

Importing and Exporting DWG and DXF in MiniCad and VectorWorks

Introduction

The following is based on our common experience and MiniCad 7 and VectorWorks manuals (MiniCad and VectorWorks are products of Diehl Graphsoft, Inc.) . We highly recommend for further reading the article by Dave Weber, *DXF Made Easy*, available at:

<http://www2.portal.ca/~wmw/dxf/dxfme.html>

Although Weber's article was written at the time of MiniCad 6, it is nonetheless thorough, informative, and useful.

What we should stress first and foremost is that DWG and DXF (the former in particular) are proprietary formats and subject to change over time. In addition, features of one software platform (such as MiniCad or VectorWorks) are not necessarily implemented on another (such as AutoCAD). As a result, as with any translation, importing and exporting via these 'universal' formats is imperfect at best, and results can be quite variable, depending on the version of a drawing's native application.

While we attempt to cover the basic mechanics of file translation, there are so many dialects and nuances of DXF and DWG, that only experience will allow for smooth translations, and imperfection is inherent to the process. That said, VectorWorks 8 (thanks in large part to Diehl Graphsoft, Inc.'s membership in the OpenDWG Alliance) makes great strides in bridging the inevitable gap between MiniCad and DWG. For the sake of thoroughness, we will cover both MiniCad 7 and VectorWorks 8.

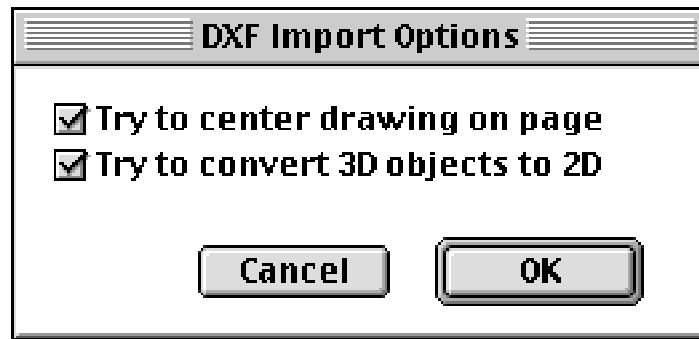
Importing to MiniCad 7

Before importing a file, it is important to communicate with the exporter (the person from whom you are getting the file, who is probably an AutoCAD user). You should do the following:

- A Let the exporter know what file format and version you need. MiniCad 7 reads up to AutoCAD version 13 DXF and DWG. Note that DWG is a more efficient file format (generating smaller files) and equal to DXF in terms of compatibility, but DXF files reportedly compress to a slightly smaller size than DWG, in spite of being much larger uncompressed.
- B Have the exporter include a graphic scale in the drawing. Surveys especially (due to surveyors' use of decimal feet instead of feet and inches) are frequently off. You may need to scale the entire file up (typically by a factor of 12 in the case of surveys) or down.
- C The exporter must not use paper space (an AutoCAD device which achieves similar results to MiniCad's use of scaled layers and layer links).
- D The exporter must eliminate 'comets'—tiny fragments of drawing miles away from the main drawing area. These may creep in to your drawing later once you've imported it (see below).
- E The exporter must purge any unused/unnecessary blocks and unused/unnecessary layers. Ask the exporter to perform multiple consecutive purges in order to remove nested blocks.
- F If the file is really important, ask for hard copy or image to accompany it.

Once you have the prepared file:

- G Open a new, blank file.
- H Set the scale and page size to match in the original you are importing.
- I From the **Edit** menu, select the **Edit Attributes** command, **Dash Styles...**, and delete all except dash style #1. (You could create a stationery file after steps G-I in order to avoid having to repeat them for every import. You can also include your standard set of classes in such an importer template).
- J Go to the **File** menu. Selecting the **Import DXF/DWG** command will result in the opening of a navigation dialogue box; choose the DWG or DXF file you wish to import. You will then see:



Generally, it is recommended to select the first option. Choose the second option only if you are using the file only for 2D information, and do not wish to import any 3D information.

- K Check the scale of the imported file against that of the original (by selecting an object whose dimension(s) you know and verifying them in the Object Information palette).

Finally, you will need to adjust the file to fit your needs:

- L This may involve going through the file layer by layer, selecting all (with **Organize** menu's **Layer Options** NOT set to **Show/Snap/Modify Others**), and ascribing one of your standard classes to the imported layer. Remember that AutoCAD layers correspond more closely to MiniCad classes.
- M Delete stray 'comets', using the **Page** menu's **ViewBar** command, **Fit to Objects** (command-6) to locate them.
- N At this point, you might want to group all the contents of each of the imported layer, in case you need to modify them globally at some later point.
- O You may also use Julian Carr's reLine commands to change imported object's colors and line weights to match your own standards (<http://www.zeta.org.au/~jbcarr/>).

Once the file is reduced to a set of groups whose contents are set to appropriate classes, colors, and line weights, you may then set the **Organize** menu's **Layer Options** to **Show/Snap/Modify Others, Select All**, then **Group**. The new single-layer group may then be cut and pasted into your standard template-based file.

Exporting from MiniCad 7

Just as when you import a file from another platform the user of that platform must prepare the file, so too must you prepare your file for export before actually shipping it off. Again, communication is the key. Talk to your audience and find out exactly what information the user needs; purge any irrelevant information. You, the exporter, should do the following:

- A Save your file under another name. Perform the following steps to the renamed file.
- B Delete all irrelevant layers, classes, and symbols. Delete your title block if possible and desirable.
- C All layers should be at the same scale.
- D **Select All** and **Ungroup**, except for 'higher level objects', such as walls and dimensions.
- E Set all line weights to 1 mil (or .03 mm). This may involve either editing each of your symbol definitions individually, or converting all your symbols to groups (which will result in a larger file), then converting line weights *en masse*. We've experienced situations where converting all line weights to 1 mil seemed to make translation go more smoothly; other times, it didn't seem to matter.
- F For good measure, change all fill attributes to none. You will now see what your recipient will see.
- G Change all text to left justified and Arial, Geneva, Helvetica, Times, or Times New Roman.
- H Convert all symbols with attached record format information to groups.
- I **Purge Unused Objects...** from the **Edit** menu—several times (four is a good rule of thumb),

depending on how 'deep' you make your nested symbols.

Once you have done the above, and are actually ready to export:

- J Go to the **File** menu, **Export DXF/DWG** command. You will see this dialogue box:



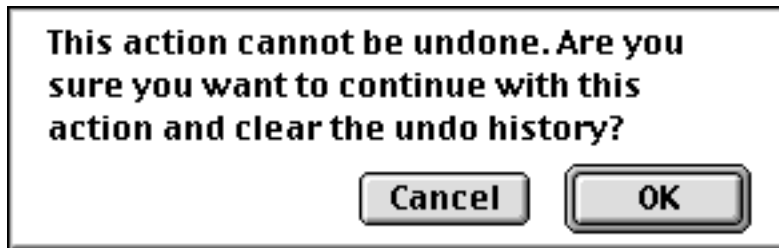
Usually, you will want to export by class (remember that AutoCAD layers correspond more closely to MiniCad classes), depending on how you use classes, layers, and colors. Choose whether to export 2D and 3D objects—again, provide the least information necessary to minimize bandwidth and reduce chances of importation failure. Decide whether to export as DXF or DWG. DWG is a more efficient file format (generating smaller files).

- K Name the export using DOS conventions: eight-character names, maximum, no spaces or special characters, followed by the .DXF or .DWG file extension as appropriate.
- L Re-import your file back into your MiniCad importer template, just as a check. If you have another CAD program available, use it. Use the same procedures as outlined in the section above.

Importing to VectorWorks 8

Generally, the same preparation is required for import to VectorWorks as MiniCad (or any other CAD program).

- A VectorWorks' multiple undo feature generates an undo history; importing a DWG or DXF clears the history and is therefore not undoable. Hence:



Click OK. Several progress bars appear as VectorWorks examines the file to be imported and loads it.

- B You will then see the following dialogue box. Under the Units and Scale tab, in all likelihood you will want to select the DXF/DWG units to 1" or 1' for surveys and other decimal-feet files. Set the scale manually if you know or can guess it (and you have already set the scale of Layer-1 in your template file); otherwise let VectorWorks choose a scale for you.

The image shows a dialog box titled "DXF/DWG Import Options" with two tabs: "Units and Scale" (selected) and "Conversions".

Units and Scale

Units Conversion:

DXF /DWG Units Setting: **Architectural**

DWG Units =

Scale:

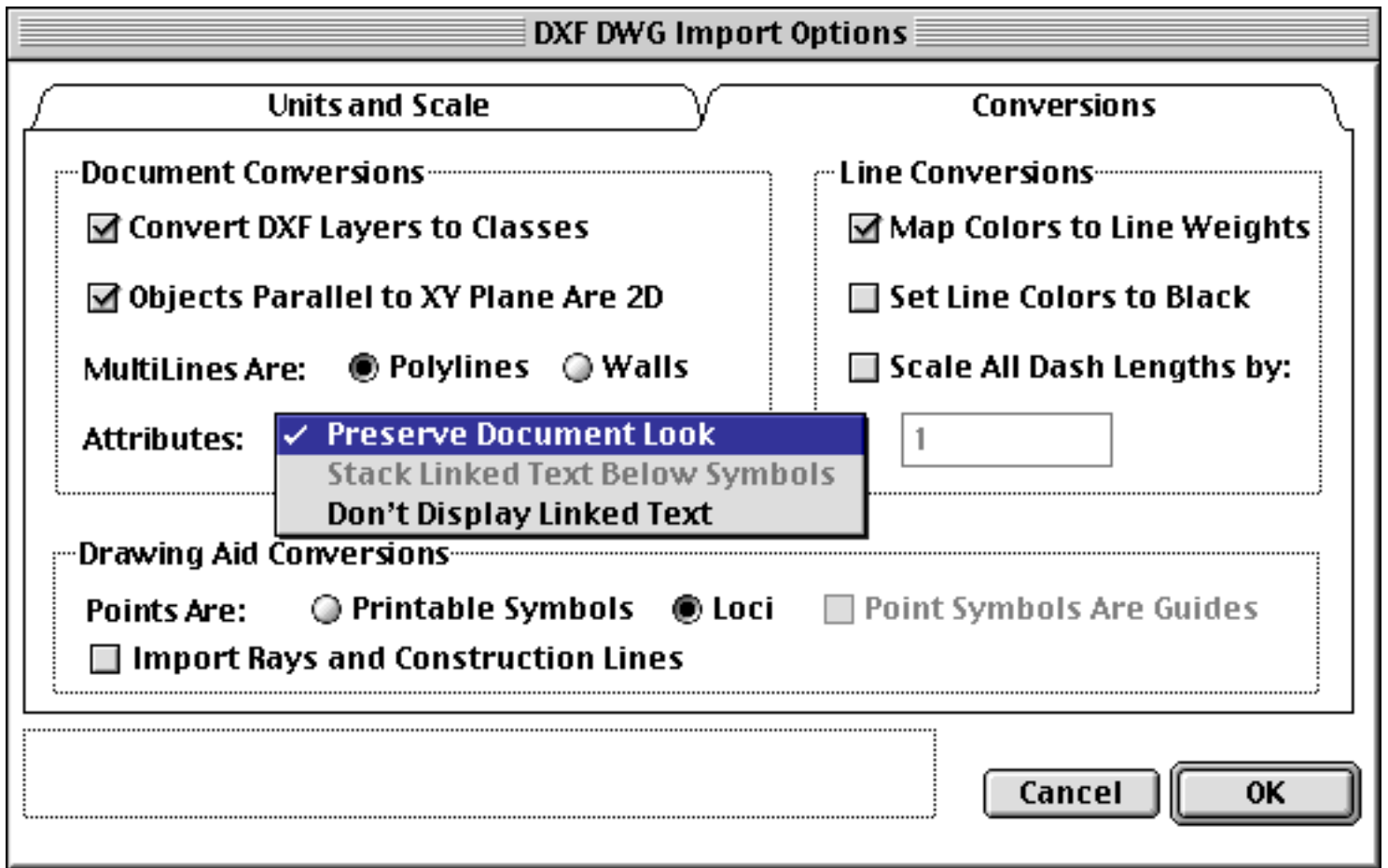
Fit Drawing to Page Estimated Fit Scale = 1.000000 : 63.992912

Set Scale Manually: on paper = in the drawing

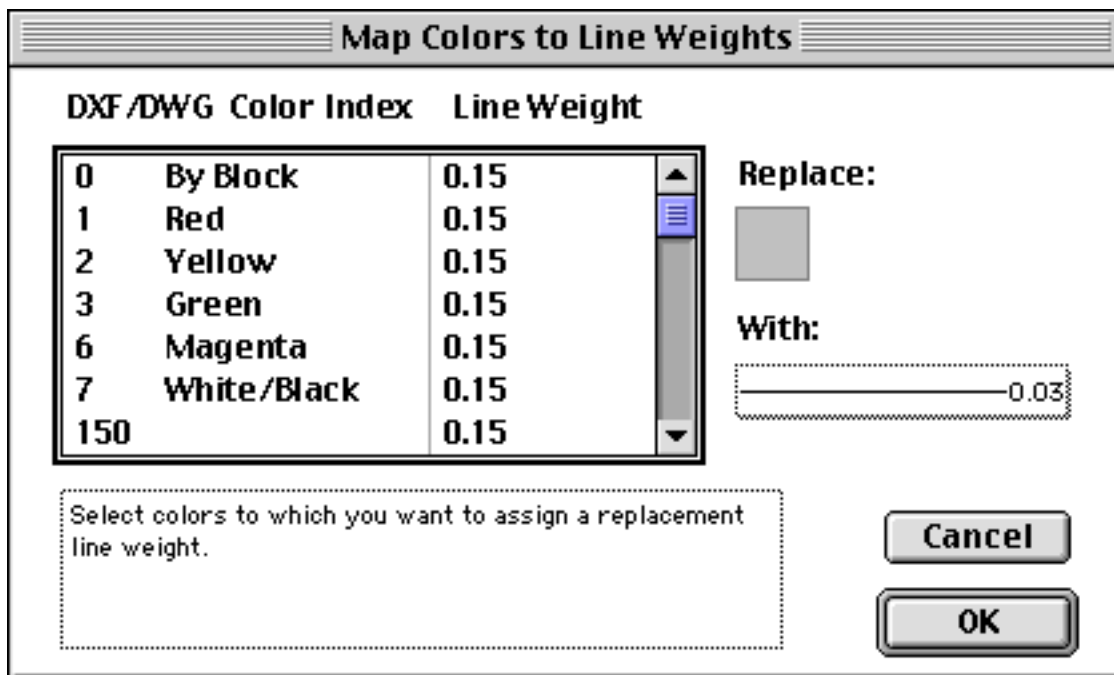
Internal Precision: .0000

At the bottom right are "Cancel" and "OK" buttons.

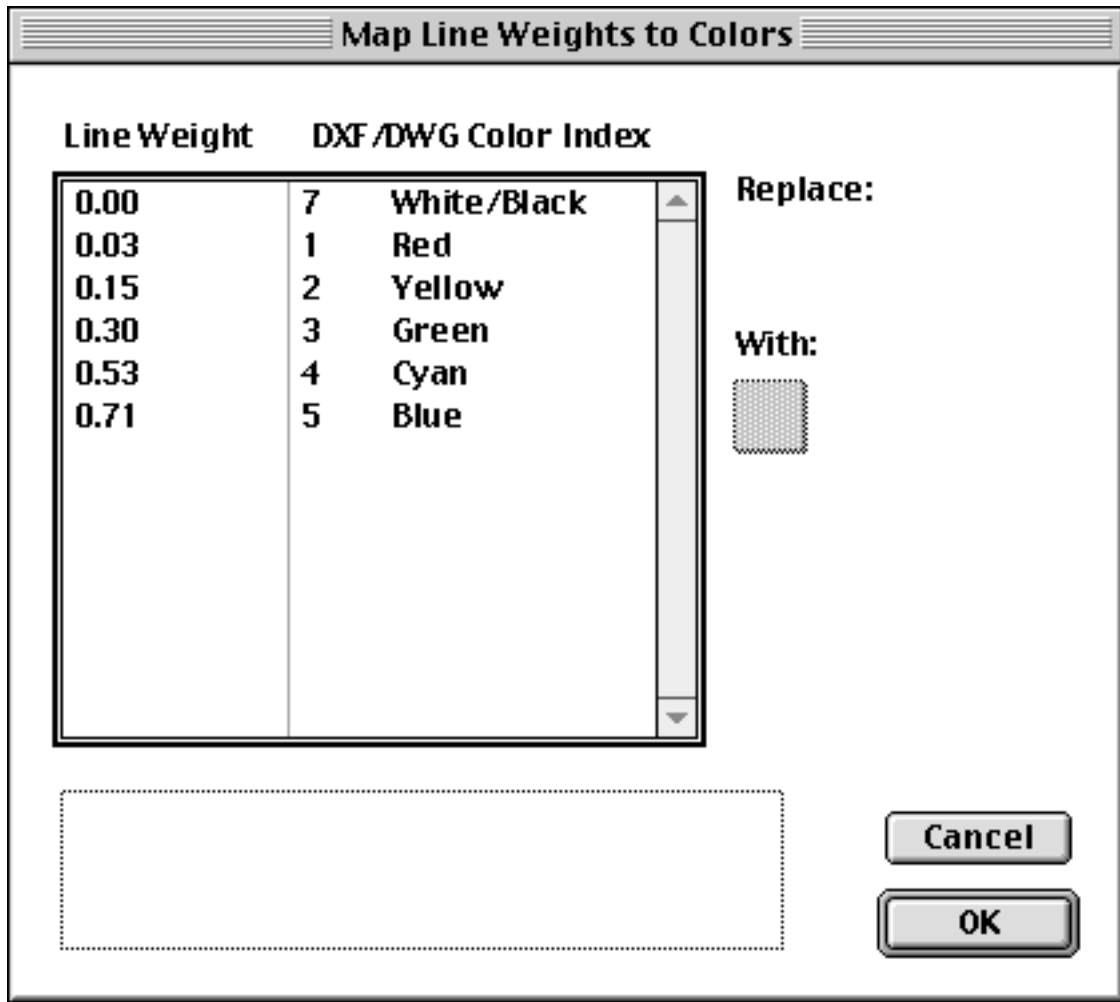
- C Under the Conversions tab, you may select whether to import the DXF/DWG layers as classes and whether to treat all XY plane-parallel object as 2D. MultiLines are non-MiniCad/VectorWorks; you must choose whether they are to be translated as walls or polylines, depending on their use in the original file. Generally, you should choose to preserve the document look, and convert DWG points to loci, unless you want them to print. DWG-based programs like AutoCAD use rays and construction lines; you may elect to import these as lines.



- D If you choose to map colors to line weights, you may designate line weights to correspond to line colors of the original document; especially useful if you know what line weights the exporter typically assigns to which pen colors.



representing gradually heavier lines: red (1), yellow (2), green (3), cyan (4), blue (5), etc. Be sure to include a text file which correlates colors with your line weights.



- E Converting classes as DXF layers typically is desirable if you use classes like AutoCAD uses layers.
- F You can avoid some of the preparation work merely by turning off layers and classes you do not wish to export and selecting the appropriate options shown above.
- G Name the export using DOS conventions: eight-character names, maximum, no spaces or special characters, followed by the .DXF or .DWG file extension as appropriate.
- H Re-import your file back into your VectorWorks importer template, just as a check. If you have another CAD program available, use it. Use the same import procedures as outlined in the section above.

Known Problems

MiniCAD 7 sometimes drops objects, particularly polylines. If you have a copy of MiniCad 6, you may get a more stable DXF v12 export, but you cannot export to DWG or a more recent version of DXF. Converting all line weights to 1 mil is often helpful in working around this problem.

VectorWorks 8 will rarely fail to export altogether. This seems to happen due to corruption of a MiniCad 7-generated polygon. To find the bad object, try to export half your file at a time. When it fails, try exporting half of the half, and so on, until you isolate the culprit. You may also at times get a low memory message, which may not actually be a function of insufficient memory. Finally, avoid 'comets' in your file to avoid an 'elements out of range' error; keep all your objects on or near the sheet area.

Two-way exchanges

We do not recommend maintaining an ongoing back-and forth from one software platform to another over the course of a project. DXF and DWG translation is really only suited for providing backgrounds. If you must collaborate with another user on another platform, and regularly trade files, at the very onset of the project you will need to develop a collaboration methodology :

- A Decide on a common exchange format: DXF or DWG, v12, 13 or 14.
- B Decide on a method for sending files: FTP server, Zip disk, email attachments. We strongly recommend the first.
- C Commit to supplying backgrounds only when feasible. Don't make promises that inherent limitations of the technology might make you unable to keep later.
- D Limit and control the exchange of symbols and title blocks.
- E Decide on a single, site-based reference point and include it in all the drawings; label it. Include a graphic scale.
- F Know the limitations of DWG and avoid or control using unsupported elements.
 - 1 Walls, for example, will export, but only as lines or polylines, not hybrid elements.
 - 2 Symbols will export as blocks, but only 2D or 3D, depending which view you are in at the time of export.
 - 3 Worksheets and layer links are totally unsupported in DXF or DWG. (You may manually copy contents of source layers into target layers to preserve the effect of a layer link, however).
 - 4 Record formats will transfer, but only if you convert the record format bearing symbol to group first.
 - 5 Any textures applied in RenderWorks will not carry through, although if you assign material-specific classes to your objects, those classes will go across as DXF layers, to which the recipient may assign colors or textures if the other platform supports it.

In fact, many of the features that make VectorWorks or MiniCad particularly powerful are lost to DWG or DXF; it truly is a 'lowest common denominator' format.