Display Model Tutorial 1

Working with Display Models

NOTE This tutorial requires a workspace with two documents, one for land data and one for gas data. Your administrator can create this workspace and import the two associated documents using the sample data provided in Topobase 2010. For more information, see the Topobase Installation and Configuration Guide.

When you generate your map, Topobase applies a display model (*.tbdm*) to the geometry. You can select a display model or use the default display model. The default display model draws all the geometry in the document and applies a default stylization to each layer. When you generate your map using the default display model, a default style applies to each feature class. You cannot influence the styling of a default display model. You can create new display models and save them for all your stylization requirements. Customized display models control what geometry is drawn and how it is displayed.

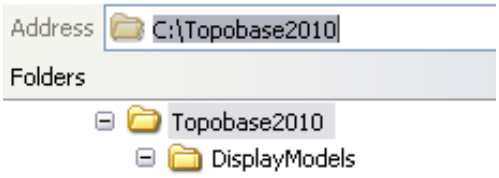
When you generate graphics, the viewport is applied the next time you generate graphics. For example, say you have two display models, DM1 and DM2. Generate graphics with DM1 and zoom into an area of interest. Next, select DM2 and generate graphics again. The same area of interest is generated using DM2 as with DM1. This enables you to switch to another display model easily and view the same area of interest. If you do not want to view the previous area of interest, you must define a new area of interest using a viewport or the position finder. To define a viewport or use the position finder, use Advanced Generate Graphics. For more information, see the online help.

Exercise 1: Set Display Model Options

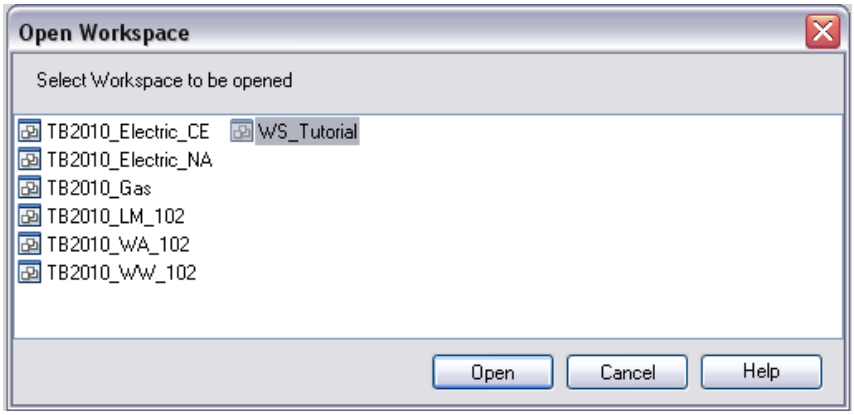
In this exercise you will:

- Create a relative path for display models to facilitate sharing.
- Specify that for each Generate Graphic the current drawing will be closed, and a new drawing will be opened.

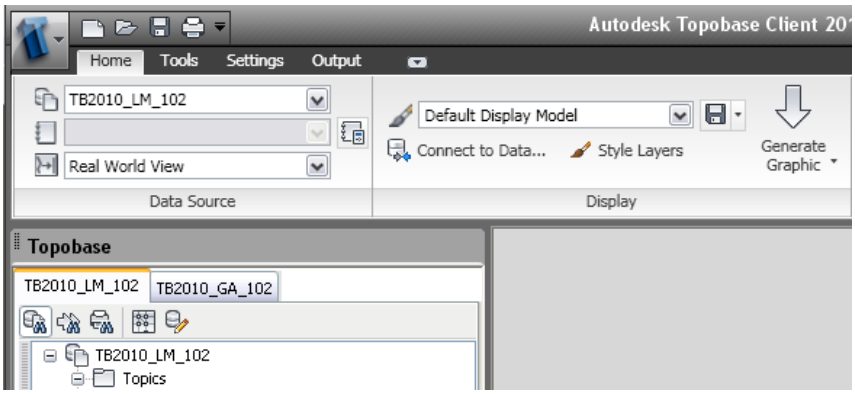
1 On your local drive, create the following folder structure:
Topobase2010\DisplayModels



2 Start Topobase 2010 Client and open the workspace containing Land and Gas sample data.

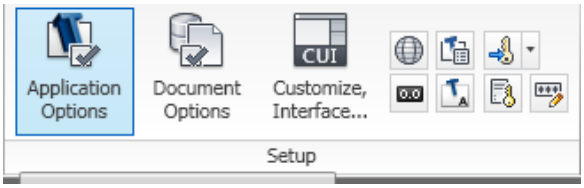


The workspace opens and the two documents are visible in the Topobase pane. Note that the Home tab ➤ Display panel shows the Default Display Model selected.



3 **IMPORTANT** Do not generate graphics. If you click Generate Graphic now, Topobase draws all the data from both documents which can take quite some time. To improve performance, you should create a display model that contains just the information of interest.

4 In the ribbon, click Settings tab ➤ Setup panel ➤ Application Options.



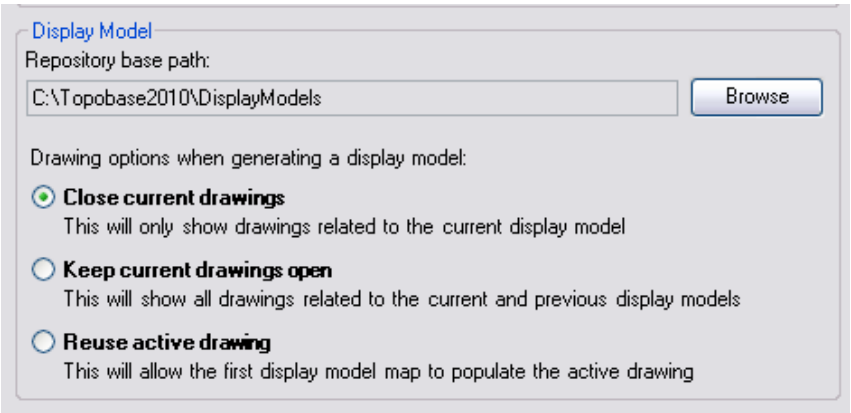
5 In the left pane of the Application Options window, click the Generate Graphic node.

6 In the Display Model area, under Repository Base Path, click Browse. In the Browse For Folder dialog box, navigate to the folder you created in step 1. Click OK.

When you set a repository base path for your display models, you can share display models more easily. A relative path is stored in the display model so you can copy it to any location on another computer. If you do not use a relative path, the same folder structure must be present on each computer that uses the display model.

NOTE It is also possible to share display models or layers using absolute UNC paths. For example, \\server\SharedDisplayModels. In this case, the folder structure only has to be created once.

7 In the Display Model area, make sure that Close Current Drawings is selected.



When you generate graphics, Topobase opens a new drawing and closes the previous drawing. This is the default selection.

8 In the left pane of the Application Options window, click the Map Options node.

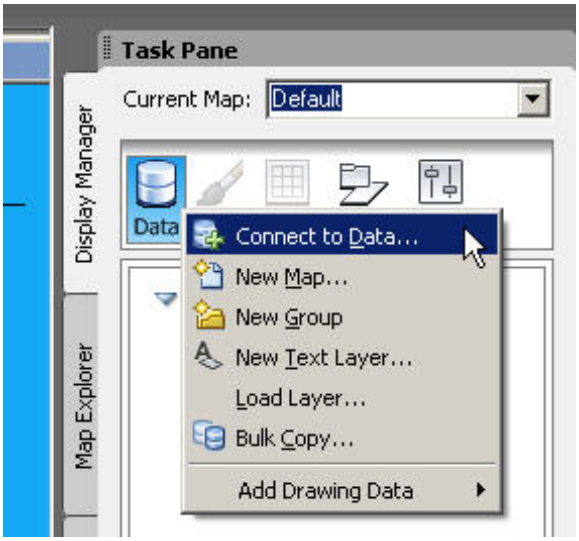
9 Under Map Options, clear Always Display Highlighted Features. Click OK to close the Application Options dialog box.

Exercise 2: Connect to Data and Define Styles

In this exercise you will:

- Connect to the Topobase documents.
- Add some feature class layers to your map.
- Define layer styles.

1 In the Display Manager task pane, click Data ➤ Connect To Data.



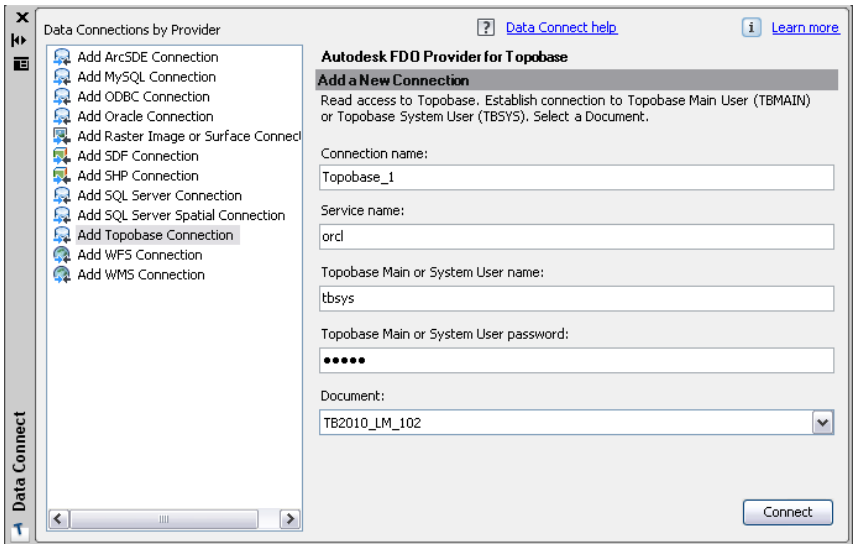
2 In the Data Connect window, click Add Topobase Connection.

You are prompted to create a connection, such as Topobase_1 or Topobase_2.

3 In the Add A New Connection area, provide the service name, user name and password.

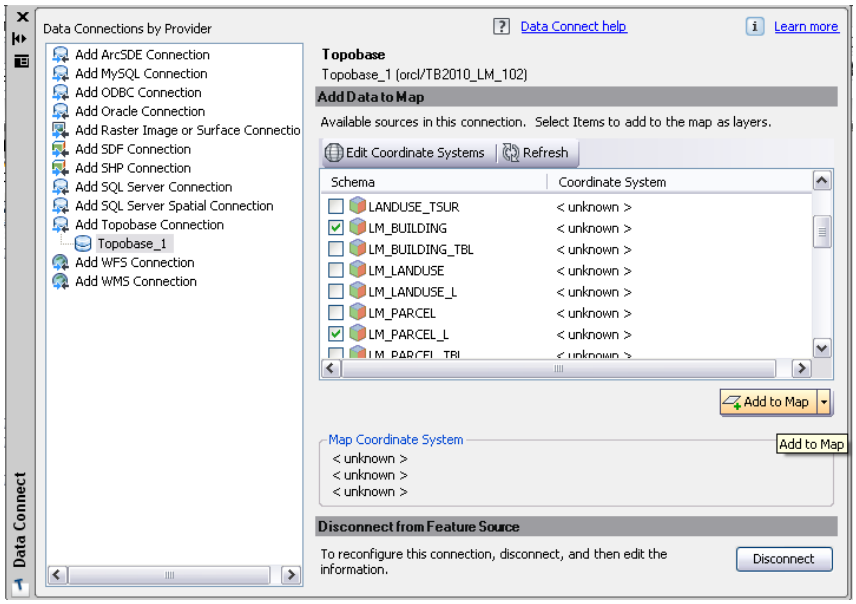
See your administrator for this information.

4 From the Document list, select TB2010_LM_102. Click Connect.

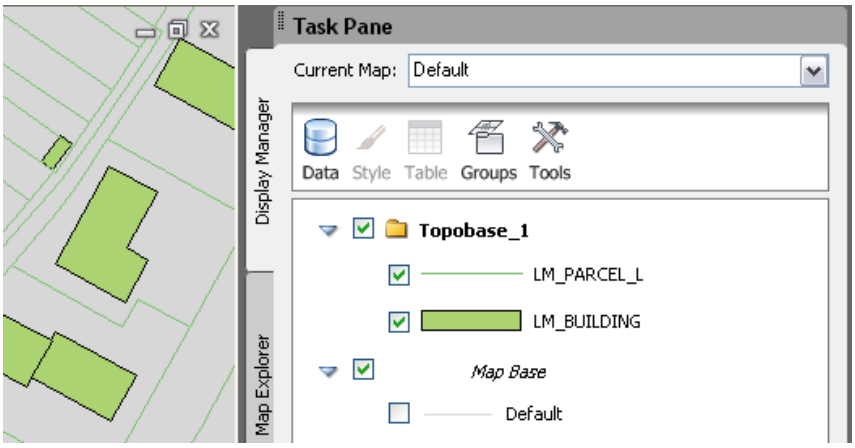


You are now prompted to select the feature class layers to add to the map.

5 In the Add Data To Map area, select LM_BUILDING and LM_PARCEL_L. Click Add To Map and then close the Data Connect window.



Layers corresponding to the Building polygon feature class and Parcel line feature class are added to the Display Manager with a default stylization.



Exercise 3: Save a Land Display Model

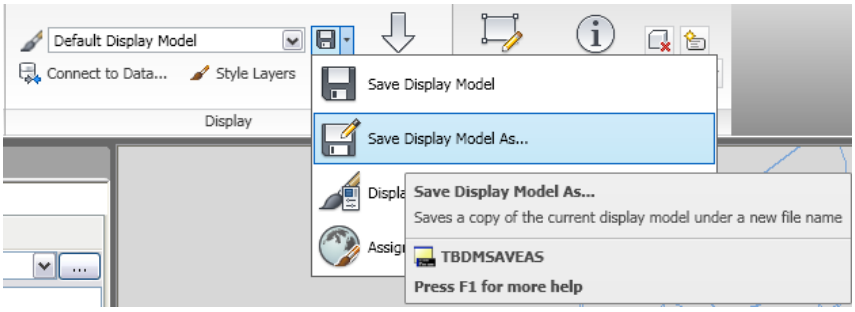
In this exercise you will:

- Save layer styles as a display model file.

  NOTE Because a display model is made up of several files, we recommend that you create a folder for each display model as shown in this exercise.

- Modify the initial viewport and save your changes.

1 Click Home tab ➤ Display panel ➤ Save Display Model As.



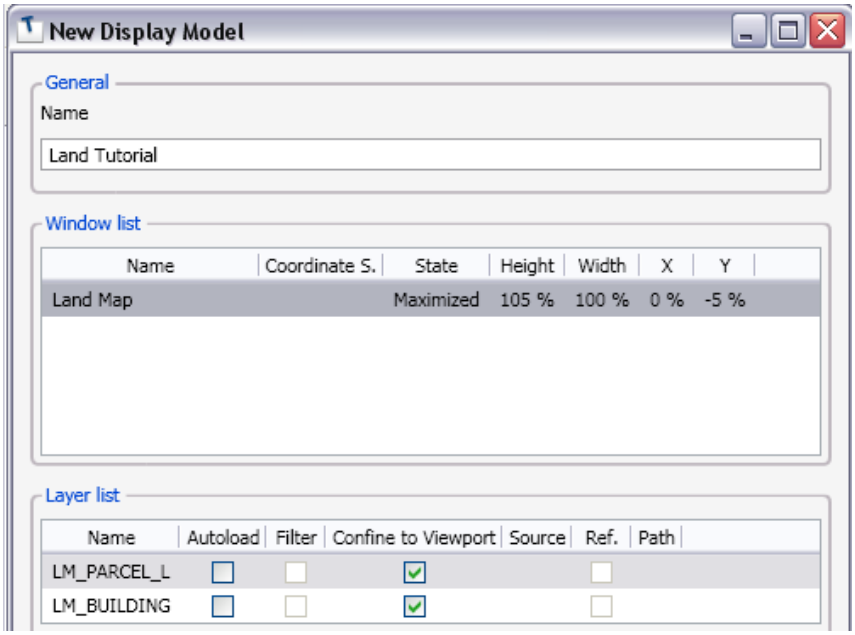
2 In the New Display Model dialog box, in the General area, under Name, enter Land Tutorial.

3 In the Window List area, right-click any column title, and click Restore Default Configuration. This is for the purpose of the exercise only. It will ensure that you are able to follow the exercise correctly.

4 Click the area under Name, and replace the default map name (New Display Model Map) with Land Map.

5 In the Layer List area, right-click any column title, and click Restore Default Configuration. We will use the other options later in this tutorial.

6 Notice that the Autoload and Filter checkboxes are cleared for both layers, and that the Confine To Viewport checkboxes are selected. Leave these settings as they are for now. We will explain them later in this exercise. Click OK.



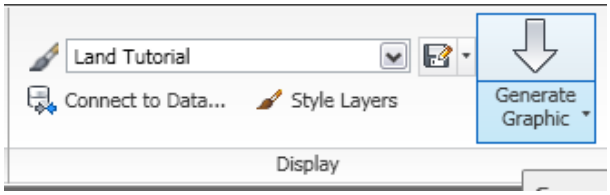
7 A dialog box displays the repository you created in Exercise 1.

8 Click Create New Folder and name the new folder DM_Land. Click Open and then click Save to save the display model to the DM_Land folder.

The display model files are saved to the DM_Land folder in your repository. We will examine the display model files in the next exercise.

9 Make sure the display model you just created, Land Tutorial, is displayed in the Home tab ➤ Display panel ➤ Display Model list.

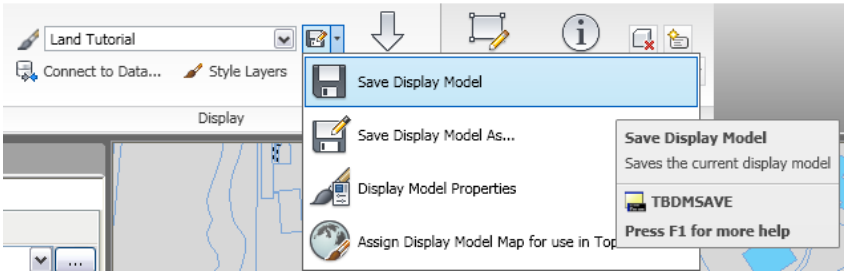
10 Click Home tab ➤ Display panel ➤ Generate Graphic.



NOTE The Generate Graphic icon contains two options, Generate Graphic and Advanced Generate Graphic. Be sure you click Generate Graphic.

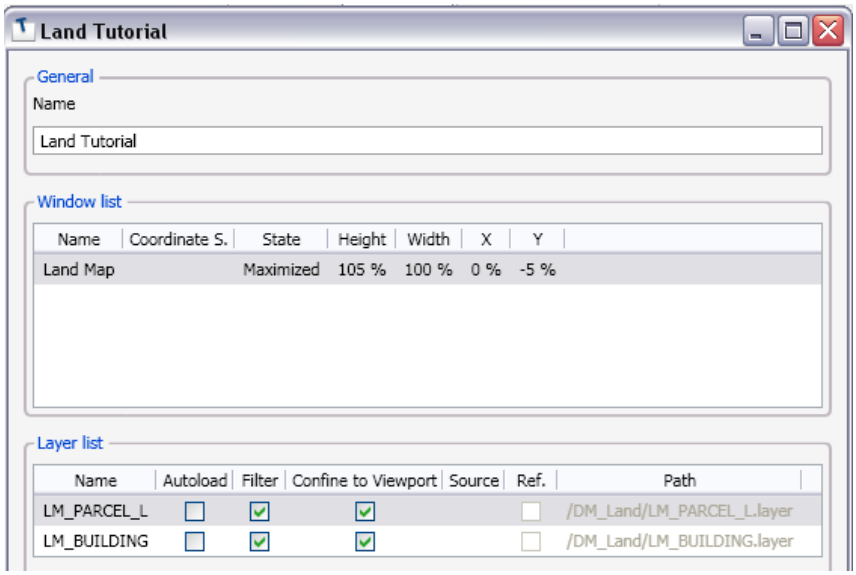
11 Zoom in or out and click Generate Graphic again. Note the display model uses the current zoom.

12 Click Home tab ➤ Display panel ➤ Save Display Model.



In the Layer List area, note that the Filter checkbox is now selected for each layer. A spatial filter is set to the viewport. If you save the display model with this spatial filter applied, this viewport will be used the first time you generate graphics using this display model. Thereafter, the viewport reflects the current zoom setting. The spatial filter helps you quickly orient yourself in a map by displaying an area of interest the first time you generate graphics.

NOTE In this exercise, the Filter checkbox only includes the spatial filter on the viewport. Keep in mind that the Filter also includes any Query To Filter Data settings you have defined in Display Manager.



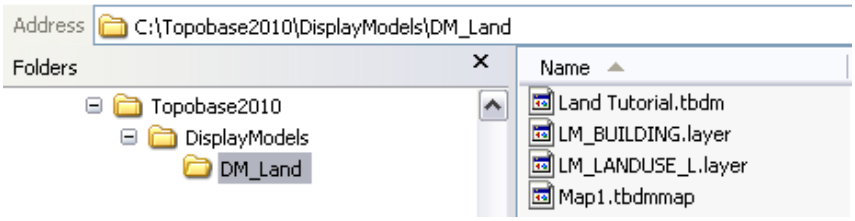
13 Do not save the Display Model now. Click Cancel.

Exercise 4: Examine Display Model File Structure

When you save a display model, Topobase creates the following files:

- Display model master file (**.tbdm*)—References the map file (**.tbdmmap*). For each map there is one *.tbdmmap* file.
- Display model map (**.tbdmmap*)—References the layer files (**.layer*).
- Layer files (**.layer*)—Contain style information for each layer.
- Recovery files—The folder *.disasterrecovery* is created in your Repository Base Path. This folder holds a temporary copy of the current Display Model during the Save Display Model operation.
- Block definition files (*BlockDefinitons*.dwg*)—Store the block definitions that are referenced in a layer file.

1 In an Explorer window, navigate to the Topobase2010\DisplayModels\DM_Land folder.



2 Open the files in a text editor. Notice that *land tutorial.tbdm* references the *map1.tbdmmap* file which references the layer files. The layer files define the layer style.

Exercise 5: Create Autoload Layers

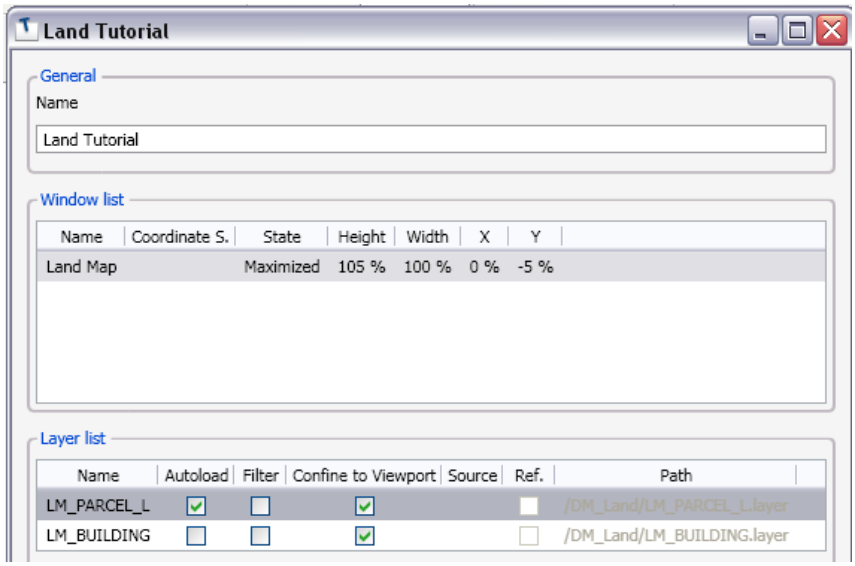
When you save a display model, you can define Autoload layers. The Autoload layers for the last selected display model are loaded the next time you open the workspace. You do not need to generate graphics first. Autoload layers provide context to help you quickly navigate to a region of interest before generating graphics.

In this exercise you will define LM_PARCEL_L layer as an Autoload layer in the Land Tutorial display model.

1 Click Home tab ➤ Display panel ➤ Save Display Model.

2 In the Land Tutorial dialog box, in the Layer List area, select the Autoload checkbox to the right of the LM_PARCEL_L layer.

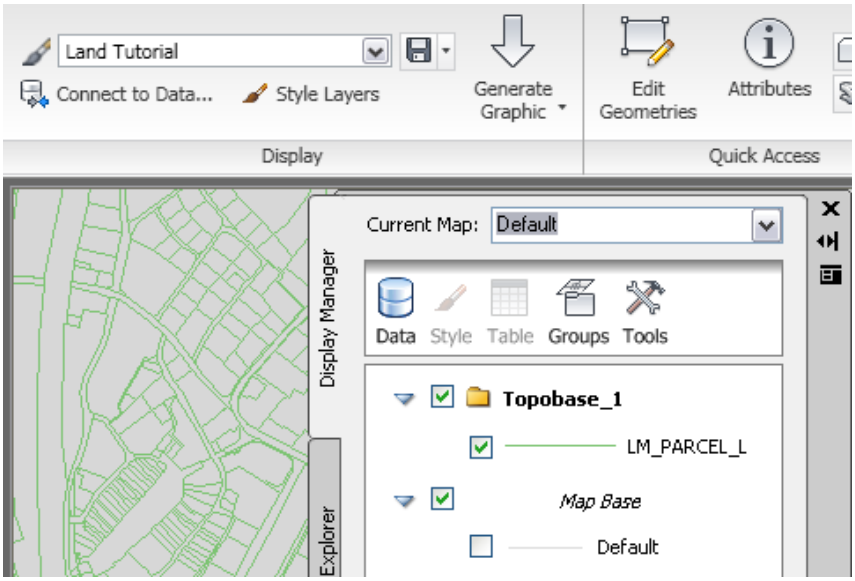
3 If selected, clear the Filter checkboxes for both layers. Leave the Confine To Viewport checkboxes selected.



4 Click OK.

5 Exit Topobase Client; click No when prompted to save changes. Restart, and reopen the workspace.

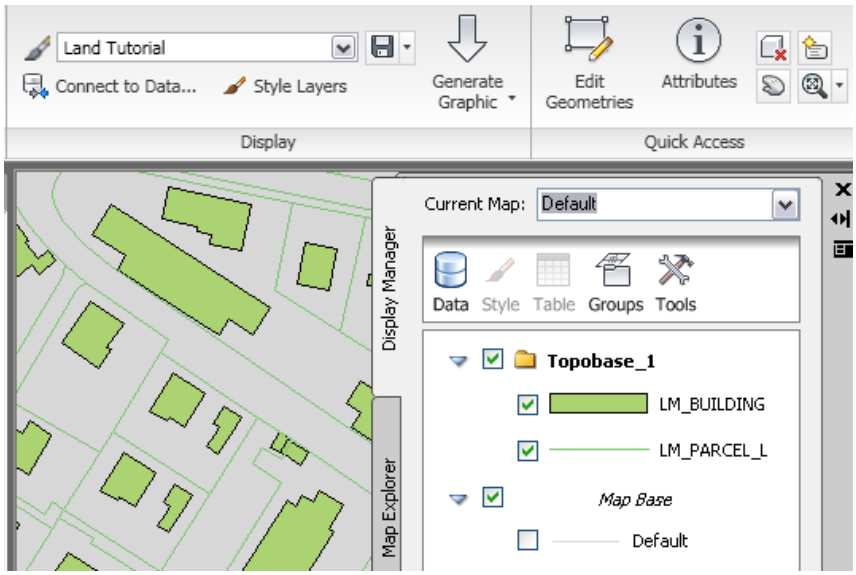
Notice that Land Tutorial is selected in the Home tab ➤ Display panel ➤ Display Model list. The Autoload layer, LM_PARCEL_L, is drawn immediately and is shown in the Display Manager.



6 Zoom to any area in the map.

7 Make sure that Land Tutorial is still selected in the Home tab ➤ Display panel ➤ Display Model list. Click Home tab ➤ Display panel ➤ Generate Graphic.

Notice that the contents of both layers in the Land Tutorial display model are drawn, and both layers are shown in the Display Manager.



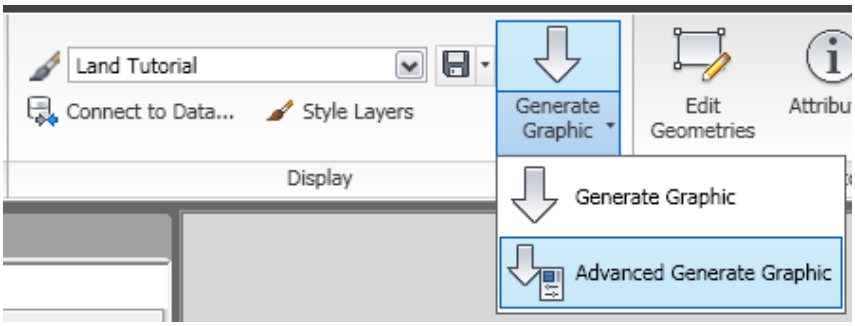
Exercise 6: Confine Layers to Viewport

By default, when you generate graphics, the layers are confined to the viewport. When you zoom out, features outside the viewport are not visible.

In this exercise you will:

- Use Advanced Generate Graphic to zoom into a viewport.
- Set up the parcel layer so it does not confine to the viewport and can be used as context to navigate to a region of interest.
- Save the settings in the Display Model.
- Specify that features resulting from a tracing or a filter are always displayed, whether they lie within the viewport or not.

1 Click Home tab ➤ Display panel ➤ Advanced Generate Graphic.

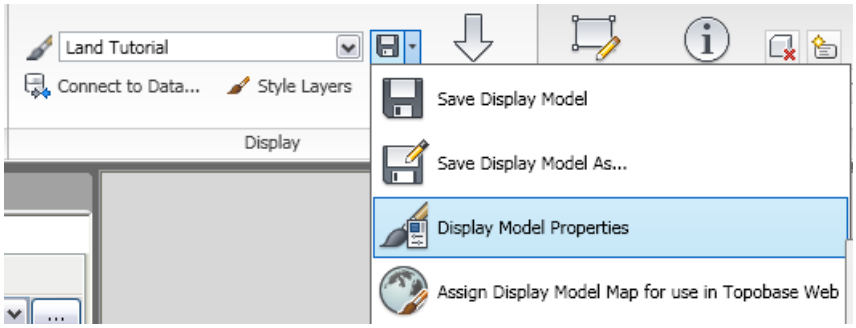


2 In the Advanced Graphic Generation dialog box, click the TB2010_LM_102 tab. Enter the following values:

- Easting: 687700
- Norting: 335400
- Width: 300
- Height: 200

3 Click Generate Graphic. Zoom out. Notice that the layers are confined to your specified viewport.

4 Click Home tab ➤ Display panel ➤ Display Model Properties.



5 In the Layer List area,

- clear the Filter checkboxes for both layers.
- clear the Confine To Viewport checkbox for the LM_Parcel_L layer.

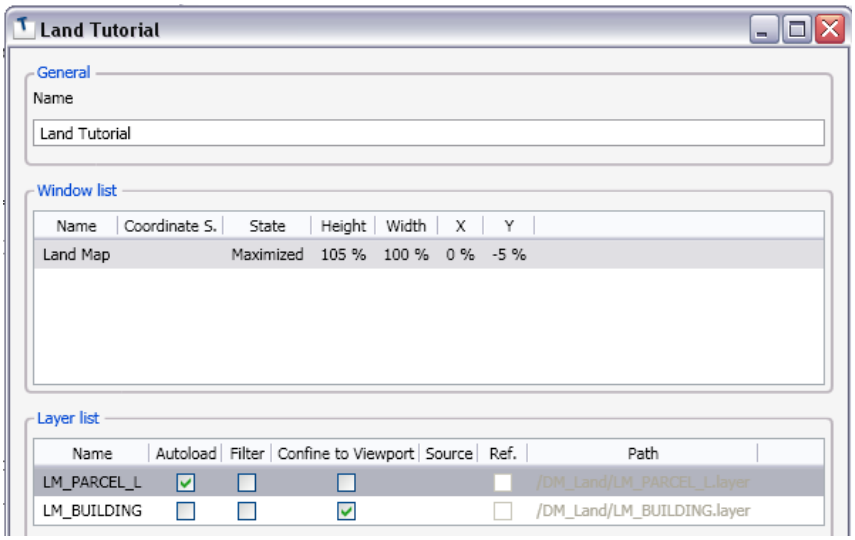
Click OK.

6 Zoom in, and generate graphics.

7 Zoom out. Notice, that the parcel borders are drawn for the complete area, while the buildings are drawn within the previous viewport.

8 Click Home tab ➤ Display panel ➤ Save Display Model.

9 In the Land Tutorial dialog box, in the Layer List area, if selected, clear the Filter checkboxes for all layers.

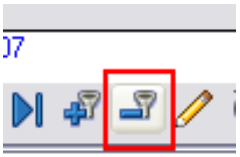


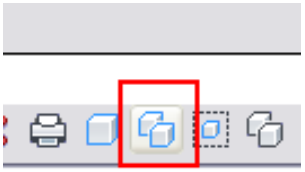
10 Click OK.

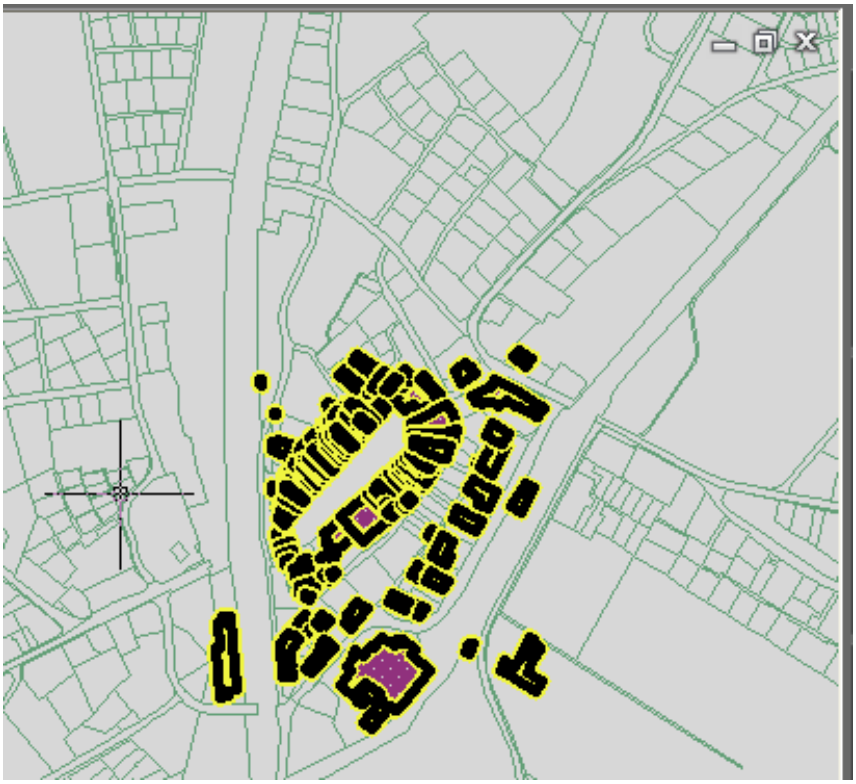
Confine To Viewport also affects highlighting of filtered features or tracing results. By default, only the features within the viewport are highlighted. You can change this behavior.

1 Zoom in, and generate graphics. Zoom out.

2 In Topobase Explorer, click the TB2020_LM_102 tab, expand the Building topic, and select Building. Right-click, and click Show Form.

3 In the Building form toolbar, click Remove Filter. 

4 Click Highlight All Features In The Selection Set  . Notice that only the buildings within the viewport are highlighted.



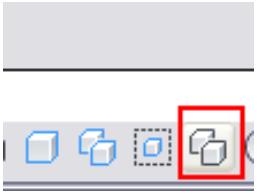
5 In the ribbon, click Settings tab ➤ Setup panel ➤ Application Options.

6 In the left pane of the Application Options window, click the Map Options node.

7 Under Map Options, select Always Display Highlighted Features. Click OK.

8 In the Building form, click Highlight All Features In The Selection Set again. Notice that all buildings are highlighted now.

9 In the Building form, click Unhighlight Highlighted features.



Close the Building form.

10 In the ribbon, click Settings tab ➤ Setup panel ➤ Application Options.

11 In the left pane of the Application Options window, click the Map Options node.

12 Under Map Options, clear Always Display Highlighted Features. Click OK.

Exercise 7: Modify and Save Layer Settings

You can use the Display Model properties to update layer settings without editing each layer in the Display Manager. The modifications apply to the next Generate Graphics. For example, you can clear layers you do not want to draw. In this exercise you will:

- Show additional display model properties in the Display Model Properties dialog box.
- Modify the caption of the layers, and make the parcel layer un-selectable.
- Save the settings in the Display Model.

1 Click Home tab ➤ Display panel ➤ Display Model Properties.

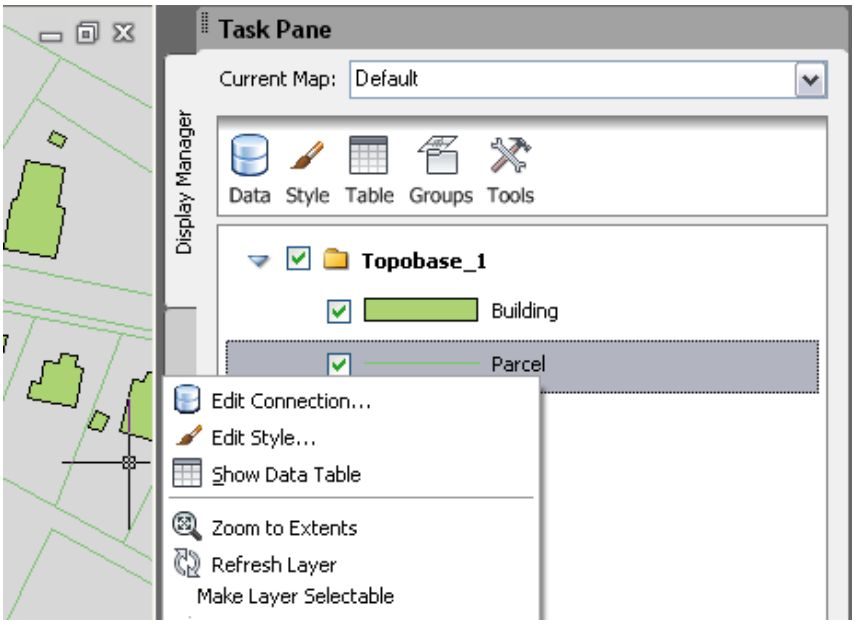
2 In the Layer List area, right-click any column title, and select Feature Class, and Selectable.

3 Click the area under Name, and replace the feature class name (LM_Parcel_L) with Parcel. Replace the feature class name (LM_Building) with Building.

4 For the Parcel layer, clear the Selectable checkbox. Click OK.

5 Generate graphics.

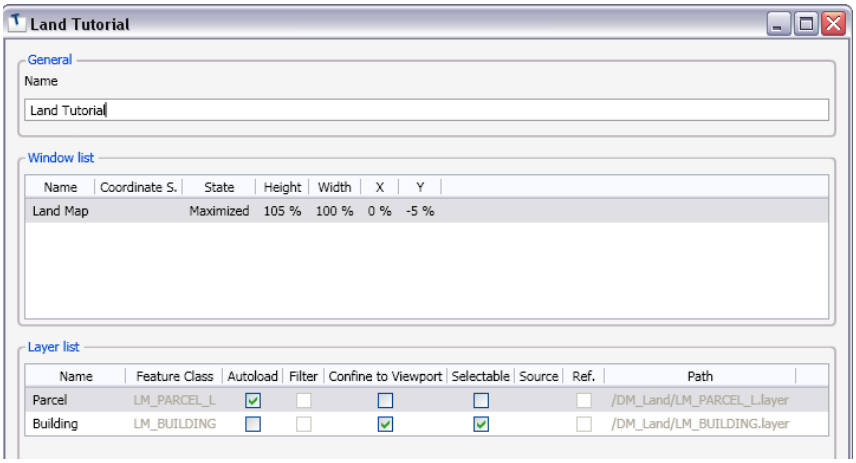
Notice that the Display Manager shows the modified captions. Right-click the Parcel layer, and notice that the layer is not selectable.



6 Until now, your modifications only apply to the Display Manager. You can save them in the Display Model.

Click Home tab ➤ Display panel ➤ Save Display Model.

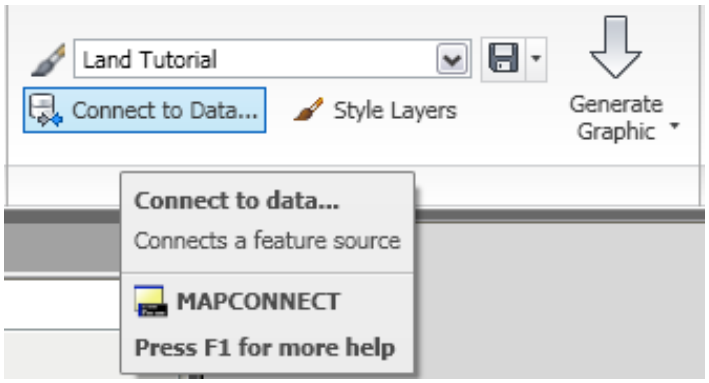
7 In the Layer List, if selected, clear the Filter checkboxes. Click OK.



Exercise 8: Create a Gas Display Model

In this exercise you will create another display model, Gas Tutorial. You will use the Gas Tutorial display model in Exercise 10 to create a multimap display model.

1 In the ribbon, click Home tab ➤ Display panel ➤ Connect To Data.



2 In the Data Connect window, click Add Topobase Connection.

You are prompted to create a Topobase_2 connection.

3 In the Add A New Connection area, provide the service name, user name and password.

See your administrator for this information.

4 From the Document list, select TB2010_GA_102. Click Connect.

You are now prompted to select the feature class layers to add to the map.

5 In the Add Data To Map area, select GA_LINE and GA_POINT. Click Add To Map and then close the Data Connect window.

Layers corresponding to the Gas line feature class and Gas point feature class are added to the Display Manager with a default stylization.

6 Click Home tab ➤ Display panel ➤ Save Display Model As.

7 In the General area, under Name, enter Gas Tutorial.

8 In the Window List area, click the area under Name, and enter Gas Map.

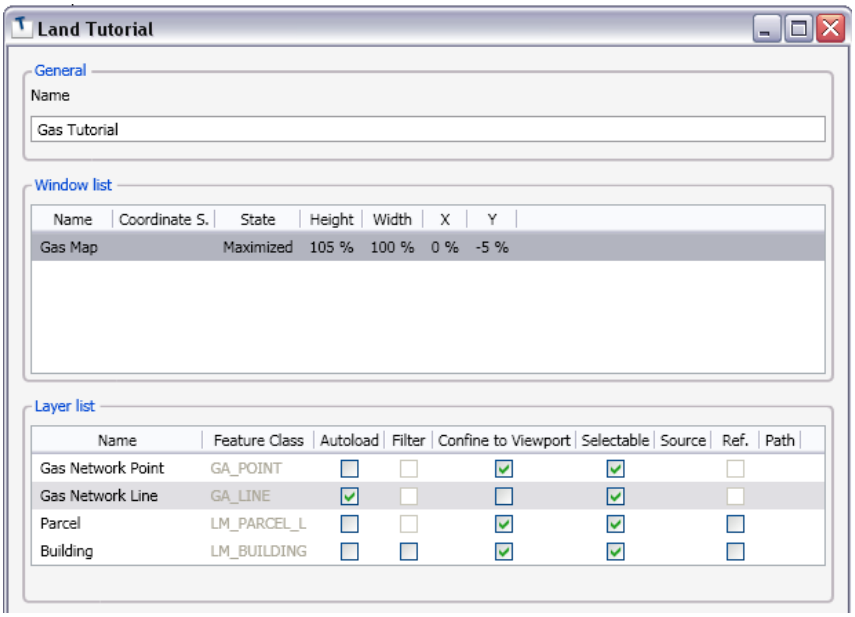
9 For GA_LINE,

- select the Autoload checkbox.

- clear the Confine To Viewport checkbox.

10 Clear the Autoload and Filter checkboxes for the other layers. Keep the Confine To Viewport checkbox selected for the other layers. Keep the Selectable checkbox selected for all layers.

11 Under Name, replace the feature class name (GA_LINE) with Gas Network Line. Replace the feature class name (GA_POINT) with Gas Network Point.



12 Click OK.

A dialog box displays the repository you created in Exercise 1.

13 Click Create New Folder and name the new folder DM_Land_Gas. Click Open and then click Save to save the display model to the DM_Land_Gas folder.

The display model files are saved to the DM_Land_Gas folder in your repository.

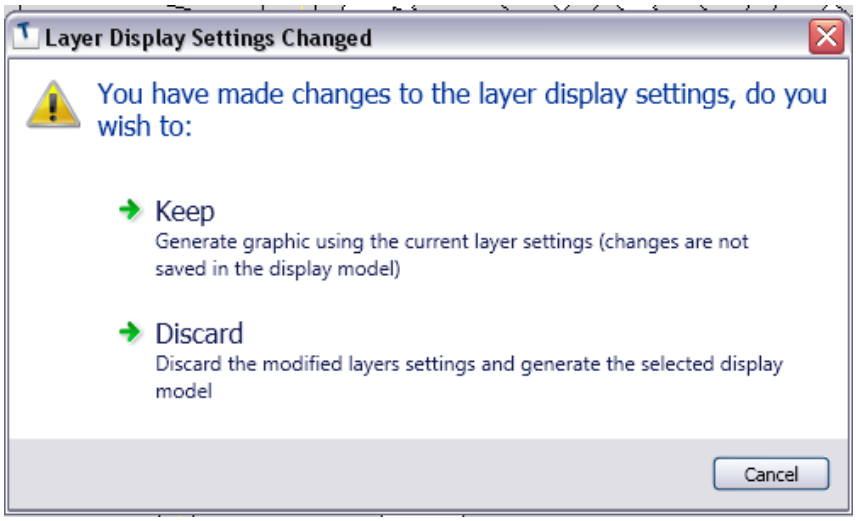
14 Generate graphics.

Exercise 9: Modify a Display Model

When you modify a layer definition, the changes apply to the Display Manager. You must explicitly save the changes to your Display Model. When you generate graphics without having saved your changes, you are prompted whether you want to save the changes. In this exercise you will:

- Modify the stylization of the Gas layers.
- See the difference between the layer settings loaded in Display Manager, and layer settings stored in a Display Model.

1. In the ribbon, click Home tab ➤ Display panel ➤ Style Layers. Select the Gas Network Point, and define another symbol.
2. For the buildings, define another fill color, and for the parcel lines, define another line color.
3. Generate graphics.



4. Click Keep. Generate Graphic uses the Display Manager settings instead of the settings that are stored in the selected Display Model.
5. Continue to refine the layer settings.

6 Click Home tab ➤ Display panel ➤ Save Display Model. Clear the Filter checkboxes for all layers. Notice the Path. All layers are stored in the same repository. Click OK.

7 Exit Topobase Client. Click No when prompted to save changes.

Exercise 10: Create a Multimap Display Model

A multimap display model consists of multiple drawings. In a Display Model, you can specify the size, the position, and the feature layers of each drawing. In this exercise you will:

- Specify that for each Generate Graphic current drawings will remain open. That means, if you use different display models, each display model will be drawn in a separate drawing.
- Create a multimap display model that generates two drawings, one with the land data, one with the land and gas data.
- Set the Application Option back so that for each Generate Graphic the current drawing will be closed, and a new drawing will be opened.

1 Restart Topobase Client and open the tutorial workspace.

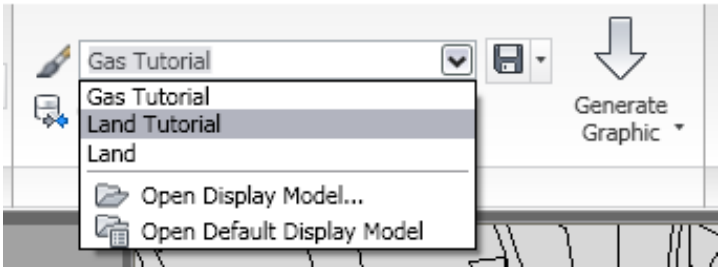
2 In the ribbon, click Settings tab ➤ Setup panel ➤ Application Options.

3 In the left pane of the Application Options window, click the Generate Graphic node.

4 In the Display Model area, select Keep Current Drawings Open.

5 Click OK to close the Application Options dialog box.

6 Click Home tab ➤ Display panel and select Land Tutorial from the display model list.



7 Click Home tab ➤ Display panel ➤ Generate Graphic.

8 Click Home tab ➤ Display panel and select Gas Tutorial from the display model list.

9 Click Home tab ➤ Display panel ➤ Generate Graphic.

10 Click Settings tab ➤ Window panel ➤ Cascade. Each display model is generated in a separate drawing. Keep the Land drawing and the Land and Gas drawing and close any other drawings.

11 Click Settings tab ➤ Window panel ➤ Tile Horizontally.

12 Click Home tab ➤ Display panel ➤ Save Display Model As.

13 In the General area, under Name, enter MultiMap Tutorial.

In the Layer List, right-click any column title, and make sure that all properties are shown.

The Window List displays the maps in the display model. Click each map name in turn to view the layers in the map in the Layer List area.

14 In the Land Map, select LM_PARCEL_L as Autoload layer. Clear the Confine To Viewport checkbox for LM_PARCEL_L. Clear all Filter checkboxes. Clear all Ref. checkboxes.

15 In the Gas Map, select GA_LINE as Autoload layer. Clear the Confine To Viewport checkbox for GA_LINE. Clear all Filter checkboxes. Clear all Ref. checkboxes.

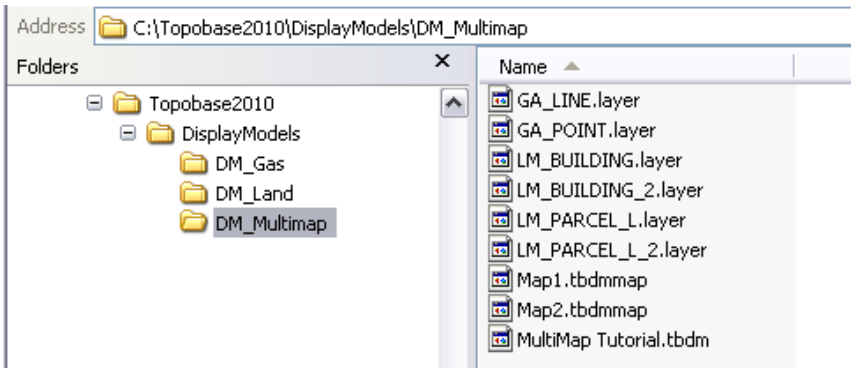
16 Click OK.

A dialog box displays the repository you created in Exercise 1.

17 Click Create New Folder and name the new folder DM_MultiMap. Click Open and then click Save to save the display model to the DM_MultiMap folder.

The display model files are saved to the DM_MultiMap folder in your repository. Each map is stored in a separate **.tbdmmap* file.

Notice that all layer files (*.layer) have been copied to the repository folder.



18 In the ribbon, click Settings tab ➤ Setup panel ➤ Application Options.

19 In the left pane of the Application Options window, click the Generate Graphic node.

20 In the Display Model area, select Close Current Drawings. Click OK.

21 Exit and restart Topobase Client. Click No when prompted to save changes. Reopen the workspace.

The MultiMap Tutorial display model is still selected, and the Autoload layers are drawn.

22 Click Home tab ➤ Display panel ➤ Generate Graphic.

23 Zoom in or out in either of the drawings and generate graphics again.

Notice that the same viewport is shown in both drawings.

Exercise 11: Reuse and Share Layer Definitions

You can use the same layer definition in multiple display models. For example, you store and maintain your base map layers in one central Land display model. You reference these layers in other display models, such as the utility display models. In this exercise you will modify the Gas display model that you have created in exercise 8. You will replace the Parcel and the Building layers by referenced layers.

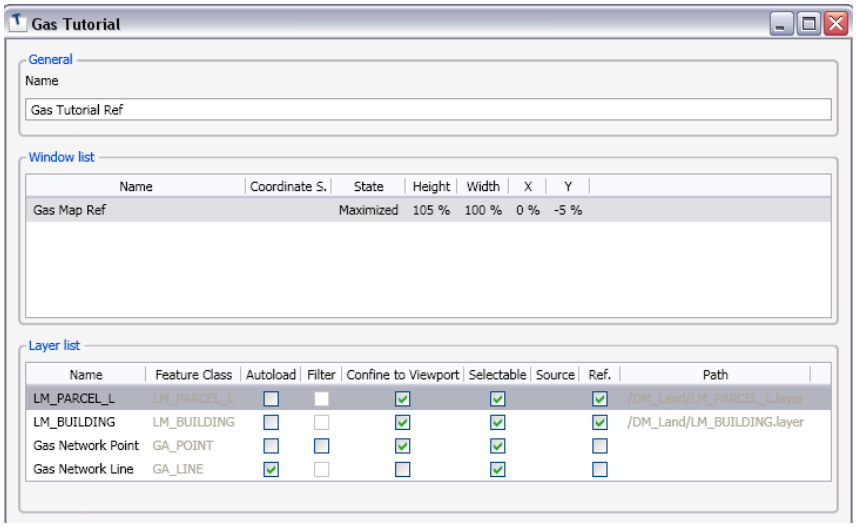
1 Click Home tab ➤ Display panel, and select the Gas Tutorial display model. Click Generate Graphic.

2 In Display Manager, select Building, and Parcel. Right-click and click Remove Layer.

3 In Windows Explorer, navigate to the repository of the DM_Land display model. Drag the layer files (LM_BUILDING.layer, LM_PARCEL_L.layer) to the drawing.

NOTE If you drop the layers into Display Manager, make sure that the draw order is By Group, otherwise you cannot drop the layers.

4 Click Home tab ➤ Display panel ➤ Save Display Model As.



5 In the General area, under Name, enter Gas Tutorial Ref.

6 In the Layer List, for LM_PARCEL_L and LM_BUILDING, keep the Ref. checkboxes selected. Notice under Path, that the repository folder of the referenced layer files is shown.

7 Click OK. When prompted, click Yes to continue.

When you modify a referenced layer, and save the DM, you are prompted that you will overwrite the referenced layers. You can either overwrite, or cancel, or clear the Ref. checkboxes.

8 Click Create New Folder and name the new folder DM_Gas_Referenced. Click Open and then click Save to save the display model to the DM_Gas_Referenced folder.

9 Exit Topobase Client; click No when prompted to save changes. Restart, and reopen the workspace.

10 In the Display Model list, the Gas Tutorial Ref is still selected, and the Autoload layer, Gas Network Line, is drawn immediately.

11 Click Home tab ➤ Display panel ➤ Display Model list, and select Land Tutorial. Generate graphics.

12 In Display Manager, modify the color of the buildings.

13 Click Home tab ➤ Display panel ➤ Save Display Model.

14 In the Land Tutorial dialog box, if selected, clear the Filter checkboxes for all layers. Click OK.

15 Click Home tab ➤ Display panel ➤ Display Model list, and select Gas Tutorial Referenced. Generate graphics. Notice that the changes you made in the Land display model are applied.

16 Click Home tab ➤ Display panel ➤ Display Model Properties. Notice the Path values.

Notice that the Filter checkboxes are selected after the Generate Graphics.

Click Cancel.

Exercise 12: Populate an existing drawing

Until now, each Generate Graphic opened a new drawing containing the data specified in the display model. Sometimes it is useful to load the data into an existing drawing. For example, into a drawing that contains project data from an external supplier to be added to your database. In this exercise you will:

- Specify that Generate Graphics loads your data into an open drawing containing some planned buildings (AutoCAD polylines).
- Create building features from the AutoCAD polylines.

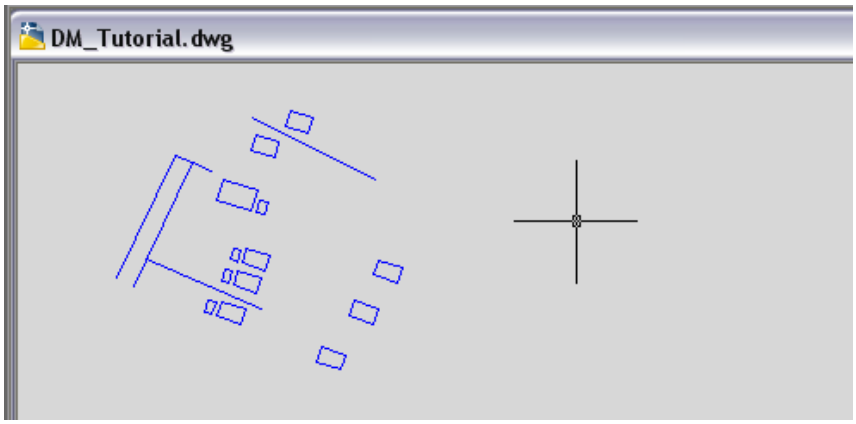
1 In the ribbon, click Settings tab ➤ Setup panel ➤ Application Options.

2 In the left pane of the Application Options window, click the Generate Graphic node.

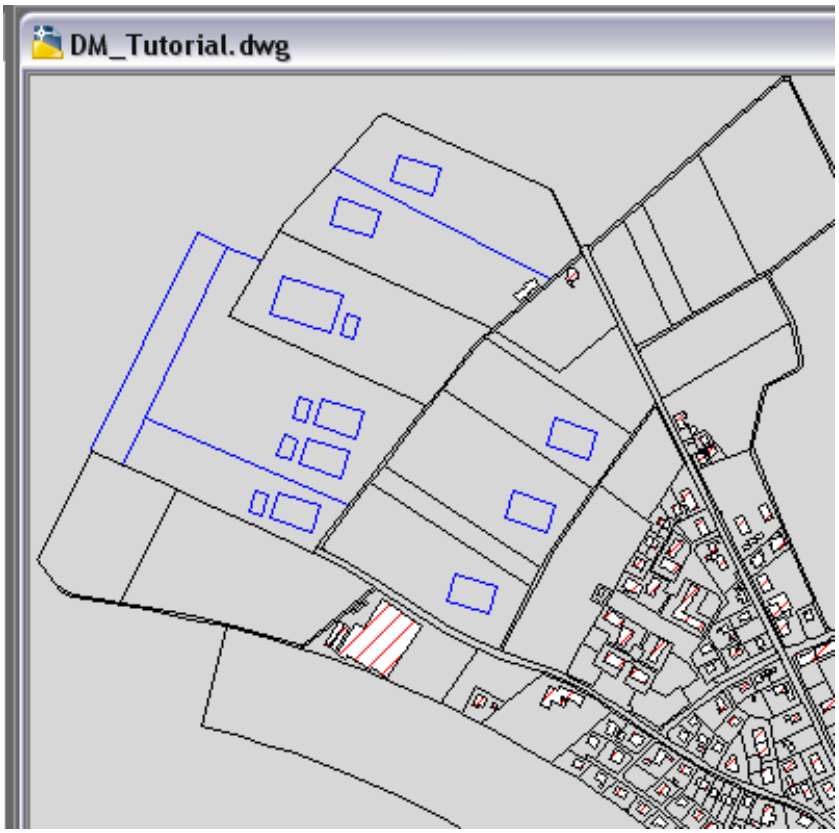
3 In the Display Model area, select Reuse Active Drawing.

4 Click OK to close the Application Options dialog box.

5 Click Application menu ➤ File ➤ Open. Select the drawing (*.DWG) that contains the planned buildings.



6 Click Home tab ➤ Display panel ➤ Display Model list, and select Land Tutorial. Generate graphics.



7 Navigate to the area of the planned buildings. Notice that the (**.dwg*) file is overlayed onto the display model map.

8 Select one of the planned buildings. Right-click and click Properties (Polyline). Press <ESC> to undo the selection. Next, select one of the building features. Right-click and click Properties (Map Feature). Press <ESC> to undo the selection.

9 In Topobase Explorer, click the TB2010_LM_102 tab, expand the Building topic, and select Building. Right-click, and click Create New Feature From Geometry.

10 In the drawing, select the polygons. Press <Enter> to finish the selection.

The building features are saved in the database and displayed according to the layer stylization.

NOTE If your have already selected some entities in the drawing, the features are created immediately. If no entities are selected, note the command line prompt. If you have selected a building feature, you are notified that the feature is already stored in the database, and you can decide how to proceed.