Tools, Tips, and Workflows

Exporting Final Product

LP360

BSAU | AWG

Support

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Final products can be exported from LIDAR data using either LP360 command line executables or the LP360 Export Wizard. Some export functions and resulting products include, but are not limited to: merging multiple LAS files into one LAS file, exporting LAS versions to different LAS versions, exporting from LAS to ASCII XYZ files, and exporting Surface Models.

There are three command line executables that can be used to export LIDAR products:

- LDMerge.exe
- LP360PntDen.exe
- LP360ExpLAS.exe

Within the LP360 GUI, the tool used to export products is known as the Export Wizard. It is available on the main LP360 toolbar.

Figure 1 - Export Wizard

LDMerge.exe

A simple way to combine multiple LAS files into one file is to run the LDMerge executable. The LDMerge executable, like all LP360 command line executables, is located under C:\Program Files\Common Files\QCoherent. A specified file name is required for the output file. This executable does not require an ArcGIS or LP360 license in order to run.

Example: LDMerge.exe E:\Sample_Data\Seattle\LAS*.las -o E:\Sample_Data\Seattle\LAS\Seattle.las			
LDMerge.exe Command Line Parameters			
-h	display usage information	-q	quiet
-o	output filename	-v	verbose

LP360PntDen.exe

The LP360PntDen executable is a program designed to export a point density surface in binary float raster format. The point density surface can be used for validation in verifying the correct point density was gathered during the acquisition process. This executable allows the user to specify the end product name if creating only one file otherwise, the default naming scheme is the input file. This executable does require a LP360 license in order to run.

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Example: LP360PntDen.exe /p c:\temp /cs 10.0 /c 2,8 /of c:\temp\pntden.flt
LP360PntDen.exe Command Line Parameters
/p or /f Use '/p' to run on all LAS files within the specified folder, or '/f' to run on the specified LAS file.
/c Use 'c' to define a comma-delimited list of classification numbers that define the points that are exported.
/r Use 'r' to specify the return combinations that define the points that are exported.
/cs Use '/cs' to specify the cellsize used in the point density calculation.
/nd Use '/nd' to specify the the nodata value used for cells that lie outside the extent of the LAS data.
/of Use '/of' to specify the Binary Raster file to export point densities to.

LP360ExpLAS.exe

The LP360ExpLAS executable is used to export LIDAR data to LAS or ASCII XYZ format from the LAS format. If the end result of LIDAR processing is an export of Ground only LAS files and First Return ASCII files, then this executable can be used in a batch process to export both options. The output products will be named based on the input LAS files. This executable does require a LP360 license in order to run.

Example: LP360ExpLAS.exe /f c:\temp\1001.las /r First /ft ascii_xyz /op c:/temp/exp (Exports First Returns)
LP360ExpLAS.exe Command Line Parameters
/p or /f Use '/p' to run on all LAS files within the specified folder, or '/f' to run on the specified LAS file.
/c Use 'c' to define a comma-delimited list of classification numbers that define the points that are exported.
/r Use 'r' to specify the return combinations that define the points that are exported.
/ft Use '/ft' to specify the export format ('las' for LAS file or 'ascii_xyz' for ASCII XYZ files).
/lasv Use '/lasv' to specify the LAS version when exporting to LAS files. Use 1.0, 1.1, or 1.2.
/op Use '/op' to specify the path that exported files are saved to.

Export Wizard

A user can do the same kind of merging and exporting available in LDMerge.exe, LP360PntDen.exe and LP360ExpLAS.exe by using the LP360 GUI tool known as the Export Wizard. The Export Wizard allows a user to export point and surface based products. There are three steps to the Wizard:

1. Specify Export Type and attributes
2. Specify Export Extent
3. Specify output location and name(s)

The Wizard allows the user to interactively filter the export product based upon: class, return values, elevation range, intensity range, flags and point source IDs, if so desired.

There are five types of point file formats that can be exported using the Export Wizard:

1. ASCII XYZ – allows the user to specify LIDAR point attribute information to be exported
2. LAS formats (1.0 – 1.4) – allows the user to specify the LAS format
3. Point Shapefile[1] – allows the user to specify LIDAR point attribute information to be exported
4. Microstation DGN
5. AutoCAD DXF

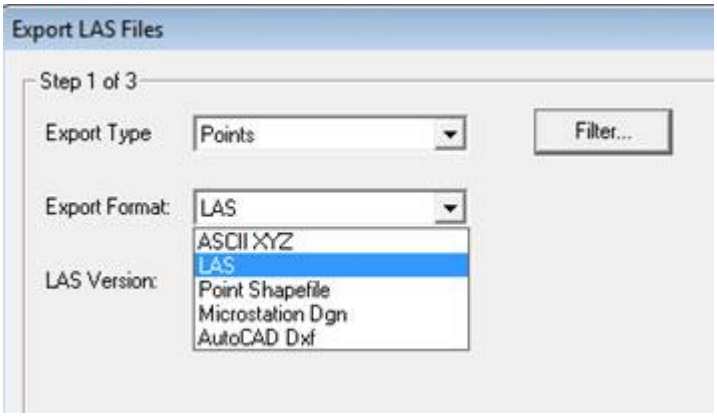

Figure 2 - Export Points Options

There are three kinds of surface export methods that can be used depending upon the need of the customer:

- Inverse Distance Weighted (IDW)
- Triangulated Irregular Network (TIN)
- Point Insertion (PI)[2]

Dependent upon the surface method specified, there are five different kinds of export file formats.

- IDW or TIN: ASCII Raster, Binary (Float) Raster, ASCII XYZ, ESRI Binary Grid[3]
- PI: TIFF Image

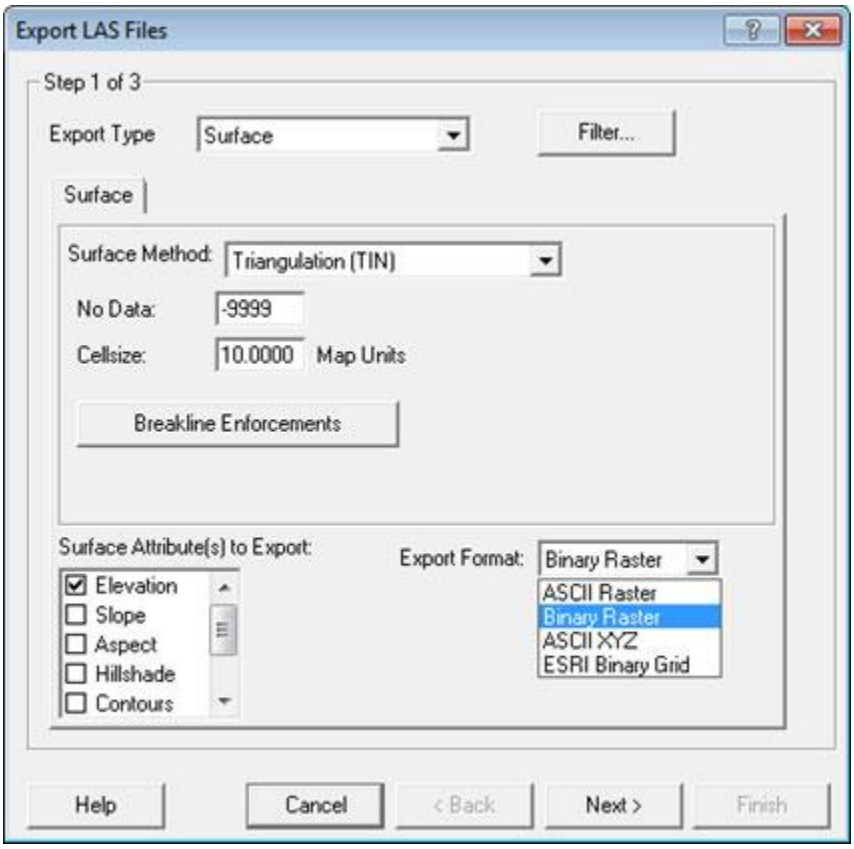

Figure 3 - Export Surface Options

The surface method exports a raster-based product and, as such, a cell/grid size is required. The default value is 10 map units, but this can be changed based upon user requirements. The TIN surface method allows for Breaklines to be incorporated into the surface, thus resulting in a Digital Terrain Model.

The last portion of the surface export is to specify the surface attributes to be exported:

- Elevation
- Slope
- Aspect
- Hillshade
- Contours
- Intensity
- Elevation Difference (Elev Diff)[4]
- Density – only visible if PI Surface Method selected
- dZ (Delta Z) Images – only visible if PI Surface Method selected

Depending upon the attribute selected, there may be additional settings that can be defined. The most common exported attribute is Elevation, for the creation of Digital Elevation Models or Digital Terrain Models.

After specifying the export type and attributes, the second step is to specify the export extent. If the user wishes to merge all the LAS files together into one large file (in the same manner as LDMerge.exe), the

user would simply export the entire LIDAR extent. If there is a tile index that is specified, then the user can export based upon that index, which is an option that is not available using the command line executables.

The last step in the GUI is to specify the export location and naming scheme.

There are several differences between exporting products using the executables versus the GUI. For instance, in the past, the only way to create point density files was to use the LP360PntDen executable. That changed with the introduction of the PI Surface Method within the Export Wizard. There are two big differences between the executable and the Export Wizard in the GUI.

1. The file output format. The executable exports a binary float raster while the GUI currently only exports a TIFF image.
2. Additional attribute settings. The GUI will also allow the user to set interval values and colors, which is not available in the executable.

By using a combination of the command line executables and the Export Wizard in the GUI, a user has different options when exporting LIDAR end products.

[1] The Point Shapefile format has a 2GB limit imposed upon it by ESRI.
[2] New option available in LP360 2013.2
[3] ESRI Binary Grid is only available in LP360 for ArcGIS.
[4] New option available in LP360 2013.1