Draw border options to add a border around the legend entries. Toggle between Custom Mode and Graphic Style mode to choose border style settings. Use the Draw title options to add a title to the legend. Specify a title in the title box and use the options to align and set a style. Enable the Draw title line to place a horizontal line in between the title and the legend entries. The Element spacing option determines the distance (in pixels) between the title, title line and legend entries.

Create Dot Density Legend

The Create Dot Density Legend dialog box is used to create a legend from Dot Density MAP Themes.



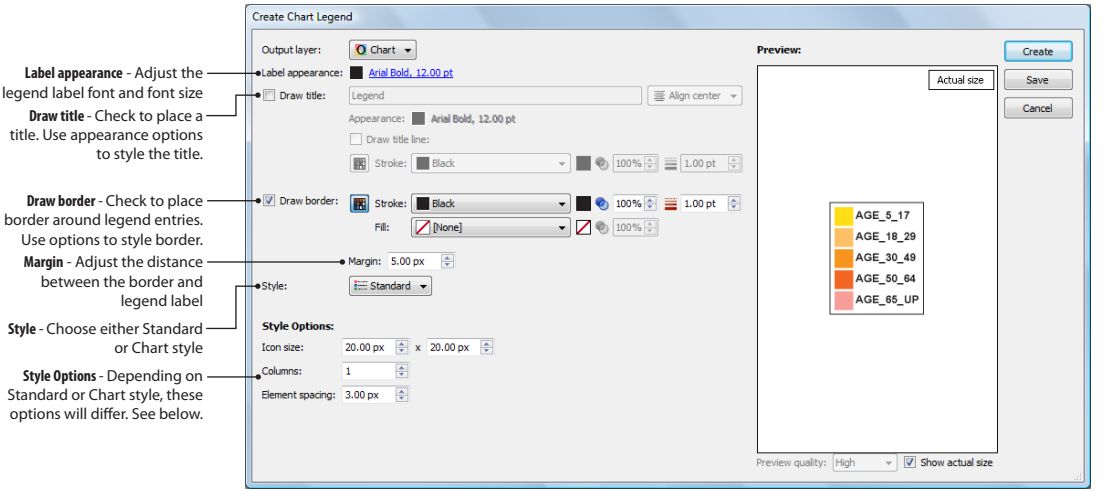
By default, the Use actual size check box for the Dot icon size setting is enabled. Uncheck it to manually set a size (in pixels). The preview shows how the legend will look depending on the settings. Adjust the Dot spacing option to increase or decrease the distance between the dot and the legend label.

The Legend label box provides the legend with a title. It uses a %value% variable to determine the value from the Dot Density theme. To adjust the value, close this dialog box and edit the Dot Density theme. Click the label appearance link to change the label font, style and size.

By default, the Border option is enabled. Use the options in either Custom Mode or Graphic Style Mode to set the style of the border. Increase or decrease the value Margin option to adjust the distance between the legend label and the border.

Create Chart Legend

The Create Chart Legend dialog box is used to create legends from Chart MAP Themes.



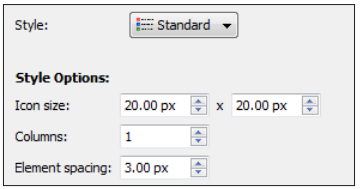
Click the Label appearance link to change the font, style and size of the legend entry labels.

Use the Draw title options to add a title to the legend. Specify a title in the title box and use the options to align and set a style. Enable the Draw title line to place a horizontal line in between the title and the legend entries. Use Custom Mode or Graphic Style Mode to set the line style.

By default, the Draw border option is enabled. Use the options in either Custom Mode or Graphic Style Mode to set the style of the border. Increase or decrease the value Margin option to adjust the distance between the legend entries and the border.

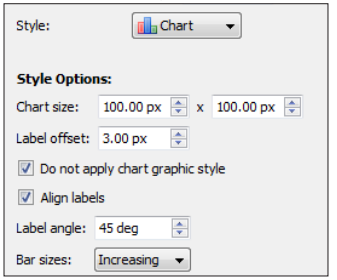
The Style drop-down list has two options: Standard and Chart. The Standard option gives the legend an icon and label style (see above screenshot).

Standard style options



The Chart option provides more options to create a legend that is representative of the chart. When the legend is created for bar charts, these options are provided:

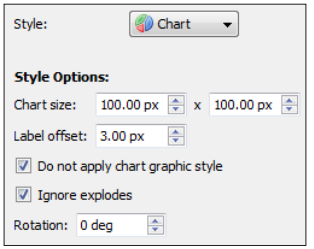
Bar chart style options



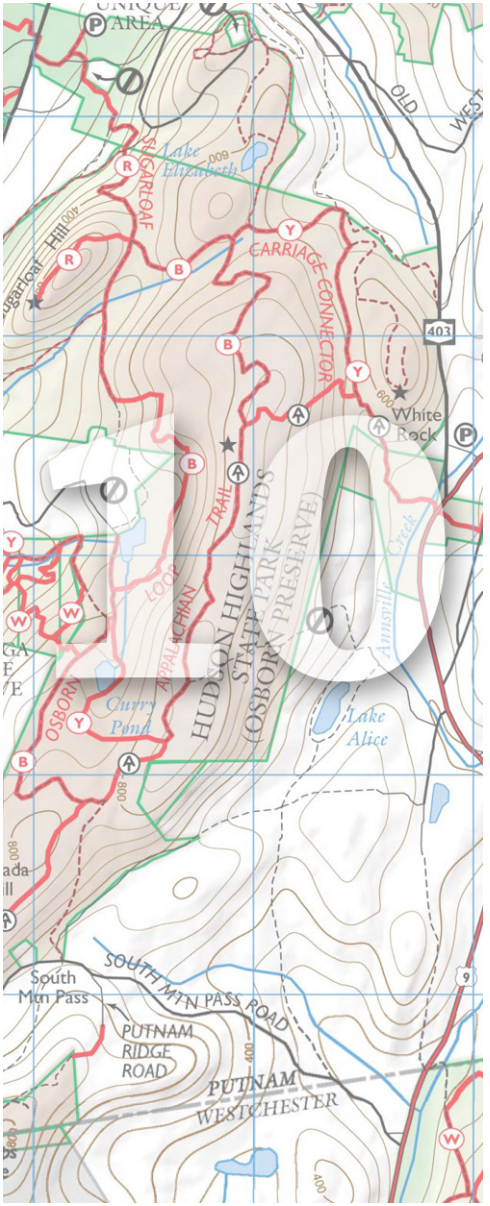
The chart size is the overall size of the chart, not the individual bars themselves. The Label offset is the distance between the bars and its respective label. The Do not apply chart graphic style option removes any graphic styles that were applied to the chart when it was created. The Label angle rotates the label to a specified degree. Bar sizes can be set to Increasing, Decreasing or Equal. These are for visual purposes only and do not reflect the actual data.

When the legend is created for bar charts, these options are provided:

Pie chart style options



By default, the Ignore explodes option does not display an exploded pie chart in the legend when it is checked. Set a Rotation to rotate the pie chart clockwise.



Labeling

One of the most useful features of MAPublisher is the ability to create labels for map objects using values from the MAP Attributes panel. Manually entering and placing labels is not necessary, provided that the labeling information is included in the map attributes of the MAP Layer being labeled.

MAPublisher provides two methods of adding labels to a map, both of which contain options to place labels intelligently using defined label settings.

One way to create feature labels is to first select all the features to be labeled and use **Label Features** to label all of them by specified attribute values.

An alternate method involves using the **MAP Tagger Tool** to apply labels individually, also by specified attribute values.

As a complement to the labeling functions, **Create Knockouts** masks the part of line features covered by text labels for improved text legibility.

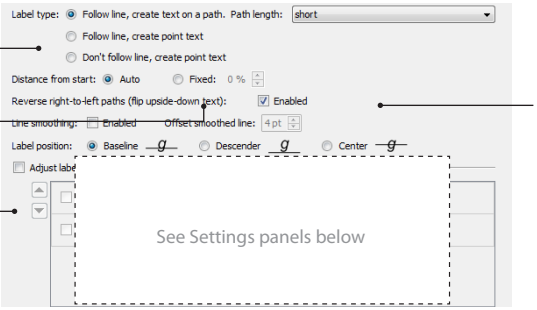
Topics covered in this section:

Label Features
MAP Tagger Tool
Create Knockouts

For more advanced labeling capabilities refer to chapter 17 about MAPublisher LabelPro (additional license required).

Labeling Tools

For Label Features and MAP Tagger Tool



Source Layer - Lists the Point, Line and Area layers which can be labeled. Only selected features are listed.

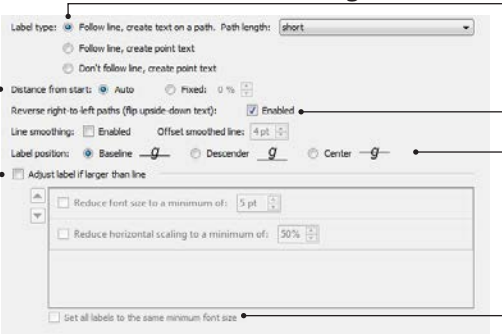
Source Column - Select the column that contains the values you wish to use to label the selected features

Label Settings - Click the appropriate button to assign label settings and rules for each layer type (see below)

Destination Text layer - For each Source Layer, select the destination text layer you wish to place the generated text labels on.

Line Label Settings





Distance from start - Controls how text is placed relative to the line:
Auto - places text at the midpoint for straight lines and find the smoothest portion closest to the midpoint for curved lines.
Fixed - allows for precise placement of text along a line.

Adjust label if larger than line - Specify rules for the scaling of text if the text will not fit onto the text path in its entirety. Click the Up or Down buttons to adjust the order in which the rules will be implemented in the labeling process.

Label type - Select whether text should follow lines or be placed at a point near the selected line. Path length option creates short or long text on path.

Reverse right-to-left paths (flip upside-down text) Always enabled by default, it automatically orients labels uniformly. Disabling this feature will not flip the label.

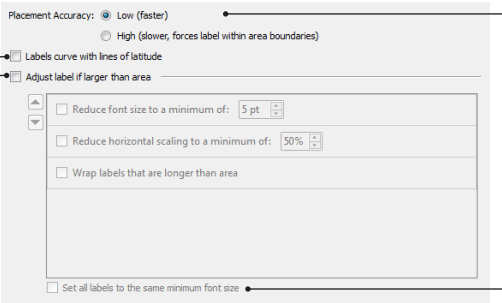
Line Smoothing / Offset Line - Check to smooth the generated text path. Then, specify an offset distance for the text path from the original.

Label Position - Choose how the text will be placed on the generated text path

Set all labels to same minimum size - If at least one label has been reduced in font size due to the implementation of rules, then ALL text items will be reduced to that font size (in Label Features only)

Area Label Settings





Labels curve with lines of latitude
For projected layers, choose this option to generate curved text along latitude lines

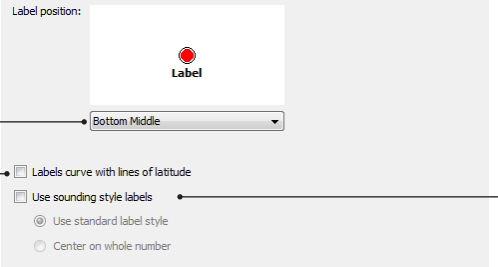
Adjust label if larger than line - Specify rules for the scaling of text if the text will not fit inside the area object in its entirety. Click the Up or Down buttons to adjust the order in which the rules will be implemented in the labeling process.

Placement Accuracy - To quickly generate labels, choose *Low*. To force labels within the boundaries of area of complex shape, choose *High*.

Set all labels to same minimum size - If at least one label has been reduced in font size due to the implementation of rules, then ALL text items will be reduced to that font size (Label Features only)

Point Label Settings





Label Position - Choose the position of the label relative to the point symbol

Labels curve with lines of latitude
For projected layers, choose this option to generate curved text on latitude lines.

Use sounding style labels - Specific options to label symbols marking a water depth position according to hydrographic conventions. See details in this chapter.

Label Features

Object > *MAPublisher* > *Label Features* or *MAP Toolbar* 

FUNCTIONALITY

The Label Features function adds labels to a map based on the attribute data of the selected features for Line, Point or Area MAP Layers. All selected features on MAP Layers (which contain appropriate attribute information) can be labeled using this tool. Data selected on multiple MAP Layers can be labeled simultaneously. Additional options can be specified, such as alignment to lines of latitude, minimum font size, horizontal scaling and label position in order to place labels intelligently.

PREREQUISITES

Labels will be added to a  **Text layer** created using the **MAP Views** panel. To create a new text layer, use the **Add MAP Layer** function in the MAP View panel(see chapter 4):

- Set the feature type to *Text*.
- To enable copying the attributes from the source MAP layer to the label destination layer, check the option **Base attribute schema on** and select the appropriate layer to copy its attribute schema.

For best results, set up a character style for type font, size, justification and color. (Adobe Illustrator menu *Window* > *Type* > *Character Style*). Select the appropriate style in the Character Style panel before starting the Label Features tool and MAPublisher will generate labels based on these settings. Otherwise labels applied will appear in the current default color, font and font size. Once text attributes have been specified, select the features to be labeled and go to *Objects* > *MAPublisher* > *Label Features* or the MAPublisher toolbar button  to access the function.

LABEL FEATURES SETTINGS

Source Layer and Column

First set the options in MAPublisher to determine the attributes that will be converted to text labels. The **Source Layer** list shows the Area, Point and/or Text layers currently containing selected data.

For each layer, the **Column** drop-down list is populated with the attribute structure of that layer. Choose the appropriate column that holds the attributes you wish to label the map with.

Destination Text Layer

In the **Text layer** drop-down list, specify a Text layer that the labels will be output to. Note that labels can only be created on text layers in the same MAP View as the Source Layer.

LABEL SETTINGS

MAPublisher provides options to specify label preferences such as label position, alignment to lines of latitude, minimum font sizes and horizontal scaling to best place labels within polygons and paths. These label settings are common to **Label Features** and the **MAP Tagger Tool** (including **MAP Contour Tagger**).

Line Labels

MAPublisher places Line labels depending on the curvature and length of the line string. Click the **Line Labels** button to assign MAPublisher Line Label Settings. Choose a Label type to either **Follow line and create text on a path**, **Follow line and create point text** or **Don't follow line and create point text**. The first option creates text that follows a path where its position can be adjusted along it. The second option creates text that follows the angle of the path, but uses a point of reference. The last option places the text at the middle point of a line and uses a point of reference.

MAPublisher controls where text is placed along lines by using the **Distance from start** option. Selecting **Auto** will place text at the midpoint for straight lines and, for curved lines, will find the smoothest portion of the curved line closest to the midpoint. When selecting **Fixed**, the distance from start is set as a percentage of the length of the line.

Reverse right-to-left paths (flip upside-down text) is enabled by default and will automatically orient labels uniformly if some lines are flipped. Disabling this feature will not flip labels.

When the **Line smoothing** option is enabled, MAPublisher creates a smoothed version of the selected path for each text object in the layer and places the text along it at the specified offset value. The labels can be dragged and positioned at any position along a line. When *Line Smoothing* is not enabled, the labels follow the original path.

Note: For lines with a high number of vertices (e.g. contour lines), using the Line Smoothing option significantly speeds up the labeling process.

The **Label position** option allows for the selection of the vertical position of the labels relative to the line. Three options are available:

- **Baseline***:* places labels above the generated text path.
- **Descender***:* places the portion of a letter in a Latin-derived alphabet that normally extends below the baseline of a particular font above the generated text path.
- **Center**: places the label on the generated text path.

Labels can be modified if they exceed the length of the line in the current default font size. Check the **Adjust label if larger than line** option to activate the label reduction rules. These rules are executed in a hierarchical order and can be reordered with the Up and Down buttons. The **Reduce font size** option reduces the size of the font to a specified minimum size in points. The **Reduce horizontal scaling** option allows text to be scaled down horizontally by the percentage specified.

Label Features also provides an additional option (not applicable for the MAP Tagger Tool). If any of the labels have been adjusted in size due to the activation of a line adjustment rule, all labels can be resized to the same size by checking the **Set all labels to the same minimum font size** option.

When a specified rule cannot be implemented successfully, MAPublisher will default to placing the label centered over the line. Also note that text generated for Line labels will be automatically orientated above the lines, irrespective of the direction of the line.

Area Labels

MAPublisher places Area labels depending on the shape and size of the area polygon. Click the **Area Labels** button to assign MAPublisher Area Label Settings.

The *High* **Placement Accuracy** option makes more advanced calculations for the label positions so as to force them to fall within the area boundaries (useful for areas with strange shapes, for example some S shape islands). However, it does slows down the labeling process so a *Low* accuracy can be preferable depending on the expected results.

When the **Labels curve with lines of latitude** option is selected, MAPublisher creates a path that conforms to local lines of latitude and place the text along it. If this option is not selected, the labels are placed horizontally. This option is enabled only for MAP Views set with a projected coordinate system.

Labels can be modified if they exceed the size of the area in the current default font size. Check the **Adjust label if larger than area** option to activate the label reduction rules. These rules are executed in a hierarchical order and can be reordered with the Up and Down buttons. The **Reduce font size** option allows to reduce the size of the font to a specified minimum size in points. The **Reduce horizontal scaling** allows text to be scaled horizontally by the fraction specified. The **Wrap Labels that are longer than area** option adds a carriage return at the nearest space in the text.

Note: The *Wrap Labels that are longer than area* option is not available if the *Labels curve with lines of latitude* option is checked.

Label Features also provides an additional option which is not available with the *MAP Tagger tool*. If *any* of the labels have been adjusted in size due to the deployment of an area adjustment rule, *all* labels can be resized to the same size by checking the **Set all labels to the same minimum font size** option.

When a specified rule cannot be implemented successfully, MAPublisher will default to placing the label centered over the area. In situations with compound areas, MAPublisher labels the largest area in the compound.

Point Labels

Click the **Point Labels** button to assign MAPublisher Point Label Settings.

The **Label Position** offers nine position options for the text anchor. Choose one of the placements in the drop-down list: Upper Left, Upper Middle, Upper Right, Left, Center, Right, Bottom Left, Bottom Middle, Bottom Right. A preview shows the label placement.

When the **Labels curve with lines of latitude** option is selected, MAPublisher creates a path that conforms to local lines of latitude and places the text along it. If this option is not selected, the labels are placed horizontally. This option is enabled only for MAP Views set with a projected coordinate system.

Special Point Labels: Sounding Style Labels

The **Use sounding style labels** option is specific for users wishing to label point symbols marking measured water depth positions. These types of labels are officially known as *Charted Soundings* and its representation on official navigational charts are ruled by international standards.

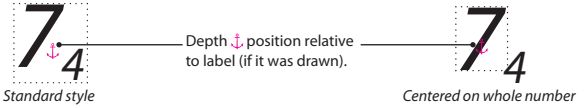
The aspect of the soundings is always according to the following rule: *Numerals representing the decimeter part of a sounding should be visibly smaller than those representing whole metres and positioned slightly lower than the latter (subscript). Zero decimeter values must not be shown.*

For example: *12* *9_2*

Note: Traditionally, slanted text (in italic) represents depth values in metre, straight text represents depths in feet.

On official nautical charts, the actual depth symbol is not plotted — the label itself indicates the depth position. Two options are possible for the soundings' placement relative to the depth point:

- **Use standard label style**: soundings are placed in such a way that the centre of gravity (geometric centre) of the set of numerals (integer and decimal parts) coincides with the position referred to. This option is the most commonly used.
- **Center on whole number**: soundings are placed in such a way that the center of gravity of the integer part of the number coincides with the position referred to.



Note: More information on these standards can be found on the International Hydrographic Office Website, *www.iho.int*, see publication S-4 (formerly M-4).

The relative size and position of the decimal (subscript) relative to the integer number (regular type) is controlled by the Adobe Illustrator document setup. Choose the menu *File > Document Setup* to change the subscript size and position under *Type Options*. These settings should be performed prior to running the labeling function because they affect the labels placement relative to the source symbols.

LABEL FEATURES RESULTS

When all the *Layer Label Options* have been set and the *Label Settings* have been specified click OK to label the selected features.

Labels applied using Label Features appear in the current default color, font and font size (as set by the selected character style).

If the destination text layer and source layer have the same attribute schema, the attributes of the labeled features are copied as attributes to text features (to apply MAP Themes for example).

MAP Tagger and MAP Contour Tagger Tool

Tools > MAP Tagger Tool  *and MAP Contour Tagger Tool* 

FUNCTIONALITY

The **MAP Tagger Tool** and **MAP Contour Tagger Tool** are interactive labeling tools that use the attribute data of selected features as a source for the labels. These tools function similarly to the *Label Features* function, however, labels are created by clicking features on the artboard. It provides greater control over the initial placement of the label. For the MAP Tagger Tool, labels are placed at the position of the mouse click and leader lines can easily be created in dense areas. For the MAP Contour Tagger Tool, labes are placed for Line layers only and works best on contour lines.

PREREQUISITES

Labels are added to a  **Text** layer created using the **MAP Views** panel.

For best results, set up a character style for type font, size, justification and color in the Adobe Illustrator *Character Style* panel. Select the appropriate style while using MAP Tagger tools otherwise labels will appear using the default color, font and font size.

Double-click the  tool to enter new label settings or to edit settings. Click and hold the button to switch to the MAP Contour Tagger tool .

MAP TAGGER TOOL SETTINGS

Source Layer and Column

First set the options in MAPublisher to determine the attribute values that will be converted to text labels. The **Source Layer** list shows all Area, Point and/or Text layers in the current document.

For each layer, the **Column** drop-down list is populated with the attribute structure of that layer. Select the column that holds the desired attributes to label the data with.

Target Text Layer

In the **Text layer** drop-down list, specify the Text layer that the labels will be output to. Note that labels can only be created in text layers in the same MAP View as the Source Layer.

LABEL SETTINGS

MAPublisher provides options to specify label preferences such as label position, alignment to lines of latitude, minimum font sizes and horizontal scaling to best place labels within polygons and paths. These Label Settings are common to **Label Features**, **MAP Tagger Tool** and **MAP Contour Tagger Tool** (Lines only).

TAG MAP DATA

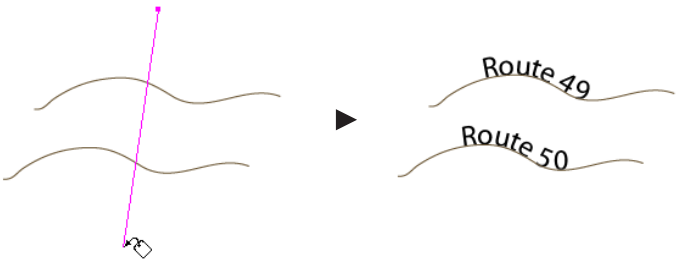
Ensure the label settings are completed. With the **MAP Tagger Tool** enabled, click a map object to add a label for it. It may be convenient to lock the layers in the Adobe Illustrator Layers panel or disable undesired features by setting the attribute column option to *No attribute selected* for those data layers that do not require labeling to avoid undesired results.

The following list of keyboard modifiers can be used for additional labeling options with the **MAP Tagger Tool**:
= *click map object with MAP Tagger Tool*

Standard label	L *Line labels are placed at click point and assigned angle of line at click point* A *Area labels are placed horizontally at click point* P *Point labels are placed horizontally at click point*
Label horizontally + Shift	L *Line labels are placed horizontally at click point*
Create leader line + Shift + *drag*	L *Line labels are placed horizontally. Leader line connects text to line feature.* A *Area labels are placed horizontally. Leader line connects text to area feature.* P *Point labels are placed horizontally. Leader line connects text to point feature.*
Label and move + *drag*	L *Line labels are assigned angle of line at click point and can be moved immediately* A *Area labels are placed horizontally and can be moved immediately* P *Point labels are placed horizontally and can be moved immediately*

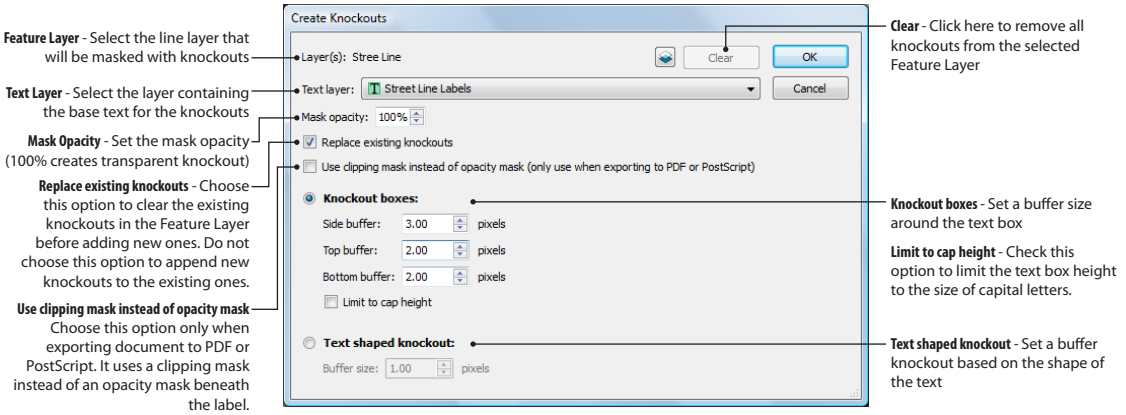
Note: To create custom leader lines use a graphic style. Create or load a graphic style and select it in the Graphic Styles panel while using the MAP Tagger Tool function.

The labeling procedure for **MAP Tagger Tool** differs slightly. Labels are placed by drawing a line and dragging it across lines (instead of clicking features to label them). This is particularly useful for contour lines, routes or rivers that are positioned near each other. The label follows the path.



Create Knockouts

Object > MAPublisher > Create Knockouts or *MAP Toolbar* 



FUNCTIONALITY

The Create Knockouts function masks parts of line features that are covered by text. The knockouts can be created for any MAP Layer. All lines in the selected feature layer are affected by the function. A knockout is created for all text in the selected **Text** layer.



The opacity of knockout masks can be set in the Create Knockouts dialog box and can be modified afterwards through the Adobe Illustrator Transparency panel.

By default, the size of the knockouts correspond to the Adobe Illustrator text bounding box—that includes ascenders and descenders (e.g. bottom of letter g). This size can be increased by adding a buffer in pixels (side, top and bottom) or limited to the height of capital letters. Optionally, choose the knockout to correspond to the shape of the text. This allow for finer control over the appearance of the knockouts.

Create Knockouts can either append new knockouts to the selected feature layer or replace the exiting ones. It is also used to clear knockouts that were previously created with the function.

Note: Any text layer can be used to create knockouts, it does not have to be generated by MAPublisher Labeling functions. The Feature and Text layers do not have to be in the same MAP View.

PREREQUISITES

Create Knockouts requires any type of MAP Layer and a **Text** layer to be unlocked and visible.

All features in the selected layers will be affected by the function. Text and features that are not supposed to be masked must be moved to a different layer beforehand.

USING CREATE KNOCKOUTS

To access the function, click the *Create Knockouts* button on the MAPublisher toolbar. Alternatively, choose *Object* > *MAPublisher* > *Create Knockouts* from the main menu.

Layers

In the Create Knockouts dialog box, click the Select Layers button to choose at least one **Feature Layer** (visible and unlocked), and then choose a **Text** layer from the drop-down list. Use the Layer Type Filter to filter which layers are shown. Text in the selected text layer should overlap with some of the features in the selected feature layer to get reasonable knockout results.

Mask Opacity

The **Mask Opacity** option sets the opacity of the masks created behind the text: a 100% setting creates an opaque mask (the feature will be invisible behind the text) and a 0% setting does not hide any features at all.

Replace Existing Knockouts

The **Replace existing knockout** option clears the existing knockouts on the selected Feature Layer before adding the new knockouts. This is useful when running the Create Knockouts function again after adjusting the settings slightly. To append the new knockouts to the existing one, make sure this option is not checked.

Knockout Boxes

Several parameters are available to set the size of the knockout. By default, the knockout corresponds to the Adobe Illustrator text bounding box. That bounding box can be slightly taller than the characters in the selected text because it takes into account the size of ascenders and descenders (e.g. | and g characters). To increase the size of the knockout, three buffer options are available: **Side Buffer**, **Top Buffer** and **Bottom Buffer**. Buffer sizes are entered as pixel values. The **Limit to cap height** option reduces the knockout size to the height of the capital letters. For example, this option is useful when labeling contour lines that are close to one another where the regular knockout size could create masks that overlap from one contour to the next. The knockout boxes are represented below by the dashed line (for visual reference only).



Default knockout size



Buffer knockout size (2 px)



Limit to cap height knockout size

To achieve a knockout that does not conform to a box, choose the **Text shaped knockout** option and specify a buffer size. This creates a knockout that is based on the shape of each text character. It allows for finer knockout control.



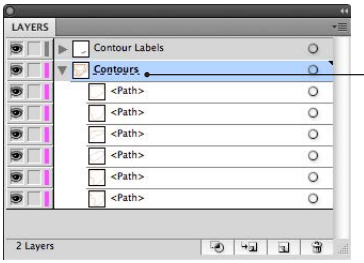
Text shaped knockout (1 px)

Note: Text shaped knockouts may increase document file size.

KNOCKOUT RESULTS

All art in the MAP Layers are masked by the text objects in the selected Text layer, where appropriate.

To achieve the knockout effect, Create Knockouts applies an opacity mask at the layer level as can be seen in the Adobe Illustrator Layers panel.

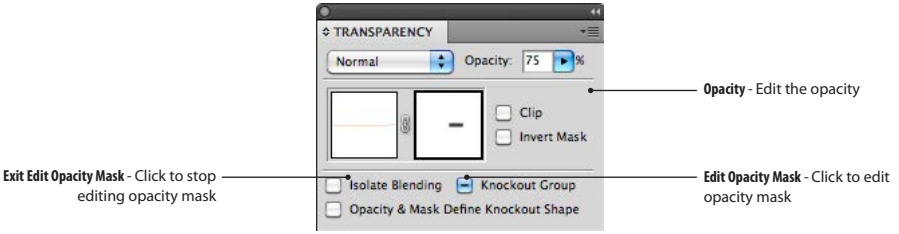


This masking does not affect the MAP Layer attributes or properties.

Edit Knockout Masks Opacity

The opacity of all the knockouts within MAP Layers can be edited using the Adobe Illustrator **Transparency** panel:

1. In the Adobe Illustrator Layers panel, click the target button next to the master layer name .
2. Choose **Window > Transparency** to open the Transparency panel.
3. In the Transparency panel, click the right-side preview to start editing opacity mask.



4. Click the left-side preview in the Transparency panel to exit the opacity mask editing mode.

Note: If for some reason the knockouts are not selected when you exit the opacity mask editing mode, the next time you return to this mode, they will not be selected by default—you'll have to select the knockouts again from within the opacity mask editing mode (click the object or use the Layers panel target button).

CLEAR KNOCKOUT MASKS

Open the **Create Knockouts** dialog box, ensure that the MAP Layers that contain the knockouts are selected and click the **Clear** button.



MAP Selections and Document Operations

MAPublisher contains tools for selecting data graphically and by attribute values.

The **MAP Selections** panel provides functionality to create, edit and save multiple selection criteria: based on attribute expressions, manual art selections or spatial filters. MAP Selections are saved with the document.

The **Split Layer** function allows to split MAP Layers based on attributes values to facilitate data management.

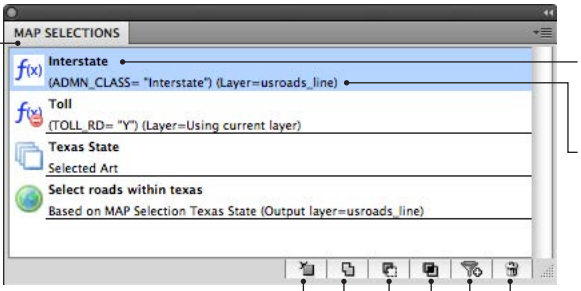
The topics covered in this section:

MAP Selections
Split Layer
Right-to-Left Text
Text Utilities

MAP Selections

Window > MAPublisher > MAP Selections or *MAP Toolbar*

MAP Selections Panel



MAP Selections List - MAP Selections saved in the current document

Three different types of MAP Selections:

- Attribute Filter
- Art Selection
- Spatial Filter

Invalid MAP Selections for the currently selected layer are marked with an additional sign.

MAP Selection Name - Name given to the MAP Selection. It can be changed in the *Edit MAP Selection* dialog box.

MAP Selection Parameters - Summary of the selection parameters. They can be changed in the *Edit MAP Selection* dialog box.

Delete MAP Selection - Delete highlighted MAP Selections

Create New MAP Selection- Opens the *New MAP Selection* dialog box (below)

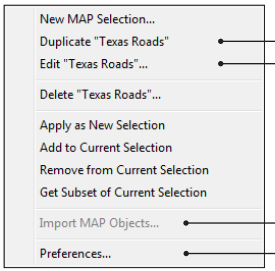
Get Subset of Current Selection - Makes a selection within the current selection

Remove from Current Selection - Removes the highlighted criteria from the current selection

Add to Current Selection - Adds the highlighted criteria to the current selection

Apply as New Selection - Makes a new selection using the highlighted criteria

Panel options:



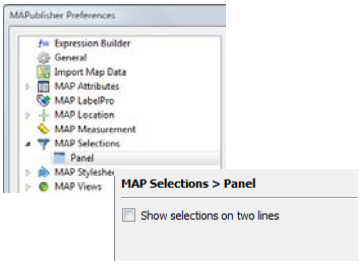
Duplicate MAP Selection - Copies the selected MAP Selection

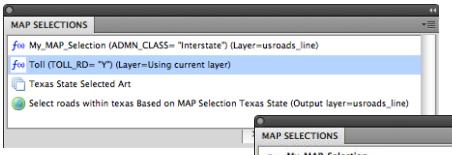
Edit MAP Selection - Opens the *Edit MAP Selection* dialog box

Import MAP Objects - Opens the *Import MAP Objects* function (see chapter 4)

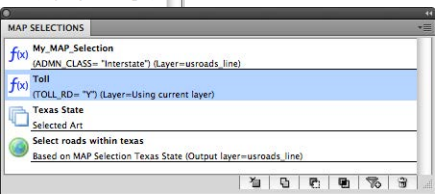
Preferences - Opens the MAPublisher Preferences on the MAP Selections property sheet

MAP Selections Panel Preferences



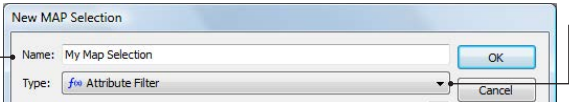


Show filters on two lines - cleared



Show filters on two lines - selected

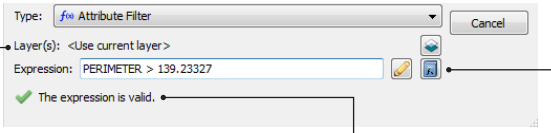
New/Edit MAP Selection



Name - Assign or edit the name of the MAP Selection

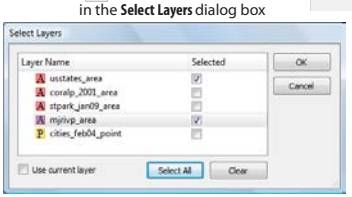
Type (new MAP Selection only) - Choose the MAP Selection type:
- *Attribute Filter*
- *Art Selection*
- *Spatial Filter*

Attribute Filter



Layer(s) - Choose layers to base the selection on. By default, the selection will be done on the currently selected layer.

Click to make a different choice in the **Select Layers** dialog box



Expression - Enter or edit the expression directly into the entry field, or access
- **Expression Builder** - see chapter 5
- **Expression Library** - see chapter 5

Expression Validity - Indicates if the expression is valid or invalid. If invalid, additional information is reported

Art Selection

Art must be selected first.



Edit Art Selection

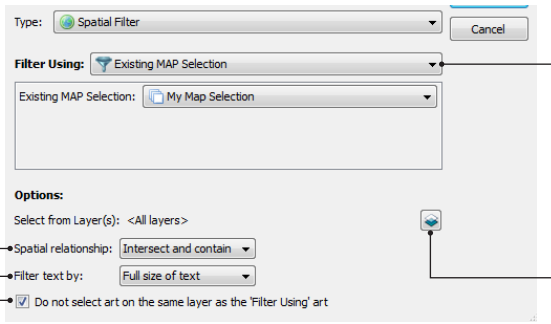


Show Selection - Highlights the Art Selection on the artboard

Replace - Replaces the saved Art Selection with the current artboard selection

Add - Adds the current artboard selection to the saved Art Selection

Spatial Filter



Spatial Relationship - Choose the method applied for the spatial filter:
- *Intersect and contain*: objects that intersect or are contained within the delimiting features will be selected
- *Fully contained*: only objects that are fully contained within the delimiting features will be selected

Filter Text By - Choose the specific behavior for selecting text:
- *First letter of text*: the position of the first letter of a text is used to make a selection
- *Full size of text*: the bounding box of the text is used for the selection

Do not select art on the same layer as the 'Filter Using' art - Check this option so as not to select art that is on the same layer delimiting feature

Filter Using - Choose where the features that delimit the spatial filter are taken from:
- **Existing MAP Selection:** select a MAP Selection name from the *Existing MAP Selection* drop-down list
- **Art Selection:** use the current art selection (see options above for edit)
- **Attribute Filter:** enter new attribute filter parameters (see *Attribute Filter* dialog box above)

Select From Layers - Choose layers to select from. By default, the selection will be done on all layers.

Click to make a different choice in the **Select Layers** dialog box (see above)

FUNCTIONALITY

The MAP Selections panel provides options to build, edit, save and apply multiple selection criteria based on:

- *Attribute Filters*: selections based on attributes and properties of MAP Layers
- *Art Selections*: saved selections (done with the MAP Selections filters or with the Adobe Illustrator selection functions)
- *Spatial Selections*: selections based on a feature's position relative to another (e.g. select points contained in a given area).

MAP Selections are saved in the Adobe Illustrator document. The **Import MAP Objects** function (see chapter 4) provides a method to exchange MAP Selections between documents opened in Adobe Illustrator.

Expressions created for Attribute Filter type MAP Selections can be saved in the **Expression Library** so that it can be used in MAP Attributes and MAP Themes stylesheets (see chapter 5 and chapter 9, respectively).

PREREQUISITES

To save or use a *MAP Selection*, at least one piece of art must be selected on the artboard before creating a new selection. This selection does not have to be on a MAP layer, although it must be visible and unlocked.

CREATE A MAP SELECTION

To open the MAP Selections panel, choose *Window* > *MAPublisher* > *MAP Selections* or click the MAPublisher toolbar button .

To create a new MAP Selection, click the **Create New MAP Selection** button  or the panel options menu to open the **New MAP Selection** dialog box.

Enter a meaningful **Name** for the new MAP Selection to facilitate its use. For example, a MAP Selection could be named *Cities* or *Countries with 80% or higher literacy* or *US Highways*.

Choose the desired MAP Selection **Type**: *Attribute Filter, Art Selection* or *Spatial Filter.*

Attribute Filter

Attribute Filters select objects on one or more MAP Layers based on the features' attributes values or properties. The selection criteria is an expression created from attributes names, values and/or preset functions.

By default, the selection is done on the currently selected layer. Users may choose a different layer or more layers by clicking the  button to open the **Select Layers** dialog box. Check any layers that may need to be included.

In the **Expression** field, enter a valid expression. Optionally, click the  button to open the **Expression Builder** dialog box or click the  button to select an expression from the **Expression Library** — see chapter 5 for more details. The **Expression Validity** icon will report if the expression entered is valid  or invalid  (and will include additional warning notes).

Note: The expression validity depends on the layer selection since it is based on some attribute column names.

The following are some examples of basic expressions which can be entered for use as selection filters.

Expression	Result
NAME = "Ontario"	*All items with the value "Ontario" in the NAME column are selected.*
NAME = "Ontario" OR NAME = "Alberta"	*Result: Items with the value "Ontario" OR "Alberta" in the NAME column are selected.*
POPULATION < 1000000	*All items with values less than one million in the POPULATION column are selected.*
NAME = "Ontario" AND POPULATION < 1000000	*Only items containing the value "Ontario" in the NAME column AND values less than one million in the POPULATION column are selected.*

Note: MAP Selections created in versions earlier than MAPublisher 8.3 are converted to MAP Selection Attribute Filters, based on the <current layer>.

Art Selection

To store a current selection — done through the MAP Selections panel or using the Adobe Illustrator selection functions (e.g. Selection tool, menu Select or Layers panel) — select the MAP Selection type **Art Selection**. No parameters are required for this type of MAP Selection.

The current selection must be performed before creating a new MAP selection.

Spatial Filter

A Spatial Filter MAP Selection selects sets of objects based on their position on the artboard.

A Spatial Filter is based on a selection of features, the boundaries of which are used as a limit for the final selection. The **Filter Using** drop-down list sets the selection of these features. Three options are available:

- **Existing MAP Selection:** the delimiting features are taken from a saved MAP Selection. The MAP Selection name is chosen in the *Existing MAP Selection* drop-down list below.
- **Art Selection:** the current artboard selection is used (the selection must be performed before creating the new Spatial Filter). The current selection is stored as part of the Spatial Filter for later use.
- **Attribute Filter:** the delimiting features are selected based on new attribute filter parameters (see *Attribute Filter* MAP Selection).

Once the delimiting features are specified, additional **Options** can be set.

By default, all objects contained within the delimiting features will be selected, regardless on which layer they belong to. The **Select From Layer(s)** option can be applied to limit which layers will be included in the final selection. To do so, click the  button to open the **Select Layers** dialog box. Note that MAP Layers and Non MAP Layers are available for selection.

The **Spatial Relationship** drop-down list offers two options for the selection method:

- *Intersect and contain*: objects that intersect or are contained within the delimiting features will be selected.
- *Fully contained*: only objects that fully contained within the delimiting features will be selected.

The option **Do not select art on the same layer as the 'Filter Using' art** is meant to avoid art that is on the same layer as a delimiting feature from being selected based on that feature. For example, if the *Spatial Relationship* is set to *Intersect and contain*, all areas that share a boundary with an area that is a delimiting feature will be selected. With this option, areas that are on the same layer as the delimiting feature will be excluded from the selection.

EDIT A MAP SELECTION

To edit an existing MAP Selection, click the selection name in the MAP Selections panel and choose **Edit MAP Selection** in the panel options menu. Alternatively, double-click the selection name.

The **Edit MAP Selection** dialog box allows to rename the MAP Selection and to edit the selection parameters. The dialog box options depend on the MAP Selection type.

When editing an **Attribute Filter**, the selection layer and the expression may be edited as new.

When editing an **Art Selection,** three options are offered:

- *Show Selection*: shows the stored Art Selection on the artboard.
- *Replace*: if art is selected, replace the stored Art Selection with the current selection.
- *Add*: if art is selected, add the current selection to the stored Art Selection.

When editing a **Spatial Filter**, all the parameters may be changed. If the *Filter Using* option is set to an Art Selection, the same edit options as above are available (*Show Selection*, *Replace* and *Add*).

DELETE A MAP SELECTION

Click one or more selection names in the MAP Selections panel, then click the delete button  or choose **Delete MAP Selection** in the panel options menu.

Note: Use caution when deleting, some selections may be dependent on others.

MAKE SELECTIONS

When a MAP Selection is first created, the matching art is automatically selected. Saved MAP Selections can be applied again at any time.

Note: MAP Selections based on Attribute Filters that are set to *<use current layer>* may become invalid when a different layer is selected because its attribute schema may not match the expression.

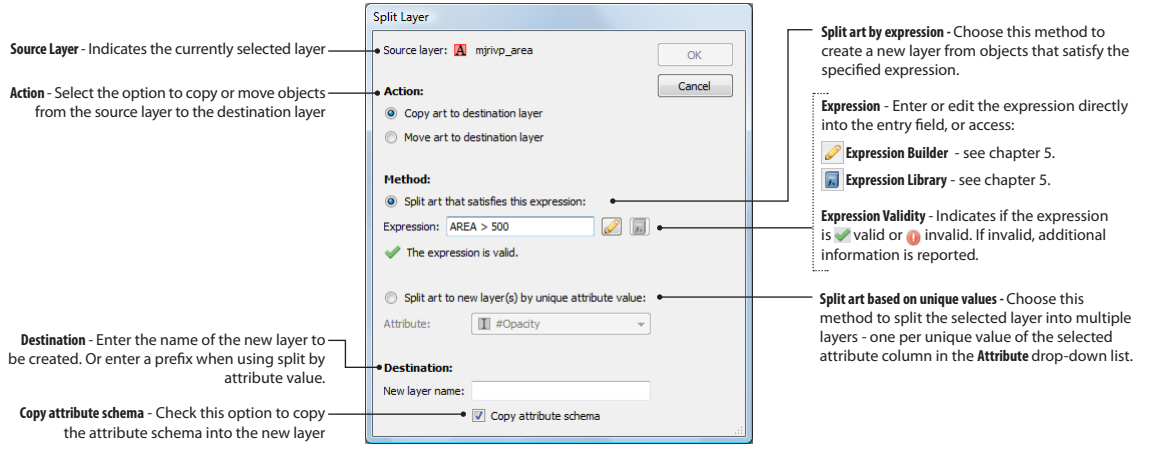
There are four methods for applying a MAP Selection (available as buttons and menu items):

Apply as New Selection	Clears the current selection and selects any art on the current layer that meets the criteria of chosen selection filters
Add to Current Selection	Adds any art on the current layer that satisfies chosen selection filters to the current selection
Remove from Current Selection	Deselects any art on the current layer that is selected and satisfies chosen selection filters
Get Subset of Current Selection	Deselects any art on the current layer that is selected and does not satisfy chosen selection filters

Note: These selection combinations can themselves be saved as an Art Selection.

Split Layer

Object> MAPublisher > Split Layer or *MAP Toolbar* 



FUNCTIONALITY

Split Layer divides a MAP Layer into new MAP layers based on its objects' attribute values. The new layers can either contain a copy of the original objects or objects can be moved from the source layer.

The split can be done:

- Based on an expression: when an object's attribute values satisfy the specified expression it is added to a new layer.
- By unique attribute value: objects that have a same attribute value are grouped into a new layer. Hence multiple layers are created (one per unique value).

This function is particularly useful to split a layer that contains a lot of objects. For example, a *road* layer with classes such as *street*, *highway* and *toll road* could be split in three distinct layers. Split Layer can be used as a preliminary to running MAPublisher LabelPro (to allow labelling of multiple classes with different styles, see chapter 17), or to exporting layers to external GIS formats.

USING SPLIT LAYER

The MAP Layer to be split must first be selected in the MAP Views panel or in the Adobe Illustrator **Layers** panel, then choose *Object* > *MAPublisher* > *Split Layer* or click the MAPublisher toolbar button .

In the **Action** options, specify if the split art should be either copied or move to the new layer.

Note: If the source layer is locked, the only option is to copy to the new layers.

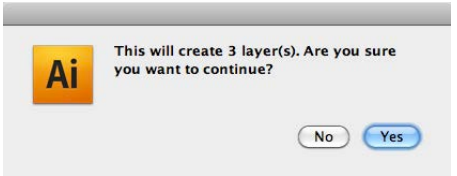
When the **Split art that satisfies this expression** method is selected, enter a valid expression in the **Expression** field, click the button to use the **Expression Builder** dialog box, or click the button to select an expression from the **Expression Library** — see chapter 5 for more details (the **Expression Validity** icon will report if the expression entered is valid. Otherwise it will report and include additional warning notes). A layer name for the new layer must be entered in the **Destination** frame.

When the **Split art by unique attribute value** method is selected, choose an attribute name from the **Attribute** drop-down list. Each new layer created will contain only art that share the same attribute value. By default, the name of these layers correspond to each single attribute value. In the **Destination** frame, users can enter a prefix to be prepended to every layer name.

The **Copy attribute schema** option duplicates the attribute schema from the source layer to the destination layer.

RESULTS

When Split Layer is run, a message is displayed that indicates the number of layers that will be created. Click **No** to cancel the split layer function or **Yes** to continue.



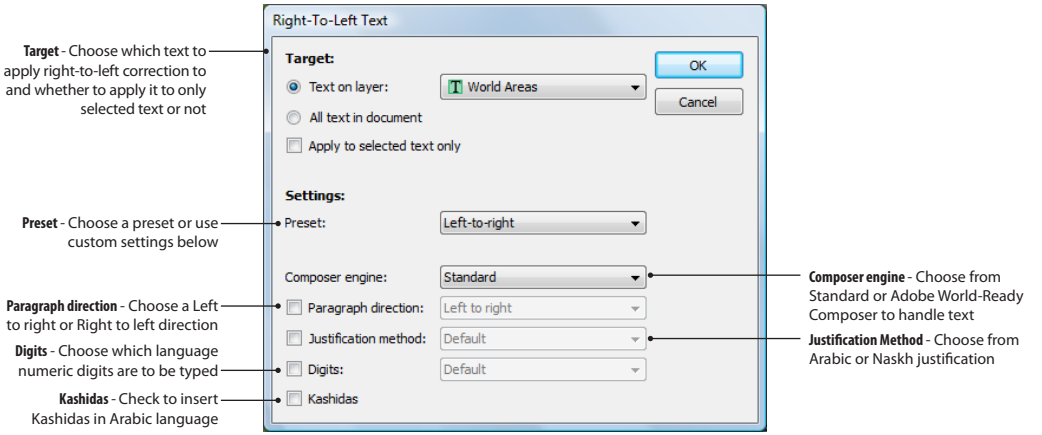
Depending on the method chosen, one or more new layers are created according to the splitting criteria. The new layers are placed on the top of the layers hierarchy in the Adobe Illustrator Layers panel.

The new layers have the same feature type as the source MAP layer and are included in the same MAP View.

If the Copy attribute schema was enabled, the new layers contain the same attributes as the source layer.

Right-to-Left Text

Object> MAPublisher > Right-to-Left Text or *MAP Toolbar*



FUNCTIONALITY

Many right-to-left languages, such as Arabic and Hebrew, require additional language-specific processing to get the correct glyph output given the incoming character stream. The Right-to-Left Text tool is used to apply proper formatting to right-to-left languages.

USING RIGHT-TO-LEFT TEXT

From the main menu choose *Object* > *MAPublisher* > *Right-to-Left Text* or click the MAPublisher toolbar button .

In the Target section, choose the target text to be a MAP Text layer or target all text in a document. Optionally, check *Apply to selected text only* to only apply formatting to text that was selected before opening the dialog box. In the Settings section, the Preset contains options (Left-to-right, Arabic, Hebrew) that sets Paragraph direction, Justification method, and Digits. Any other settings chosen are considered as Custom.

The Composer engine has two modes: Standard and Adobe World-Ready Composer. The Standard mode uses the default Adobe Illustrator text engine. The Adobe World-Ready Composer enables support for complex script languages (such as Arabic and Hebrew).

The Paragraph direction can be chosen as Left to right or Right to left (this is the result, not the current text).

The Justification method can be left as Default (the same as the language set in the Character panel) or set to Arabic or Naskh. To convert text to right-to-left without changing the justification or location of text, uncheck all options and set the composer to Adobe World-Ready Composer.

Choose the language in which numeric Digits are to be typed. The Default setting means that the numbers will be in the same language as set in the Character panel, otherwise, choose between Arabic, Hindi, or Farsi digits.

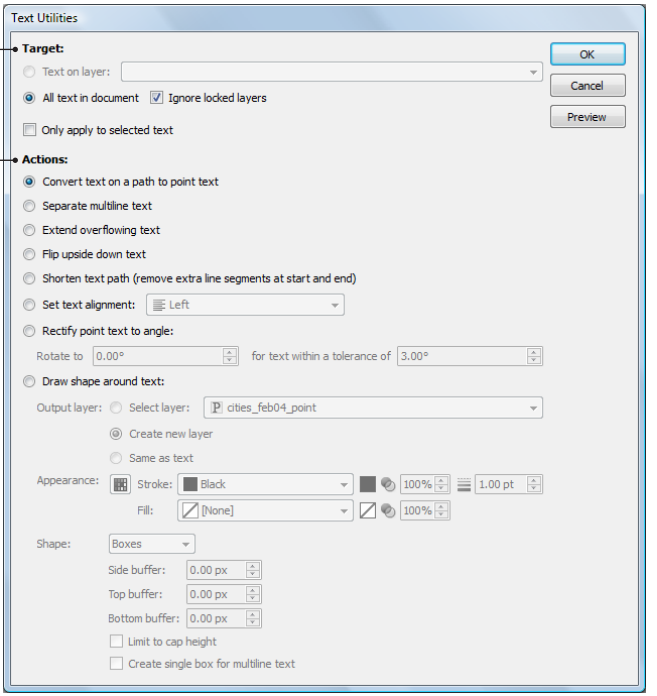
Kashida is a type of justification that elongates characters at certain chosen points. Kashida justification can be combined with white-space justification to various extents.

Text Utilities

Object > *MAPublisher* > *Text Utilities* or *MAP Toolbar* 

Target - Choose which layer to apply text utilities to or choose to apply it to all text in the document. Optionally, only apply it to selected text.

Actions - Choose an action to perform it on the target text. Explained on the next page.



FUNCTIONALITY

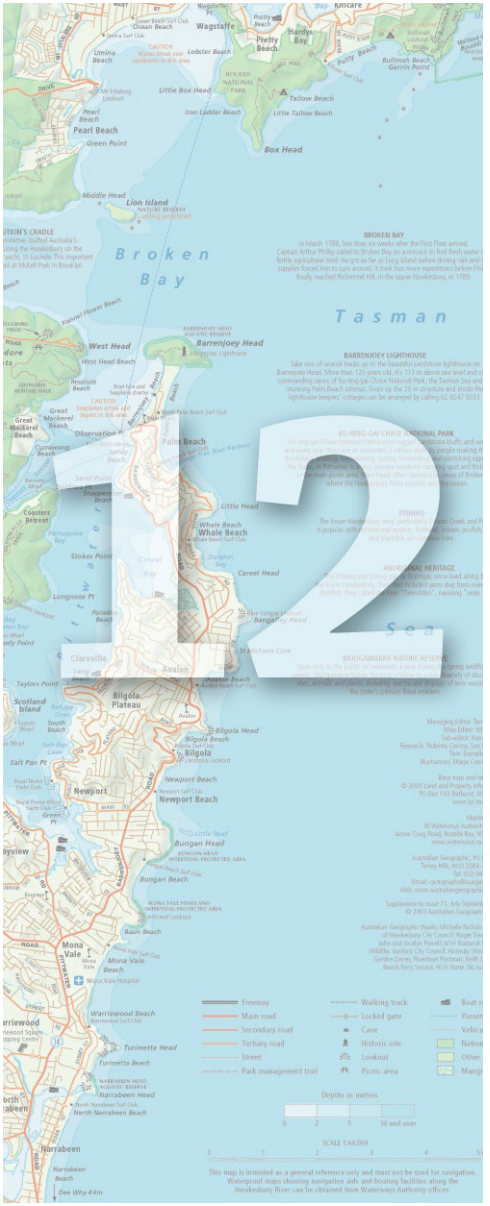
The Text Utilities dialog box centralizes many text related actions that map makers require. Many of these text actions have come about due to the complexities of working with text, geographic data and follow cartographic conventions. Common text issues that Text Utilities can handle are correcting upside down text, separating multiline text into single line and cropping text path to text length. These actions can be applied to either all text layers or specific text on a layer. Optionally, actions can be applied to selected text only.

USING TEXT UTILITIES

From the main menu choose *Object* > *MAPublisher* > *Text Utilities* or click the MAPublisher toolbar button .

In the Target section, choose the target text to be a MAP Text layer or target all text in a document. Optionally, check *Apply to selected text only* to only apply formatting to text that was selected before opening the dialog box. In the Actions section, choose an action to be performed (actions explained on the next page). Only one text action may be performed at a time. Click the Preview button to see how the text may be affected.

Actions	Original	Result
Convert text on a path to point text Converts text on a path to point text removes curvature and creates "straight" text.		
Separate multiline text Separates multiline text into individual lines of text.	Blue Springs Park	Blue Springs Park Example result produces three separate lines of text.
Extend overflowing text Extends text elements that contain overflow.		
Flip upside down text Flips upside down text (corrects left-to-right direction)		
Shorten text path to text length Remove extra line segments at the start and end of a path		
Set text alignment Text alignment can be set to left, center or right.	Blue Springs Park	Blue Springs Park Example result produces right justified text.
Rectify point text to angle Rotates point text to any angle for text within a specific tolerance angle.	Edward St	Edward St Example result rotated 8 degrees for text within a 10 degree tolerance angle.
Draw shape around text Draws text shapes or boxes around text. Change the style using the appearance options. Optionally, limit box to cap height of text and choose a specific layer for output.	Oxford St	Oxford St Example result has a box shape with side, top and bottom buffer of 4 px. **Note**: some text may not appear centered if no descenders are present and the limit to cap option is disabled.



Working With Images

MAPublisher contains tools for working with georeferenced raster images such as aerial photography and satellite imagery.

The **Register Image** function accurately registers raster images with georeferencing information to vector map data.

Export raster images to various georeferenced formats through the MAP Views panel.

Georeferencing information for raster images are usually stored in a separate text file where the image and its associated reference file have the same file name but a different file extension.

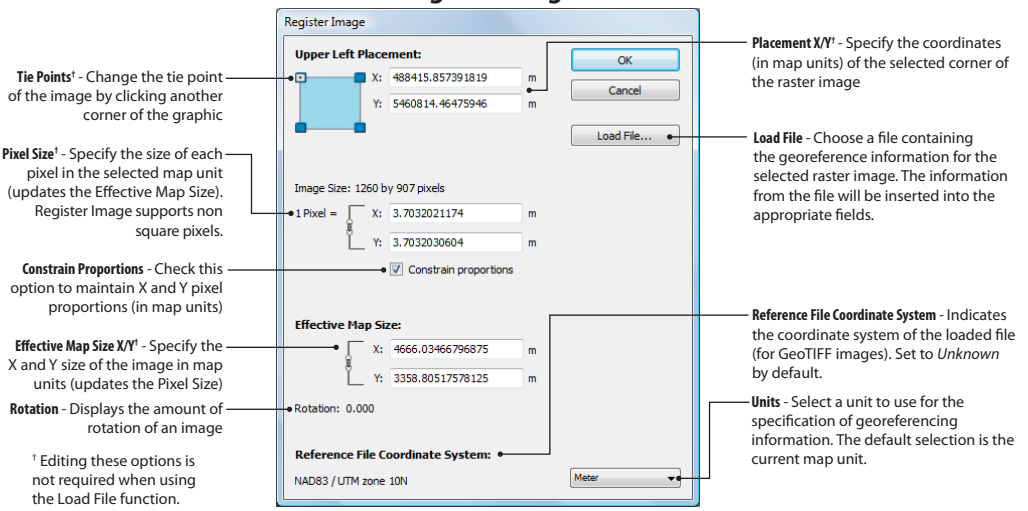
The reference file formats that can be read by Register Image or written to by Export Image are:
World (*.tfw)
Image Report (*.irp)
MapInfo TAB (*.tab)
Blue Marble Reference (*.rsf)
ER Mapper ERS (*.ers)
ListGeo (*.lgo)
GeoTIFF (*.tif) (contains both the image and reference data)

Topics covered in this section:
Register Image
Export Image

Register Image

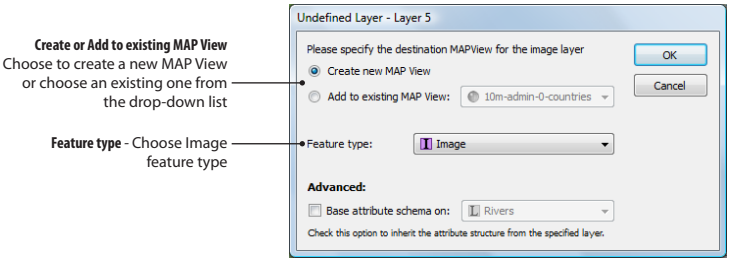
Object > MAPublisher> Register Image or *MAP Toolbar* 

Register Image



Undefined Layer

This dialog box appears if the image to register is not placed on a MAP Layer



FUNCTIONALITY

Register Image applies geospatial properties to raster images imported using the Adobe Illustrator **Place** command. Register Image uses a coordinate system and coordinates—entered manually or loaded from a reference file—to properly georeference and scale an image. If the coordinate system of an image matches one of existing vector data, the image can be scaled and rotated to fit the vector data. If no matching vector data is found in the document, a new MAP view can be created to store the cartographic information of the image to allow for data digitization with accurate positioning.

Note: Register Image does not have the capability to transform images from one coordinate system to another. Use a product like Avenza Geographic Imager to transform images.

PREREQUISITES

To use Register Image, the geospatial properties of the raster image must be known. Some raster image formats store the relationship between source image coordinates (pixel location) and real-world reference coordinates in an associated reference file but do not save the coordinate system information (e.g. world file *.tfw). The commonly used GeoTIFF format is embedded with geographic information such as position and coordinate system. Depending on the image format, check the position and coordinate system of imagery with the data provider before attempting to use this tool.

To import a raster image into a document, select a layer from the Layers panel (Image MAP Layer or not) and choose the Adobe Illustrator **Place** command (*File > Place*). The image is placed on the artboard, but is not spatially referenced at this point—it needs to be registered.

Notes: When placing an image, do not use the *Convert Layers to Objects* option. It will treat images that may have multiple layers as grouped objects and will prevent it from being registered properly.

Using an embedded, unflattened image with an existing transparency may result in incorrect registration.

USING REGISTER IMAGE

With an image selected, choose *Object > MAPublisher > Register Image* or click the Register Image button  on the MAPublisher toolbar.

If the image is placed on a MAP Layer, the Register Image automatically registers the image using the coordinate system of the MAP View containing that MAP Layer.

If the raster image was not imported to a MAP Layer, the Undefined Layer dialog box will appear. Choose either to create a new MAP View based on the image or choose to add the image to an existing MAP View. In either case, the Image feature type is the only one available for rasters. It is recommended to use the Image feature type for image registration and for better layer management and workflow.

When creating a new MAP View, the anchor point and scale are derived from the registration information (placement and image size). In the case of GeoTIFF images, the MAP View coordinate system is automatically read from the image header—for other image formats, the coordinate system has to be specified manually in the MAP View Editor after the registration process (see chapter 4 for more information on *Specify coordinate system*).

Registration using Reference File

To register an image using a reference file, click the **Load File** button and navigate to the folder containing the file. The reference file may have the same name as the image, but may have a different extension (*.irp, .tfw, .tab, .rsf, .ers* or *.lgo*). In the case of the GeoTIFF format, the image file itself contains both the image and reference data and the needs to be chosen to retrieve the georeferencing information.

The values contained in this reference file are automatically entered into the image parameters. If the file is in GeoTIFF format, the image coordinate system is read and displayed under **Reference File Coordinate System**—for other file formats, the coordinate system is left as *unknown*.

Manual Registration

To manually enter image parameters, one of the following combinations must be available in page units *or* map units:

- The X and Y coordinates of one corner of the image *and* the X and Y Pixel Size.
- The X and Y coordinates of one corner of the image *and* the X and Y size of the image.

First choose the units to use for entering parameters by making a selection from the **Units** drop-down list. Then, click the appropriate corner of the graphic to indicate the image placement point and enter the X and Y coordinates for this location in the adjacent fields. Next set *either* the **Pixel Size** or **Effective Map Size**. The *Pixel Size* is the value of a single pixel in the units set. The *Effective Map Size* is the X and Y size of the whole image in the units set. Setting either option will update the other accordingly.

Note: MAPublisher Register Image supports the registration of images having non-square pixels.

RESULTS

When registering GeoTIFF images, a warning message will be displayed if the coordinate system of the image does not match the selected MAP View's coordinate system. When registering images not in GeoTIFF format while creating a new MAP View, the coordinate system of the MAP View has to be specified in the MAP View Editor to finalize the georeferencing.

Provided that the coordinate system, placement and size of the raster image are correct, the image will be scaled and registered. When matching vector data is available, the image will fit to the artwork. The MAP Location Tool can be used to check the positions (see chapter 4).

Notes: Raster images cannot be transformed into another coordinate system. If the vector data is transformed through the **MAP View Editor** *Perform Coordinate System Transformation* function after the image has been register, the image will have to be transformed externally (with Avenza Geographic Imager for example) and registered again in MAPublisher.

Registered images will be scaled and rotated together with the vector data, but not automatically. After the vector data has been scaled or rotated using the **MAP View Editor**, **Register Image** must be used to apply the image referencing information. In the case of a manual registration, it is recommended to use the **Export Image** function before applying the changes to the vector data (see next paragraph). This way, registering the image again is only a matter of loading a reference file.

SUPPORTED GEOREFERENCED IMAGE REFERENCE FORMATS

World File (*.tfw, *.tifw, *.wld, *.eww, *.jgw, *.jpw, *.pgw, *.sdw, *.eww, *.blw, *.dmw)

World files contain the affine relationship between source image coordinates (pixel locations) and real-world reference coordinates (lat/long or other real-world coordinate units). World files simply contain a computed relationship between source image coordinates and reference coordinates and not the complete reference point information. World files do not support storing coordinate system information.

IRP Image Report File (*.irp)

IRP Image Report files are ASCII report files indicating the coordinates of the four corners of the raster file and the pixel size in ground units to allow for georeferencing of the image in other image processing, CAD, or GIS programs.

MapInfo TAB File (*.tab)

MapInfo Table file formats save the complete reference point list information such that it can be loaded again in the future. MapInfo TAB files support storing coordinate system information.

Supported projections when saving the coordinate system are listed below:

Albers Equal-Area
Azimuthal Equidistant
Cylindrical Equal Area*
Eckert IV*
Eckert VI*
Equidistant Conic*
Gall Stereographic*
Hotine Oblique Mercator
Lambert Azimuthal Equal Area*
Lambert Conic Conformal
Mercator*
Miller Cylindrical*
Mollweide*
New Zealand Map Grid
Hotine Oblique Mercator 1pt
Polyconic
Robinson*
Sinusoidal*
Swiss Oblique Mercator
Stereographic Transverse Mercator

* Coordinate Systems using this projection will not be stored when saving the reference file.

Blue Marble Reference File (*.rsf)

The Blue Marble Reference Settings File saves the complete reference point list information such that it can be loaded again in the future. Within a Blue Marble Reference File, the first line contains the version of the file format (not to be confused with the version of the software) and the total number of points in the file. The remaining lines contain, in each line, the point ID, the x (row) pixel, the y (column) pixel, the z (elevation) value which is usually 0.00, followed by the ground coordinates expressed as Latitude or Northing (Y), Longitude or Easting (X) and Elevation (Z). The last value indicates whether the point described on that line is included in the solution, 0 = not included and 1 = included. Blue Marble Reference files support storing coordinate system information (all are supported).

ER Mapper File (*.ers)

The ER Mapper header file is an ASCII file describing the raster data in the data file. The entire header file holds information about the data source and is contained in the *DatasetHeader* block. There are two compulsory sub-blocks, the *CoordinateSpace* block (to define the coordinate space and location) and the *RasterInfo* block (to define the characteristics of the data in the accompanying data file). The *RasterInfo* block my contain a number of optional sub-blocks. To completely define coordinate information in an ER Mapper header file you need to include the following data: datum, projection, coordinate type, units, X and Y dimensions for cell size, registration cell X and Y values, registration cell coordinates, and possibly null cell value. Coordinate information is frequently, but not always, given for the upper left corner of an image. This would be registration cell X and Y values of 0.0 and 0.0. For most projections registration coordinates are entered as eastings and northings, the coordinate type will be "EN", and units will be meters (or occasionally feet). If you are using latitude and longitude the projection is Geodetic, coordinate type will be "LL", and the X and Y dimensions for the cell size will be in decimal degrees.

ER Mapper files support storing a limited number of pre-defined coordinate systems. Check the coordinate system details to ensure the ER Mapper identifier exists as the issuer for the coordinate system to be saved. The file will still be exported however the coordinate system will not be saved with the reference file.

Note: ER Mapper reference files do not support rotated images. When attempting to export a reference file with a rotated image ER Mapper will not be listed.

ListGeo file (*.lgo)

A ListGeo files are text files containing the GeoTIFF metadata information (or tags), which can then be read, and may also be used as input to other programs.

GeoTIFF File (*.tif, *.tiff)

Tagged Image File Format (TIFF or TIF) is a common raster graphic file format and one of the most common geospatial image formats you are likely to come across. Many raster geographic images from GIS systems are stored in this format. A GeoTIFF is a TIFF file with embedded geographic information such as position and scale in world coordinates, coordinate system or an explicit list of ground control points.

Note: The only way to differentiate a regular TIFF image from a referenced GeoTIFF image is to open it in a spatial imaging software application (such as Avenza Geographic Imager).

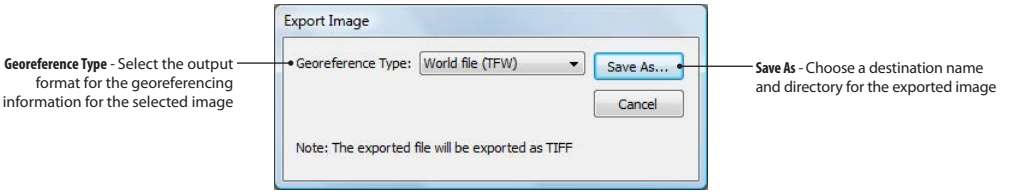
Unlike the other geographically referenced image formats discussed in this section, GeoTIFFs do not require a separate reference file. When registering a GeoTIFF image in MAPublisher, the same file name must be selected in the **Load File** dialog box—the required georeference information is contained in the file header.

Supported projections when saving the coordinate system are listed below:

Albers Equal-Area
Cassini-Soldner - Cassini
Cylindrical Equal Area
Equidistant Conic
Equidistant Cylindrical
Equirectangular
Gnomonic
Hotine Oblique Mercator
Laborde Oblique Mercator
Lambert Azimuthal Equal Area
Lambert Conic Conformal (1SP)
Lambert Conic Conformal (2SP)
Lambert Cylindrical Equal Area
Mercator
Miller Cylindrical
New Zealand Map Grid
Oblique Mercator
Oblique Stereographic
Orthographic
Polar Stereographic
Polyconic
Robinson
Sinusoidal
Stereographic
Transverse Mercator
Transverse Mercator (South Oriented)
VanDerGrinten

Export Image

MAP Views panel options menu > Export Image



FUNCTIONALITY

MAPublisher has the ability to export placed raster files as georeferenced images for use in other programs and/or for archival purposes. This can be useful in a number of ways. For example, when working with an image for which there is no georeferencing file, use the MAPublisher Export Image function to create a GeoTIFF or other georeferenced image file based upon the coordinate system of the host MAP View.

The Register Image function can be used to accurately position and scale imagery with vector data. Alternatively, the imagery can be manually moved, scaled or rotated to align with artwork in a designated MAP View. If the host MAP View contains accurate georeferencing information, Export Image can be used to save raster data to a fully georeferenced image format. It is also possible to convert the vector artwork to a georeferenced raster image.

MAPublisher exports selected images as a TIF/TIFF, with a choice of the five reference file formats (see the previous page).

USING EXPORT IMAGE

With an image selected, go to the *MAP Views panel options menu > Export Image*.

In the Export Image dialog box, the **Georeference Type** drop-down list shows the five available reference file formats: **World File (TFW)**, **Image Report file (IRP)**, **MapInfo TAB file (TAB), Blue Marble Reference file (RSF), ER Mapper file (ERS), ListGeo file (LGO)** and **GeoTIFF**. A regular TIF file is generated with **TFW**, **IRP**, **TAB, RSF, ERS** or **LGO** reference files. A single TIF file is produced with **GeoTIFF** selected, which contain both the image and the georeference information.

Note: Image MAP layers are not included when an entire MAP View is exported to a spatial format (e.g. shapefile).

RESULTS

When all of the export options have been set, click the **Save As** button. Specify a name for the TIF file and the folder location where it will be saved. The reference file will have the same file name as the TIF and will be saved to the same location.

This image file can be subsequently used in imagery applications, such as Avenza Geographic Imager for Adobe Photoshop, or in other Adobe Illustrator documents using MAPublisher.

Notes: Exporting a linked image in CMYK color mode or an embedded image with an existing transparency may create incorrect color results. For the former situation, an image must either be set to a different color mode or embedded. For the latter, the transparency must be removed from the source file.

If a MAP View is rotated, the exported image will not store any rotation parameter (it will be automatically rectified—oriented north up).



Grids and Indexes

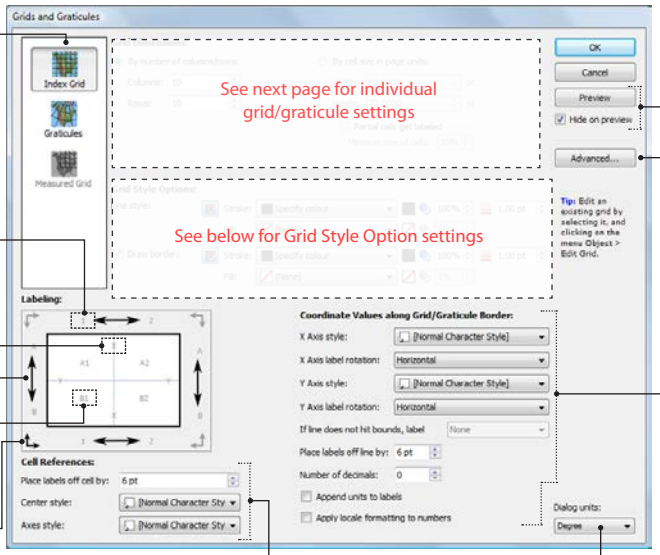
MAPublisher contains tools to easily create map grids and map indexes. Grids can be created for reference purposes, or to follow designated lines such as latitude and longitude (graticule), with optional labeling (cells or axis).

A grid or a graticule can be used as a base to generate index files. MAPublisher outputs a text file containing grid indexes of text or map object locations that can contain map attribute information.

Topics covered in this section:
Grid and Graticules
Make Index

Grids and Graticules

Object > MAPublisher > Grids and Graticules or *MAP Toolbar*
Object > Edit Grid / Edit Graticules



Grid/Graticule Selection - Click the appropriate button to select the grid type required and to assign settings (see below). Note: Measured Grids can only be created on MAP Views in projected coordinate systems.

Labeling: Label in boldface denotes it is as enabled. Not in boldface denotes it as not enabled.

Axis Labels - Click an axis label to toggle all labels on that axis ON or OFF.

Coordinates Labels - Click the label to toggle between *X, Y, Both, OFF* or *Lng, Lat, Both, OFF.* (Labeled as X,Y for measured grids or Lat/Long for graticules).

Label Direction - Click to reverse the direction that labels increment

Cell Labels - Click any cell label to toggle all center labels ON or OFF.

Flip Label Axes - Click to flip alpha and numerical labels.

† *If the* **Center, Axes** *and* **X or Y Axis style** *lists do not contain a recently created character style, simply return to the Character Style panel, double-click this style and click OK in the Character Style Options dialog box. This forces Adobe Illustrator to re-load the list of character styles.*

Cell References:

Place labels off cell by - Select a distance off the grid to place the labels.

Center Style† - Select the *Character Style* to use for the Center Labels

Axes Style† - Select the *Character Style* to use for the Axis Labels

Dialog Units - Set the units for *Measured Grid* dimensions if appropriate

Preview - Click this button to preview the grid

Hide on preview - Minimizes this dialog box during preview

Advanced - Access the **Advanced** dialog box to specify additional options for the grids or graticules

Coordinate Values along Grid/Graticule Border:

X and Y Axis style - Select the *Character Style* to use for the X and Y labels

X and Y Axis label rotation - Choose *Horizontal* or *Vertical* rotation

If line does not hit bounds, label - Specify if the lines that do not intersect with the graticule bounding box should be labeled. Options are: *None, Latitude, Longitude, Latitude & Longitude*

Place labels off line by - Select a distance off the grid to place the labels

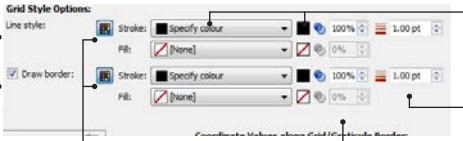
Number of decimals - Specify the number of decimals

Append units to labels - Choose to include units (i.e. degree symbols or m) to Line Labels.

Apply locale formatting to numbers - Choose to apply locale formatting (e.g. decimal separator as dot or comma), see MAPublisher Preferences.

Custom mode

Specify grid and border styles using custom options.



Line Style - Set custom styles for the grid lines

Draw Border - Check this option to draw the grid border (frame) and set the custom styles for it

Switch Mode - Click to switch to Graphic Style mode

Stroke/Fill - Choose a colour from the drop-down lists. Alternatively, click the colour chip to pick a custom colour.

Stroke Weight - Set the stroke width of the grid/border line. 1.0 pt is default.

Stroke/Fill Opacity - Set the transparency of the stroke or fill. 100% is solid.

Graphic Style mode

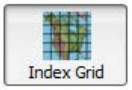
Specify grid and border styles based on graphic styles already created.



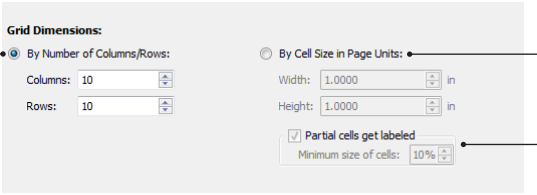
Switch Mode - Click to switch to Custom mode

Graphic Style - Choose a graphic style predefined in the Adobe Illustrator Graphic Style panel.

These settings will differ depending on the type of grid or graticule option chosen:



Index Grid Settings



Number of Columns and Rows -Select this option to create a grid with the specified number of rows and columns

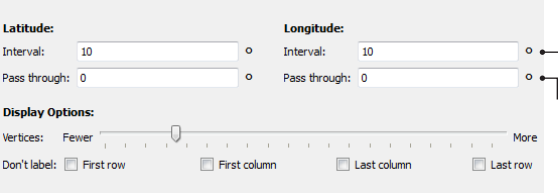
Cell Size in Page Units - Select this option to specify the cell size in page unit (as specified in the Adobe Illustrator Document Setup)

Partial cells get labeled - Check this option to label cells that do not reach its full size (in page units)

Minimum size of cells - the minimum size of partial cells before being labeled



Graticule Settings



Latitude Interval - Specify the interval for each line of latitude

Pass through latitude - Specify a line of latitude that must be included (any great circle)

Vertices - Use the slider to increase or decrease the number of nodes which will be used in the construction of the graticule (use more for curved)

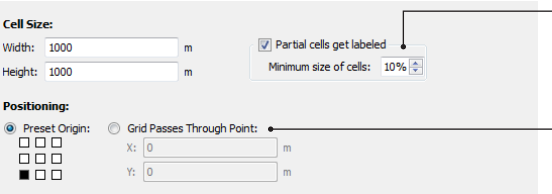
Don't label - Check to prevent the corresponding row or column from being labeled

Longitude Interval - Specify the interval for each line of longitude

Pass through longitude - Specify a line of longitude that must be included (any meridian).



Measured Grid Settings



Cell Width/Height - Specify the dimensions of each cell comprising the grid in the current map units

Preset Origin - Choose a position for the X and Y origin

Partial cells get labeled - Check this option to label partial cells (cells that do not reach the full size in page units)

Minimum size of cells - set the minimum size of partial cells to be labeled

Grid passes through point - Choose this option to specify coordinates for the X and Y origin

FUNCTIONALITY

The **Grids and Graticules** tool generates grid lines based on a number of user-defined settings.

There are three grid types available:

Index Grid	Divides grid extents based on a specified number of cells or by entering a cell size in document units.
Graticules	Plots grid lines at specific intervals of latitude and longitude which will be automatically curved as applicable.
Measured Grid	Place grid lines based on a grid size in real-world dimensions.

Numerous options for labels, placement, size and alignment are provided.

All grids plotted with this tool can be subsequently resized using the bounding box of the grid, and can be edited by clicking the Adobe Illustrator menu *Object* > *Edit Grid / Edit Graticules*.

PREREQUISITES

Grids and Graticules are added on **Legend** layers. If no legend layer is present in the document, a new legend layer will be created automatically. To manually create a new Legend layer, use the *Add MAP Layer* button on the MAP View panel and specify the feature type as Legend (see chapter 4 for more details).

By default, MAPublisher uses the Normal Character Style when generating grid labels. If custom character styles are to be used for the labels, they should be created beforehand (*Window* > *Type* > *Character Styles*).

A default grid line style will also be used. Use the Grid Style Options section to choose an alternate style for the grid and border lines, in either Custom mode or Graphic Style mode. In Custom mode, choose the style options directly in the dialog box. In Graphic Style mode, choose desired styles that are populated in the Adobe Illustrator Graphic Styles panel.

The MAP View must have a coordinate system assigned in order to plot a grid. Graticules and Index Grids can be generated for any coordinate system. Measured Grids cannot be generated for geodetic coordinate systems.

To access the function select the legend layer and navigate to *Object* > *MAPublisher* > *Grids and Graticules* or MAPublisher toolbar button .

INDEX GRIDS

The *Index Grid* option divides the grid extents based on a specified number of cells or by entering a cell size in document units. The grid dimension can be either calculated from the specified **number of columns and rows** or by **Cell Size in Page Units**. Finally, graphic styles for the grid lines and border, and character styles for labels may be specified.

Note: The page units are specified in the Adobe Illustrator document setup (main menu *File* > *Document Setup*).

The *By Cell Size in Page Units* option may result in partial cells being created. By default, the labeling of these partial cells is enabled (in order to include them in the indexing process), uncheck the **Partial cells get labeled** check box to disable this option. The **Minimum size of cells** drop-down list is used to set the minimum size of the partial cells to be labeled — cells that are smaller than this minimum will not get labeled and will not be used as a base for indexes.

GRATICULES

The *Graticules* option permits grid lines to be placed at specific intervals of latitude and longitude (in degrees). Specify the **interval** for lines of latitude and longitude and as required a latitude and longitude value to **pass through**. Use the **vertices slider** to increase or decrease the number of vertices used in the graticules if required (use a higher number if the graticules are highly curved due to the current projection).

To control which axis are to be labeled, set the following features:

- **Don't label**: allows not labeling a specific column or row (first or last, row or column).
- **If line does not hit bounds, label** (*None, Latitude, Longitude* or *Latitude & Longitude*): choose to label or not label curved lines that do not intersect with the grid extents (applies even if the line hits the grid border but not the bounding box).
- **None, Lat, Lng** or **Both** axis labels: a click on the axis in the label placement control switches the label caption from off (text grayed out), Lat, Lng or Both. This is useful for rotated grids or for labels of curved lines.

MEASURED GRIDS

The *Measured Grid* option creates a grid based on a grid cell size specified in real world units, when the current MAP View is in a projected coordinate system. The size is specified in the **Width** and **Height** text boxes (the map units can be specified in the **Units** list).

The grid position can be specified as relative to the page extent (**Preset Origin**) or by entering an X, Y position (**Grid Pass Through Point**). Finally, graphic styles for the grid lines and border, and character styles for labels may be selected.

Measured grids may contain partial cells. By default, the labeling of these partial cells is enabled (in order to include them in the indexing process), uncheck the **Partial cells get labeled** check box to disable this option. The **Minimum size of cells** drop-down list is used to set the minimum size of the partial cells to be labeled — cells that are smaller than this minimum will not get labeled and will not be used as base for indexes.

LABELING OPTIONS

A number of labeling options are available for use in grids and graticules.

The **Cell Reference** options are relative to the indexing labels of grids and graticules. In the label placement control diagram, click on the **axes labels** (A, B or 1, 2) and **cell labels** (A1, A2, B1, or B2) to enable or disable the display of these labels. Use the arrows to change the direction of axes and flip the numeric labels. Click a corner graphic to swap which axes are labeled numerically and which are labeled alphabetically. Then specify the axes label distance from the grid border (**Place Labels off cell by** option — a negative value places labels inside the grid) and choose a character style for the **Center** and **Axes styles.**

Note: Indexing labels for graticules are always generated as if the graticules covered the full map extents, regardless of the actual graticules' bounding box.

The **Coordinate Values along Grid/Graticule Border** options are relative to the coordinate labels of the grids and graticules (X,Y for indexed and measured grids and Lat, Lng for graticules). In the label placement control, click on the X/Y or Lat/Lng axis labels to select which values are labeled (**disable, X, Y** or **X&Y** for grids, **disable, Lat, Lng, Both** for graticules). These options are useful for rotated grids where grid lines may intersect on the wrong border of the grid or curved lines of latitude or longitude. Rotate labels using the **X** or **Y Axis label rotation** drop-down list (*Horizontal* or *Vertical*).

Other options for the coordinate labels are:

- **If line does not hit bounds, label**: (*None, Latitude, Longitude* or *Latitude & Longitude*) Applies only to Graticules only.
- **Place labels off line by**: a negative value places labels inside the grid.
- **Number of decimals**: decimal places for grid labels.
- **Append units to labels**: e.g. ° (degree symbol), or m (meters)
- **Apply locale formatting to numbers**: apply number formatting according to the locale settings in the MAPublisher Preferences (e.g. 10000 may be written 10,000 or 10.000 or 10 000).

ADVANCED OPTIONS

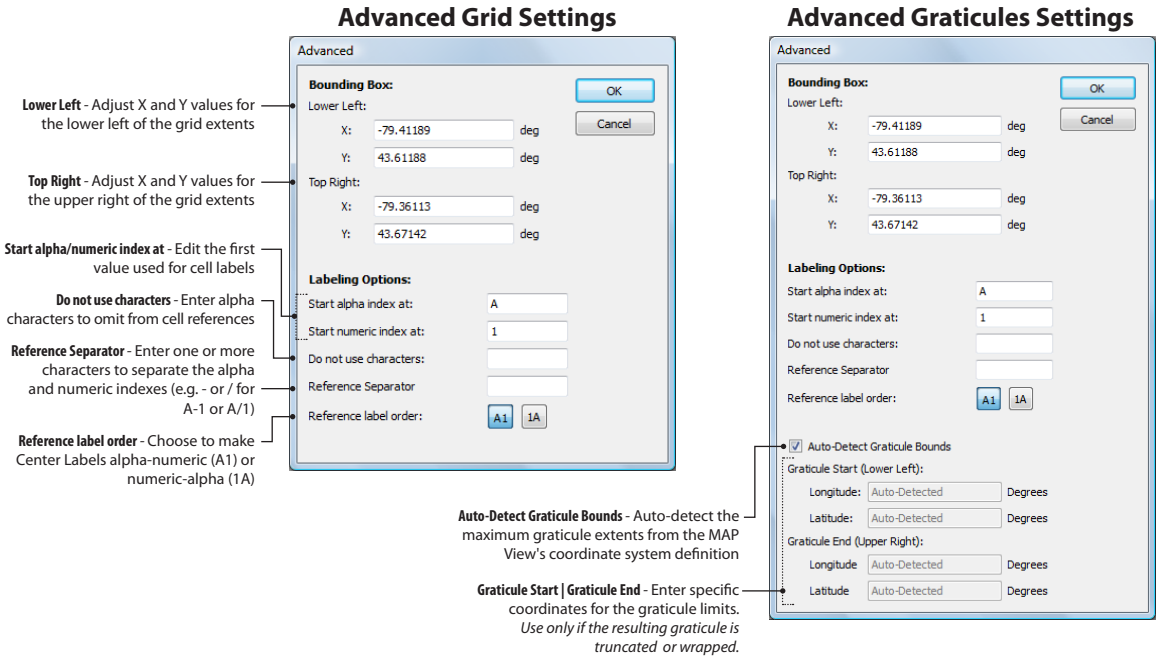
Click the **Advanced** button to access additional grid extents and labeling options.

Modify the bounding box extents of the grid or graticules by entering new coordinates for the *Lower Left* and *Top Right* position of the grid.

It is also possible to edit the first value used for cell labels by editing the *Start alpha/numeric index at* values. Omit certain alpha characters from cell references with the *Do not use characters* option. For example, it may be useful to omit the characters "I" and "O" for indexing purposes (when entering alpha characters to omit, separate characters with a comma). The Reference label order option can be edited to change the center labels from alpha-numeric (A-1) to numeric-alpha (1-A), or vice versa.

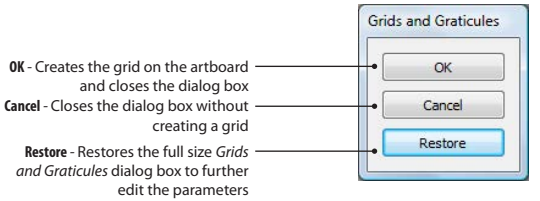
When creating graticules, users may need to edit the maximum graticule extents allowed. By default, MAPublisher automatically detects the maximum graticule extents as +/- 180° from the central meridian specified in the coordinate system definition of the current MAP View for longitudes and +/- 90° from the Equator for latitudes. The graticule is then created as the intersection of the bounding box and the maximum graticules extents.

In some rare cases, the bounding box specified may extend beyond the default limit (with some polar projections or some cases where the data crosses the 180 degrees west/east meridian), and the created graticule will be truncated or wrapped. In these cases, users may enter specific values for the **Graticule Start** and **Graticule End** coordinates in the **Advanced** dialog box — e.g. Start: -180, -90 | End: 360, 90. In most cases this is not necessary, so we recommend using **Auto-Detect Graticule Bounds** and only edit the graticule start and end coordinates if the resulting graticule is truncated (increase extents) or wrapped (reduce extents).



GENERATING AND EDITING THE GRID

When all the options have been set, click the **Preview** button to display a preview of the result. The Grids and Graticules dialog box can be minimized in the preview mode by clicking Hide In Preview.



Click **OK** to create the grid or click **Restore** to return to setting up the parameters. The grid is plotted on the legend layer using the entered parameters.

Once the grid is added on the artboard, use the bounding box of the generated grid *(View > Show Bounding Box)* to resize if required. Re-sizing grids horizontally or vertically adds, removes or re-sizes (index grid) component cells in the grid.

After transforming a MAP View containing a grid, the grid will be transformed and scaled within its current bounds (the physical extents of the grid on the page is not edited). The grid may have to be resized manually.

To change any parameter without generating a new grid, simply select the grid and choose from the main menu, *Object > Edit Grid/Edit Graticules*. This opens the *Grids and Graticules* dialog box populated with the current parameters of the grid. All parameters can be edited, even the grid type selection.

IMPORTANT NOTES

Manually editing text position, font, color etc is not possible on grids and graticules in their default grouped state. Manual editing is possible however if the grid is first expanded *(Object > Expand),* though this will negate any opportunity to subsequently edit the art via the *Grids and Graticules* dialog box. When expanded, grids cells are converted to both polygons (from index) and lines.

Measured grids cannot be labeled properly using actual coordinates when the data is projected using a stereographic or orthographic coordinate system (because some areas may have some high curvature).

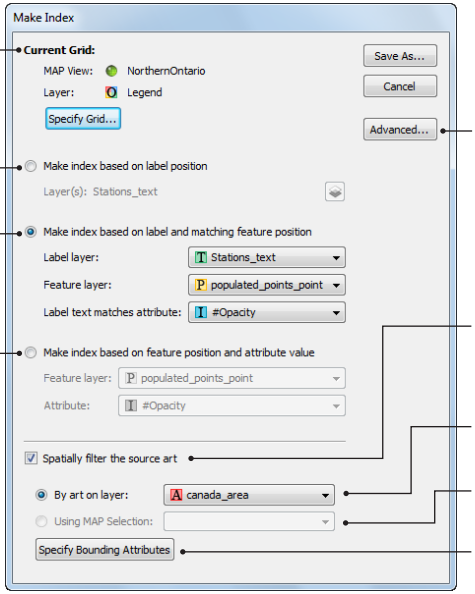
If the generation of a grid/graticule causes blank or incomplete results, the following workflow should be used:

1. Transform the MAP View to a geodetic coordinate system (e.g. WGS 84).
2. Generate a grid or graticules on this MAP View.
3. Expand the object *(Object > Expand).*
4. Create a new area layer in the MAP View. Drag the expanded grid to this new layer.
5. Transform the MAP View back to the original projection.

Please see Appendix A3 for more information on working with grids and graticules in MAPublisher.

Make Index

Object > *MAPublisher* > *Make Index* or *MAP Toolbar* A-1



Current Grid: - Select from available grids or MAP Area layers to make index from

Make index based on label position - An index will be created by assigning one index location for each label found on the selected label text layer

Make index based on label and matching feature position - MAPublisher will determine what features to index by matching label text on the indicated *Label layer* to the indicated attribute on the *Feature layer*. An index will be created for every grid cell in which the labeled feature can be found.

Make index based on feature position and attribute value - An index location is added for each feature found on the selected label *Feature layer*. The index label will be the value of the selected *Attribute* for each feature.

Advanced - Click this button to open the **Advanced Options** dialog box (below) to specify additional options for the index format

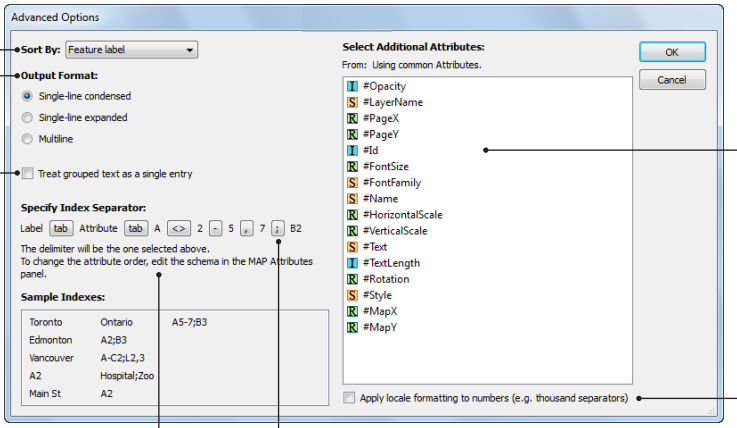
Spatially filter the source art Check this checkbox to limit index to labels or art intersecting chosen bounding geometry.

Filter area layer - Select a layer and corresponding attributes to filter by.

Using MAP Selection - Select a saved MAP Selection to filter by.

Specify Bounding Attributes - Select one or more attributes from the bounding art to be included in the index.

Advanced Options



Sort by - Choose to sort the entries in the index file by either *Feature label* or *Grid cell* address

Output Format

Single-line condensed Creates one index entry for each unique label. The index is compressed in the format: A1-3;B2,4

Single-line expanded Creates one index entry for each unique label. The index is in the format: A1,A2,A3,B2,B3

Multiline Creates one index per label recurrence

Treat grouped text as single entry Select this option to create a single index for grouped text

Specify Index Separator Select a delimiter to separate the different elements of the index file: label, attribute, grid column, grid row, continuous spanning, discreet spanning and next in the list. Choices are reflected in *Sample Indexes*.

Click a button to open the **Edit Separator** dialog box. Choose between *Tab, None* or a *Custom* separator.

Select Additional Attributes Select one or more attributes to be added to the index file. The selected attributes appear in separated columns delimited by the chosen *Index Separator*.

Apply locale formatting to numbers - Choose to apply locale formatting (e.g. decimal separator as dot or comma), see MAPublisher Preferences.

FUNCTIONALITY

The **Make Index** feature can be used to generate a map index based on the position of text elements or map features in a grid (index or measured), a graticule or a MAP Area Layer. Index files generated using this function are produced as a simple text file and sorted alphabetically (by label or cell reference). A typical file would be formatted as follows:

Millwood Road	B4
University Street	A4
Broadway Ave	B5

For text elements, the position of the first letter of the text is indexed. For map features of type Line or Area, all cells intersecting the feature are index. For map feature of type Point, the center of the symbol is indexed.

The index file contains a header indicating the name of each column (name, attribute name [if applicable], and grid locations).

PREREQUISITES

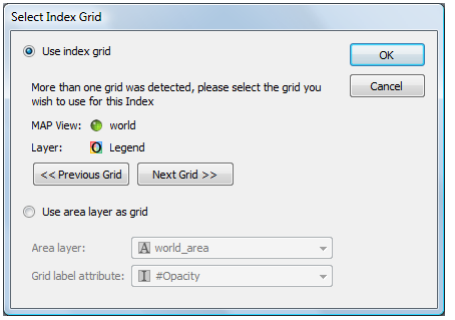
To create a map index, an *Index Grid, Measured Grid* or set of *Graticules* must have been created using the **Grids and Graticules** feature. This grid must exist on a **Legend layer**, and not be expanded (by Adobe Illustrator), in order to use the Make Index function. An index will be created even if grid labels are hidden. A MAP Area Layer can can also be used as the basis for a map index.

The **Text layer** containing the labels to be indexed and/or the **Feature layer** must be located in the same MAP View as the grid.

USING MAKE INDEX

Click the **Make Index** button on the MAPublisher Toolbar A-1 or choose *Object* > *MAPublisher* > *Make Index*.

- The selected grid will be used as the index reference.
- When no grid is selected, Make Index will detect a grid in the document. If more than one grid is found, the **Select Index Grid** dialog box opens. Click the **Previous Grid** or **Next Grid** buttons to browse through available grids in the document. The selected grid is highlighted on the artboard.
- Alternatively, **Use area layer as grid** (choose appropriate area layer and grid label attribute). This layer can be of irregular shape (non-rectangular).



Index Based on Label Position

Select the **Make index based on label position** button to generate an index using this method. Then choose one or more layers containing the text to be indexed from the **Label layer** drop-down list. This method creates an index by assigning one index location for each label found on the selected text layer. For example, if the label "High Street" is only found in grid cell A4, the only entry for "High Street" in the index file would be as follows: High Street A4

Index Based on Label and Matching Feature Position

This method creates an index by matching label text on a selected *Label Layer* to the indicated attribute on the *Feature layer*, creating an index entry for every grid cell in which the feature can be found. Note that only features that have labels will be indexed. For example if "High Street" passes through grid cells A3, B3 and C4, each grid cell will be in the index — on a single or multiline (see advanced options). For example as: High Street A3, B3, C4

Use this function as follows:

- Select the **Make index based on label and matching feature position** option to generate an index using this method.
- Choose the layer containing the text to be indexed from the **Label layer** drop-down list.
- Choose the layer that was used to generate the labels from the **Feature layer** drop-down list.
- In the **Label text matches attribute** list, select the attribute column in the selected *Feature layer* which matches the labels to be indexed.

Index Based on Feature Position and Attribute Value

This method creates indexes for map features that have not been labeled.

The map features to be indexed are contained in the selected feature layer. Any MAP Layer of type *Point, Line* or *Area* contained in the same MAP View as the grid can be selected.

The index position is based on each feature on the grid — for *Area* and *Line* layers all cells that intersect with the feature are indexed; for *Point* layers the cells that contain the center of the feature symbol are indexed.

The actual index label listed in the output index file corresponds to the value of the selected Attribute.

Spatially Filter the Source Art

This option affects the range of feature labels, feature labels and art, or pieces of art selected to be indexed.

Choose the **By art on layer** option to limit index creation to those entries that intersect the bounds of the art on the specified layer.

Choose the **Using MAP Selection** option to limit index creation to those entries that intersect the bounds of the art selection resulting from the application of the chosen pre-defined MAP Selection.

Click the **Specify Bounding Attributes** button to open the Specify Attributes dialog box. Use this dialog box to select multiple attributes from the bounding art to be included in the index.

Advanced Formatting Options

To set additional options to control the formatting of the index file, click the **Advanced** button.

The **Sort index by** option controls the order of the index entries. The default setting is **Feature label** — entries are ordered based on the label text (alphabetical). Alternativel
y, **Grid cell** can be selected to sort by the cell indexes.

The **Specify Index Separator** indicates which delimiter is used to separate the different columns in the index file (label, additional attributes and indexes). To change a specific delimiter, click the separator button in between the two desired elements. The separator options are **Tab**, **None**, or a **Custom** delimiter. When using a custom delimiter, type the desired character(s) in the adjacent text field. The separator settings are reflected in the **Sample Indexes** section.

The **Treat group text as single entry** option is required to create a single index for grouped text. Enabling this option is recommended to create index for labels created with *MAPublisher Label Pro* because the generated text is often grouped (e.g. multiline labels or along a curve).

There are three output formats for indexes (examples are using the default separators):

Output format	*Description*	*Example*	*Notes*
Single-line condensed	One index for each unique label is created, condenses grid locations	Label A1-3; B2,4; F-H9	• A dash (-) indicates a range: A1-3 means the label is found in cells A1, A2 and A3; F-H9 means the label is found in cells F9, G9 and H9. The ranges by number are grouped first and then the ranges by letter. • A comma (,) indicates a list: B2,4 means the label is found in cells B2 and B4 but not B3. • A semicolon (;) separates each entry.
Single-line expanded	One index for each unique label is created	Label A1, A2, A3, B2, B4, F9, G9, H9	• A comma (,) separates each entry.
Multiline	One index for each cell reference is created	Label A1 Label A2 Label A3	• Each entry is on its own line

Users can add more attributes to the index file by selecting one or more attributes from the **Select addition attributes** drop-down list. Additional attributes are inserted in the file in columns between the label and the grid locations, separated by the chosen *Index Separators*. For example:

Label Attribute1 Attribute 2 A1-3;B2,4;F-H9

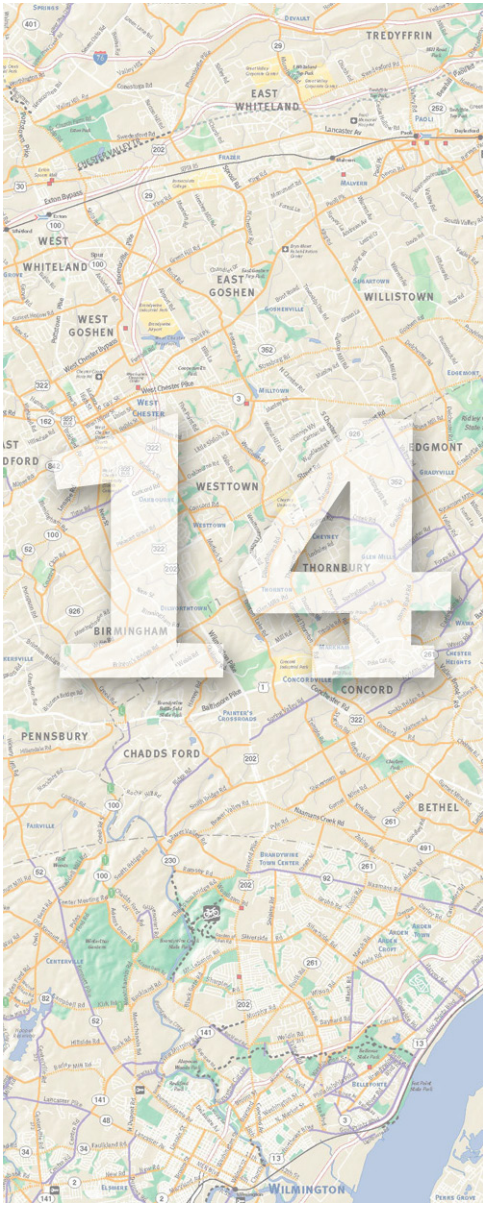
Note: Duplicated labels that have different selected attribute values, will have a separate entry in the index file (single-line options). Duplicated labels that share the same attribute values will have a single index entry but each location will be reflected in the cell references.

The **Apply locale formatting to numbers** option applies number formatting according to the locale settings in the MAPublisher General Preferences (e.g. 10000 may be written 10,000 or 10.000 or 10 000).

Saving the Index File

When all indexed options have been set, click the **Save As** button. Then specify a name for the text file, and the location where it will be saved. The index file can be opened in a text editor, or placed back into the document using the Adobe Illustrator **Place** function*.

* **Adobe Illustrator CS4 Mac OS X users:** It is recommended to copy the index contents into a text box instead of using the Place function.



Scale Bars and North Arrows

MAPublisher contains tools for plotting accurate scale bars and north arrows onto your map.

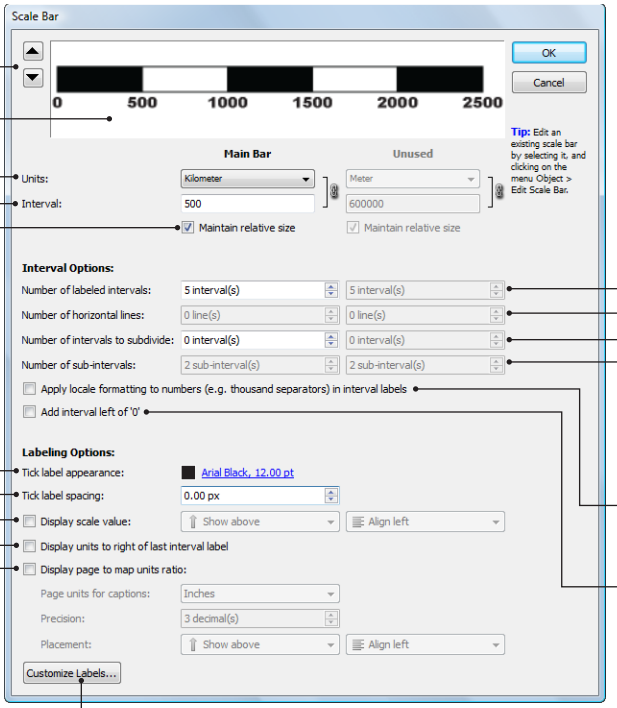
The **Scale Bar** tool offers a number of different designs that you can choose from, including double-bar designs for the placement of scale bars in multiple units.

North Arrows are created from selected artwork on the page using the **Create North Arrow** tool and are immediately aligned to true north.

Topics covered in this section:
Scale Bar
Create North Arrow

Scale Bar

Object > MAPublisher > Scale Bar or *MAP Toolbar*
Object > Edit Scale Bar



Select Style - Click the up or down button to browse through the scale bar styles.

Preview Panel - Displays a preview of the generated scale bar.

Units - Select the desired map units to be used in the selected scale bar.

Interval - Specify the length of each interval in the selected map unit.

Maintain relative size - Check this option to convert the interval values when units are changed

Labeling Options:

Tick label appearance - Select the Adobe Illustrator Character Style to be applied to the text

Tick label spacing - Specify the spacing between the scale bar and scale bar label.

Display scale value - Check this option to enable options to position the scale value above or below the bar and left, center or right aligned.

Display units to right of last interval label Check this option to display the interval unit at the end of the last interval label.

Display page to map units ratio Check this option enable options to show the scale as page unit to map unit ratio (select from Inches, Centimeters and Millimeters), the decimal precision and placement.

Customize Labels
Opens the Customize Labels dialog box. Use it to change the label of page and world units and adjust the appearance and variable of scale and ratio labels. See below.

Interval Options:

Labeled intervals - Enter the number of interval which will comprise each bar.

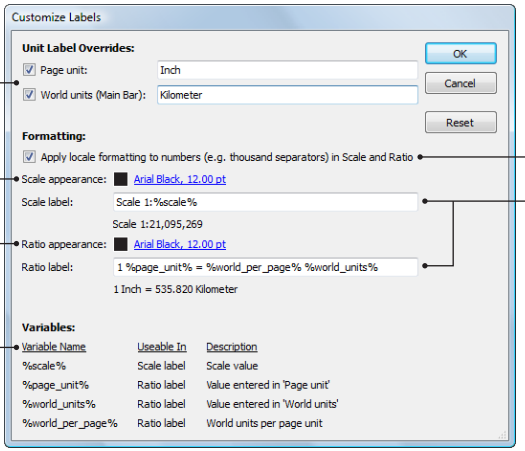
Horizontal lines - Select the desired number of horizontal lines to be included in the scale bar. Used with certain scale bar styles only.

Intervals to subdivide - Enter the number of scale bar intervals to be subdivided.

Sub intervals - Select the number of sub-intervals for each subdivided scale bar interval.

Apply local - Use the locale format settings specified in the *General* section of MAPublisher Preferences

Add interval label left of '0' - Places an interval label left of the zero marker on the scale bar.



Page unit and **World units** - Check these options to be able to specify custom labels. These override the unit labels specified in the Scale Bar dialog box.

Scale Appearance
Set the scale label style in the Edit Text Rendition dialog box.

Variables - Use these variables in the Scale and Ratio label text boxes.

Apply locale formatting to numbers
Insert a comma (or another locale format) to the scale and ratio numbers.

Scale Label and **Ratio Label**
Set the scale or ratio label. Use the variables available below. A preview of the scale or ratio is shown below the text box.

FUNCTIONALITY

MAPublisher contains ten different scale bar designs that may be incorporated into a map. After creation, MAPublisher scale bars can be subsequently resized using the bounding box (for example to add or remove component intervals). Scale bars can also be edited by selecting the *Object* > *Edit Scale Bar* menu item.

PREREQUISITES

To accurately create a scale bar, a MAP View must contain accurate georeferencing information and the coordinate system must be projected. (i.e. not in degrees). Scale bars are added on **Legend** layers. If no legend layer is present in the document, a new legend layer will be created automatically. To manually create a new Legend layer, use the *Add MAP Layer* button on the MAP View panel and specify a feature type of Legend (see chapter 4 for more details).

If a custom character style is to be used for the labels of the Scale Bar, it is also advisable to establish this style *(Window* > *Type* > *Character Styles)* before opening this dialog box. Alternatively, use the Edit Text Rendition dialog box to specify the font, colour, size and style of text to use.

ADDING A SCALE BAR

Click the **Scale Bar** button on the MAPublisher toolbar or choose *Object* > *MAPublisher* > *Scale Bar*.

Standard Options

Use the **Up** and **Down** buttons to select a scale bar design. Note that some scale bar designs contain two bars and when such a design is selected, the *Second Bar* column of options is enabled.

In the **Units** drop-down list, specify the units for the scale bar intervals to be based on. The default units are that of the current MAP View.

In the **Interval** text box, specify a real-world distance that each interval of the scale bar will represent. This number will be in the unit specified in the Units list.

Note: A scale bar cannot be created on a MAP View that contains a coordinate system using custom (user defined) point styles or units.

Specify the number of cells in the scale bar by entering a number in the **Number of labeled intervals** scroll box.

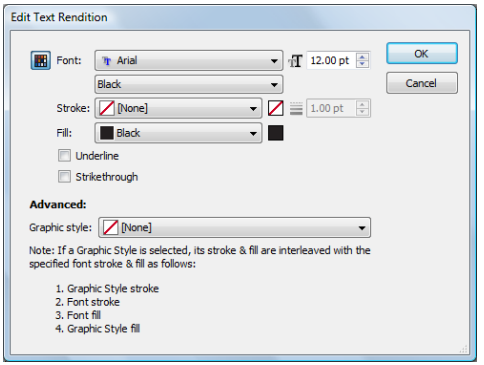
Depending on the chosen style of scale bar, it may be required to specify the **Number of horizontal lines** that will compose the scale bar.

To subdivide some of the intervals or cells in the scale bar, specify a number in the **Number of intervals to subdivide** scroll box. The subdivided cells begin at the left side of the scale bar. The **Number of sub-intervals** that compose each of these cells can be specified in the next scroll box. As required, choose to **Add an interval left of zero**.

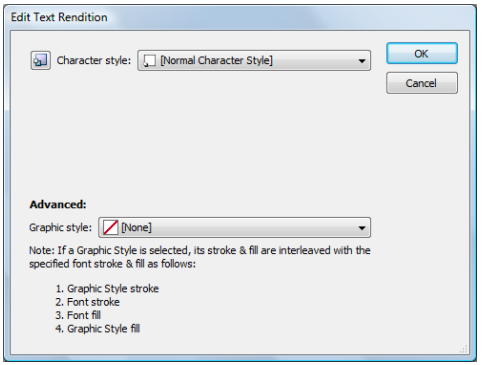
Labeling Options

Click the **Tick label appearance** to adjust the tick labels of a scale bar in the Edit Text Rendition dialog box. Choose a predefined Character Style in the Graphic Style mode or set font, stroke and fill options in the Custom mode.

In Graphic Style mode, labels can be styled using predefined Adobe Illustrator Character Styles. Graphic Styles can be applied to these labels by choosing one from the Graphic style drop-down list. In Custom mode, labels can be styled using the font, font size, stroke, stroke width and fill options available.



Custom mode



Graphic Style mode

Adjust the **Tick label spacing** to increase or decrease spacing between the tick label and the scale bar.

The **Display scale value** option shows the scale value above and to the left of the scale bar (by default). The position and alignment can be changed using the respective drop-down lists. The **Display page to map units ratio** option adds the page unit to map unit ratio label (select from Inches, Centimeters and Millimeters). Use the decimal precision and placement options to adjust the appearance as necessary.

To further enhance the look of scale bar labels, click the **Customize Labels** button. Under the Label Unit Overrides section, check the options to override the **Page unit** and **World unit** labels and type text into the text boxes. Under the Formatting section, click the **Scale** and **Ratio appearance** links to open the Edit Text Rendition dialog box (same as above) to adjust the font, color, size, stroke and fill of the scale and ratio labels. Type text into the **Scale** and **Ratio label** text boxes to specify custom labels along with using the available variables (e.g. %page_unit%). The variables represent stored values from the Scale Bar dialog box and the map document. A preview of the scale is shown below each of the text boxes.

Click OK to place the selected scale bar on the legend layer at a default position (centered on the artboard). The Adobe Illustrator editing tools may be used to move the scale bar to a desirable location.

EDIT A SCALE BAR

Use the bounding box of the generated scale bar (*View* > *Show Bounding Box*) to resize. Resizing scale bars horizontally will add or remove intervals from it. Resizing vertically will adjust the width of the bars.

Scale bars can also be resized using the Adobe Illustrator menu *Object* > *Transform* >*Transform Each*, by changing the horizontal or vertical scales.

To change the design of the scale bar, or to modify any parameter without generating a new version, select the scale bar and access the *Object* > *Edit Scale Bar* menu item. This will re-open the Scale Bar dialog box and the current parameters of the bar are available for editing.

Note: Manually editing a scale bar is not possible in its default grouped state. However, manual editing is still possible if the object is expanded first (*Object* > *Expand*). Note, that this will break the dynamic link between MAPublisher and the scale bar and it cannot be edited through the *Object* > *Edit Scale Bar* menu item anymore. Please see Appendix A3 for more information on working with scale bars in MAPublisher.

Create North Arrow

Object > *MAPublisher* > *Create North Arrow* or *MAP Toolbar* 

FUNCTIONALITY

The **Create North Arrow** tool converts selected art into a directional true north arrow.

In this process, the selected art is rotated toward *true north* at the art location. This property is maintained through subsequent moves of the map, projection or rotation.

The true north is the direction to the geographic North Pole — this direction may vary on a map depending on the selected MAP View coordinate system. To visualize this, think of the lines of latitude in a graticule (see chapter 13) — these lines can be straight or curved.

Note: *True north* usually differs from *magnetic north* (the direction of the magnetic north pole, which varies in time and space) and *grid north* (the direction northwards along the measured grid of a projected map).

PREREQUISITES

Any Adobe Illustrator artwork (path or symbol) may be used as a base to create a north arrow. The only requirement is that the art resides on a  **Legend** layer, and be selected.

This Legend layer must be hosted by the **MAP View** base for the alignment of the north arrow.

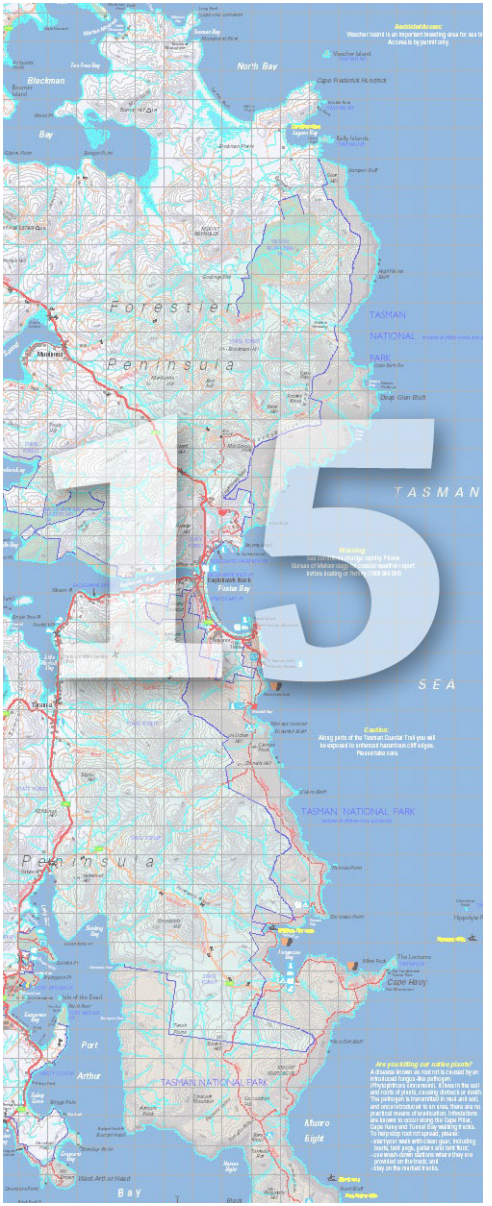
Note: Sample north arrow symbol designs are included with MAPublisher. In the Symbols panel options menu, choose *Open Symbol Library* > *MAP Symbols* > *Other Symbols* > *North Arrows*.

CREATING A NORTH ARROW

Select the piece of art to be converted to a north arrow and click the MAPublisher toolbar button . Alternatively, choose *Object* > *MAPublisher* > *Create North Arrow*.

Upon creation, the selected art is aligned to true north, based on the coordinate system of the host MAP View and its position on the map. If the north arrow symbol is repositioned on the map, it will be re-oriented to the true north at the new location.

Note: If the selected art is not already a symbol, it is converted to an Adobe Illustrator symbol and is added to the Adobe Illustrator Symbols panel.



MAP Web Author

Users should have a basic understanding of HTML syntax to use this feature.

MAPublisher introduces the **MAP Web Author** tool that exports Adobe Illustrator documents with GIS attribute data to interactive Flash maps complete with callout bubbles, rollovers, layer control, pan and zoom controls.

Like other MAPublisher functions, MAP Web Author is completely built-in to Adobe Illustrator. Interactive Flash maps can be exported without any additional coding or software requirements. Therefore, users are not required to have Adobe Flash installed to benefit from this tool.

Flash map export offers controls for the layers visibility. Additionally, map features (point, line, and area) can be identified from the attribute information when users type a keyword in a search box.

Users with a good understanding of HTML, CSS and JavaScript will be able to customize maps to embed into any web page using the MAP Web Author API and CSS tools.

Topics covered in this section:

MAP Web Author Workflow
MAP Web Author Panel
Web Tag Dialog
Web Export Dialog
Advanced Features

MAP Web Author Workflow

MAPublisher is installed with tutorial materials. It is recommended that users work with the exercises in order to gain familiarity with MAPublisher tools. The tutorial materials have an exercise dedicated to the new **MAP Web Author** panel. The following workflow can be used for guidance.

1) MAP COMPILATION WITH ADOBE ILLUSTRATOR / MAPUBLISHER

Users must create their map document using MAPublisher 8 and Adobe Illustrator tools. If the only purpose of the map is to create a Flash map, consider at this stage the document size parameter, as this determines the size of map viewer extents in the Web browser.

2) PREPARING FOR MAP WEB AUTHOR

a) Create a working directory

Create a folder on your computer. This folder is used to store all the components for the Web Flash map and the exported Flash files.

b) Prepare graphics for callouts

Images or Flash animations that will be used in the Web tagging process must be grouped in a **Source Media Folder**. When inserting graphics using a **MAP Attributes** field for multiple artwork, note that it is not possible to change the graphic dimensions in the **Web Tag Dialog**. Graphic dimensions should be set beforehand.

c) Set document size for the Flash map

If the document size hasn't been set at step one (document creation), it should be modified through the Adobe Illustrator menu *File* > *Document Setup* prior to Web export.

Note: Changing the document size after artwork is created may result in the adjustment of MAP View Scale, symbol and text sizes as well as stroke widths.

d) Use attribute table information for callouts

To use attribute information for Web tags, it must be organized using the MAPublisher **MAP Attributes** panel. This may require creating new attribute columns for elements such as Website links or graphic file paths.

e) Data preparation

Run the crop tool, simplify lines and remove unneeded attributes.

3) USING MAP WEB AUTHOR

a) Setup the Source Media Folder

Users have a choice between entering an *absolute* or *relative* path for the **Source Media Folder**.

Note: If an image is placed under *C:\Work\Flash_Project\Images\MyImage\MyImage1.jpg*, and the Source Media Folder is *C:\Work\Flash_Project\Images*, then the path *\MyImage\MyImage1.jpg* must be typed in the **Web Tag Dialog** (or in the **MAP Attributes** panel when using attributes).

b) Create callout bubbles

Using the **Web Tag Dialog,** insert content (such as a title, images and text) into the callout bubbles Use the **Callout Preview** to see an example of how the callout bubble will look, prior to the export process.

4) EXPORT FLASH DOCUMENTS

The settings entered in the **Web Export Dialog** are determined by the desired aspect of the Web map. It is recommended that users try different configurations. Here are some basic examples:



Simple MAP - No layer control, no navigation (*Basic Settings*). No Search box (*Advanced Settings*).



Default Style Map - Built-in layer control and navigation button added through the *Basic Settings* only.
No *Advanced Settings* required.



Customized Style Map - External layer control and navigation button added through the *Basic Settings*. Removed zoom buttons and changed callout bubble style through *Advanced Settings*.

5) VIEWING FLASH MAPS WITH A WEB BROWSER

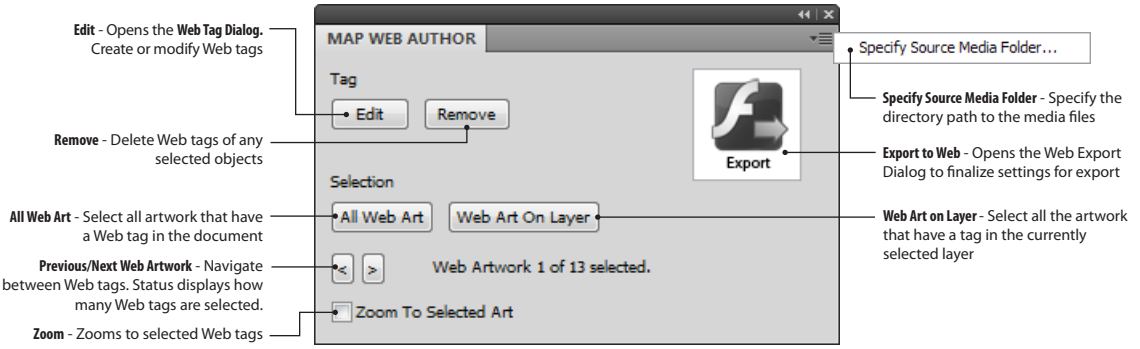
Download the latest Flash Player version (*http://get.adobe.com/flashplayer/*) and install it. Open the Flash map in a Web browser to view it (i.e. select the exported HTML file and open it locally).

Note: If the **Flash Player Security Sandbox** is set to **Network** during the export, the folder permissions must be set in the *Adobe Flash Player Settings Manager,* as explained earlier in this chapter. If the option **Auto** or **Local** has been chosen during the export, the map can be opened while offline with no further settings.

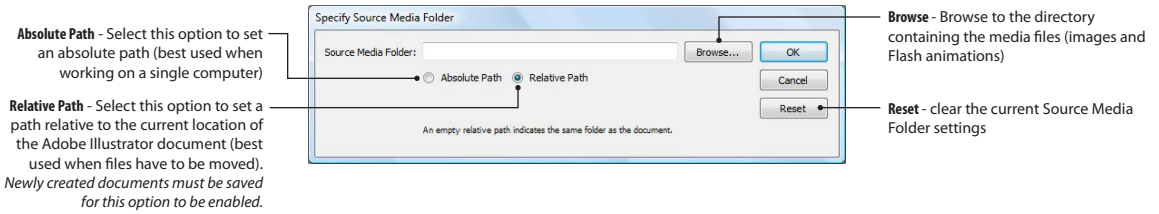
MAP Web Author Panel

Window > MAPublisher > MAP Web Author or *MAP Toolbar*

MAP Web Author Panel



Specify Source Media Folder



FUNCTIONALITY

The MAP Web Author tool exports a MAPublisher document as an interactive Flash map for Web display. Together with the map artwork, Web tags (also known as callout bubbles) are included in the export. Prior to the export process, the MAP Web Author panel is used to create, edit or modify these interactive objects.

Web tags can either be populated one object at a time or for a selection of objects. To create or edit multiple Web tags, select artwork and click the Edit button. Using this method, the same Web tag format is applied to all selected artwork. Information can be entered manually or extracted from the MAP Attributes fields (when available for the object layer). At any time, Web tags can be edited or modified by selecting them and clicking Edit.

Text and image formatting is created using simple HTML (Hyper Text Markup Language). The results can be checked in the **Callout Preview** window available in the **Web Tag Dialog**.

Additional settings such as customizing the navigation and callout bubbles are available during the export process.

PREREQUISITES

In order to use MAP Web Author, first complete a map using MAPublisher and Adobe Illustrator tools. The Adobe Illustrator artboard will determine the size of the Flash map. It is recommended to set the document size before any work is started. The document size may be changed using the Adobe Illustrator **Artboard Tool** at any time. Using pixel units is the most practical to determine Flash map sizes in a Web browser.

To populate Web tags, MAP layers must have relevant attributes populated in their **MAP Attributes** tables. For example, to insert links to graphics (images and Flash animations), the MAP layer must have a dedicated attribute field containing a path (e.g. \images\picture1.jpg). The **Source Media Folder** containing the graphics must be organized properly. The supported image formats are JPEG, PNG and GIF and supported Flash animation format is SWF.

Notes: Not just any map can be made into a Flash map. A print ready map does not necessarily mean that it is a Flash ready map. Unneeded art and attributes should be removed, lines should be simplified. Layers that do not require tagging will still be exported.

Only the active artboard will be exported to Flash (Adobe Illustrator CS4/CS5 only).

MAPublisher Flash export requires the Firefox version of the Flash Player to be installed. Full support for Internet Explorer Flash plug-in is partially complete at the time of printing. Also, the user is no longer warned if the Flash plug-in is not installed/detected prior to loading the Flash map, instead, a link is provided when an attempt to load the file is made. To ensure compatibility, download and install the latest Flash Player at *http://get.adobe.com/flashplayer/otherversions*.

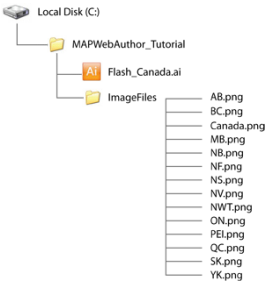
USING MAP WEB AUTHOR

Specify the Source Media Folder

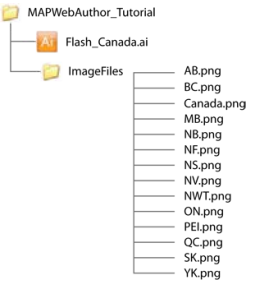
The **Source Media Folder** is the directory containing graphics that might be displayed in the Web tags (callout bubbles). The path to this directory is chosen through **Specify Source Media Folder** in the **MAP Web Author** panel options menu.

Either an **Absolute Path** or a **Relative Path** may be entered. An absolute path refers to the full folder directory path (e.g. *C:\folder1\folder2...*). A relative path refers to the folder path from the current location of the Adobe Illustrator document. In the example below, the relative path starts from \MAPWebAuthor_Tutorial.

Absolute Path example



Relative Path example



If the Adobe Illustrator file is to be exchanged between computers, it is good practice to use a **Relative Path** to avoid having to reset the link to **Source Media Folder** when the files are moved.

Add, Edit and Remove Web Tags

To add or edit a Web tag, select a piece of artwork and click the **Edit** button in the MAP Web Author panel. This opens the **Web Tag Dialog** where the Web tag settings can be defined. When multiple artwork is selected, any settings made in the **Multiple Web Tag Dialog** are applied for all of the selected artwork. They may be individually modified by scrolling through the Web tags or at a later time by selecting the artwork and clicking the **Edit** button.

To remove Web tags, select artwork with an associated Web tag and click the **Remove** button.

Note: Document artwork (lines, areas, points) associated with callout bubbles are also called *Web Art*. Only Web Art will be searchable in the resulting Flash map (see **Export to Web**). Text cannot be tagged as Web Art.

Selection

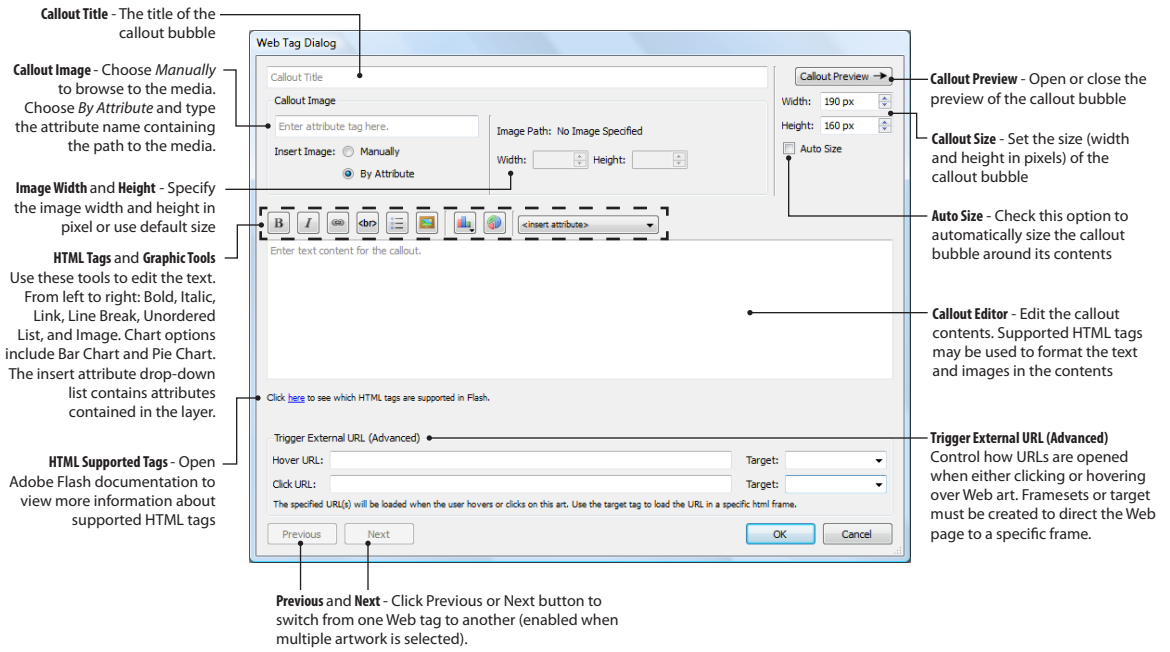
Select any artwork in the document and the MAP Web Author panel displays the number of Web tags (assuming the artwork contains a Web tag). To select all the artwork with Web tags in a document, click the **All Web Art** button. To select all the artwork with Web tags on a specific layer, select the layer in the Adobe Illustrator Layers panel, and click the **Web Art On Layer** button. Use the navigation buttons to consecutively move to the previous or next artwork that contains a Web tag.

The **Zoom To Selected Art** option centers the Adobe Illustrator document view to the selected artwork with Web tags. Check this option and use the **Previous/Next Web Art** buttons to navigate between them.

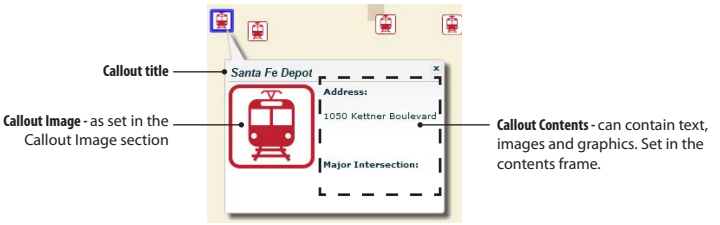
Export to Web

The **Export to Web** button opens the **Web Export Dialog** described later in this chapter.

Web Tag Dialog



Callout Bubble example



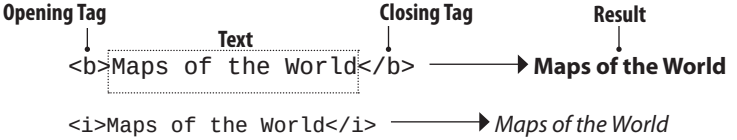
FUNCTIONALITY

Click the **Edit** button in the **MAP Web Author** panel to open the **Web Tag Dialog** (**Multiple Web Tag Dialog** if multiple artwork is selected). These dialog boxes are used to design the Web tags (callout bubbles) using HTML. These callout bubbles appear when objects in the Flash map are clicked or hovered over. Not all objects in the map need to be associated with a callout. Use the Callout Preview to see how the HTML affects the Web tag.

PREREQUISITES

In the **Web Tag Dialog**, text and image parameters are edited using *HTML tags*. HTML tags are key codes written between less than (<) and greater than (>) signs, that indicate how the Web browser should display the text. There are opening and closing version for most (but not all) of the tags, and the text to be affected is contained between the both tags. Both the opening and closing tags use the same key code but the closing tag is preceded by an initial extra forward slash sign (/).

Examples of text formatting



Examples

Some HTML tags are used to insert links and images.

- `<a href="http://www.avenza.com">Avenza Web Page</a>`
  → Creates a link to www.avenza.com accessed when clicking "Avenza Web Page" text.

- `<img src="sourcemedia/picture.jpg" hspace="0" vspace="0" align="left" >`
  → Inserts an image (picture.jpg located in the **Source Media Folder**).

HTML ignores extra spaces and returns, therefore tags such as **
** (to create line breaks) and **<p>** (to start a new paragraph) should be used. In addition to the HTML tags, MAPublisher can use text extracted from the MAP Attributes table. The reference to the attribute field name is indicated between two percent **(%)** signs. For example, `%AttributeName%`.

Examples of using attribute fields

- `<b>%Street_Name%</b>`
  → **Main Street**

- `<img src="sourcemedia/%image%" hspace="0" vspace="0" align="left" >`
  → Displays image indicated in the attribute called "image" (a string text). hspace and vspace sets the horizontal and vertical space left blank around the image. The align setting sets the image alignment to the left of the page.

- `<a href="http://%WebSite%">Avenza Web</a>`
  → Avenza Web (opens the Website value indicated in the WebSite attribute).

USING THE WEB TAG DIALOG

Callout Setup and Preview

The **Preview** button opens or closes the preview of the callout. As text and graphics are inserted, the preview gets updated to show the aspect of the callout bubble prior to export. Set the **Height** and **Width** of the callout bubble in pixel units or use the **Auto Size** option. This option sets the size of the bubble automatically based on the contents of the callout.

Note: Flash is used to generate a callout preview of exactly what you will see in a web tag. However, due to some known Flash Player HTML rendering limitations, some callouts may not appear in a Web browser exactly as shown in the MAP Web Author preview. For example, ordered and unordered lists (<ol> and <ul> tags) are not recognized by Flash Player so they do not modify how the list is rendered and all list items will be shown using bullets.

Insert a Title

Callout bubbles can be given a title. The title can be typed in as text, but it can also be formatted using HTML tags and MAP Attribute values. The attribute field name must be entered between percent (%) signs, e.g. %TITLE%.

Insert an Image or Flash Animation

Images and Flash animations (SWF) can be inserted into callout bubbles. To insert graphics manually, choose the **Manually** option and browse to the graphic file. To use an attribute value containing the path to the graphic file, choose the **By Attribute** option and type the attribute field name into the box. The attribute field name must be entered between percent (%) signs, e.g. %Image_File%.

By default, the original graphic size is used. To change the graphic size, enter a new **Width** and **Height** into the boxes (the width/height ratio is maintained). The Callout Preview shows the size of the graphic. The **By Attribute** option is not available for **Multiple** tagging.

Note: The maximum size for a callout is 800 pixels by 800 pixels. When this limit is reached, graphics are automatically scaled to fit (aspect ratio is maintained).

Add and Edit Contents

The **Web Tag Dialog** provides a series of tools to create HTML tags more quickly. The Table title (next page) shows the tag buttons and functions that are available.

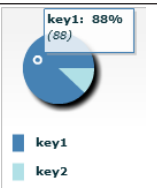
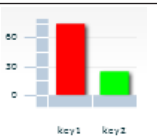
To insert a tag into the callout editor box, click a tag button. Then type callout text in between the opening and closing tags. Alternatively, highlight text with the cursor and click a tag button to wrap tags around it. Use the Callout Preview to see how the text, links or charts are displayed.

Aside from the HTML tags, the **Web Tag Dialog** provides a drop-down list to pick **MAP Attributes** (visible attributes only). Choose an attribute from the drop-down list and it will be entered into the callout editor box.

Note: MAP Attributes column names are case sensitive.

Tag button	Tag Function	HTML tag example	Result
	Bold	`<b>Madrid, Spain</b>`	**Madrid, Spain**
	Italic	`<i>Land Parcels</i>`	*Land Parcels*
	Hyperlink	`<a href="http://www.avenza.com">Avenza Page</a>`	Avenza Page
	Line Break	`Orlando, Florida`	Orlando, Florida

	Unordered List	`<ul>`
		`  <li>Roads</li>`
		`  <li>Avenues</li>`
		`</ul>`
			• Roads
			• Avenues

	Insert Image	`<img src="ImageFile/Canada.png">`	
	Pie chart	`<chart type="pie" showLegend="true" values="'key1', '%attrib1%' | 'key2', '%attrib2%'" colors="0xff0000, 0x00ff00" width="180" height="180" >`	
	Horizontal bar chart	`<chart type="horizontalbar" showLegend="true" showAxisValues="true" values="'key1', '%attrib1%' | 'key2', '%attrib2%'" colors="0xff0000, 0x00ff00" width="180" height="180" >`	
	Vertical bar chart	`<chart type="verticalbar" showLegend="true" showAxisValues="true" values="'key1', '%attrib1%' | 'key2', '%attrib2%'" colors="0xff0000, 0x00ff00" width="180" height="180" >`	

Additional information for pie and bar charts:

- **key1**: Legend for the first value. Enter a text in between single quotes. For example: 'Table Title'
- **%attrib1%**: Attribute that contains the first numerical value for the graph, as found in the MAP Attributes panel. For example, if the attribute is named MALE_POP enter '%MALE_POP%'
- **key2**: Legend for the second value. You can enter a text of your choice in between ' sign. For example: 'Female Population'
- **%attrib2%**: Attribute that contains the second numerical value for the graph, as found in the MAP Attributes panel. For example, if the attribute is named FEMALE_POP enter '%FEMALE_POP%'
- **colors**: enter a list of colors for the chart (first color, second color etc...). The color values must be entered in hexadecimal values. For example, use the Adobe Illustrator Color Picker and select color : the hex value (below the B of RGB). However, Illustrator writes the color as #BC1E1E , but in MAP Web Author, the # sign by 0x (zero-x) replaces the # — so 0xBC1E1E must be entered.
- **width** and **height**: Size of the graph in pixels.

Advanced HTML tag combinations can be used to create more effects. For more information and a complete list of HTML tags supported by Adobe Flash, click the link on the Web Tag dialog box or go to *http://livedocs.adobe.com/flash/9.0/main/wwhelp/wwhimpl/common/html/wwhelp.htm?context=LiveDocs_Parts&file=00000922.html*.

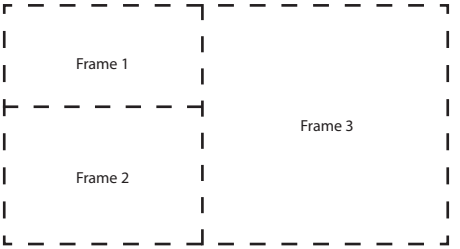
Auto Size Option

When this option is used, the callout bubble automatically resizes to fit its contents.

Trigger External URL

The Trigger External URL options allow an advanced Web designer to load a specified HTML document (designated by its URL address) into a targeted HTML frame. Attributes may be used (i.e. %ATTRIBUTE_NAME%). This option occurs when the Web Art is clicked or hovered over.

A Web browser can be divided into multiple panes called HTML frames in order to present documents in multiple views, which may be independent windows or subwindows. For example, within the same window, one frame might display a static banner, a second a navigation menu, and a third the main document that can be scrolled through or replaced by navigating in the second frame. An example layout could be as follow:



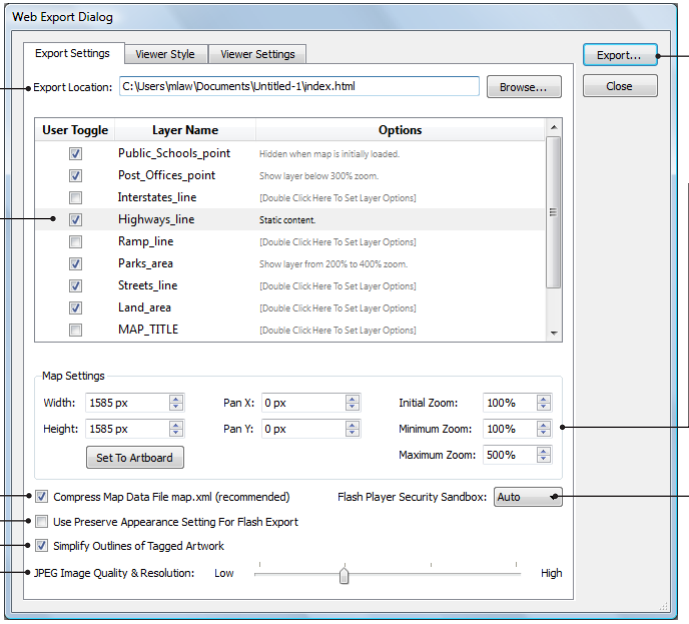
Names of frames created by Web designers must begin with an alphabetic character (a-z/A-Z). Some special purpose HTML frames have reserved names with a leading underscore. The following reserved names are available for selection from the **Target** drop-down list.

_blank	Loads a linked document into a new blank window (unnamed).
_self	Loads a linked document into the same frame in which the link was clicked (frame containing Flash map).
_parent	Loads a linked document into the immediate parent of the document the link is in (frame containing Flash map).
_top	Loads a linked document into the entire window, clearing the frames.

To use the *Trigger External URL* options, enter the URL address of the HTML document to open in the **Hover URL** or **Click URL** fields. The specified URL can be any page available locally or any external Web page (for example *http://www.avenza.com*). In the **Target** drop-down list, enter the name of the destination frame (type in the name given by Web designers or use one of the four available reserved names).

Web Export Dialog

Export Settings



Export Location- The destination folder of the exported Flash documents

Layer Controls - Lists all the layers in the active artboard. All layers will be visible, but only checked layers under **User Toggle** can be shown/hidden by a user. **Options** - Set layer export options. Show a layer at certain zoom levels, set initial layer visibility and static content is affected by pan and zoom.

Compress Metadata File - Check this option to compress the map data file, map.xml

Preserve Appearance - When unchecked, path simplifications are applied by Adobe Illustrator.

Simplify Outlines - Check to simplify outlines of tagged artwork in the Flash map

JPEG Image Quality & Resolution Drag the slider to control the amount of JPEG file compression

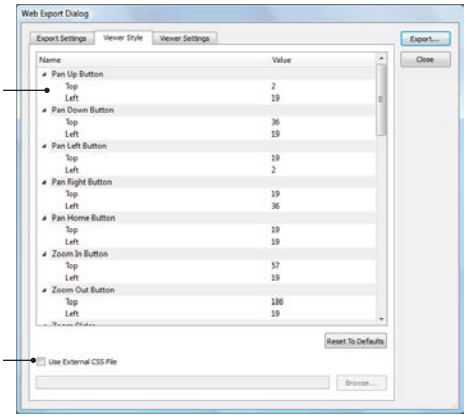
Export - Export the document to a Flash map

Map Settings
Width and Height - Size of the Flash map in the browser. Cannot be larger than the Adobe Illustrator document.
Set to Artboard - Reset the width and height to its original values
Pan X and Pan Y - Initial pan shift applied to the Flash map (from top-left corner)
Initial Zoom - Zoom level when the Flash map is opened
Minimum Zoom - The minimum zoom level that the map can be set to
Maximum Zoom - The maximum zoom level that the map can be set to

Flash Player Security Sandbox
Provides a restricted area for the map that prevents access to private data. Depending on location of final Flash map, choose Local or Network. It is set to Auto by default.

Viewer Style

See next section for more details

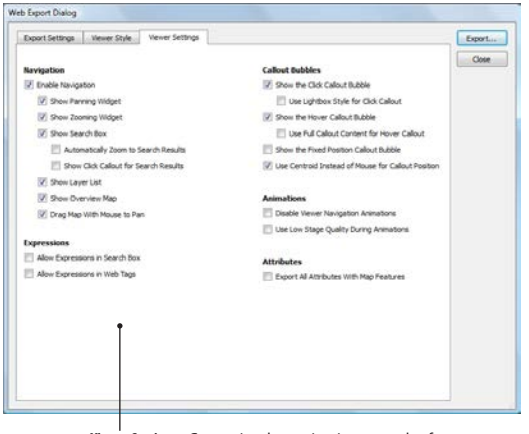


Viewer Style - Use these setting to control the style and position of navigation objects and map elements. Any changes to the default settings will output a new CSS file.

Use External CSS File - If an external CSS file is specified, it will override any of the settings specified above. When a CSS file is specified, an Edit link is enabled. It opens the file in the system's default text edtior.

Viewer Settings

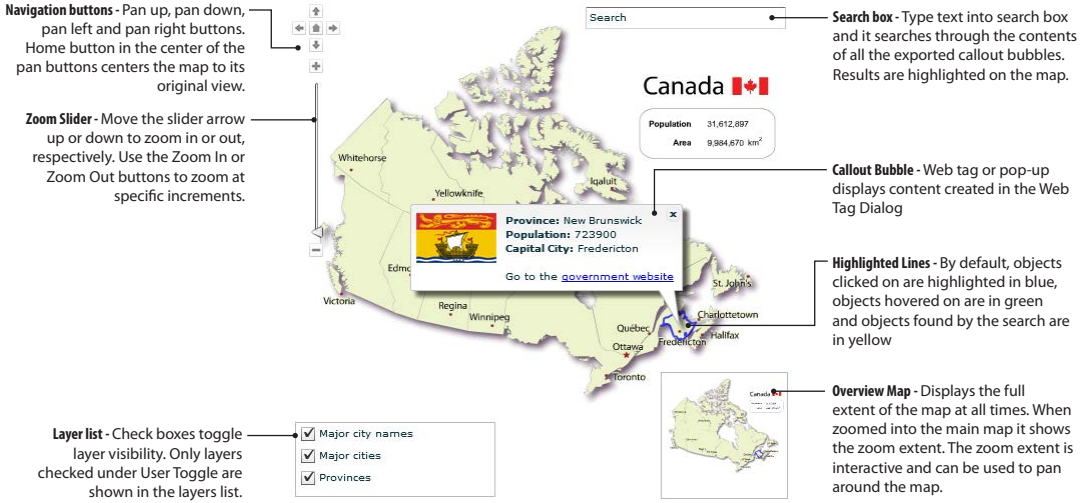
See next section for more details



Viewer Settings - Customize the navigation controls of the map. The default settings shown are shown here.

FUNCTIONALITY

Use the **Web Export Dialog** to set the look and feel of the Flash map: style navigation objects and map elements such as buttons, the search box, overview map, layer list, callout bubble, zoom slider, and highlight lines and colours. These are the final settings before exporting the document as a Flash map.



PREREQUISITE

Web tags must be first created using the **Web Tag Dialog**.

USING WEB EXPORT DIALOG

In the **MAP Web Author** panel, click the **Export to Web** button  to access the **Web Export Dialog**. The Web Export Dialog contains two tabs. The **Export Settings** tab controls the export location, layer options (visibility, toggability, etc.) and the Flash map settings. **The Viewer Settings** tab control the appearance and disposition of the Flash widgets.

WEB EXPORT DIALOG - EXPORT SETTINGS

In the **Export Location** box, specify the directory that will store the HTML index file (by default *index.html*) and Flash export files. Click the Export button to complete the Web export.

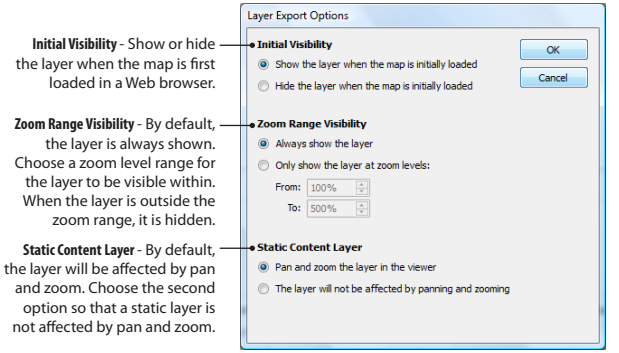
Layer Controls

To insert a layer list in the Flash map, at least one layer check box under the **User Toggle** column must be checked (Export Settings tab) and the Show Layer List option must be enabled (Viewer Settings tab). Layers that are checked are included in the Flash map layer list and can be toggled on or off. The layers that are unchecked are exported, but can not be toggled on or off.

Layer Export Options

It is also possible to customize the visibility and zoom of each layer. Double-click **[Double Click Here To Set Layer Options]** to access the **Layer Export Options** dialog box.

Layer Export Options



Map Settings

Use these settings to change how the Flash map is displayed in a Web browser:

- Change the width and height of the Flash map. It cannot be larger than the Adobe Illustrator document. Click the **Set To Artboard** button to reset the width and height to its original values.
- Set the initial position of the Flash map upon load using Pan X and Pan Y (if zoomed-in).
- Set the initial zoom upon load. Set the minimum and maximum zoom that the map is allowed to have.

Additional Settings

Images in Adobe Illustrator are exported as JPEG. The **JPEG Image Quality & Resolution** slider sets the compression level of exported images. This setting does not apply to images included in Web tags.

The option **Use Preserve Appearance Settings For Flash Export** flattens the artwork to a single layer before exporting. It is recommended to maintain the artwork quality. However, some known issues with Adobe Illustrator Flash export cause some documents to fail to export with this option enabled.

The **Flash Player Security Sandbox** provides a secure area in which a Flash map will load. Three options are offered:

- **Auto**: If the file is opened from a Web based URL, the sandbox is automatically switched to *Network*. If the file is opened from a file folder, the sandbox switches to *Local*.
- **Network**: When Network is selected, Flash Player classifies assets (including SWF files) from the Internet in separate sandboxes that correspond to their Website origin domains. By default, these files are authorized to access any resources from their own server, but can not load any local files or resources unless these are enabled through the Flash Security Settings (see later in this chapter).
- **Local**: With this option, Flash Security Settings are not required, however only contents from the local host computer can be accessed by Flash Player (i.e. hyperlinks, API will not function). This option is recommended when distributing Flash maps on CD, for example.

The **Compress Map Data File** (*map.xml* or *map.xml.zip*) is used by the Flash viewer to get information on the initial zoom level, Web tag content, tagged object geographic coordinates. It is recommended to keep this option enabled to use a compressed version of this file (*map.xml.zip*) to maintain a fast loading map. However, advanced users may use the uncompressed version (*map.xml*). For example, an advanced user could create programs that automatically update the Web Tag contents. Once compressed, this file cannot be uncompressed to *map.xml*. If this file is required, the export must be run again with this option disabled.

Note: In MAPublisher 8.0, the metadata file was named *map.afm* or *map.afm.compressed*. The decision was made to change the file extensions because these file formats were not recognized by all Web servers.

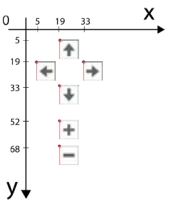
WEB EXPORT DIALOG - VIEWER STYLE

To set the style and position of the MAP Web Author map viewer controls, users can edit the **Viewer Style** list or use a CSS (Cascading Style Sheet). CSS is a style sheet language that enables the separation of document content (HTML, JavaScript) from document presentation — it is a simple mechanism for adding style (e.g. fonts, colors, spacing) to multiple Web pages at once.

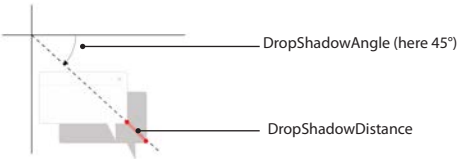
The **Viewer Style** list contains MAP Web Author map viewer controls which include navigation buttons, zoom slider, search bar and callout bubbles. Each control can be styled and positioned by adjusting basic property values. Users can export with the default values without further adjustment. If any control properties are changed from the default values, a custom CSS file is exported to the export data folder.

Note: The controls in the Viewer Style list contain only basic properties, for more advanced designs an external CSS file should be used (see below).

Map viewer controls and properties in the Viewer Styles list are as follows — all positions are relative to the top left corner of the Flash map:



- **Pan Up Button** (*Top, Left*) - Position of the pan up button.
- **Pan Down Button** (*Top, Left*) - Position of the pan down button.
- **Pan Left Button** (*Top, Left*) - Position of the pan left button.
- **Pan Right Button** (*Top, Left*) - Position of the pan right button.
- **Pan Home Button** (*Top, Left*) - Position of the pan home button.
- **Zoom In Button** (*Top, Left*) - Position of the zoom in button.
- **Zoom Out Button** (*Top, Left*) - Position of the zoom out button.
- **Zoom Slider** (*Top, Left*) - Position of the zoom slider widget.
- **Click Callout Bubble** (*Corner Radius, Show Arrow, Drop Shadow, Fill Colors Start, Fill Colors End*) - style of a callout bubble when it is clicked.
- **Hover Callout Bubble** (*Corner Radius, Show Arrow, Drop Shadow, Fill Colors Start, Fill Colors End*) - style of a callout bubble when it is hovered over.



- **Fixed Position Callout Bubble** (*Top, Left, Width, Height, Corner Radius, Draw Bubble, Fill Colors Start, Fill Colors End*) - position and style of a static position callout bubble.
- **Click Highlight Line** - (*Visible, Color, Transparency, Line Thickness*).
- **Hover Highlight Line** - (*Visible, Color, Transparency, Line Thickness*).
- **Search Highlight Line** - (*Visible, Color, Transparency, Line Thickness*).
- **Search Box** (*Top, Left*) - Position of the search box.
- **Layer List** (*Top, Left, Width, Height*) - Position and size of the map layer list.
- **Overview Map** (*Top, Left, Proportion*) - Position and proportion (relative to map size) of the overview map.

For advanced users, the appearance of the MAP Web Author map viewer can be fully customized using CSS. Enable the **Use External CSS File** option and browse to a CSS file. The file will overwrite any of the configurations made in the Viewers Style list. Using an external CSS file for styling the viewer is advantageous because more visual aspects of the viewer can be set—such as, callout bubble style, text font, images for buttons—and external CSS can be reused for multiple maps. If the need arises, the external CSS file can be updated after the map has been exported.

The CSS implementation is based on the Adobe Flex 3 CSS system. Only class selectors are supported. Full documentation is located at *http://www.avenza.com/mapublisher/mapwebauthor/css*. This site includes full maps, CSS samples and examples of CSS code.

WEB EXPORT DIALOG - VIEWER SETTINGS

In the **Viewer Settings** tab, check/uncheck any of the options to enable/disable them. Most of these options are enabled by default unless otherwise specified. The visibility of these controls may also be set through an external CSS file (specified in the Viewer Style tab).

Navigation

- **Enable Navigation** - Displays all of the navigation buttons, search box, layers list and overview map.
  - **Show Panning Widget** - Show pan widget in map viewer.
  - **Show Zooming Widget** - Show zoom widget in map viewer.
  - **Show Search Box** - Show search box in the map viewer.
    - **Automatically Zoom to Search Results** - Zoom the map viewer to search results. Disabled by default.
    - **Show Click Callout for Search Results** - Show click callouts for search results. Disabled by default.
  - **Show Layer List** - Show the layer list in the map viewer.
  - **Show Overview Map** - Show the overview map in the map viewer.
  - **Drag Map With Mouse to Pan** - Allows the user to pan the map using the mouse in the map viewer.

Callout Bubbles

- **Show the Click Callout Bubble** - Display a callout bubble when a feature with a Web tag is clicked.
  - Use Lightbox Style for Click Callout. Disabled by default.
- **Show the Hover Callout Bubble** - Displays a callout bubble when a feature with a Web tag is moused over.
  - **Use Full Callout Content for Hover Callout** - Displays full callout bubble when option to show hover callout bubble is enabled. Disabled by default.
- **Show the Fixed position Callout Bubble** - Displays a fixed position callout bubble. Disabled by default.
- **Use Centroid Instead of Mouse for Callout Position** - places the callout bubble position of a feature with a Web tag on the centroid. Disable it so that the callout position occurs where the mouse position is.

Animations

- **Disable Viewer Navigation Animations** - Enabling this option disables panning and zooming animations. Disabled by default.
- **Use Low Stage Quality During Animations** - Lowers the quality of animations for improved performance. Disabled by default.

Attributes

- **Export All Attributes With Map Features** - Forces all attributes to export, regardless of whether they are used in a Web tag or not. Disabled by default.

Expressions

- **Allow Expressions in Search Box** - Allow users to type expressions into the search box. Disabled by default.
- **Allow Expressions in Web Tags** - Evaluate expressions in web tags at runtime. Disabled by default.

EXECUTE WEB EXPORT

Click the Export button to execute Web export. The export summary is displayed in the **Web Export Log**.

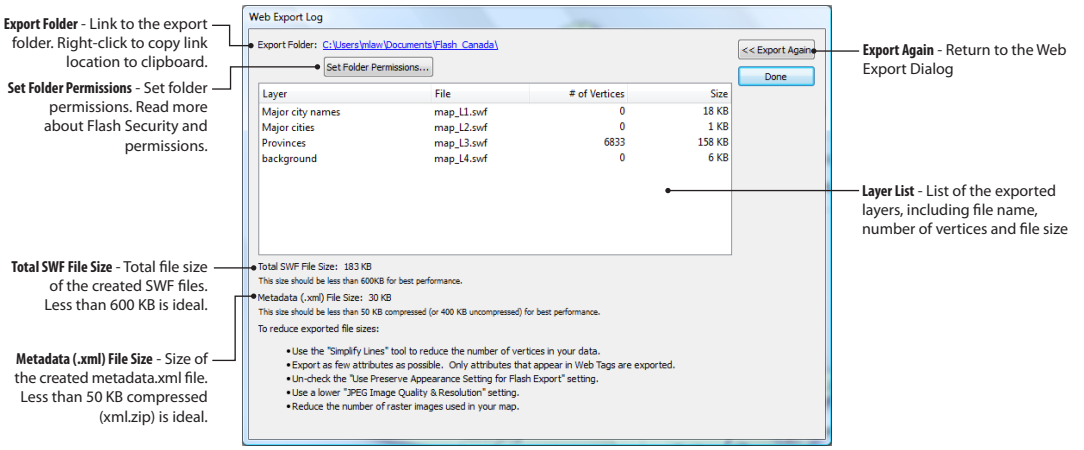
The export creates an *index.html* file and an *index_data* folder in the export location (the "index" name is default, a custom name can be substituted here in the **Export Location** box). Some of the important files are:

- *map.xml.zip* (or *map.xml* when the Compress Map Data File option is not checked).
- *MAPublisherViewer-local.swf* and *MAPublisherViewer.swf* (map viewer implementation files).
- *map_L#.swf* (where # is the layer number; one file per layer when option to toggle is checked).

View the README.txt file inside the export data folder for more information about each file.

The **Web Export Log** displays several export file size statistics: the total SWF file size and the metdata file size. These file sizes are meant to warn the users when files get very large. Large files should be avoided as they may be very slow to open on a Website.

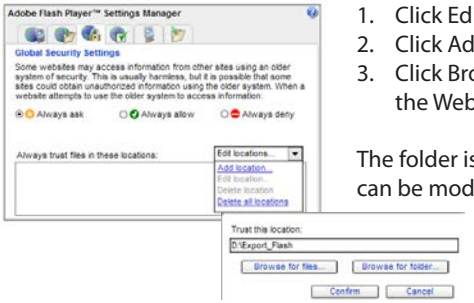
Web Export Log



Flash Security and Permissions

When exporting a Flash map intended for Web distribution, choose the **Network** option in the Flash Player Security Sandbox drop-down list. If a Flash map is intended for only local use, choose the **Local** option. By default, the **Auto** option is chosen and automatically detects whether the Flash map is run on a network or locally. If the Network option is selected, the Global Security Settings must be configured in the Adobe Flash Player Settings Manager before an Internet browser can properly view the Flash map **without posting it on a server**. If the **Local** option is chosen, it is not necessary to set folder permissions. However, files exported with this option will not work for a Website and will have to be exported again with either the **Network** or **Auto** option.

Click the **Set Permissions** button in the **Web Export Log** dialog box to access the Adobe Flash Player Settings Manager (*http://www.macromedia.com/support/documentation/en/flashplayer/help/settings_manager04.html*):



1. Click Edit Locations.
2. Click Add Location.
3. Click Browse For Folder or copy the full path as written in the Web Export Log dialog box and click Confirm.

The folder is added to the list of trusted locations. Locations can be modified or deleted at a later time.

Note: You must be connected to the Internet in order to set these permissions.

View Flash Map

To view the exported Flash map, browse to the Flash export folder (as specified in the **Web Export Dialog**) and open the file *index.html* (or name specified in Export Location) in a Web browser. Check that the Web browser has the latest version of Flash Player installed (*http://www.adobe.com/products/flashplayer/*). An outdated version may cause the Flash map to display incorrectly.

Note: Depending on the security settings of the Web browser used, some warnings may appear when opening files exported with Local option enabled. These can be ignored.

Advanced Features

Additional to the common MAP Web Author functions, users with good knowledge of HTML and Javascript can benefit from some advanced features. The information for these features is provided on the Avenza Systems Inc. Website (*www.avenza.com*) to allow for frequent updates. This information is available to all MAPublisher customers.

EXTERNAL CSS

As explained earlier in this chapter, the visual aspects of the widgets that appear in the MAPublisher Web Author viewer can be configured using CSS (Cascading Style Sheet). The CSS implementation is based on the Adobe Flex 3 CSS system. Only class selectors are supported.

Refer to the Web page *http://www.avenza.com/mapublisher/mapwebauthor/css* for information on how to edit the CSS file and for a reference to the list of classes available for styling and their supported properties.

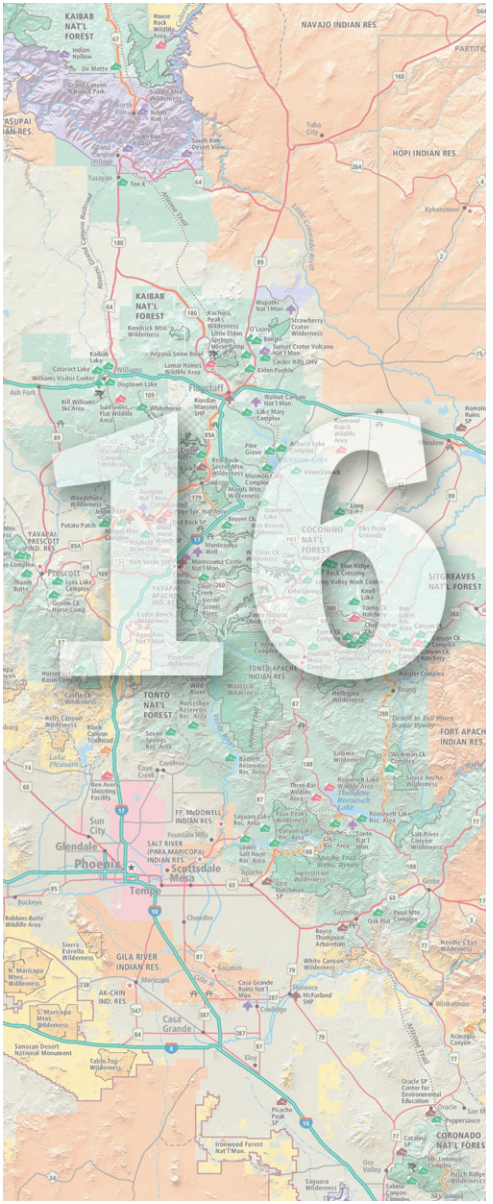
MAP WEB AUTHOR JAVASCRIPT API

The MAP Web Author JavaScript API allows developers to embed and interact with maps produced by MAPublisher in web pages.

Some Web pages have been developed on the Avenza Systems Inc. Website to provide a guide to the API and are available to all MAPublisher customers. They include an API reference, FAQs and examples.

For more information please refer to *http://www.avenza.com/mapublisher/mapwebauthor/api*.

The Web Author examples are also provided on the MAPublisher DVD.



Export Geospatial PDF

Adobe Illustrator documents with GIS data can be exported to georeferenced PDF files thanks to the MAPublisher **Export Geospatial PDF** feature.

A geospatial PDF is an Adobe Acrobat file that contains geospatial coordinates. With coordinates, users can view and interact with the PDF to find and mark location data.

MAPublisher exports all the MAP Attributes data in an Adobe Illustrator document into the geospatial PDF. Attribute values can subsequently be accessed and searched in Acrobat 9 (and 8 with limitations).

Geospatial PDF exported with MAPublisher can be used in Adobe Acrobat to:

- Find and mark location coordinates
- Measure distance, perimeter, and area
- View coordinates in measurement units in various formats/units
- Copy location coordinates to clipboard.
- View attributes of map objects
- Reopen geospatial PDF in Adobe Illustrator with MAPublisher capabilities maintained.

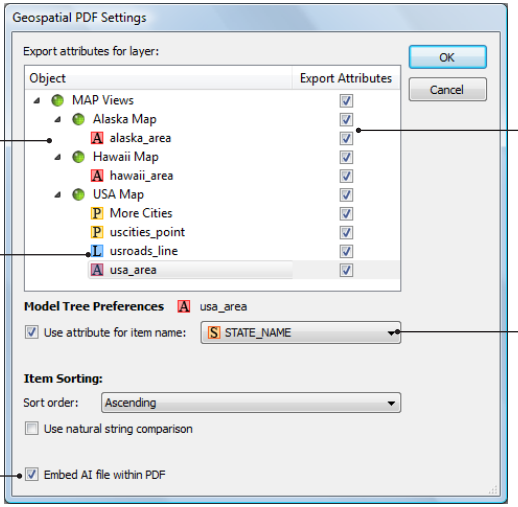
Topics covered in this section:

Export Geospatial PDF

View Geospatial PDF

Export Geospatial PDF

File > Export> Geospatial PDF or *MAP Toolbar*



MAP View name: click the check box to enable/disable the attribute export of all layers in the selected MAP View

MAP Layer name: click the check box to enable/disable the attribute export for the selected layer

Embed AI file within PDF - Enable this option to preserve the Adobe Illustrator editing capabilities in the exported PDF

Export Attributes - Enable which layers will be exported with attributes:

Model Tree Preferences - Set the Model Tree display options for the selected layer (shown):

Use attribute for item name
Enable display of attribute name rather than the Adobe Illustrator object name in the Adobe Acrobat Model Tree. Then choose an attribute from the drop-down list.

Item Sorting:
Sort order - choose Ascending or Descending for the sorting order

Check *Use Natural String Comparison* to sort numerical values in a natural order (e.g. 1-2-10 rather than 1-10-2)

FUNCTIONALITY

The Export Geospatial PDF function exports any MAPublisher document containing a MAP View with a specified coordinate system to the Adobe Acrobat geospatial PDF format while retaining the georeference and attribute information. All layers are exported to PDF, including non MAP layers (regular Adobe Illustrator layers).

The geospatial PDF files exported from MAPublisher are compatible with Adobe Acrobat 9 and later. The Adobe Acrobat Analysis Tools allow viewing and marking coordinates, viewing attributes, measuring distances, perimeters and areas.

With Acrobat Pro and Pro Extended, the measurement tool is always enabled. To enable this tool in Acrobat Reader 9 (standard), the file must first be opened in Acrobat Pro to enable annotations on the PDF (menu *Comments > Enable for commenting and analysis*).

Note: Geospatial PDF files can also be opened in Adobe Acrobat 8, however no geospatial information will be visible, only attributes.

PREREQUISITES

Export Geospatial PDF can only be used with MAPublisher documents, meaning that it must contain at least one MAP View with a specified coordinate system. All coordinate systems within MAPublisher are supported, including user-defined systems*. Multiple MAP Views are supported with no limitation. Individual document size must be smaller than 14,400 pixel by 14,400 pixel to maintain correct georeferencing.

** With some unusual coordinate systems, measurements in Adobe Acrobat may not give proper results. This is an Adobe Acrobat limitation. Predefined coordinate systems with an EPSG code will provide accurate results.*

Depending on the expected behavior of the geospatial PDF, settings for MAP Views, MAP Attributes, and MAP Layers may need additional attention. See sections below.

Adobe Illustrator documents created using MAPublisher legacy versions (8.1 or earlier) as well as documents created by third-party software (such as Cartographica) must be opened, saved and closed with at least MAPublisher 8.3 prior to exporting to geospatial PDF. If these steps are not taken, a warning may be prompted on export and the Adobe Acrobat data tools (see later in this chapter) will not function properly.

Note: Some Adobe Illustrator effects are not supported during export. The attributes will not be visible for objects with the following effects† :

- All *Adobe Photoshop* effects
- Any effect that modifies the outline shape of the artwork will cause attributes to fail. (i.e. *Warp* effects, *Convert to Shape*, *3D* effects, *Distort and Transform*, and some of the *Pathfinder* effects).
- Any effect that rasterizes the art will cause attributes to fail (several *SVG filters* do this).
- *Gradient Fills* are supported, although transparency gradients (going from opaque to transparent) and *Gradient Mesh* are not supported.

Geospatial Information Extents

A geospatial PDF only contains geographic information in the extent covered by a MAP View. In other words, Adobe Acrobat *Geospatial Location Tool* and *Measurement Tool* will not work outside the spatial extents of a MAP View. To increase the extents of the MAP View so that it covers a larger part of the document, create a polygon on a MAP area layer.

Layers and MAP Views Structure

All layers in the Adobe Illustrator document are exported including locked and hidden layers. The visibility status is maintained in the exported geospatial PDF, however not the locking status. Locking layers must be done within Adobe Acrobat.

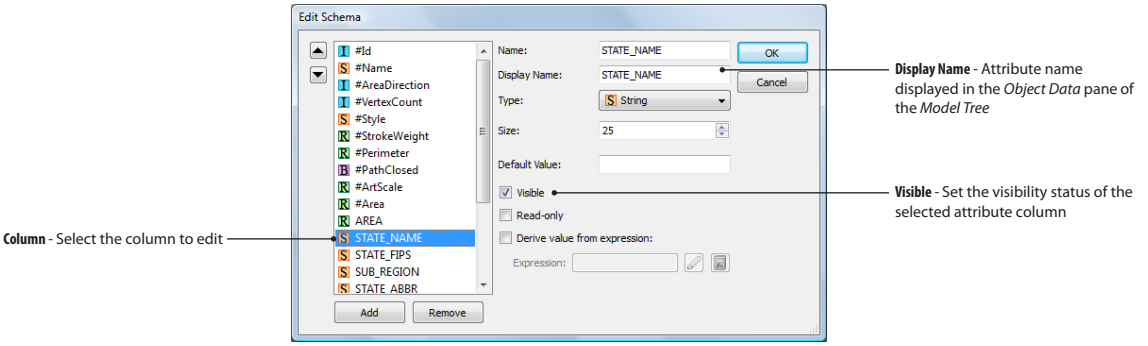
Layer name and order are maintained as they are in the Adobe Illustrator document (with the exception of nested layers). Layers must have a unique name. If multiple layers have the same name, a warning message is prompted upon export. Adobe Acrobat does not support nested layers therefore only top most layers are maintained in the exported geospatial PDF. Objects in nested layers are still exported but they are included in the top most layer. It is not recommended to use nested MAP Layers because their attributes will not be exported unless the master layer is also a MAP Layer.

All MAP Views are exported in the order that they appear in the MAP Views panel (alphabetical): the top most is exported first and lowest is exported last. If some MAP Views are overlapping, the positions shown in Adobe Acrobat are calculated based on the coordinate system of the latest exported MAP View (the lowest one in the MAP Views panel). When working with inset maps, the inset MAP View should be placed at the bottom of the tree in the MAP Views panel (using an appropriate MAP View name since the order is alphabetical).

MAP Attributes

The *Geospatial PDF Settings* dialog box allows the user to customize which layer attributes to export. When attributes are exported, only visible attributes for map objects are exported to PDF. The attribute name displayed in the Adobe Acrobat Model Tree **Property** list corresponds to the attribute **Display Name** specified in the MAP Attributes panel.

Prior to exporting, users can delete or hide/display relevant attributes in the MAP Attributes panel (through the *Edit Schema* dialog box or using the *Show/Hide* button). The Edit Schema dialog box is also used to change the attribute display name - see chapter 5 for details):



USING EXPORT GEOSPATIAL PDF

To export to geospatial PDF, choose *File* > *Export* and select **Geospatial PDF** in the **Save as type** (Windows) or **Format** (Mac) (drop-down list)—or click the **Export Geospatial PDF** button on the MAPublisher Toolbar.

After selecting an export directory and file name, the **Geospatial PDF Settings** dialog box opens to offer the export options described hereafter.

Export Attributes For Layer

The **Export Attributes For Layer** tree lists all the MAP Layers that can be exported with attributes (Area layer, Line layer or Point layer), sorted by MAP View and document. To select which layers will have their attributes exported:

- Click the **Export Attributes** check box for each individual layer to enable or disable the export of attributes.
- Click the **Export Attributes** check box for a given MAP View to enable or disable the export of attributes for all layers within the MAP View.
- Click the **Export Attributes** check box next to the document name or next to **MAP Views** to enable or disable the export of attributes for all layers of all MAP Views.

Layers that are exported without attributes will be visible in the Adobe Acrobat Layers panel but not in the Model Tree.

Notes: Due to Adobe Acrobat limitations, attributes of **Text** layers cannot be exported. In addition, <compound path> objects that have an element outside the artboard are exported without attributes.

Model Tree Preferences

In Adobe Acrobat, the *Model Tree* displays a list of all the map objects in the document along with their attribute information (if applicable), organized in a tree structure in MAP View/Layer Name/Object Name—see next section on how to view Geospatial PDF.

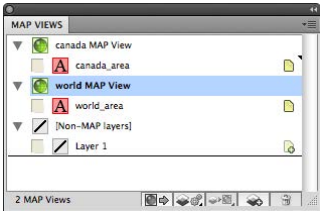
The **Model Tree Preferences** options control, by layer, how objects will be displayed in the Adobe Acrobat Model Tree. To set these options, first select a layer in the *Export Attributes* for Layer tree. The name of the selected layer is then written next to the *Model Tree Preferences* caption.

The **Use attribute for item name** option assigns a specific attribute value as a name to objects prior to export in order to make the geospatial PDF more readable for users.

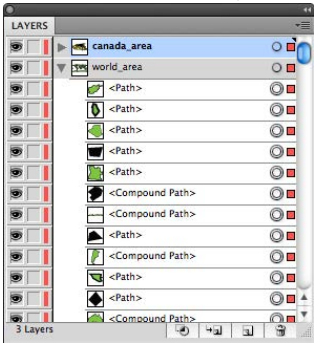
By default, the name of the objects displayed in the *Structure Pane* of the Model tree are derived from the map object's name as shown in the Adobe Illustrator Layers Panel. The default names given by Adobe Illustrator to objects are often meaningless an end user. For example, lines and areas have a default name of <*Path*> or <*Compound Path*>, points have the name of the symbol or ordering number.

To use a specific attribute value as an object name, enable the *Use attribute for item name* option and choose the desired attribute column from the drop-down list.

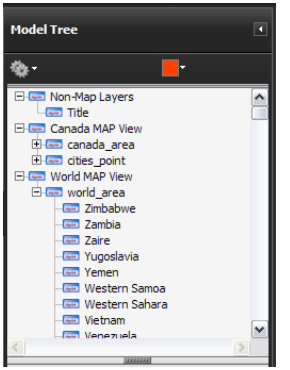
MAP Views Panel



Adobe Illustrator Layers



Model Tree Objects List



The **Item Sorting** options control the order of the objects in the object tree (even if objects are not renamed):

- In the **Use attribute for item name** drop-down list, choose the attribute column that will be used for sorting.
- In the **Sort Order** drop-down list choose *Ascending* or *Descending* order.
- Enable **Use natural string comparison** to sort numeral values by natural order (e.g. 1,2,10 instead of 1,10,2).

Embed AI File Within PDF

The **Embed AI file within PDF** option preserves the Adobe Illustrator editing capabilities in the resulting PDF.

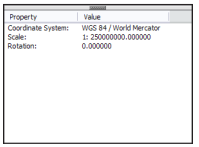
This option is enabled by default. When the Adobe Illustrator editing capabilities are preserved, users will be able to retrieve MAP Views, MAP Layers and MAP Attributes when opening the exported geospatial PDF in Adobe Illustrator. When this option is disabled, the geospatial PDF will open in Adobe Illustrator with no georeferencing or attribute information and all layers will be merged into one—this may be useful for secured documents.

Note: If a preserved geospatial PDF is opened in Adobe Illustrator and some changes are made, the file will have to be exported again using the Export Geospatial PDF function. Simply saving the document will not maintain the geospatial capabilities of the PDF.

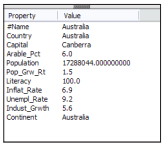
RESULTS

The exported geospatial PDF can be opened in Adobe Acrobat—the geographic reference and attribute information are available for query (see next section).

The MAPublisher data is accessible through the **Object Data Pane** of the **Model Tree** - this displays either the coordinate system of a MAP View, if a MAP View is selected in the Model Tree, or the exported attribute information of a selected object.



MAP Views properties



Attributes properties

Notes: Layers exported without attributes can be seen in the Adobe Acrobat Layers panel, but not in the Model Tree.

During export, a warning may appear: "Multiple Art Objects Matched - One or more map objects may be missing attribute information". This simply states that the layers listed in the warning have objects that are close enough in proximity to each other that they are indistinguishable. There is an option in the warning to select these objects in the event that the user may want to work on them.

The default PDF settings are applied, regardless of any specific preferences set elsewhere:

- Compatibility: Acrobat 8, PDF 1.7.
- General: *Embed Page Thumbnails* and *Create Acrobat Layers from Top-Level Layers.*
- Compression: no image compression, *Compress Text and Line Art* is enabled.
- Security: no master or user password required.

To change PDF file settings (compression, password access, etc.) open the exported geospatial PDF file in Adobe Acrobat Pro or Pro Extended (version 9 or higher) and resave the document.

View Geospatial PDF

Geospatial PDF files are compatible with the geospatial tools introduced in Adobe Acrobat 9. The availability of these tools depends on the user's Acrobat version (Reader, Standard, Pro or Pro Extended), but no additional Acrobat plug-in is necessary to use geospatial PDF.

All traditional Adobe Acrobat tools apply with the following being the most relevant:

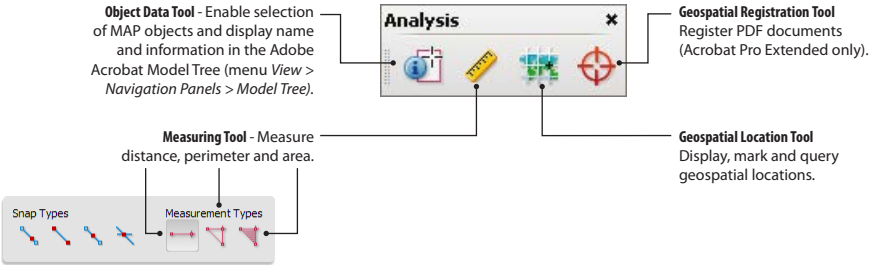
- **Search:** selects objects with matching name first, then objects that have a matching attribute value.
- **Acrobat Layers panel:** displays all layers and controls the display and lock of the layers.
- **Object Data Tool:** to select map objects and display their attributes in the Adobe Acrobat Model Tree (Structure Pane and Object Data Pane).

Geospatial PDF files can also be read in Adobe Acrobat 8, however, the attribute information is only accessible (through the menu *Tools* > *Object Data* > *Object Data Tool*) and it does not have the geospatial tools that are available in version 9.

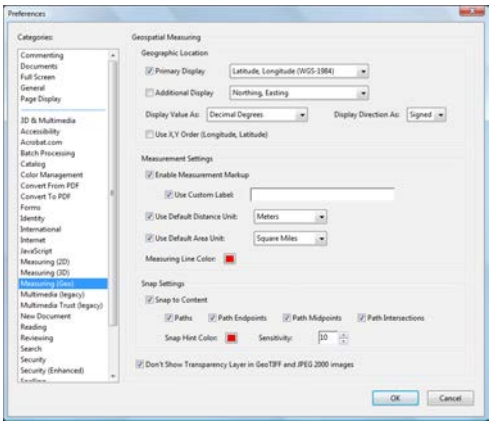
Adobe Acrobat 9 has the following special tools to access geospatial information:

- **Measuring Tool**: to measure distance, area and perimeter.
- **Geospatial Location Tool:** to display, mark and query geospatial locations.
- **Geospatial Registration Tool**: to spatially register any PDF document by digitizing control points (Adobe Acrobat Pro Extended only).

These tools and the Object Data Tool are found on the Analysis Toolbar (menu *View* > *Toolbars* > *Analysis*).



The settings for the Measurement and Geospatial tools are found in the Adobe Acrobat **Preferences** (menu *Edit* > *Preferences*), under the category **Measuring (Geo)**.



These analysis tools are described in detail in the Adobe Acrobat documentation that can be found under the Adobe Acrobat menu *Help > Adobe Acrobat Help* or on the Adobe Website *www.adobe.com*.

Not all tools are available for every Adobe Acrobat version, below is a matrix showing the features availability per Adobe Acrobat version:

	Acrobat 9 Reader	Acrobat 9 Standard Acrobat 9 Pro	Acrobat 9 Pro Extended (Windows only)
Geospatial Measuring Tool			
Measure distance/perimeter/area	✓*	✓	✓
Store measurements as comments	✓*	✓	✓
Export/import PDF comments	✓*	✓	✓
Geospatial Location Tool			
Show on-screen coordinates	✓	✓	✓
Search for/zoom to a location	✓	✓	✓
Mark location with right click	✗	✓	✓
Copy coordinates to clipboard	✗	✓	✓
Geospatial PDF Registration Tool			
Create from GeoTIFF/JPG2000	✗	✗	✓
Georegister a PDF map/image	✗	✗	✓
Add shapefile layers to a map	✗	✗	✓

* To enable the measurement tool in Acrobat Reader 9, the file must first be opened in Acrobat Standard, Pro or Pro Extended to enable annotations on the PDF (menu *Comments > Enable for commenting and analysis*).

Note: The extended tools of Adobe Acrobat Pro Extended are not necessary for MAPublisher users because these functions can be performed by MAPublisher. Adobe Acrobat Pro Extended is currently not supported for Mac operating systems.



MAPublisher LabelPro™

MAPublisher LabelPro is a comprehensive collision-free labeling solution integrated into MAPublisher. Using rules and styles for text placement, it extracts label information from map layer attributes and performs fast, intelligent, cartographic text placement. Placement rules can be saved to a file and imported into other labeling work sessions.

Topics covered in this section:

MAP LabelPro
MAP LabelPro Settings
MAP LabelPro Styles
MAP LabelPro Rules
Label Verification

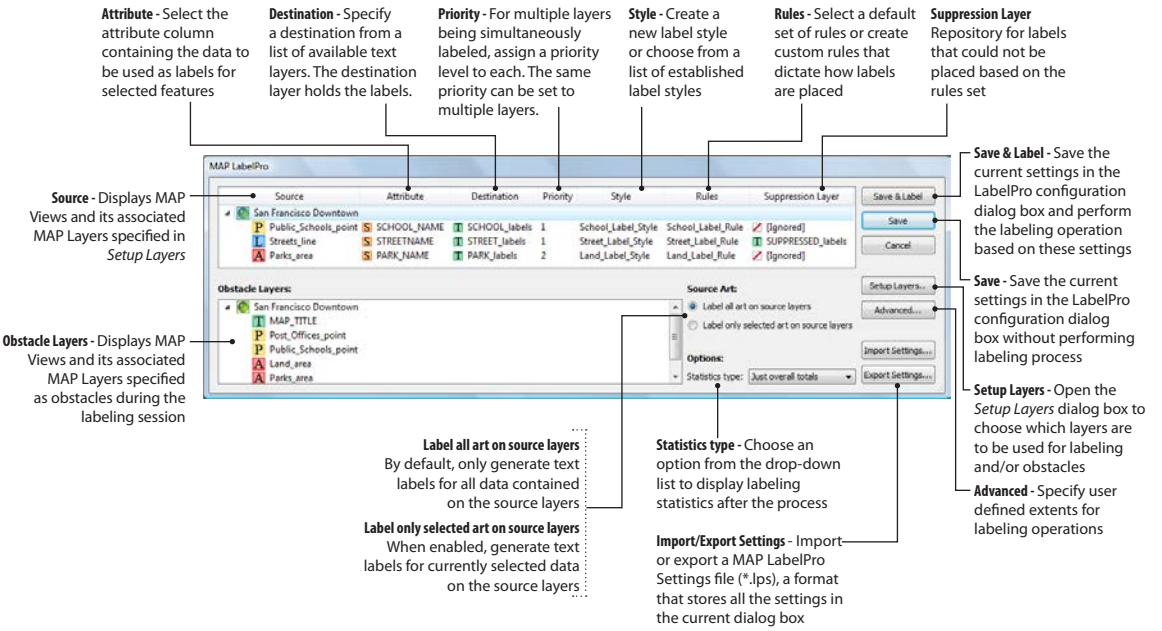
MAP LabelPro is available as an optional add-on to MAPublisher. To purchase a MAPublisher LabelPro license, please contact *sales@avenza.com* or visit *www.avenza.com*.

For information on how to activate a purchased or evaluation license please refer to chapter 1.

Note: The evaluation version of MAPublisher LabelPro scrambles the text of placed labels but preserves the case, spacing and punctuation, so that the results give a sense of how actual labels would be placed based on the rule settings.

MAPublisher LabelPro

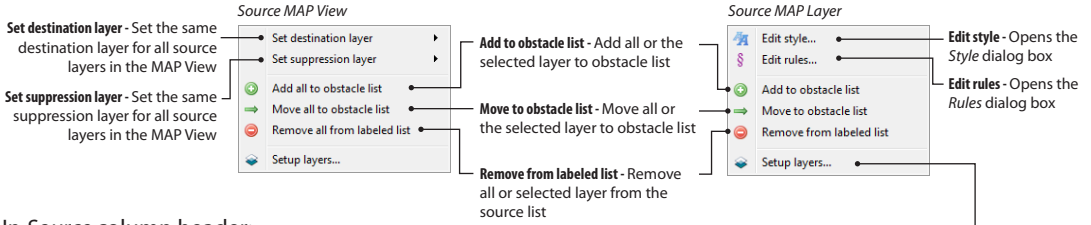
Object > MAPublisher > MAP LabelPro or *MAP Toolbar*



Pop-up menus

Right-click (Windows) or Ctrl-click (Mac) to display the menus:

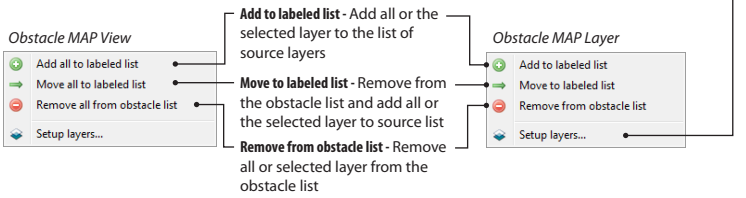
In *Source*:



In *Source* column header:



In a *Obstacle Layers*:



FUNCTIONALITY

The MAPublisher LabelPro labeling engine offers advanced labeling capabilities beyond those available in MAPublisher Feature Text. The MAP LabelPro engine contains sophisticated algorithms that solve many of the most common map labeling problems such as complex conflict resolution across multiple layers, the ability to specify data as obstacles and the ability to create complex labeling conventions via user defined rules. The MAPublisher LabelPro engine uses map data attributes for labeling and provides a much greater level of sophistication and control that can be configured through an intuitive user interface. Data layers may be assigned an order of prioritization for labeling sequences and existing text can be recognized as obstacles for multiple labeling sessions if necessary. Placement rules and properties, once set, can be saved to a file and imported into other files or shared over a network.

Only Point, Line and Area layers can be labeled using MAPublisher LabelPro, however, Text layers may only be used as obstacles.

PREREQUISITES

MAPublisher LabelPro can only be used in conjunction with MAPublisher documents. MAPublisher LabelPro generates static text, meaning the map extent and scale should be established prior to labeling. Once placed, labels do not maintain a link with the source data.

Before labeling with MAPublisher LabelPro, it is necessary to create the destination **Text layers** (where the new labels will be contained). To use suppression layers (for labels that could not be placed by MAPublisher LabelPro) create other text layers for this purpose. To create a new text layer, use the **Add MAP Layer** function in the **MAP View panel** (see chapter 4):

- Set the feature type to *Text*.
- To copy the attributes from the source MAP layer to the label destination layer, check the option **Base attribute schema on** and select the appropriate layer to copy its attribute schema.

For each source layer, MAPublisher LabelPro derives the labels from a selected attribute column. Use the **MAP Attributes** panel to analyze and/or edit the information prior to labeling. For instance, to force some labels to be stacked, users can insert the characters && in the MAP Attribute value to indicate a Carriage Return — this can be done by combining two columns into a new one or using the Find and Replace function.

It is not possible to label based on an expression (e.g. a *road* layer with classes such as *street*, *highway* and *toll road* can only be labeled with a single style and rule). To label multiple classes of a layer, use the **Split Layer** option of the **MAP Selections** to create new layers for each class (see chapter 11).

In the MAPublisher Preferences section for MAP LabelPro, base rule and style folder paths can be set. By default, invisible objects are ignored by MAPublisher LabelPro (they will not be labeled or used as obstacle). To take them into consideration, uncheck the *Ignore invisible artwork* option. Also, check the *Merge multiline text* option to create single line text labels. See chapter 1 on MAPublisher Preferences for more information on this topic.

USING MAPUBLISHER LABELPRO

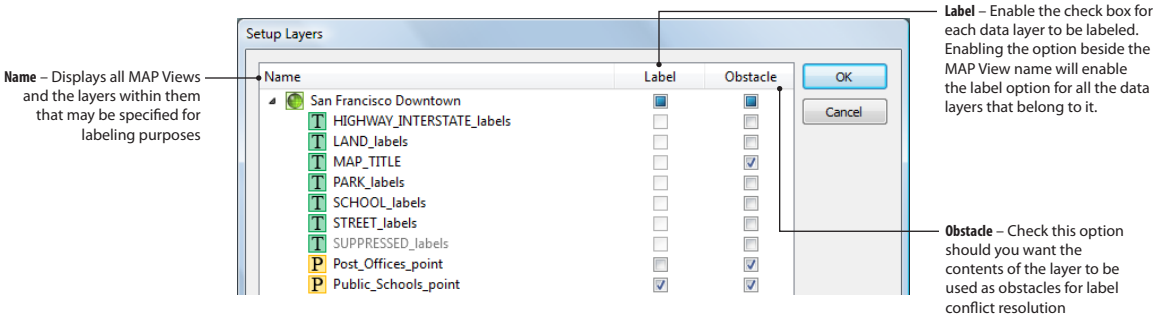
To start MAPublisher LabelPro click the MAP LabelPro button  on the MAPublisher Toolbar or choose from the menu *Object > MAPublisher > MAP LabelPro*.

MAPublisher LabelPro Settings

SETUP LAYERS

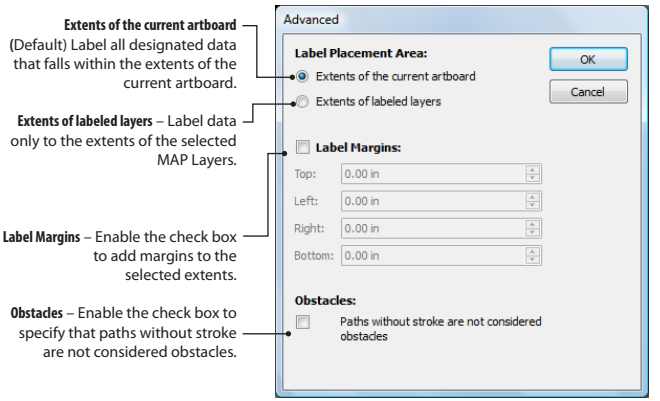
Before labeling, the Setup Layers dialog box must be configured to specify which MAP Layers are to be labeled and which layers, if any, will be denoted as obstacles. Obstacles are map objects that are included in the conflict resolution decision making process, and are considered objects that must be avoided when trying to place a label. The Setup Layers dialog box displays all valid MAP Views and their MAP Layers in the document. To mark a layer for labeling purposes or as an obstacle, check the appropriate check boxes to the right of the layer name. All layers are listed, but only layers that are checked will be included in the labeling process or considered as obstacles.

Note: Layers may be used as both a label and an obstacle concurrently. It is possible to perform labeling operations for multiple MAP Views simultaneously, however, source data layers and destination text layers must belong to the same MAP View.



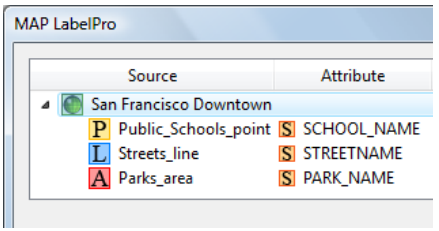
ADVANCED OPTIONS

In the Advanced options dialog box, set the Label Placement Area option to the extents based on the current artboard or the extents of labeled source layers. To set Label Margins, enable the option and enter the extents of the label container in increments of the current document units. Data that is outside of the label margins is disregarded in the labeling process.



Note: These settings are applied in conjunction to the settings from the *Source Art* section in the main MAP LabelPro configuration dialog box. Units for margins are determined by *Document Setup* in Adobe Illustrator.

SOURCE AND ATTRIBUTE COLUMNS



These settings determine which attribute information is converted into text labels for a respective layer. The Source column shows the Area, Point and Line layers in the document that have been enabled for labeling through the Setup Layers option. For each layer listed in Source column, the Attribute column holds a drop-down list populated with the attribute structure of that MAP layer. Specify the appropriate attribute to be used for generating that layer's labels.

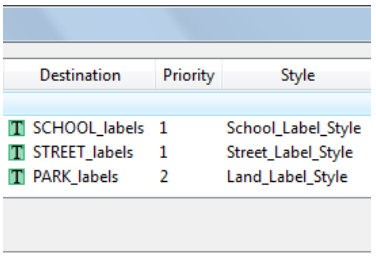
Note: By default, label case is left exactly as it is found in the attribute table. To modify a label's case, see the options in the *Label Case* drop-down list located in the *Style* dialog box of each layer.

DESTINATION AND SUPPRESSION TEXT LAYERS

The layers on which generated labels should be placed are specified in the *Destination* and *Suppression* Layer column drop-down lists. Destination layers will contain only the labels that could be placed successfully on the map based on the defined rules. Suppression layers are repositories for labels that could not be placed successfully according to the rules and have not met all placement conditions. For best viewing results after labeling, hide the suppression type text layers. Alternately, the suppression layer can be set to **Ignored** and unsuccessfully placed labels will not output to any layer.

Note: Rows that have incomplete configuration settings (locked destination or suppression layers/unspecified destination layers) are displayed in red under the Source list in the configuration dialog box. It is normal for a certain percentage of labels to not succeed in being placed due to rule or data conflicts. Information regarding the success rate of placement can be reviewed by enabling one of the *Statistic type* options located in the *Options* frame.

PRIORITY



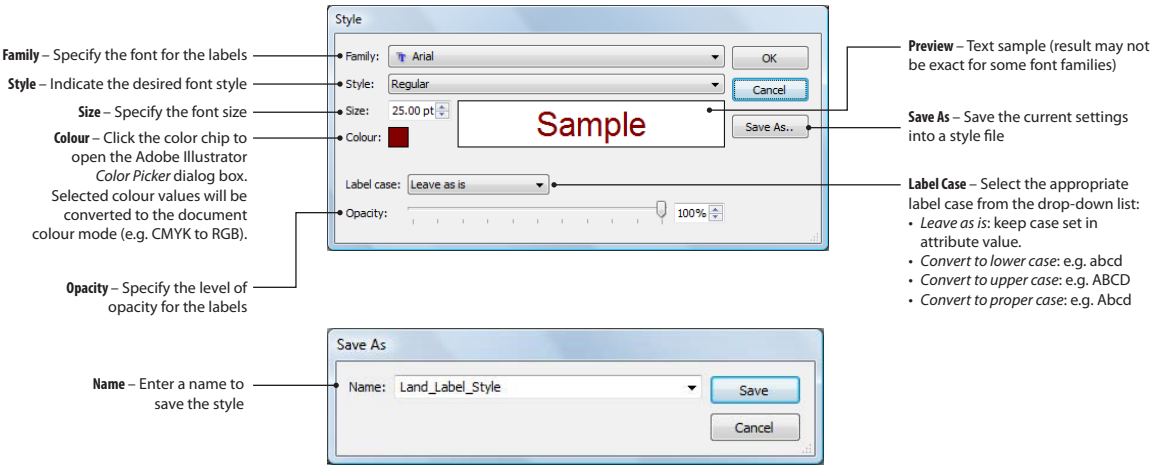
The *Priority* setting allows for complex hierarchical labeling sequences. The priority is the order of preference in which labels are placed. Layers with a priority of 1 will be placed first (or have a high priority). Layers with a priority of 12 will be placed last (or have a low priority). Consequently, layers with a low priority might have more suppression labels generated for them. Priorities are set by selecting a number in the *Priority* drop-down list for a respective layer.

Note: A maximum of twelve priorities may be assigned at any given time however the same priority number can be assigned to multiple layers.

MAPublisher LabelPro Styles

POINT AND AREA STYLES

The *Style* dialog box is used to set label style properties for each map layer. To access the dialog box, click the Style edit button . Set the text properties for font family, style, size and colour. A sample preview of the stylized text is shown in the large text box. Once the desired settings have been made, they can be collectively saved into a style file by clicking *Save As*. MAP LabelPro offers a pre-configured default style of 12 point Arial as a base labeling option. Once saved, Styles are added to the Styles drop-down list in the MAP LabelPro Configuration dialog box.



This is very helpful in maintaining labeling consistency among similar mapping projects or when multiple users are working on the same project. Existing styles may be deleted by selecting it from the Style drop-down list and then clicking on the delete button. Style files are saved to either a point, line or area folder depending on the type of map layer it is associated with.

By default, styles are saved in the following location:

Windows XP: C:\Documents and Settings\All Users\Application Data\Avenza\MAPublisher 8\LabelPro\Styles
Windows Vista/7: C:\ProgramData\Avenza\MAPublisher 8\LabelPro\Styles
Mac OS X: Applications/Avenza/MAPublisher 8/MAPublisher Plug-In/LabelPro/Styles

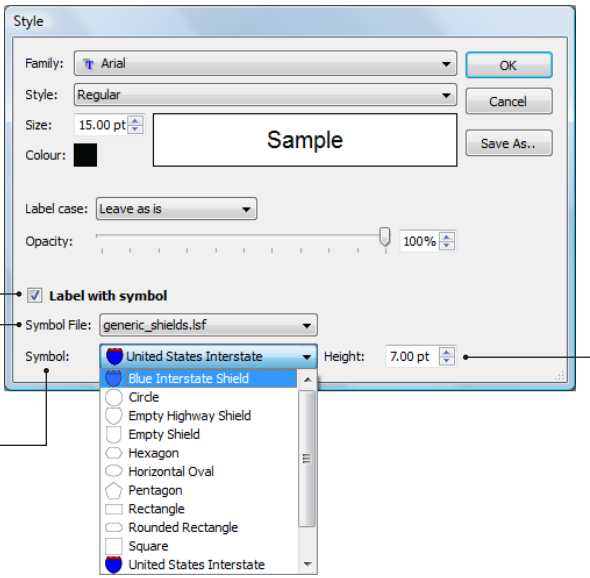
The default save path for the Styles can be modified in the MAP LabelPro section of the MAPublisher Preferences dialog box. Choose *Edit* > *MAPublisher Preferences* (Windows) or choose *Illustrator* > *MAPublisher Preferences* (Mac).

Notes: On Windows, labeling with PostScript Type 1 fonts that are not placed in the Windows system font folder will produce an error message *Failed to perform label placement: FontNotFound Exception*. In these very rare cases, the font files should be copied from the Adobe font folder (usually under *C:\Program Files\Common Files\Adobe\Fonts\Reqrt\Base*) to the Windows font folder (found from *Control Panel* > *Fonts*). Notably, *Myriad* font is such a PostScript Type 1 font that is not installed on the Windows font folder by default.

Attributes consisting of Unicode characters must be labeled with a Unicode font that contains the appropriate characters. For example, attempting to label Japanese characters with an Arial font will result in an error or incorrect results.

LABEL LINE DATA WITH SYMBOLS

MAPublisher LabelPro has the ability to place labels inside symbols. A typical application of this would be numbered highway route shields. To label lines with symbols, check the *Label with symbol* check box to enable the symbol options. Choose an appropriate symbol set from the *Symbol File* drop-down list and select a symbol from the Symbol drop-down list. Use the *Height* option to change the size of the symbol in the Adobe Illustrator document unit (e.g. inches or millimeters).



Symbols are stored in the location set in the MAPublisher Preferences (see chapter 1). The default locations are:

Windows XP: C:\Documents and Settings\All Users\Application Data\Avenza\MAPublisher 8\LabelPro\Symbols
Windows Vista/7: C:\ProgramData\Avenza\MAPublisher 8\LabelPro\Symbols
Mac OS X: Applications/Avenza/MAPublisher 8/MAPublisher Plug-In/LabelPro/Symbols

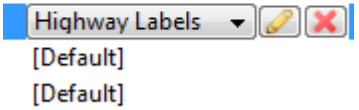
Notes: The label font size and a fixed symbol height (not Auto size) affect how a label is sized inside a symbol. For example, if a fixed symbol height of 0.5 in is used, but the label font size of 5 pt, the symbol will be 0.5 in but the label inside will be no greater than 5 pt. If the label font is set to 50 pt, but the fixed symbol size is 0.5 in, the label will have a maximum size of whatever fits inside the symbol or the selected font size.

Each symbol file has one version in RGB colour and one in CMYK.

Labeling with symbols is only available for Line layers. To label areas with symbols, use the Plot Centroids function from the MAP Point Plotter (see chapter 6).

MAPublisher LabelPro Rules





MAPublisher LabelPro provides users with an intuitive, easy to understand graphical user interface for setting up labeling rules. Each Point, Line and Area rule dialog box has numerous label placement options for a high level of label detail and a variety of configurations.

To access label rules, click the Rules edit button in the Rules column of the main MAP LabelPro dialog box. Depending on the layer type, this will open either the Area, Line or Point Rules dialog box. Configure label rules and, if needed, save the rules to add it to the Rules drop-down list.

Rules operate in a very similar approach to Styles in that once added to the *Rules* list, they can be immediately applied, reused later in the same file or in other documents provided they are being applied to the same type of data. Rules are saved to the Area, Line or Point folder depending on the feature type of the MAP layer.

MAPublisher LabelPro offers a pre-configured *Default* rule for each data type. It is loaded by default and used until new rules have been created or selected. The default rule is a good starting choice as it is configured to be useful for the most common labeling situations, however, creating custom rules can be very useful when specific labeling conventions are required.

In an Area, Point or Line Rule dialog box, the sequence in which the rule options appear and are checked have no bearing on the order of label placement, only whether the option is enabled or not. Adjust the Priority value of layers to adjust the sequence of label placement. Existing rules may be deleted by selecting them from the Rule drop-down list and then clicking the delete button .

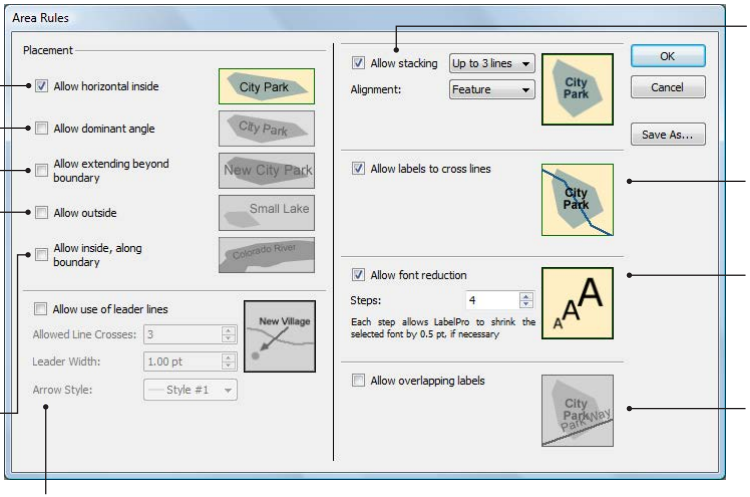
Rules are saved to the location set in MAPublisher Preferences (see chapter 1). The default locations are:

Windows XP: C:\Documents and Settings\All Users\Application Data\Avenza\MAPublisher 8\LabelPro\Rules
Windows Vista/7: C:\ProgramData\Avenza\MAPublisher 8\LabelPro\Rules
Mac OS X: Applications/Avenza/MAPublisher 8/MAPublisher Plug-In/LabelPro/Rules

Note: Labeling results will vary depending on which rules are enabled. If no rules are enabled, MAP LabelPro will not perform any labeling.

AREA RULES

The Area Rules dialog box contains the label configuration options for labeling Area layers. Rules can be set by selecting an area feature type layer and clicking the Rules edit button in the Rules column. The placement settings in the screenshot below represent the *default* configuration, however, these settings may be changed to match any labeling requirements. Click the *Save As* button to save the label configuration. The rule will be saved with a user assigned name. Click *OK* to apply the current settings.



Allow horizontal inside Labels are allowed to be placed horizontally inside the polygon

Allow dominant angle – Labels are allowed to be placed parallel to the dominant angle of the polygon

Allow extending beyond boundary Labels are allowed to exceed the boundaries of the polygon being labeled

Allow outside – Labels are allowed to be placed outside the polygon being labeled

Allow inside, along boundary Labels are allowed to be placed inside the polygon, following the polygon boundary

Allow use of leader lines – Incorporates the use of leader lines. Options include the number of lines the leader line are allowed to cross, the width of the leader line being used and the style of arrow to be used as the leader line.

Allow stacking – Labels are allowed to stack up to a maximum of two, three, or four lines. Choose Alignment option: *Feature*, *Left*, *Center* or *Right*.

Allow labels to cross lines Labels are allowed to cross line features and area boundaries.

Allow font reduction Automatically reduces the label size incrementally, when necessary. Each step shrinks the selected font by 0.5 pt.

Allow overlapping labels Area Labels are allowed to overlap other labels in the same labeling session

About Allow overlapping labels

When the **Allow overlapping labels** option is enabled, labels are placed without applying other placement rules. Generally it is recommended to leave this option off and use **Allow font reduction**, **Allow stacking**, and **Allow use of leader lines** to increase label placement.

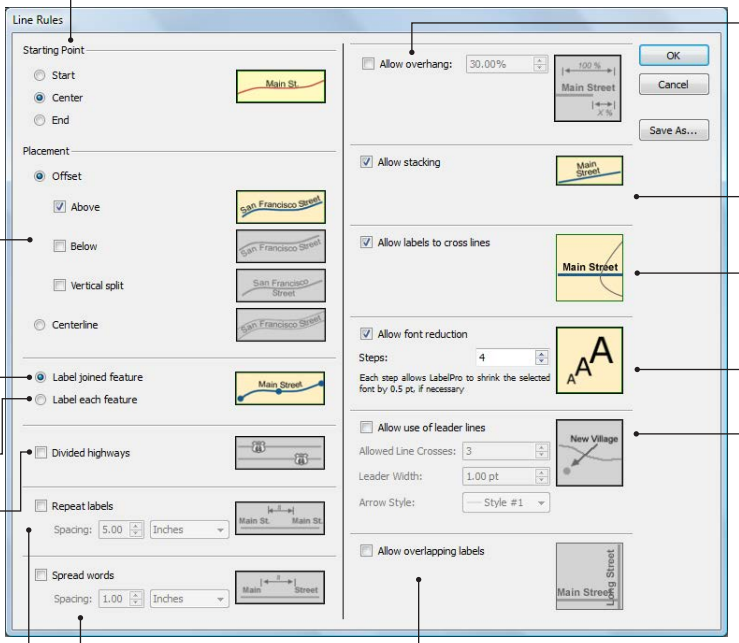
Notes: For Area type data, labels are placed relative to an object's centroid.

For areas grouped in a compound path, the largest area of the compound will be labeled.

LINE RULES

The Line Rules dialog box contains the label configuration options for labeling Line layers. Rules can be set by selecting a line feature type layer and clicking the Line Rules edit button  in the Rules column. The placement settings in the graphic below represent the default configuration, however, these settings may be changed to match any labeling requirements. Click the *Save As* button to save the label configuration. The rule will be saved with a user assigned name. Click *OK* to apply the current settings.

Starting Point – Specify where the start of the label will be placed with options including Start, Center and End. Start will have the start of the label placed at the starting point of the line, Center will place the label in the center of the line and End will place the label at the end of the line. The starting point of a line depends on the direction of the vertices.



Placement – Place labels using an offset or on a centerline. Offset labels *Above* or *Below* a line. *Vertical Split* places multiple word labels above and below the line and relative to the center of the line. If the generated label only has one word, it will be placed on the suppression layer. The Centerline option places labels directly on top of the line.

Label joined feature – Places one label on a line that is joined together

Label each feature – Labels each and every line segment

Divided highways – Label multiple road segments with a common symbol such as a shield. Lines must be within 0.25 inch and 75% of the lines must be parallel to be considered a divided highway. The divided highway symbol will be placed on the line with the longest geometry.

Allow overhang – Labels are allowed to overhang the line up to a set percentage. The percentage of overhang is relative to the start of the label and the end of the line.

Allow stacking – Labels are allowed to stack to a maximum of two lines

Allow Labels to Cross Lines Labels are allowed to cross line features and area boundaries

Allow font reduction Automatically reduces the label size incrementally, when necessary. Each step shrinks the selected font by 0.5 pt.

Allow use of leader lines Incorporate the use of leader lines. Allowed Line Crosses permits the number of lines the leader line will be allowed to cross. Leader Width and Arrow Style adjusts the thickness and style of the leader line, respectively.

Spread words – Multiple word labels placed a specified amount apart

Repeat labels– Repeat labels along a line at specified amounts

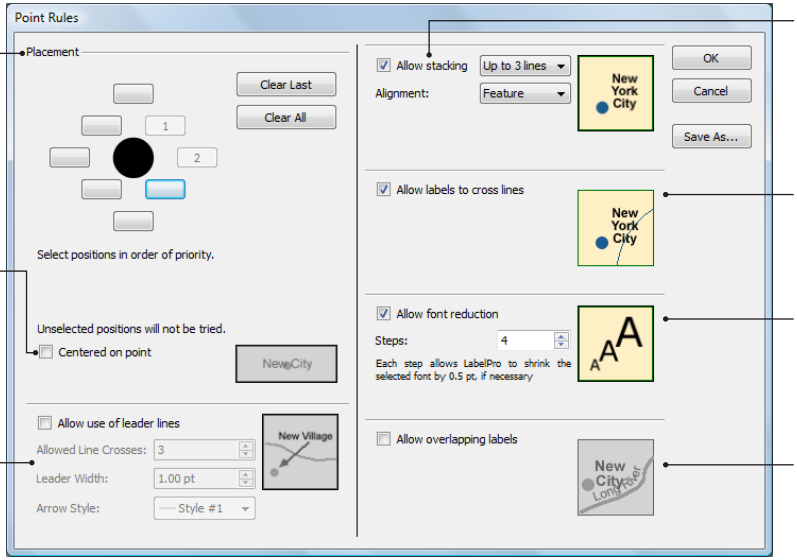
Allow overlapping labels – Check this option to allow line labels to overlap with other labels in the same labeling session

Notes: Text as obstacles will not work unless the *Allow labels to cross lines option* is disabled. This is because text obstacles are treated as areas and not text. Also, text will only be avoided being placed where it intersects the outline of the shape and not within it.

Using the Placement option *Vertical Split* may require additional line smoothing (straightening or simplifying).

POINT RULES

The Point Rules dialog box contains the label configuration options for labeling Point layers and follows the same conventions mentioned for the previous two data types.



Placement – Click the placement buttons in the desired order of priority. Use the *Clear Last* or *Clear All* options to remove selections. Unselected positions will not be considered.

Centered on point Labels are placed on the center of the point

Allow use of leader lines Incorporate the use of leader lines. Allowed Line Crosses permits the number of lines the leader line will be allowed to cross. Leader Width and Arrow Style adjusts the thickness and style of the leader line, respectively.

Allow stacking – Labels are allowed to stack up to a maximum of two, three, or four lines.

Allow labels to cross lines Labels are allowed to cross line features and area boundaries.

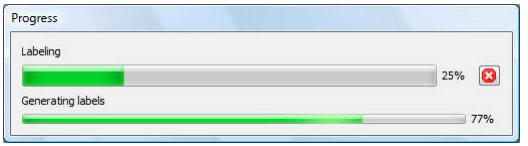
Allow font reduction Automatically reduces the label size incrementally, when necessary. Each step shrinks the selected font by 0.5 pt.

Allow overlapping label Check this option to allow point labels to overlap with other labels in the same labeling session

Note: For each point label there is a fixed minimal zone of 0.3 inches, within which no other point feature can be labelled. Consequently, when two point features are closer than 0.3 inches of each other, their labels are automatically placed in the suppression layer (if selected).

SAVE AND LABEL

Once the layers, main configuration, style and rule based options have been completed, proceed to label the map data by clicking the *Save & Label* button. Clicking the *Save & Label* button will save the current settings, close the main MAP LabelPro configuration dialog box and begin the labeling process.

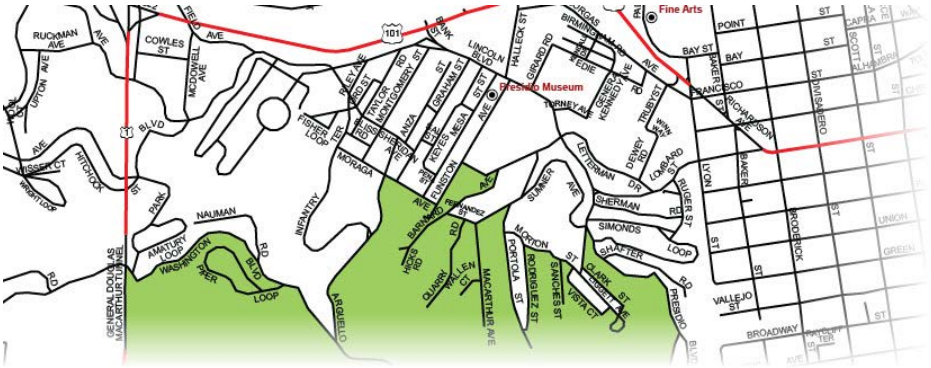


Due to the complexity of the calculations involved in rule based text placement, it is likely that a progress meter will be displayed for most labeling processes except those that are sufficiently simple or small. Cancel the labeling process at any time by clicking on the button in the progress dialog box.

Alternatively, save the current settings without labeling by clicking the *Save* button. This will close the main MAP LabelPro configuration dialog box and will not label any features. The dialog box can be reopened later to edit the saved label settings or be used to label the map.

Label Verification

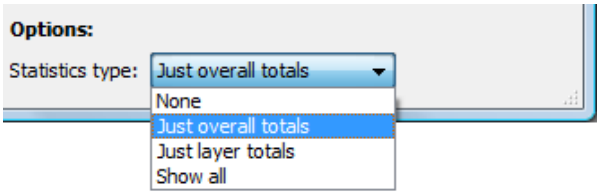
The graphic below shows results of a typical labeling result using options such as stack labels, repeat labels, allow labels to cross lines, and many others.



Verify that labels were successfully placed in accordance to the rule base set out in the MAP LabelPro configuration. Also verify that labels were placed on the appropriate Destination text layers. Text failing to meet the labeling criteria will be placed in a Suppression layer (if one is available and has been set). If no Suppression layer is available, the non-compliant text is ignored and is not generated. Once placed, the labels are considered standard text and may be modified using Adobe Illustrator or MAPublisher operations.

Note: Undo and Redo operations are supported when labeling. Be aware that undoing a labeling operation will also undo any changes to rules, styles or settings made at the same time. It may be useful to save without labeling, close the MAP LabelPro Editor, re-open it, then proceed to click *Save & Label*.

OPTIONS



None – (Default) No statistics panel will display after labeling

Just overall totals – Totals for all placed and unplaced labels (not separated by layer)

Just layer totals – Totals for each layer. Shows both placed and unplaced labels.

Show all – Show all statistics

The **Statistics type** drop-down lists several options for displaying statistical information after the labeling process is completed. This information is useful in determining how successful the labeling operation was based on the number of labels written to Destination and Suppression layers. It may help indicate whether adjustments to the rule base are required to achieve a higher rate of successful placement. Statistics reports may be saved as a text file for future reference.



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Appendix 1: Technical Reference Guide

Graphic File Formats

AI

The *Adobe Illustrator* native postscript file format. Refer to the Adobe Illustrator User Guide for more information.

DOQ

Digital Orthophoto Quadrangle (DOQ) are geographic images from the United States Geological Survey (USGS) and are stored in the JPG format. They can be placed by Adobe Illustrator and registered by the MAPublisher Register Image function. DOQ are usually very large files (30 MB or more) and require extremely large amounts of RAM.

DRG

Digital Raster Graphics (DRG) are scanned images of published topographic maps from the USGS stored in TIF format. They can be placed by Adobe Illustrator and registered by the MAPublisher Register Image function. DRG are also usually very large files (30 MB or more) and require extremely large amounts of RAM.

EPS

The *Encapsulated Post Script* (EPS) file is used to transfer PostScript language artwork between applications. EPS files are easily opened by Adobe Illustrator because the format is widely supported by most graphics programs. It is the preferred format for export to most illustration and page-layout programs. EPS files are vector based, but can contain embedded raster graphics and fonts.

GIF

Graphic Interchange Format (GIF) is a colour-indexed graphics format, commonly used for web pages and image file transfer. Adobe Illustrator can export 8-bit indexed-colour or grayscale GIF.

JPEG

Joint Photographic Experts Group (JPEG or JPG) is a compression technique for raster file formats. The Digital Orthophoto Quadrangle geographic images from the USGS are stored in this format, which can be imported by Adobe Illustrator and registered by the MAPublisher Register Image function.

PDF / GEOSPATIAL PDF

Portable Document Format (PDF) is a standardized format developed by Adobe for use across Macintosh, Windows, DOS, and UNIX platforms. Based on the PostScript Level 2 language, PDF supports both raster and vector graphics. A Geospatial PDF is an Adobe Acrobat file that retains geospatial coordinates.

TIF/TIFF (GEOTIFF)

Tagged Image File Format (TIFF or TIF) is a common raster graphic file format that can be imported by Adobe Illustrator. Many raster geographic images from GIS systems are stored in this format, which can be imported by Adobe Illustrator and registered by the MAPublisher Register Image function. A GeoTIFF is a TIFF file with embedded geographic information identifying its position and scale in world coordinates.

OTHERS

Please refer to the Adobe Illustrator User Guide for other graphics file formats supported by Adobe Illustrator.

MAPublisher Import Formats

This section contains descriptions of the GIS formats supported for import by MAPublisher. Here you will find an overview of the structure of each format, as well as information on supported format versions and elements unique to each data type. Each file format will carry a checklist covering which core elements are supported by MAPublisher during its import. You can also refer to the Frequently Asked Questions section in this guide for information on any issues associated with the various file formats.
Also see chapter 2 on Map Data File Formats.

AUTOCAD DRAWING (*DWG) AND DRAWING EXCHANGE (*.DXF)

There are two formats used by AutoCAD: DXF and DWG. DXF is a CAD data file format, developed by Autodesk as their solution for enabling data interoperability between AutoCAD and other programs. The DWG format is used for storing two and three dimensional design data and is the internal format for the AutoCAD Computer Aided Design package. DWG is also the common name for AutoCAD proprietary DWG technology developed by Autodesk for their AutoCAD package.

Supported Elements		**Supported Geometry**	
Typical File Extensions	*.dwg, *.dxf	Aggregate	No
Automated Translation	Yes	Circles	Yes
User-Defined Attributes	Yes	Circular Arc	Yes
Coordinate System Support	No	Elliptical Arc	Yes
Generic Colour Support	Yes	Ellipses	Yes
Spatial Index	Never	Polygon	Yes
Schema Required	Yes	Donut Polygon	Yes
3D Support	Yes	Point	Yes
		Line	Yes
		Text	Yes

Supported Versions
Windows: Releases vrs. R12 to 2007
Mac OS X: Releases vrs. R12 to 2007.

Prior to the import process, additional Settings can be made, which will affect how the selected file will import. The following parameters can be applied to the import:

- **Group Entities** - Group entities by Layer Name or Geometry.
- **Hatches** - Check this box if you want MAPublisher to read your hatch patterns upon import.
- **White Lines and Fills** - Enabling the *Import as is* option will instruct MAPublisher to import the data true to the original colour settings contained in the file. Check the *Change white lines and fills to black* box to import black lines instead of the files native white lines. Check the *Create black background* option to incorporate a layer containing a black background to mimic the AutoCAD environment.

DELIMITED ASCII TEXT (*CSV, *TSV,*TXT)

An ASCII file containing a tabular data where delimiters separate the columns and rows. Common delimiters are commas, spaces or tabs. Microsoft Excel and many other spreadsheet programs will export data in these formats.

Supported Elements		Supported Geometry	
Typical File Extensions	*.csv, *.tsv, *.txt	Aggregate	No
Automated Translation	Yes	Circles	No
User-Defined Attributes	Yes	Circular Arc	No
Coordinate System Support	No	Elliptical Arc	No
Generic Colour Support	No	Ellipses	No
Spatial Index	Never	Polygon	No
Schema Required	Yes	Donut Polygon	No
		Point	Yes
		Line	No
		Text	No

Prior to the import process, additional Settings can be made, which will affect how the selected file will import. The following parameters can be applied to the import:

- **Axis Column** - Specify which columns contain the x and y coordinates for the point data to be read in.
- **Coordinate Format** - Choose the formatting type of the data you wish to import *(e.g. Decimal Degrees, Delimited Degrees Minutes Seconds, Packed DMS)* — formats are described in chapter 6.
- **Use first line as header** - Allows the user to enable the first line of the text file to be used as column headings.

ESRI INTERCHANGE FILE (*.E00)

An archive of files that describes a complete ArcInfo coverage. This is either ASCII or compressed into a binary and is used to transfer files between different versions of ArcInfo. It is a commonly found format for freely distributed data such as that found at the GIS Data Depot *(http://www.geocomm.com)*.

A single E00 file describes a complete ArcInfo coverage. The file itself is actually an archive of several smaller files, referred to as subfiles. Some of these subfiles have fixed names which do not vary from coverage to coverage, and follow a predefined data format. The remainder of the subfiles contained within an E00 are the info files. These files may contain user-defined attributes, and have names which vary from coverage to coverage.

Supported Elements		Supported Geometry	
Typical File Extensions	*.e00	Aggregate	No
Automated Translation	Yes	Circles	No
User-Defined Attributes	Yes	Circular Arc	Yes
Coordinate System Support	Yes	Elliptical Arc	Yes
Spatial Index	Never	Ellipses	No
Schema Required	Yes	Polygon	Yes
Geometry Type Attribute	e00_type	Donut Polygon	Yes
		Point	Yes
		Line	Yes
		Text	Yes

There are essentially four types of geometry defined in E00 files, which will be reproduced as layers during import: Arcs (lines), Points, Polygons, and Text. Prior to the import process, an additional Setting can be made:

- **Tic points layer** - This option enables you to include an additional layer which will hold the registration points for the imported data. The default is to set to Yes.

ESRI ARCINFO GENERATE (*.GEN)

Esri simple ASCII storage and interchange format. There are three different types of .gen files each with of its own syntax one for points, one for lines, and one for text geometries. This is the format exported by ArcInfo generate command. The *.gen files are use by ArcInfo to transfer coverages to other mapping systems.

Supported Elements		Supported Geometry	
Typical File Extensions	*.gen	Aggregate	No
Automated Translation	Yes	Circles	No
User-Defined Attributes	No	Circular Arc	No
Coordinate System Support	No	Elliptical Arc	No
Generic Colour Support	No	Ellipses	No
Spatial Index	Never	Polygon	No
Schema Required	Yes	Donut Polygon	No
Geometry Type Attribute	arcgen_geometry	Point	Yes
		Line	Yes
		Text	Yes

ESRI GEODATABASES

A Geodatabase is a native Esri ArcGIS data format for storing geographic data. It is a collection of geographic datasets of various types used in ArcGIS and managed in either a file folder or a relational database. There are two main types of geodatabases:

- Single-User: Personal Geodatabases (extension *.mdb) and File Geodatabases (extension *.gdb)
- Multi-User: server based geodatabases, also known as ArcSDE Geodatabases.

Supported Elements		Supported Geometry	
Typical File Extensions	*.mdb (personal), *.gdb (file)	Aggregate	Yes
Automated Translation	Yes	Circles	Yes
User-Defined Attributes	Yes	Circular Arc	Yes
Coordinate System Support	Yes	Elliptical Arc	Yes
Generic Colour Support	No	Ellipses	Yes
3D Support	Yes	Polygon	Yes
Schema Required	Yes	Donut Polygon	Yes
Transaction Support	Yes	Point	Yes
Enhanced Geometry	Yes	Line	Yes
Geometry Type Attribute	geodb_type	Text	Yes
Encoding Support	Yes	Raster	No
		Solid	No
		Surface	No
		Z value	Yes

ESRI SHAPEFILE (*.SHP)

The Esri Shapefile is a geospatial vector data format for geographic information systems software. It is developed and regulated by Esri as a mostly open specification for data interoperability among Esri and other software products. A Shapefile is a digital vector storage format for storing geometric location and associated attribute information. This format lacks the capacity to store topological information

A single logical Shapefile consists of three physical files, each with one of the following file name extensions:

*.shp : Geometric data
*.shx : Index to the geometric data
*.dbf : Attributes for the geometric data

These extensions are added to the base name of the Shapefile , creating separate physical files that must all reside in the same directory. You must select the *.shp file for import. Point, multipoint, polyline, and polygon geometric data can be stored in *.shp files. However, a single *.shp file can contain only one type of geometry. Each entity in a *.shp file has a corresponding entry in the *.shx index file and a corresponding row of attributes in the associated *.dbf file. The order of the entries in each of these files is synchronized. For example, the 3rd geometric entity in the *.shp file is pointed to by the 3rd entry in the *.shx index file and has the attributes held in the 3rd row of the *.dbf.

A single Shapefile may also consist of a number of additional files, with the following file name extensions:
*.sbn / *.sbx : Spatial index files for the geometric data. These two files are only generating by an Esri product however they are not required by MAPublisher for import and will they be generated when exporting data to the Shapefile format..
*.prj : Spatial coordinate system information.

If a *.prj file exists in your Shapefile directory, holding the coordinate system information of the Shapefile , this will automatically be read by MAPublisher on import. If your Shapefile folder does not contain a .prj file you will be required to specify the coordinate system in order to fully utilize MAPublisher.

Supported Elements	
Typical File Extensions	*.shp (*.shx, *.dbf, *.prj)
Automated Translation	Yes
User-Defined Attributes	Yes
Coordinate System Support	Yes (if have *.prj)
Generic Colour Support	No
3D Support	Yes
Schema Required	Yes
Transaction Support	No
Geometry Type Attribute	SHAPE_GEOMETRY

Supported Geometry	
Aggregate	Yes
Circles	No
Circular Arc	No
Elliptical Arc	No
Ellipses	No
Polygon	Yes
Donut Polygon	Yes
Point	Yes
Line	Yes
Text	No

GEOGRAPHIC MARKUP LANGUAGE - SIMPLE FEATURES (*.GML)

GML was designed as a geographic interface language for the Geo-Web. It is currently in draft as an ISO standard (ISO 19136). The goal of the format is to provide users with a set of abstract base objects that can be built into working real world datasets. It uses as XML base to store geometry and feature information that can easily be transported across the Internet.

The GML simple feature profile was created by the Open Geospatial Consortium as a restricted subset of the GML specification. It provides a reduced geometry and metadata profile that can be shared across many GIS tasks. This simple feature model can be used as a base to generate local application profiles for a specific work area. Since the GML models base abstract classes, these application profiles (schemas) are required for accessing and processing any GML datasets. Generally, GML data has a *.gml extension, and requires any application specific schema files (*.xsd). For more information on GML, and the GML simple features profile, please visit the Open Geospatial Consortium web site: *www.opengeospatial.com*

Supported Elements	
Typical File Extensions	*.gml (*.xml) *.xsd
Automated Translation	Varies
User-Defined Attributes	Yes
Coordinate System Support	Yes
Generic Colour Support	No
3D Support	Yes
Schema Required	Yes (*.xsd)
Transaction Support	No
Geometry Type Attribute	xml_type

Supported Geometry	
Aggregate	Yes
Circles	No
Circular Arc	Yes
Elliptical Arc	No
Ellipses	No
Polygon	Yes
Donut Polygon	Yes
Point	Yes
Line	Yes
Text	No

KEYHOLE MARKUP LANGUAGE (*.KML/*.KMZ)

KML is an XML-based language for managing the display of three-dimensional geospatial data in the programs Google Earth, Google Maps, Google Mobile and WorldWind. The KML file specifies a set of features for display. Each feature always has a longitude and a latitude and can have other data, such as tilt, heading, and altitude. KML shares some of the same structural grammar as GML. KML files are very often distributed as KMZ files, which are zipped KML files with a .kmz extension. MAPublisher uses KML version 2.2 specifications for import and export.

Supported Elements	
Typical File Extensions	*.kml, *.kmz
Automated Translation	Yes
User-Defined Attributes	Yes
Coordinate System Support	Yes
Generic Colour Support	Yes
Spatial Index	Never
Schema Required	No
3D Support	Yes

Supported Geometry	
Aggregate	Yes
Circles	No
Circular Arc	No
Elliptical Arc	No
Ellipses	No
Polygon	Yes
Donut Polygon	Yes
Point	Yes
Line	Yes
Text	No

Prior to the import process, additional Settings can be made, which will affect how the selected KML file will import. The following parameters can be applied to the import:

- **Allow Random Colour Mode** - This option allows Adobe Illustrator to generate random colour settings for the data.
- **Expand Network Links** - Checking this box will enable the use of network linked KML files.
- **Import KML Properties as Visible** - Check this option to make KML properties visible attributes (hidden by default).

MAPINFO INTERCHANGE (*.MIF/*.MID)

MIF is a published ASCII storage format used by the MapInfo. It is used as a file format for map and database exporting/importing in MapInfo software products. The *MapInfo Reference Manual* describes the MIF format and all constants it uses for colour, style, symbol, and fill patterns. MapInfo Interchange Format Files are often called MIF or MIF/MID files.

A single logical MIF file consists of two physical files, having the following file name extensions:
*.mif : Geometric data
*.mid : Attributes for the geometric data

These extensions are added to the base name of the MIF file, creating separate physical files that must all reside in the same directory. You must select the *.mif file for import.

Each entity in a *.mif file has a row of attributes stored in an associated *.mid file. A single .mif file contains many different types of geometry however, the associated attribute in the *.mid file must have the same number and type of fields for each entity in the *.mif file. The order of the entries in the two files is synchronized. For example, the second geometric entity in the *.mif file has the attributes held in the second row of the *.mid file. The number and type of attributes associated with each entity is specified by the user. There must be at least one attribute field in the *.mid file.

Supported Elements		**Supported Geometry**	
Typical File Extensions	*.mif (*.mid)	Aggregate	Yes
Automated Translation	Yes	Circles	Yes
User-Defined Attributes	Yes	Circular Arc	Yes
Coordinate System Support	Yes	Elliptical Arc	Yes
Generic Colour Support	Yes	Ellipses	Yes
Spatial Index	Never	Polygon	Yes
Schema Required	Yes	Donut Polygon	Yes
Geometry Type Attribute	mif_type	Point	Yes
		Line	Yes
		Text	Yes

Prior to the import process, additional Settings can be made, which will affect how the selected file will import. The following parameters can be applied to the import:

- **Import as Visible Attributes** - Enable this option to view the pen and brush pattern values in the imported attribute table.

The MAPublisher MID/MIF importer supports the storage of point, line, polyline, arc, ellipse, rectangle, rounded rectangle, region (polygon), and text geometric data in *.mif files. Each geometric entity present in a *.mif file has display properties such as pen and brush width, pattern, and colour. Supported MID/MIF properties are as follows:

MAPublisher supports the import of line weights (0-7), colours (24 bit RGB), strokes (1-71). It also supports fonts (family, style, justification) for text. In order to use line patterns and fill patterns you must have opened or accessed the style library equivalents. Two library files have been created, *MIF - Line Styles.ai* and *MIF - Area Styles.ai*, which provide support for many of the standard MapInfo pen styles (stroke patterns) and brush styles (fill patterns). These files can be found in the *Helpful Styles & Symbols* folder installed with MAPublisher. Please refer to your Adobe Illustrator User Guide for details about how to add these libraries to your Adobe Illustrator Graphic Style panel.

MAPINFO TABLE (*.TAB)

TAB is a proprietary geospatial vector data format for geographic information systems software used by MapInfo mapping products. A minimum of two files are required for the tab format. The .DAT file which stores the attribute data and the .TAB ASCII file which is the link between all other files and holds information about the type of data file. The MapInfo TAB importer is closely patterned after the MapInfo MIF/MID reader and writer. This commonality makes it easy to support both MIF and MapInfo native formats in the same mapping file.

A single logical TAB file consists of a number of physical files, having the following file name extensions:

*.tab : The main file for a MapInfo table, it is associated with the appropriate dat, map, id and ind files.
*.dat : Tabular data for a table in MapInfo native format
*.id : An index to a MapInfo graphical objects (MAP) file.
*.map : Contains geographic information describing map objects
*.ind : An index to a MapInfo tabular (DAT) file

These extensions are added to the base name of the TAB file, creating separate physical files that must all reside in the same directory. You must select the *.tab file for import.

Supported Elements		**Supported Geometry**	
Typical File Extensions	*.tab (*.dat, *.id, *.map, *.ind)	Aggregate	Yes
Automated Translation	Yes	Circles	Yes
User-Defined Attributes	Yes	Circular Arc	Yes
Coordinate System Support	Yes	Elliptical Arc	Yes
Generic Colour Support	Yes	Ellipses	Yes
Spatial Index	Always	Polygon	Yes
Schema Required	Yes	Donut Polygon	Yes
Geometry Type Attribute	mapinfo_type	Point	Yes
		Line	Yes
		Text	Yes

Prior to the import process, additional Settings can be made, which will affect how the selected file will import. The following parameters can be applied to the import:

- **Import as Visible Attributes** - Enable this option to view the pen and brush pattern values in the imported attribute table

The MAPublisher TAB importer supports the storage of point, line, polyline, arc, ellipse, rectangle, rounded rectangle, region (polygon), and text geometric data in .tab files. Each geometric entity present in a *.tab file has display properties such as pen and brush width, pattern, and colour. Supported TAB properties match those described for MID MIF files on the previous page.

Raster TAB files cannot be imported in MAPublisher.

MICROSTATION DESIGN (*.DGN)

DGN are the native files created for Bentley Systems Inc. MicroStation product. These files consist of a header, followed by a series of elements. The header contains global information including the transformation equation from design units to user coordinates, as well as the dimension of the elements in the file. Each element contains standard display information, such as its colour, level, class, and style, as well as a number of attributes specific to its element type. For example, a text element has fields for font, size, and the text string in addition to the standard display attributes.

Supported Elements	
Typical File Extensions	*.dgn
Automated Translation	Yes
User-Defined Attributes	Yes
Coordinate System Support	No
Generic Colour Support	Yes
Spatial Index	Never
Schema Required	Yes
Geometry Type Attribute	igds_type
3D Support	Yes

Supported Geometry	
Aggregate	No
Circles	Yes
Circular Arc	Yes
Elliptical Arc	Yes
Ellipses	Yes
Polygon	Yes
Donut Polygon	Yes
Point	Yes
Line	Yes
Text	Yes

Supported Versions
Windows: V7, V8. Mac OS X: V7,V8

Prior to the import process, additional Settings can be made, which will affect how the selected file will import. The following parameters can be applied to the import. *Note: versions V7 and V8 are supported for import, attached raster files are ignored.*

- **Group Elements** - Choose how you want to group the elements of the file on import. If you group the elements by level, it may result in a large number of output files. *By Level* is the default.
- **Coordinate Units** - Choose *Master* or *UOR* (Unit of Resolution) as the coordinate units. *Master* is the default.
- **White Lines and Fills** - Enabling the *Import as is* option will instruct MAPublisher to import the data true to the original colour settings contained in the file. Check the *Change white lines and fills to black box* to import black lines instead of the files native white lines. Check the *Create black background* option to incorporate a layer containing a black background to mimic the AutoCAD environment.
- **Other** - Check *Drop complex chains* if you want each component of a complex chain to be returned as its own feature, otherwise all elements of the complex chain will be merged into a single linear feature.

Note: Line weight in Microstation are integer number only, as such, the Microstation export will round the Adobe Illustrator stroke width. 0 is a valid line weight in Microstation.

S57 FORMAT (*000)

S57format is intended for the exchange of digital hydrographic data between national hydrographic offices and for its distribution to manufacturers, mariners and other data users. It is used for the supply of ENC cells (Electronic Navigational Charts) to ECDIS (Electronic Chart Display and Information System).

The format is public, developed and maintained by the IHO (International Hydrographic Office) CHRIS working committee (Committee on Hydrographic Requirements for Information Systems). The objects spatial geometry can be of Point, Line or Area geometry, while object descriptions are categorized in object classes, organized in specific attributes schemas. For a full format description, please visit *http://www.iho.shom.fr/PUBLICATIONS/IHO_Download.htm#S-*57 (Appendix A in particular). An online object catalog is also available on *www.s-57.com*

An S57 base file has the extension *.000, while the update files have extensions like .001, .002 and so on. It can also be accompanied by other files:
*.000: main file
*.001: update file 1
*.002: update file 2
*.00n: update file n
files.TXT and files.JPG: ancillary text and picture files indicated in attribute definition

Update files contains only the changed (new/deleted/modified) objects and are only used as a complement of a .000 file. Only the *.000 file is required for the import into MAPublisher. The update files will be applied at conversion, when present. However, text and image files linked to attributes will be ignored.

Supported Elements		**Supported Geometry**	
Typical File Extensions	*.000 (*.001 *.002...)	Aggregate	No
Automated Translation	Yes	Circles	No
User-Defined Attributes	No	Circular Arc	No
Coordinate System Support	Yes	Elliptical Arc	No
Generic Colour Support	No	Ellipses	No
3D Support	Yes	Polygon	Yes
Schema Required	N/A	Donut Polygon	Yes
Transaction Support	No	Point	Yes
Geometry Type Attribute	s57_type	Line	Yes
		Text	No

Note: Most ENC producers (private and public) publish their .000 files in encrypted formats. Only non-encrypted files can be imported in MAPublisher (from NOAA or USACE for example).

TIGER/LINE (*.RT1) (*.BW1)

Topologically Integrated Geographic Encoding and Referencing (TIGER). TIGER is the United States Census Bureau format for its digital database of geographic features. TIGER includes both land attributes such as roads, buildings, rivers, and lakes, as well as areas such as counties, ZIP codes, census tracts, and census blocks. Some of the geographic areas represented in TIGER are political areas, including counties, congressional districts, school districts, and ZIP codes. Others are statistical areas, including Metropolitan Statistical Areas (MSA), census tracts, census block groups, and census block. The database contains information about these features such as their location in latitude and longitude, the name, the type of feature, address ranges for most streets, the geographic relationship to other features, and other related information. More information on the TIGER/Line file format and data product can be found on the U.S. Census web page at: *http://www.census.gov/geo/www/tiger/*
This web site contains a detailed description of the current TIGER/Line format, with an explanation of field meaning for each feature type. A detailed description of the TIGER/Line 1998 format, with an explanation of field meaning for each feature type, is available at: *http://www.census.gov/geo/www/tiger/tiger98.pdf*

Supported Elements		**Supported Geometry**	
Typical File Extensions	*.rt1, *.bw1	Aggregate	No
Automated Translation	Yes	Circles	No
User-Defined Attributes	Yes	Circular Arc	No
Coordinate System Support	Yes	Elliptical Arc	No
Generic Colour Support	Yes	Ellipses	No
Spatial Index	Never	Polygon	Yes
Schema Required	Yes	Donut Polygon	Yes
Transaction Support	No	Point	Yes
Geometry Type Attribute	tiger_type	Line	Yes
		Text	No

Supported Versions: 1992, 1995, 1997, 1998, 1999, 2000, 2002

USGS SDTS (*CATD.DDF)

SDTS is the USGS robust way of transferring Earth-referenced spatial data between dissimilar computer systems with the potential for no information loss. It is a transfer standard that embraces the philosophy of self-contained transfers, i.e. spatial data, attribute, georeferencing, data quality report, data dictionary, and other supporting metadata all included in the transfer. More info can be found at http://mcmcweb.er.usgs.gov/sdts/. Files in the SDTS format will have the extension *.ddf. More information on this format can be found at: *http://mcmcweb.er.usgs.gov/sdts/*

A group of *.ddf files is normally identified by the catalog file, or *CATD.DDF file, which relates the files of a single SDTS transfer, and binds together all the files with a common prefix. Always select the SDTS file which ends in CATD, i.e. HP01CATD.DDF.

Supported Elements		**Supported Geometry**	
Typical File Extensions	*.ddf	Aggregate	No
Automated Translation	Yes	Circles	No
User-Defined Attributes	No	Circular Arc	No
Coordinate System Support	Yes	Elliptical Arc	No
Generic Colour Support	No	Ellipses	No
Spatial Index	Yes	Polygon	Yes
Schema Required	N/A	Donut Polygon	Yes
Transaction Support	No	Point	Yes
Geometry Type Attribute	sdts_type	Line	Yes
		Text	No

USGS DIGITAL LINE GRAPH (*.DLG) (*.OPT)

DLG is a fixed field record that may or may not have end of line markers. The DLG file structure was designed to accommodate all categories of spatial data represented on a conventional line map. DLG is a published ASCII format developed by the United States Geological Survey (USGS) Federal Agency and is intended to assist in data exchange with the National Digital Cartographic Data Base (NDCDB).

The DLG reader supports all three distinct types of DLG data:

- Large-scale DLG data (1:24,000-scale)
- Intermediate-scale DLG (1:100,000-scale)
- Small-scale DLG data (1:2,000,000-scale)

The three scales of DLG data are physically formatted into files in one of these ways: standard, optional, and graphics formats. MAPublisher supports both the standard and the optional DLG distribution formats; however the graphics format is not supported. Most DLG data is distributed in the optional format. The DLG file structure was designed to accommodate all categories of spatial data represented on a conventional line map. Node, line, and area data types are present within the DLG format, along with linkages and attribute codes. Linkages are references to other features within the same DLG data set, used in a variety of contexts. DLG files do not explicitly store attribute values but use a feature coding approach in which unique feature codes are assigned to the different types of features stored within the data set. MAPublisher will look for the extension .dlg or .opt for the input DLG files.

Supported Elements	
Typical File Extensions	*.dlg, *.opt
Automated Translation	Yes
User-Defined Attributes	No
Coordinate System Support	Yes
Generic Colour Support	No
Spatial Index	Never
Schema Required	No
Geometry Type Attribute	dlg_type

Supported Geometry	
Aggregate	No
Circles	No
Circular Arc	No
Elliptical Arc	No
Ellipses	No
Polygon	Yes
Donut Polygon	Yes
Point	Yes
Line	Yes
Text	No

MAPublisher Unicode Support

This section contains information regarding Unicode character encoding in MAPublisher. MAPublisher supports Unicode character encoding in MAP Views, MAP Attributes, MAP Themes, and MAP Selections. MAPublisher can also reference Adobe Illustrator layers, graphic styles and character styles using Unicode encoding.

To use Unicode character encoding you require a Unicode compliant font. Mac OS X users will have Unicode compliant fonts installed with OS X. Windows users will require Unicode compliant fonts to render Unicode. For more information on Unicode visit *http://www.unicode.org*.

The following tables display Unicode—UTF8 support in MAPublisher, for GIS data formats that are Unicode—UTF8 compliant. Unicode support for importing and exporting data is different, so for each platform two tables have been created. For each data format there are four areas where Unicode character encoding can be used:

1. *File Directory* - when Unicode encoding is used in the path to where the file is located.
2. *Filename* - when Unicode encoding is used in the filename.
3. *Attribute column name* - when Unicode encoding is used in a column name for attributes.
4. *Attribute value* - when an attribute value contains Unicode encoding.

Windows Unicode Support (*Importing*)

Data Format	File Directory	Filename	Attribute Column Name	Attribute Value
Delimited Text	✓	✓	✓	✓
CAD-DWG	✓	✓	FORMAT HAS NO ATTRIBUTES	
CAD-DXF	✓	✓	FORMAT HAS NO ATTRIBUTES	
Esri ArcInfo Generate	✓	✓	FORMAT HAS NO ATTRIBUTES	
Esri ArcSDE Geodatabase	✓	✓	✓	✓
Esri File Geodatabase	✓	✓	✓	✓
Esri Inter-change File	✓	✓	✓	✓
Esri Personal Geodatabase	✓	✓	✓	✓
Esri Shapefile	✓	✓	✓	✓
GML (Simple Features)	✓	✓	✓	✓
MapInfo MIF/MID	✓	✓	✗	✓
MapInfo TAB	✓	✓	✗	✓
MicroStation Design	✗	✗	FORMAT HAS NO ATTRIBUTES	
KML/KMZ	✓	✓	✓	✓
S57	✓	✓	FORMAT USES SIMPLE ASCII TEXT FOR ATTRIBUTE NAMES AND MOST VALUES	

Windows Unicode Support (*Exporting*)

Data Format	File Directory	Filename	Attribute Column Name	Attribute Value
Delimited Text	✓	✓	✓	✓
CAD-DWG	✓	✓	FORMAT HAS NO ATTRIBUTES	
CAD-DXF	✓	✓	FORMAT HAS NO ATTRIBUTES	
Esri Inter-change File	✓	✓	✓	✓
Esri ArcInfo Generate	✓	✓	FORMAT HAS NO ATTRIBUTES	
Esri Shapefile	✓	✓	✓	✓
GML (Simple Features)	✓	✓	✓	✓
MapInfo MIF/MID	✓	✓	✗	✓
MapInfo TAB	✓	✓	✗	✓
MicroStation Design	✗	✗	FORMAT HAS NO ATTRIBUTES	
KML	✓	✓	✓	✓

Mac OS X Unicode Support (*Importing*)				
Data Format	**File Directory**	**File-name**	**Attribute Column Name**	**Attribute Value**
Delimited Text	✓	✓	✓	✓
CAD-DWG	✓	✓	FORMAT HAS NO ATTRIBUTES	
CAD-DXF	✓	✓	FORMAT HAS NO ATTRIBUTES	
Esri ArcInfo Generate	✓	✓	FORMAT HAS NO ATTRIBUTES	
Esri ArcSDE Geodatabase	NOT SUPPORTED ON MAC OS X			
Esri File Geodatabase	NOT SUPPORTED ON MAC OS X			
Esri Inter-change File	✓	✓	✓	✓
Esri Personal Geodatabase	NOT SUPPORTED ON MAC OS X			
Esri Shapefile	✓	✓	✓	✓
GML (Simple Features)	✓	✓	✓	✓
MapInfo MID/MIF	✓	✓	✗	✓
MapInfo TAB	✓	✓	✗	✓
MicroStation Design	✗	✗	FORMAT HAS NO ATTRIBUTES	
KML/KMZ	✓	✓	✓	✓
S57	✓	✓	FORMAT USES SIMPLE ASCII TEXT FOR ATTRIBUTE NAMES AND MOST VALUES	

Mac OS X Unicode Support (*Exporting*)				
Data Format	**File Directory**	**File-name**	**Attribute Column Name**	**Attribute Value**
Delimited Text	✓	✓	✓	✓
CAD-DWG	✓	✓	FORMAT HAS NO ATTRIBUTES	
CAD-DXF	✓	✓	FORMAT HAS NO ATTRIBUTES	
Esri Inter-change File	✓	✓	✓	✓
Esri ArcInfo Generate	✓	✓	FORMAT HAS NO ATTRIBUTES	
Esri Shapefile	✓	✓	✓	✓
GML (Simple Features)	✓	✓	✓	✓
MapInfo MID/MIF	✓	✓	✗	✓
MapInfo TAB	✓	✓	✗	✓
MicroStation Design	✗	✗	FORMAT HAS NO ATTRIBUTES	
KML	✓	✓	✓	✓

Windows Unicode Support (*Working with Images*)				
Data Format	**File Directory** *(Register Image)*	**Filename** *(Register Image)*	**File Directory** *(Export Image)*	**Filename** *(Export Image)*
World File (.tfw)	✓* / ✓♦	✓* / ✓♦	✓* / ×♦	✓* / ×♦
Image Report (.irp)	✓* / ✓♦	✓* / ✓♦	✓* / ×♦	✓* / ×♦
MapInfo TAB (.tab)	✓* / ✓♦	✓* / ✓♦	✓* / ×♦	✓* / ×♦
ListGeo (.lgo)	✓* / ✓♦	✓* / ✓♦	✓* / ×♦	✓* / ×♦
GeoTIFF (.tif)	✓* / ✓♦	✓* / ✓♦	✓* / ×♦	✓* / ×♦

***** *When using system encoding on Windows XP*
(for example, using the default Japanese encoding on Japanese Windows XP)

♦ *When using non-system encoding on Windows XP*
(for example, using Japanese encoding on English Windows XP)

Mac OS X Unicode Support (*Working with Images*)				
Data Format	**File Directory** *(Register Image)*	**Filename** *(Register Image)*	**File Directory** *(Export Image)*	**Filename** *(Export Image)*
World File (.tfw)	✓⊙	✓⊙	✓⊙	✓⊙
Image Report (.irp)	✓⊙	✓⊙	✓⊙	✓⊙
MapInfo TAB (.tab)	✓⊙	✓⊙	✓⊙	✓⊙
ListGeo (.lgo)	✓⊙	✓⊙	✓⊙	✓⊙
GeoTIFF (.tif)	✓⊙	✓⊙	✓⊙	✓⊙

⊙ *Limited support*
(not all combinations of Unicode characters are supported)

Technical Support Options / FAQ

MAPublisher support is provided free of charge to customers with a current MAPublisher Maintenance Program (MMP) subscription. All new license and upgrade purchases include a one year MMP subscription. Customers without a current MMP subscription may obtain support from a qualified MAPublisher technical specialist at the rate of US$49 per incident.

TECHNICAL SUPPORT

Please consult the FAQs, the additional how-to's on the following pages as well as the following online options before contacting Avenza technical support as your situation may be easily addressed by one of the answers contained therein.

MAPublisher Online Resources

The Avenza Systems Inc. Website provides additional source of information to assist you in the use of MAPublisher. The Avenza Resources are located at *http://www.avenza.com/resources*

- **Avenza Resources Blog**: tips, how-tos and news on MAPublisher and Geographic Imager software.
- **Map Gallery**: examples of maps created with MAPublisher.
- **Styles and Symbols**: a collection of styles and symbols to help make your maps look better.
- **User Forums and Frequently Asked Questions**: answers to common technical questions may be found in the **Common Support Issues and FAQs** category. All users with a MAPublisher license (evaluation or permanent) can post and read topics under the **General Questions for Evaluation and Licensed Users** category. Additionally, users with maintenance have access to the **Maintenance Users** category. There, users can find additional information relative to software updates, etc.
- **MAP Web Author API and CSS**: find advanced information on MAP Web Author API functions and CSS support - see chapter 15 for more details.

Contacting Avenza Technical Support

Avenza offers a number of methods for direct communication with our qualified and experienced technical experts. Please have your MAPublisher registration details handy to get prompt attention and include it in any email correspondence. Support issues are handled on a first come, first-served basis. For non-maintenance users, Avenza does not guarantee a response within any specified time. MAPublisher Maintenance Program subscribers receive free and unlimited support. All others are eligible for support at the rate of US$49 per incident.

- **Hours**: 9:00am to 4:00pm Eastern Standard Time
- **Email**: support@avenza.com
- **Online request form**: http://www.avenza.com/support/form
- **Phone**: +1 (416) 487-6442

MAPUBLISHER MAINTENANCE PROGRAM (MMP)

The MAPublisher Maintenance Program is a subscription-based service plan that guarantees its members:

- unlimited priority technical support—guaranteed same business day or next business day response
- unlimited telephone support
- free MAPublisher updates
- free MAPublisher version upgrades
- additional discounts and offers available to MMP members only

Your MAPublisher purchase includes a one-year membership in the MAPublisher Maintenance Program so you are well on the way to worry-free use of MAPublisher for the first year and will be able to enjoy all the benefits of the MMP immediately. All MAPublisher Maintenance Program subscriptions begin on the date of purchase and run for one calendar year.

Your email address has been automatically entered in the **mp-maintenance-l** online email list for MMP subscribers so that you are assured of receiving all the latest MMP news and access to all the update and upgrade files. If you purchased your MAPublisher license from a reseller or are the end user but not the person who purchased the software, please contact us at *sales@avenza.com* to ensure that we receive your email address and add you to the MMP notification group.

Renewal

You will be notified regarding renewal options approximately six to eight weeks prior to the expiration of your annual MMP subscription. You will be contacted a minimum of five times prior to expiration in order to ensure that you have ample opportunity to renew or not at your discretion. You will have the option of renewing your MMP for an additional year at the then prevailing price or canceling without penalty. Of course, if you cancel or let your MMP lapse you will no longer be entitled to the benefits of the program as outlined above and will thus have to purchase future upgrades at the upgrade price.

There is a grace period of approximately 30 days from the time of the MMP expiry during which you may still renew without penalty. All post-expiration renewals will be backdated to the actual expiry date.

Lapsed Subscriptions

Failure to renew your MMP within 30 days from the expiry date will result in a lapsed MMP subscription. Lapsed subscriptions may not be renewed and the licensee will be required to purchase support and upgrades accordingly.

Please direct all MMP questions and purchase inquiries to *info@avenza.com*.

WISHLIST

As either a new or experienced MAPublisher user we value your opinions on how we can improve our product. Please let us know what functions you would like to see incorporated into future upgrades of MAPublisher.

Memory Considerations

RAM RECOMMENDATIONS

Occasional User: 2 GB of RAM is recommended.
A graphics or GIS user who uses MAPublisher with medium sized data sets with up to 20 layers, minimal text labels, and some low-resolution or small coverage raster images.

Power User: 4 GB or more of RAM is recommended.
A professional cartographer who uses MAPublisher daily and works with large urban data sets (including large transportation layers) with 20 or more layers, raster based air photographs, large numbers of text labels, complex fill patterns, etc.

RAM USAGE HINTS

Users often ask us why is so much RAM needed to operate MAPublisher. First of all, Adobe Illustrator requires a significant amount of RAM itself in order to run smoothly. Secondly, map data sets are often large which increases the need for RAM even further. Map data sets contain both vector and attribute data which must be stored in memory. Since we are adding a database to Adobe Illustrator this increases the file size, which increases the RAM requirements. MAPublisher builds a mini-GIS application inside Adobe Illustrator so that it can geo-code information and attach data to objects. This also has some overhead.

GIS users also often ask why so much more memory is needed with MAPublisher than is with GIS software. The graphics environment software of Adobe Illustrator loads the entire file into memory rather than just reading it from disk, thus more RAM memory is required.

When you are importing a large number of files into Adobe Illustrator using MAPublisher, you'll notice that the amount of available memory will decrease rapidly and your computer loses speed. This is due to the memory management. MAPublisher reserves a fairly large amount of memory for each import-action, which is not properly returned when the import is done or even when it is cancelled. The solution is simple: save your file, close it and open it again. It's not even necessary to close Adobe Illustrator itself. By closing the file, the reserved memory is properly returned.

RAM SAVING TIPS

Since a percentage of the memory is taken for attribute storage, remove any redundant or otherwise unnecessary attribute fields from the MAP Attributes table of a layer.

Many sources of street data include paths/vectors that are segmented based on street addressing information. You can use the MAPublisher Join Lines function to join these into single linear features based on a selected attribute field. Reducing the number of objects (and data records) in the map file will free up memory.

Many GIS data files are large and when a series of such files is imported, you may find that the import function starts to run more slowly. This is because scratch and memory allocations are being used up. The best solution is to periodically save your work, quit Adobe Illustrator and then restart. This will free up the available scratch memory.

Reduce the minimum number of Undo commands (since they all reside in memory).

Use polylined or pre-joined linear feature data sets where available.

In your GIS application, strip out the attributes you won't be using for queries or labeling before importing the data into Adobe Illustrator.

You can set a primary and secondary scratch disk under the Adobe Illustrator preferences option in order to draw additional storage from a partitioned or multi-drive environment.

Turn off the layer preview icon that appears to the left of each layer name in the Adobe Illustrator layers panel. This can be done by clicking the options menu in the layers panel and then selecting small panel rows in the panel option dialog box.

Online Sources

For geographic information system (GIS) users, the appeal of graphics is strong and the increasing ability to discover and share GIS across the Internet is fascinating. The Internet offers a large number of free-access GIS-related web sites from which you can access map and information data sets. To find some information on the source listed it, use any internet search browser such as Google to get access to the websites.

For the general public, there's general information about countries, states, and places; simple maps of areas (e.g., GIF, PS format); lists and maps of Internet resources in an area. For cartographers and geography researchers, there are cartographic/ GIS base map files (e.g., USGS Demos, DLGs, TIGER); thematic data of a geographic nature (e.g., census data); and complete GIS data sets (e.g., Esri Interchange Files).

FREE MAP DATA

Many sites on the Internet offer GIS data free of charge. Data is available from these and other Internet sites in a wide variety of formats. Please consult the sections in this manual on file formats (chapter 2) to ensure that you download usable data. Some popular sites:

- **CAST data**: Center of Advanced Spatial Technologies, University of Arkansas.
- **EROS Data Center**: access to USGS digital datasets.
- **Geocommunity** and **GIS Data Depot**: very good source of free GIS data.
- **Geoconnections/Geoconnexions**: Canada Ministry of Natural Resources site.
- **Geography Network**: world-wide geographic contents.
- **Geogratis**: maps offered by Natural Resources Canada.
- **Geoscience Australia**: Australian National Mapping Agency.
- **National Atlas of the United States:** excellent data source for the United States.
- **NOAA ENC Download**: free download of electronic nautical charts in S-57 format (USA).
- **Robert E. Kennedy Library @ California Polytechnic State University:** US based map inventory.
- **United State Geological Survey**: various data formats available (DLG, GeoTIFF, etc.) from the USGS website.
- **United States Fish and Wildlife Service**: variety of map data in USGS DLG format.
- **USACE IENC download:** US Army Corps of Engineers, S-57 and Esri Shapefile of US waterways.

OTHER VALUABLE GEOSPATIAL RESOURCES

In some additional places on the Internet where you can find news, reviews, tips and general GIS, cartographic and geographic information. Some popular sites:

- **Directions Magazine**
- **Geospatial World**
- **GIS Cafe**
- **GIS Dictionary**
- **GIS Lounge**
- **GIS Development**
- **GISuser**
- **University of Edinburgh**
- **University of Florida - Geoplan Center**
- **US Census Bureau**

General Tips and Hints

CREATING DELIMITED XY TEXT FILES

There may be times when you wish to add a point or a series of points to your map but you do not have a GIS or ASCII file containing these points ready for import. Provided you have the real-world coordinates for the locations you wish to plot*, you can manually create a delimited ASCII file using a text editor (e.g. Notepad) or a spreadsheet program (e.g. Microsoft Excel). This file can then be imported using either Simple or Advanced Import using the Delimited XY Text Data format.

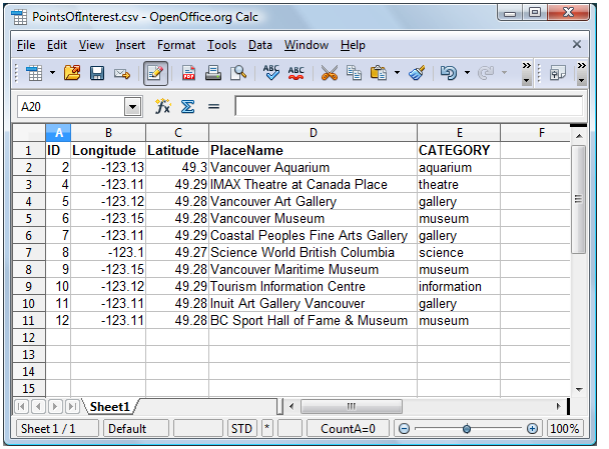
In a text editor, one column in the file must contain the X coordinate and another must contain the Y coordinate. Add as many additional columns as you wish containing additional information to be imported as attribute data.

If you are using a text editor, you can simply type in your data in the following format:

"Column 1 Header","Column 2 Header","Column 3 Header"...etc
"Column 1 Value 1","Column 2 Value 1","Column 3 Value 1"...etc
"Column 1 Value 2","Column 2 Value 2","Column 3 Value 2"...etc

Note that negative values for the X and Y coordinates denote west longitude and south latitude, respectively. Also make sure to enter a carriage return using the *Enter* key on your keyboard after the last line of data otherwise the last line may be ignored by MAPublisher Simple or Advanced Import.

In a spreadsheet application, enter your point information as a table and save the file in a text format, preferably .csv or .txt, choosing either comma or tab delimiting. The spreadsheet application will format the text automatically.



	A	B	C	D	E	F
1	ID	Longitude	Latitude	PlaceName	CATEGORY	
2	2	-123.13	49.3	Vancouver Aquarium	aquarium	
3	4	-123.11	49.29	IMAX Theatre at Canada Place	theatre	
4	5	-123.12	49.28	Vancouver Art Gallery	gallery	
5	6	-123.15	49.28	Vancouver Museum	museum	
6	7	-123.11	49.29	Coastal Peoples Fine Arts Gallery	gallery	
7	8	-123.1	49.27	Science World British Columbia	science	
8	9	-123.15	49.28	Vancouver Maritime Museum	museum	
9	10	-123.12	49.29	Tourism Information Centre	information	
10	11	-123.11	49.28	Inuit Art Gallery Vancouver	gallery	
11	12	-123.11	49.28	BC Sport Hall of Fame & Museum	museum	
12						
13						
14						
15						

* The MAP Location Tool can be used to generate the X and Y coordinate values suitable for building ASCII Point Files. See chapter 4 for more information.

JOINING SDTS TABLES

The following information should be used in conjunction with the MAPublisher Join Table function.

When working with United States Geological Survey SDTS files it is necessary to join tables frequently in order to obtain the map attribute table you require to make the map you want. This is due to the fact that SDTS data is constructed such that the primary vector data is held separately from the various attribute tables that one might want to use for a particular mapping purpose. The attribute table that comes as part of the vector file usually contains a unique identifier (RCID) for each map element that is used to join it with the other data tables. For example, a particular vector file containing the geography of rivers would contain a data column called RCID. Various data tables containing information such as vegetation, fish counts or flow rates might be available each also with an RCID column. The desired tables are then joined to the initial map attribute table by RCID value using the techniques described in the previous pages.

To find the SDTS tables to join with the vector map file look for the files which have names that start with the same character string as the name of the vector file. MAPublisher imports SDTS files that have the characters "CATD" at the end of the file name. A typical table to import and join with this file might be called HY01CATD.ddf.

Use the MAPublisher table importer with SDTS file type chosen to import these files. When you join layer and table, you do the join based on the column from the layer matched to the RCID column of the table. Note that the CATD catalog file found amongst the SDTS files explains what each table is.

ROTATING OBJECTS INDIVIDUALLY IN ADOBE ILLUSTRATOR

On some occasions you may wish to rotate selected objects about their own centres rather than as a group about a common origin. This can be accomplished using the Adobe Illustrator **Transform Each** function. To use this function, first select the objects you wish to rotate. Then go to *Object* > *Transform* > *Transform Each*. In the *Rotate* box enter a desired rotation value and click OK. Each of the selected objects will be rotated individually about their own centres.

You may also use the #Rotation property column to individually rotate point symbols or text items based on a specified value. See chapter 5 for guidelines on how to use this function.

GEOREFERENCING AN ADOBE ILLUSTRATOR FILE

If you are using an existing Adobe Illustrator file that was created without the use of MAPublisher and as such does not contain any geographic parameters or attribute data, the following steps will enable you to georeference your Adobe Illustrator file and ultimately create an attribute-rich and accurate scale and world grid structure for your map. Please note that the steps that follow refer to functions that are outlined in more detail in the body of this user guide. Please familiarize yourself with the main MAPublisher functions and in particular those under the MAP Views section (see chapter 4) before proceeding.

Before beginning to georeference an Adobe Illustrator file you must be in possession of the following information:

1. The real-world scale of your data
2. Details of the coordinate system the data is in (i.e. Projection, Datum etc)
3. The X-Y coordinates of one tie-in point in the coordinate system of your data

To determine the real-world scale of your data, use the scale bar drawn on the map for reference (measure the page size using the Adobe Illustrator *Measure tool* and divide by the scale size indicated - make sure to correct for the measurement units). If no scale bar is available, try measuring distances in page units in Adobe Illustrator and compare with the same distance measured in real unit with a mapping or GIS software, beware that differences in coordinate systems may affect the distance measurements.

Determining the coordinate system of the map may be difficult. If no information is provided as meta data or in the map legend, try to compare with other maps of the same area or with traditional coordinate systems used in the area (e.g. US State Plane zone matching a county name in the USA...).

To determine the real-world tie point, find a specific location in your document for which a real-world coordinate location is known or can be easily determined (such as known feature or grid or graticule crossing positions). Record the location of this point in real world coordinates on a piece of paper.

When you have this information please use the following guidelines in order to georeferencing data with MAPublisher in Adobe Illustrator.

1. Identify the registration or tie-in point in your document for which you know the X,Y or Lat,Long coordinates.
2. Determine the page position of the same point on the Adobe Illustrator page using the **Info panel** (*Window* > *Info*).

You should now have the location of your tie-in point in both map and page units (e.g. –79.5, 43.5 in Lat/Long is located at 4cm, 2cm in the document).

3. In the **MAP Views panel,** choose **New MAP View** in the panel options menu.
4. Enter a name for the MAP View.
5. Click the **Specify** button in the *Source Coordinate System* section. Choose the coordinate system that matches that of your vector data and click OK.
6. Set the **Scale** to the proper scale of the map. It is important to set the scale after the coordinate system but before you enter the map anchors.
7. Click *OK* in the MAP View Editor to apply the information to the new MAP View.
8. In the **MAP Views panel,** choose **Specify Anchors** in the panel options menu.
9. Set the **Map Anchors** to the value of the tie-in location in map units using the values determined earlier (e.g. Longitude= –79.5º, 43.5º).
10. Set the **Page Anchors** to the value of the tie-in location in Page Units using the values determined in step 2 (e.g. X=4cm, Y=2cm). Then click OK.
11. If you have not previously done so, ensure that each layer in your Adobe Illustrator file contains only one feature type (*Point, Area, Line*, *Text, Legend*).
12. In the **MAP Views panel** drag each of the layers which contain your data in to your new MAP View, ensuring that you set the appropriate Feature Type in the *Define Layer* dialog box.
13. Repeat steps 1-13 for any other coordinate systems which exist in your document (such as inset maps for example).
14. Your document is now a georeferenced MAPublisher file wherein each feature is also georeferenced and capable of accepting attributes using MAP Attributes (see chapter 5). You can also use the MAPublisher *Export* function to create a GIS file from this newly georeferenced Adobe Illustrator map.

TIPS ON EXPORTING TO OTHER GIS SOFTWARE WITH MAPUBLISHER

These strategies do not focus on how to do the procedures, as these are discussed in the Export section of the MAP Views chapter, but more on what you need to know and understand for successful export results.

First and most importantly you need to understand that the MAPublisher export was designed to export MP imported or created data one layer and one feature at a time. Why is it important to know this? MAPublisher only recognizes objects that have been imported by or created with its functions. If a layer was not imported with MAPublisher or is not hosted by a designated MAP View, then MAPublisher will not allow you to export the layer.

If you have an entire layer that was not created by MAPublisher then:

1. Ensure that your layer contains only a single feature type (*Point, Area, Line* or *Text*).
2. In the *MAP Views* panel, check that you have a designated MAP View with a matching coordinate system. If you do not, create a new MAP Views.
3. Select the layer in the MAP Views panel.
4. Drag the layer to the MAP View containing the matching coordinate system to georeference the layer.

There are also a couple of additional considerations to be aware of when exporting:

Since the current exported vector formats are GIS formats that do not support the concept of Bezier curves you need to compensate for this. If you have Bezier curves in your Adobe Illustrator file they will not be recognized in the GIS software. In order for these features may be represented correctly you will need to add points to these lines in Adobe Illustrator first. Simply identify and select any objects that use Bezier curves and then select *Object > Path > Add Anchor Points*. Repeat this command until the line has a sufficient number of anchor points that the shape of your curves will not be lost on export.

Adobe Illustrator stores the origin of text that has been applied along paths differently from other text objects. We have found the following steps to be the most successful way to get such Text exported to GIS files:

1. Create a new Adobe Illustrator layer
2. Select any text that has been created along paths.
3. Drag this text to the new Adobe Illustrator layer
4. Select *Type > Create Outlines*. The text will be converted to vector objects.
5. In the *MAP Views* panel, drag this layer back into your MAP View, specifying Area as the feature type

You can now export your Text as Area objects. Since the text is no longer text, you can no longer modify the fonts. We recommend that you make a copy of the original text objects before you do this process. These hints on how to transfer Adobe Illustrator files are necessary because the graphics environment handles text and curves differently and they need some modification in order for the GIS software to represent these accurately.

DOUGLAS-PEUCKER LINE SIMPLIFICATION

The Douglas-Peucker algorithm was primarily designed to reduce the number of points required to represent a vector line. A common problem in digital cartography and geographic information systems can occur when lines are generated automatically from a mathematical function, which records points at a fixed interval regardless if they are all lying along a straight line. A reduction of the number of points makes for a cleaner and more readable cartographic line. As well in cartographic work within Adobe Illustrator the removal of points along a path can significantly improve the speed of file redraws and reduce the overall file size.

The Douglas-Peucker Algorithm was created in Fortran 66 by David H. Douglas and Thomas K. Peucker at the University of Ottawa in 1970-71. It was extensively tested in 1972 and was publicly communicated in the following article: *Algorithms for the Reduction of the Number of Points Required to Represent a Digitized Line or Its Caricature*, Canadian Cartographer, Vol. 10, No. 2, December 1973.

BEZIER CURVES AND OTHER MAPUBLISHER OPERATIONS

Bezier curves are defined using four control points. Two of these are the end points of the curve, while the other two effectively define the gradient at the end points. These two points control the shape of the curve. The curve is actually a blend of the control points. This is a recurring theme of approximation curves; defining a curve as a blend of the values of several control points.

Most GIS formats do not support Bezier curves when used in graphics software such as Adobe Illustrator. Typically, curved sections of GIS data will be composed of a series of small line segments rather than an actual curve. This is also how features imported by MAPublisher will first appear in Adobe Illustrator. Use Adobe Illustrator *Object* > *Path* > *Simplify* to convert this type of feature into a Bezier curve (see chapter 8). Furthermore, Bezier curves cannot be simplified using the *MAPublisher Simplify Line* tool.

If Bezier curves are exported from Adobe Illustrator using any of the MAPublisher Export functions they will be converted to link and node topology (i.e. the end points of the curve will simply be joined as straight lines). It is therefore necessary to create additional points to curves to retain their true shape. This can be done globally by using the Adobe Illustrator *Object* > *Path* > *Add Anchor Points* function.

This version of MAPublisher supports Bezier curve features during the following operations:

- Scale and Projection transformations via the MAP View Editor
- Area and length calculations

CREATING SYMBOLS FOR USE IN POINT STYLESHEETS

A MAPublisher Symbol Library and a National Parks Symbol Library are supplied in the *Helpful Styles & Symbols* folder. You may also find that a search on the internet may be useful for finding additional libraries. If you are required to create new symbols, the steps below will help you to quickly create symbols manually in Adobe Illustrator.

1. Use Adobe Illustrator **Tools** for the manual creation of artwork that will comprise the new symbol. If you wish to use a character that are contained in a font library, select the text character instance and click the menu *Type* > *Create Outlines* to convert the text to vector art.
2. Open the Adobe Illustrator **Symbols** panel *(Window* > *Symbols*).
3. Select the artwork that will comprise the new symbol and drag it into the Adobe Illustrator **Symbols** panel double-click the symbol in this panel to assign a name.
4. When **Edit Stylesheet Theme** is accessed for Point stylesheets, this symbol will be available in the **Style** column.

CREATING A MAP THEMES TEMPLATE

You can create template files with legends to automate the production of a series of similar maps. The procedure when using MAP Themes is as follows:

1. Create a prototype map using MAP Themes to create the desired look.
2. Make a copy of your prototype map file. Delete all the layers from the file so that only the designated MAP Themes exist.
3. Save it to a new Adobe Illustrator template file (*.ait).

4. Use this template file as a base for future maps as follows:
    a) Make a copy of the template file.
    b) Import all map layers into the template file and do any needed processing.
    c) In the MAP Themes panel, assign your MAP Layers into the desired MAP Themes type.
    d) Apply the MAP Themes and your new layers will be symbolized.

CREATING A MULTI-CONDITIONAL IF EXPRESSION

In Edit Expression it is possible to assign symbology to map objects by assigning an expression to the #Style column. In the following example this is achieved by creating a multi-conditional IF statement.

In the following example, a point layer represents cities. Each point has the value "Y", "N" or "C" in the CAPITAL attribute column, describing whether the city is a state capital (Y), is not a state capital (N) or is a country capital (C). There are three point symbols to assign to the type of point. In this example the following expressions can be assigned to the #Style column of the point layer (both expressions have the same result):

Expression 1:

IF(CAPITAL = "Y", "MAP Symbol 01", IF(CAPITAL = "C", "MAP Symbol 02", "MAP Symbol 03"))

Expression 2:

IF_CASE("MAP Symbol 01", CAPITAL="C", "MAP Symbol 02", CAPITAL="N", "MAP Symbol 03")

Therefore: If the capital is "Y", assign the symbol "MAP Symbol 01". If the capital is "C" assign the symbol "MAP Symbol 02". All other symbols assign "MAP Symbol 03".

NOTES FOR EXPORTING IMAGES

If the document colour mode is CMYK, exporting an embedded image may result in increased file size compared to RGB mode.

If the image is **linked** consider the following:

1. The image will be exported in the original colour mode of the image irrespective of the current colour mode of the document (i.e. a linked grayscale image in a CMYK document will be exported as a grayscale image, whereas a linked RGB image in an CMYK document will be exported as a RGB image).
2. A linked image with Alpha channels may be exported in a different colour model. For example a grayscale with two alphas will export as an RGB or an RGB with an alpha channel will export as CMYK.
3. Linked images in CMYK mode (regardless of the color mode of the document) will export with an incorrect result and should therefore be avoided (see chapter 12).

If the image is **embedded** consider the following:

1. The image will be exported in the colour mode of document (i.e. an embedded grayscale image in a CMYK document will be exported as a CMYK image, whereas an embedded CMYK image in an RGB document will be exported as an RGB image).
2. Embedded grayscales do not pick up the document colour model (i.e. an embedded grayscale image will be exported as grayscale).
3. The export of embedded Bitmap images is not supported.

Appendix 2: Coordinate Systems

Overview

In the MAPublisher application, the coordinate system option must be entered at two levels: coordinate system of the source data (when importing GIS data) and coordinate system of the final map.

SOURCE DATA COORDINATE SYSTEM

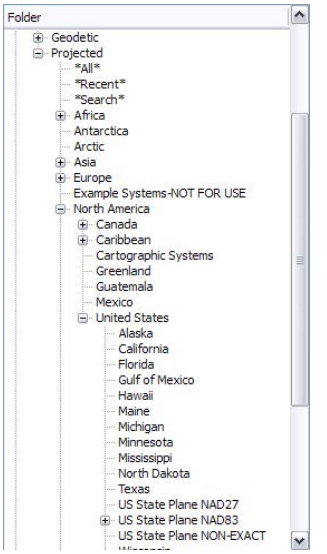
The Source coordinate system is usually detected when the coordinate system information is available with the GIS data being imported and when supported in the native GIS format (such as Shapefile , e00). However, in some cases, this information is not imported because it is not supported in the original GIS format (e.g. DWG, DXF) or when using a non-referenced Adobe Illustrator files. In that case, the coordinate system must be specified by the user. It generally can be found from an attached metadata document, by contacting the data provider or in textual information on the original data itself (e.g. title or legend of a scanned map).

In all cases, the **source coordinate system must be known with certainty**. Then only can the proper parameter be specified in the MAPublisher interface. A wrongly specified source coordinate system would make the map data unusable for transformations and merging with other datasets.

FINAL MAP COORDINATE SYSTEM

Most of cartographic projects are restricted in the choice of coordinate system for the final map. This parameter is usually part of the project requirement. It is the task of the professional cartographer to analyze carefully the situation to make the wise decision. For general purpose mapping projects (interpretive or marketing maps for example), a more approximative selection of the coordinate systems might be acceptable. Following the request from some of our users, who may not have a cartographic expertise, here are a list of simple considerations to take into account before making a choice:

- Use of a Geodetic Coordinate system (angular coordinates, Lat/Long):
  - Appropriate for overlay with GPS data recorded in Lat/Long format.
  - WGS84 system is required to export vector data to KML format (for display in Google Earth, Google Maps).
- Use of a Projected coordinate system:
  - Appropriate for printed map (so that users can use a ruler to measure distances on the map).
  - Required to add a scale bar.
- Use of a particular system (within the list of projected and geodetic systems):
  - Maps that are part of a portfolio or Atlas have to comply to the same system to be consistent.
  - When a geo-referenced image (geotiff or world tiff) is to be used together with the data, it is easier to use the same coordinate system for the vector data as of the raster.
  - Most countries or geographic areas have published standards or usual way for representing the land (e.g. for road maps or meteorological maps). In this case, the user should make some test with the systems listed in MAPublisher. For a convenient use, coordinate systems are sorted by continent>country>sub-division (state or county for example).

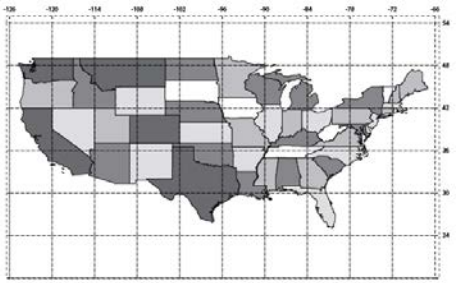


In doubt, it is recommended to test different coordinate systems and visualize the results.

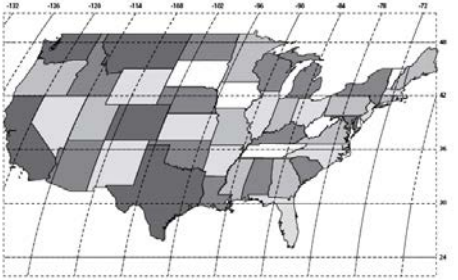
For more information on the supported coordinate systems and projections in MAPublisher, please refer to the *Avenza Projections Guide* installed with MAPublisher.

Examples of appearance of the USA depending of the chosen coordinate system

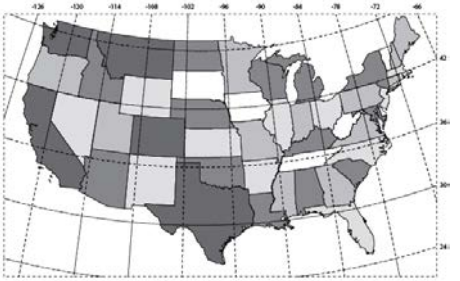
Geodetic > *World* > *WGS84* (unprojected)



Projected > World > Robinson



Projected > North America > United States > US National Atlas



The Geodetic Datasource

MAPublisher includes an extensive geodetic parameter database called the **Geodetic Datasource**. It contains all the latest updates from the widely used EPSG Geodetic Parameter Dataset maintained by the Geodesy Subcommittee of OGP (International Association of Oil and Gas producers) as well as custom systems maintained by Avenza. In addition, the MAPublisher Geodetic Datasource supports user's custom definitions and allows for importing external WKT (Well-Know Text) and PRJ (Esri projection file) parameter files.

Over 3500 pre-defined coordinates systems are readily available for use in most cartographic projects. Even though the current list of systems is comprehensive, there may be instances where the end users may wish to add a brand new coordinate system to meet their particular needs, or perhaps to duplicate and modify an existing definition to change the units for example. A complementary *Avenza Projections Guide* is installed with MAPublisher. It describes all the projections and datum shifts methods supported by MAPublisher, to assist users in the process of creating or editing a coordinate system.

The default parameters installed with MAPublisher are stored within read-only XML database files referred to as the Geodetic Datasource (files named geodata.xml and avenza.xsp). The base datasource files shipped with MAPublisher are installed in the *Data Source Files* folder at the following location:

Windows: *C:\Program Files\Avenza\MAPublisher 8\Data Source Files*
Mac OS X: */Applications/Avenza/MAPublisher 8/MAPublisher Plug-In/Data Source Files*

Custom definitions and parameters are saved or loaded from separate XML files that must always accompanied with a file named geocalc.xsd (when not present, this file can be copied from the Data Source Files folder).

The custom and read-only entries are organized into categories and sub-folders — users may create new folders, move entries or create short-cuts. That folder structure is saved in a *view file* (*.xvw).

When MAPublisher is uninstalled or a newer release is installed, an option will be given to backup the custom coordinates systems and view file (Windows only). The backup files can be found:

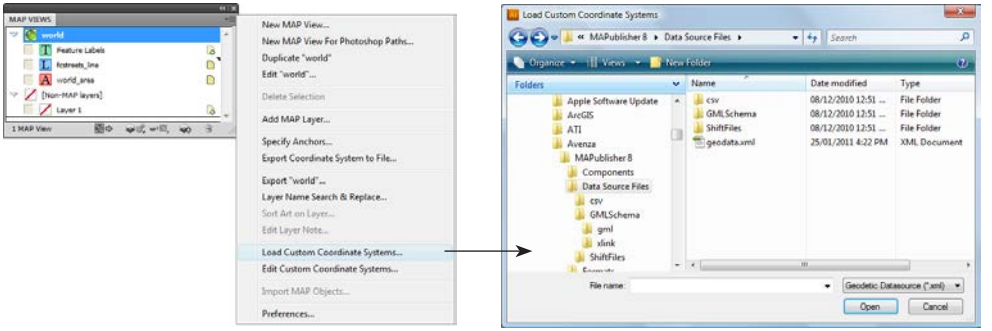
Windows XP: *C:\Documents and Settings\All Users\Application Data\Avenza\MAPublisher 8*
Windows Vista/7: *C:\ProgramData\Avenza\MAPublisher 8*
Mac OS X: */Applications/Avenza/MAPublisher 8/Data Source Backup*

LOAD CUSTOM COORDINATE SYSTEMS

A geodetic datasource or coordinate system database can be loaded into MAPublisher, greatly extending the coordinate systems available for use. To load a geodetic database within MAPublisher, choose **Load Custom Coordinate Systems** from the MAP Views panel options menu.

The directory containing the XML file must also contain the file **geocalc.xsd**. This file can be found in the directory of the default geodata.xml file (see above). So the custom XML file can either be copied to the Data Source File directory prior to loading, or geocalc.xsd should be copied from there to the custom XML directory.

Any additional change will be saved into the loaded xml file.



Note: Coordinate systems may also be extracted from the input data formats (during import process).

EDIT CUSTOM COORDINATE SYSTEMS

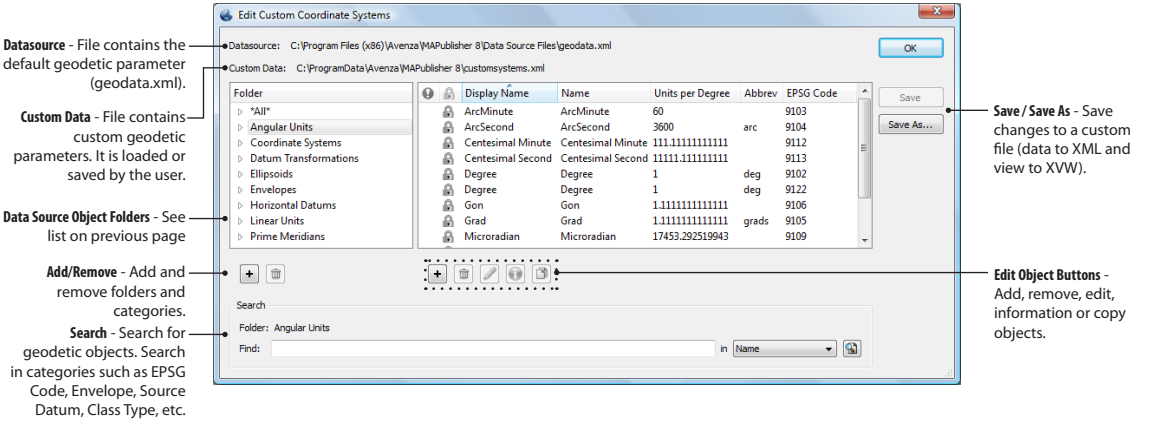
MAPublisher includes an extensive geodetic parameter database. The contents of the Geodetic Datasource can be browsed or searched by using a search frame. Users can extend MAPublisher Geodetic Datasource to support an unlimited number of custom linear and angular units, ellipsoids, datums, datum shifts, and coordinate systems.

MAPublisher Custom Coordinate Systems Editor is accessed from the MAP Views panel options menu *Edit Custom Coordinate Systems*. Coordinate systems may also be edited/created from the *Specify Destination Coordinate System* dialog box (opened using the Specify button in MAP Views panel and import dialog boxes), but the other geodetic objects are only accessible through Edit Custom Coordinate Systems.

Individual entries in the geodetic data source are known as Data Source Objects. There are different types of objects for different types of definition. Objects contained in the geodetic data source are:

- ***All***: used to define the orientation of axes used and the type of units used in the system.
- **Angular Units**: type of units for measuring rotation.
- **Coordinate Systems**: a complete definition needed to express the context of a set of map data.
- **Datum Transformations**: parameters to transform coordinates from one datum to another.
- **Ellipsoids**: an ellipsoid gives a horizontal datum its size and shape. An ellipsoid does not have an origin and cannot be used as a base model for coordinates on its own.
- **Envelopes**: defines a geographic area of use for a particular object.
- **Horizontal Datums**: more commonly referred to as just "datum" is the base model maps are built on. All coordinate systems must have a datum associated with them to be related to any other map. Without a known datum, coordinates are meaningless.
- **Linear Units**: units for measuring straight line, Cartesian distances.
- **Prime Meridians**: defines longitude values of meridians.

You can define new coordinate systems, make copy and modify existing objects. The custom objects are stored in a separate xml file saved by the user. Users can also re-organize the Geodetic Datasource (default and custom parameters) into categories and sub-folders. These changes are saved to a view file (.xvw). The view file may be deleted to reset the Edit Custom Coordinate Systems dialog box to its default state.



At the top of the *Edit Custom Coordinate Systems* dialog box, two directory paths are listed: the geodetic data source path and the custom data path.

Note: The geodetic data source file is protected (read-only). Any additions or modifications to coordinate systems are stored in a separate XML file called customsystems.xml.

On the left-hand side of the dialog box is the data source object folders. To expand a folder to see its subfolders, click the plus sign (Windows) or arrow (Mac) to the left of the category name. To see the entries at any particular level of category, click the category itself. When an object, folder or subfolder is selected, the data source objects list box to the right displays the information stored within each one. User defined coordinate system objects can be organized using drag-and-drop between folders. Columns can be resized and sorted alphabetically/numerically. Right-click on a column header to show or hide it. Entries loaded from the main geodetic data source will be shown in black text, while entries from the custom data file will be shown in blue.

To create a new folder, click the New Folder button. A new folder will be titled "New Folder" by default and can be renamed. Subfolders can also be created using the same method. Only user-defined categories can be deleted using the Delete Folder button.

Changes are saved to **customsystems.xml** located in:
Windows XP: *C:\Documents and Settings\All Users\Application Data\Avenza\MAPublisher 8*
Windows Vista/7: *C:\ProgramData\Avenza\MAPublisher 8*
Mac OS *Applications/Avenza/MAPublisher 8/MAPublisher Plug-In/Data Source Files*

The default XVW file (folder structure) is saved to **customview.xvw**, located in:
Windows XP: *C:\Documents and Settings\All Users\Application Data\Avenza\MAPublisher 8*
Windows Vista/7: *C:\ProgramData\Avenza\MAPublisher 8*
Mac OS X: *Applications/Avenza/MAPublisher 8/MAPublisher Plug-In/*

CREATE NEW DATA SOURCE OBJECTS

In the *Edit Custom Coordinate Systems* dialog box, click the New Object button [+] to create a new data source object. When creating new data source objects, the identification information and definition parameters need to be completed. Complete this information in the respective Identification and Definition tabs.

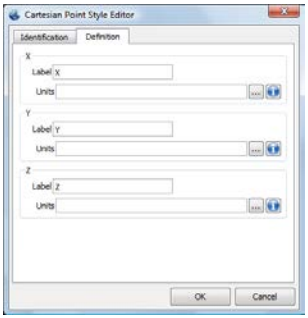
The **Identification** tab is used to name the object and associate identification codes with it (if applicable). It is important to enter an appropriate name for the object. The Remarks field can be used to add notes on a definition and is optional. The Identifiers list may be used to add identifying codes for an object that may come from other databases. The GC code is a unique identifier assigned by Geographic Imager and should not be altered. To enter additional codes use the space below it.

The **Definition** tab is used to define the parameters of an object. Each object has parameters unique to it. Refer to the list below when creating new objects.

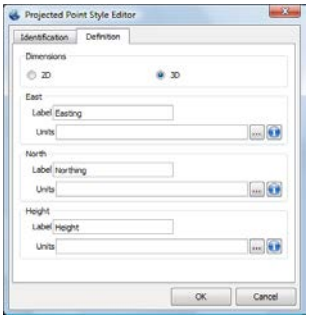
Note: Refer to the Avenza Projections Guide for more information on supported projections and their parameters as well as supported datum transformations methods.

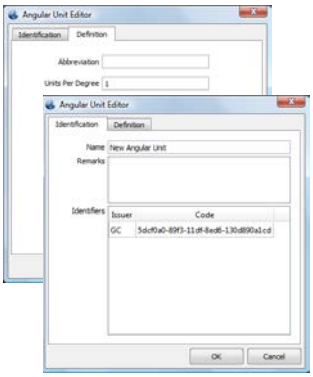
All

For coordinate points, specify the coordinate point dimensions in either 2D or 3D. For Geodetic and Projected Coordinate Points, the Longitude and Latitude style of units must be entered for all 2D Dimensional Points. The Longitude, Latitude and Ellipsoid Height style of units must be entered for 3D Dimensional Points.



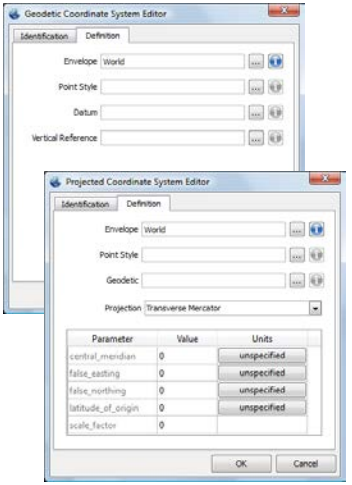






Angular Units

For angular units, enter a conversion for the new unit in terms of the scientific standard Degrees. The Abbreviation is used to identify the unit within the application interface (Example: The abbreviation for degrees is "deg").



Coordinate Systems

For Coordinate Systems, select an Envelope defining the appropriate area of use. If you are unsure of the appropriate envelope, you can leave it set to the default World envelope. The Point Style is how you will select the style of linear units for your system. For most projected systems, you will want to select "Projected point in (units)". Then select the Geodetic model that using the appropriate datum for your system. When you select the appropriate projection for your system, the parameters needed to define the system will appear in the table below. Enter the needed parameters and define the units each parameter is specified in.



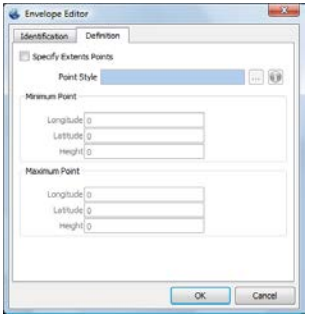
Datum Transformations

For Datum Shifts, select an Envelope (appropriate geographic area of use), Source, Target and Method. If you are unsure of a more specific envelope, leave it set to the default "World" Envelope. The Source and Target fields are used to specify the two geodetic models the Transformation is valid for. The Method specifies the necessary parameters to define a particular datum transformation. With the proper method selected, enter the appropriate parameters for your datum transformation. Be sure to define the appropriate units for each parameter by clicking the Units button.

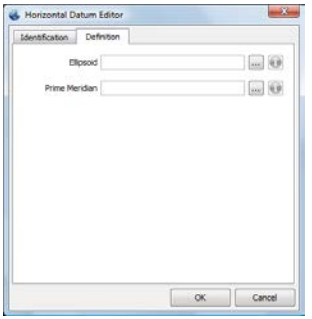


Ellipsoids

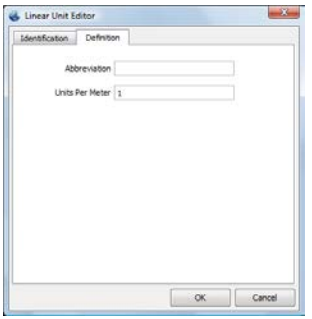
For Ellipsoids you must enter the parameters for the Semi-Major Axis and Semi-Minor Axis (often noted as "a" and "b" respectively) define the linear units the axes are specified in by selecting a predefined unit in the appropriate fields. The Inverse Flattening (often noted as "1/f") will automatically calculate in the field below. Alternately, you can make the Inverse Flattening definitive by enabling the check box at the bottom. You can then manually enter the Inverse Flattening rather than the Semi-Minor Axis parameter.



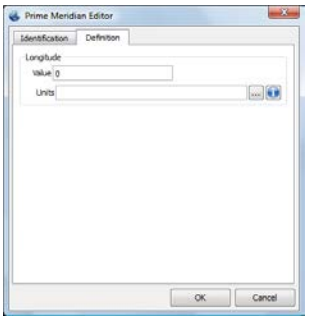
Envelopes
For Envelopes, specify the extents of the envelope (it is not required but recommended). If the Specify Extents Points check box is checked, it is required to enter the minimum and maximum points of the envelope and the point style the value represent.



Horizontal Datums
For Horizontal datums you must select the Ellipsoid the datum is based on, as well as the prime meridian used.



Linear Units
For Linear units, enter a conversion for the new unit in terms of the scientific standard Meters. The Abbreviation is used to identify the unit within the application interface (Example: The Abbreviation for Meters is "m")



Prime Meridians
For Prime Meridians you must enter the longitude value of the Prime Meridian and the angular unit that value is in.

EDIT OBJECTS

To edit a custom or user-defined object, click the Edit Object button . Edits may be made in the respective object editor dialog box. Alternatively, double-click an object to open the editor dialog box. When a data source object belonging to the master data set is selected, the Edit Object button is disabled (because these objects are read-only). To modify an original object, create a copy of the object first then edit it.

DELETE OBJECTS

When a data source object belonging to the master data set is selected, the Delete Object button is disabled. Only user-defined objects can be deleted.

COPY OBJECTS

Any object can be copied. To create a copy of an object, select an object and click the Copy Object button . A dialog box will appear with "Copy of:" preceding the object name in the Name box.

MOVE OBJECTS

Any user defined object can be moved. Drag-and-drop an object from the Data Source Objects List to a Data Source Object Folder. A dialog box will prompt you to move the object or to create a shortcut to it.

LOAD CUSTOM COORDINATE SYSTEM DEFINITIONS

In some instances, the coordinate system of an image is not listed in the geodetic data source or the reference file format does not support the coordinate system. In such cases, it may be useful to load custom coordinate system definitions. In the Geographic Imager panel options menu, click **Load Custom Coordinate System**. MAPublisher can use the following coordinate system file formats: WKT definitions (.wkt), MapInfo MAP files (.map), MapInfo TAB files (.tab) and ESRI projection files (.prj).

When a new coordinate system definition is loaded, it automatically replaces the source coordinate system of the currently selected image. To transform the image to the loaded coordinate system, open another referenced file and then load the coordinate system to that file. In the *Transform* dialog box, choose the Same As option to make the destination coordinate system identical to the image of the loaded coordinate system.

When a coordinate system definition is loaded, it is added to the geodetic data source but not saved. If the loaded file matches an existing definition, the original definition will be used and the loaded definition will not be added. All new definitions are located at the top level of the appropriate category in the Coordinate Systems folder list (in either Geodetic or Projected). Before exiting Adobe Photoshop, be sure to save your geodetic data source if you wish to use the coordinate system definition again.

Appendix 3: MAPublisher 8 How-To's For Legacy Users

Legend Functionality in MAP Themes

A number of functions have been redesigned in MAPublisher 8.4. Users of MAPublisher 6 or earlier should consult the following pages for information on how to perform common legacy MAPublisher tasks in MAPublisher 8.4.

BUILDING COLOUR RAMPS TO CREATE STYLES

You can enhance the look of your maps by using colour ramps, rather than random colours, for your area and line styles. A possible use for this would be in the creation of relief maps.

1. Determine the number of new graduated styles you wish to create.
2. Create two rectangles with the Rectangle Tool aligned vertically, one at the top of the page, the other at the base.
3. Colour the first (top) and last (bottom) elements with two end colours for the ramp.
4. Choose *Object* > *Blend* > *Blend Options*.
5. Choose *Specified Steps* from the list. Enter the value you determined in the first step minus two. Click OK.
6. Select the two rectangles. Choose *Object* > *Blend* > *Make*. The legend elements will be blended between the two end colours.
7. Choose *Object* > *Expand,* then choose *Object* > *Ungroup.* This ungroups the art so that the new styles can be added to the Graphic Styles panel and be used in the MAP Themes.

ASSIGNING INCREMENTAL VALUES TO STYLES

It is very straightforward to assign styles to values for stylesheets based on *Equal to* expressions. The following examples can be used as a basis for new stylesheets, providing the functionality which was previously available in the *Unique Occurrences* option in *Auto Assign Legend Info.*

Example 1 (Rule 1 assigned first listed value and first style):

1. Create the first *Equal to* rule, using the first listed style, and an expression based on the first listed value in a specified attribute column, i.e. *Style A* assigned to *Column X = "Value 1"*.
2. Click the *Add* button. The second rule will be automatically assigned an incremental expression, i.e. *Style B* assigned to *Column X = "Value 2"*.
3. Keep clicking the *Add* button until all the values or styles have been used.

Example 2 (Rule 1 assigned first listed value and third style):

1. Create the first *Equal to* rule, using the first listed style, and an expression based on the third listed value in a specified attribute column, i.e. *Style C* assigned to *Column X ="Value 1"*.
2. Click the *Add* button. The second rule will be automatically assigned the first unused style, i.e. *Style A* assigned to *Column X = "Value 2"*.
3. Keep clicking the *Add* button. Assignments will be incremental, but will not include the third style again, i.e. *Style B* assigned to *Column X ="Value 3"*; *Style D* assigned to *Column X = "Value 4"*; etc

CREATING STYLE RULES BASED ON MULTIBLE ATTRIBUTE COLUMNS

Assign Legend Info previously provided options to assign legend criteria to legend elements based on values in multiple attribute columns. This functionality can be achieved in the Edit Stylesheet Theme dialog box. Toggle to the **Advanced mode** to compose advanced expressions.

The following are some examples of multi-column expressions in a world countries stylesheet *(using a string type column named CONTINENT and an integer type column named POPULATION).*

CONTINENT="Africa" AND POPULATION<1000000
Result: only African countries with populations less than one million are assigned the selected style.

CONTINENT="Africa" OR POPULATION<1000000
Result: all African countries and all countries with populations less than one million are assigned the selected style.

CONTAINS(CONTINENT,"America" AND POPULATION>1000000
Result: only countries in North and South America with populations more than one million are assigned the selected style.

CONTINENT="Europe" AND POPULATION>1000000 OR CONTINENT="Asia" AND POPULATION>10000000
Result: countries in Europe with populations more than one million and countries in Asia with populations more than ten million are assigned the selected style.

Copy and Paste

The MAP Copy/Paste function was removed in MAPublisher version 7. You can now achieve the same functionality via Adobe Illustrator native Copy/Paste tools.

1. Use *Edit* > *Copy* or *Edit* > *Cut* to copy art.
2. Deselect the art.
3. Select the destination layer in the Layers panel
4. Use *Edit* > *Paste in Front* or *Edit* > *Paste in Back* to paste the art into the new layer at its previous location.

- When pasting to layers which already contain an attribute structure, the destination layer must have an attribute schema which matches the source layer (only attributes in common will be transferred).
- When pasting to layers which contain no attribute structure, the destination layer will be assigned the same attribute schema as the source layer.
- The destination layer can be contained in any MAP View as required.
- The destination layer must be of a matching feature type as the source layer.
- Pasted data will always maintain its attributes. If you paste into a non-map layer, drag this layer into a MAP View, then recreate the schema, attributes will be populated appropriately.

Grid and Scalebar Operations

EDITING CUSTOM ART

Manually editing type (position, font, colour, etc) is not possible on Grids and Scale Bars in their default grouped state. Manual editing is possible but objects must be first expanded (choose *Object* > *Expand*). Note that this will negate any opportunity to subsequently edit the art using MAPublisher editing tools.

If you require a different design to be used for your Grid or Scale Bar, or wish to change any parameter without generating a new version, simply select the Grid or Scale Bar and choose *Object* > *Edit Grid* or *Scale Bar*. This will re-open the *Grids and Graticules* or *Scale Bar* dialog box with the current parameters of the object for subsequent editing. Editing the style of text (text colour, font, alignment, etc) used in the Grid or Scale Bar can be achieved by modifying the properties of the style in the *Character Styles* panel.

Use the bounding box of the generated grid or scale bar (choose *View* > *Show Bounding Box*) to resize. Resizing scale bars horizontally will add or remove intervals from the bar(s). Resizing scale bars vertically will adjust the width of the bar(s). Resizing grids horizontally or vertically will add or remove component cells in the grid.

EXPORTING GRIDS

To export a grid you must first expand the object (choose *Object* > *Expand*), then move it to an *Area* layer. Alternatively expand your grid, move the legend layer to the *[Non-MAP layers]* category, then move it back into the MAP View specifying the feature type as Area.

MISSING DATA IN GRIDS ON PROJECTED MAP VIEWS

Certain projections may cause incomplete grids and graticules to be drawn. Such issues may occur if the MAP View is in a polar projection or the extents of the data cross the 180 degree west/east meridian.

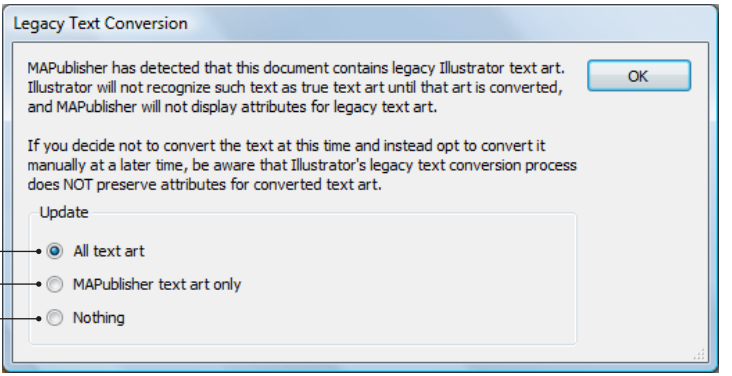
If the generation of a grid/graticule causes blank or incomplete results, the following workflow should be used:

1. Reproject the MAP View to a standard Lat/Long projection (e.g. NAD27 Lat/Long, Degrees).
2. Generate your grid or graticules on this MAP View.
3. Expand the object (choose *Object* > *Expand*).
4. Create a new Area layer in the MAP View. Drag the expanded grid to this new layer.
5. Reproject the MAP View back to the original projection.

Legacy Text Conversion

Opening legacy files, you may be prompted to update text (legacy text conversion).

Only text objects that are associated to attributes are required to be updated. For other text with no attributes, you do not necessarily need to update.



All text art - Choose this option to convert all text to the Adobe Illustrator current version.

MAPublisher text art only - Choose this option to convert only the MAPublisher text (on MAP layers)

Nothing - Choose this option if no conversion is necessary

Appendix 4: Helpful Styles and Symbols Files

The Helpful Styles & Symbols folder is found in the following locations:

Windows XP: *C:\Documents and Settings\All Users\Documents\Avenza\MAPublisher 8\Helpful Styles & Symbols*
Windows Vista/7: *C:\Users\Public\Public Documents\Avenza\MAPublisher 8\Helpful Styles & Symbols*
Mac OS X: *Applications/Avenza/MAPublisher 8/Helpful Styles & Symbols*

Helpful Styles & Symbols > MAP Graphic Styles

This folder contains eight sets of graphic styles for areas and lines:

MAP - Area Effects.ai	A set of area gradients
MAP - Area Patterns.ai	A set of black and patterns for areas
MAP - Area Solid Colors.ai	A set of solid colors for areas
MAP - Line Styles.ai	A set of line styles
Format specific styles	
DGN - Line Styles.ai	A set of MicroStation DGN line styles 1-7
MIF - Area Styles.ai	A set of MapInfo MIF/MID area styles 1-71
MIF - Line Styles.ai	A set of MapInfo MIF/MID line styles 1-77
S57 - Line and Area Styles.ai	A set of S-57 specific styles for lines and areas

Helpful Styles & Symbols > MAP Swatches

This folder contains two sets of swatches:

MAP - Color Groups and Gradients.ai	A set color groups and gradient swatches
MAP - Patterns.ai	A set of various swatch patterns

Helpful Styles & Symbols > Symbols

This folder contains nine symbol sets of categorized symbols:

MAP - Symbols.ai	A set of useful map symbols
S57 - Symbols.ai	A set of S-57 specific symbols
Aeronautical Symbols.ai	A set of aeronautical point symbols
Bank Symbols.ai	A set of symbols from major world banks
North Arrows.ai	A set of north arrow symbols
Park Symbols.ai	A set of U.S. National Parks Service symbols
Subway Symbols.ai	A set of symbols from major subway lines
Transit Symbols.ai	A set of symbols from major transit systems
Weather Symbols.ai	A set of weather-related point symbols

Helpful Styles & Symbols > S-57 Symbolization

The S-57 Symbolization folder contains two templates with a series of MAP Theme stylesheets linking S-57 imported features to appropriate nautical symbols and graphic styles inspired from the International Hydrographic Office S-4 publication (previously M-4) (*Regulations of the IHO for international (INT) charts and charts specifications of the IHO*). Graphic styles and symbol names are mostly based on the S-57 naming conventions. The basic template allow users to quickly apply styles to the imported data. The advanced template is more detailed to help users learn the format and make use of the data.

Subway Symbols.ai	Adobe Illustrator template with detailed MAP Themes for use with S-57 data
S57_Basic_Template.ait	Adobe Illustrator template with simplified MAP Themes for use with S-57data
US5FL12M	Sample ENC file in S-57 format (chart of Tampa Bay, courtesy of NOAA®)

How to use S-57 templates:

- Open **S-57_Basic_Template.ait** or **S-57_Basic_Template.ait** and import S-57 data.
- In the **MAP Themes** panel, double-click a stylesheet theme to see its settings.
- For depth sounding labels, use attribute values with the *Label Features - Use sounding style* option for points labels. To round the depth values according to hydrographic standards, use the expression provided in the Expression Library (see chapter 5 on MAP Attributes and chapter 10 on Labeling)

Note: This representation is non-exhaustive and meant to assist users with limited knowledge of the S-57 format to interpret the data contents more easily. The created map must not be used for navigation, unless further processing is supervised by a trained hydrographer.

More Helpful Styles & Symbols on Avenza.com

For even more styles and symbols, visit http://www.avenza.com/resources/styles-symbols.