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# GeoCue Group

## LP360/True View EVO Product Family

### ***Introduction:***

LP360 and True View EVO are a family of point cloud exploitation tools for both native Windows (“standalone”) and the ArcGIS® desktop platform.

- LP360 for ArcGIS is the world’s most popular extension to ArcGIS for point cloud visualization, editing and information extraction tool set for ArcMap®. Like ArcGIS itself, it is a 32 bit application. LP360 for ArcGIS contains a subset of the features of LP360.
- LP360 is a powerful 64 bit native Windows (“stand alone) applications for processing point cloud data. Its features range from visualization to automatic feature extraction.
- True View EVO is a adaptation of LP360 (standalone only) used for processing data from GeoCue’s True View sensor product line as well as select guest sensors. It contains all features of LP360.

### ***Platform Requirements:***

LP360 applications are available in two platform configurations (all Microsoft Windows®-based):

- LP360 for ArcGIS® - This is a fully qualified extension for ArcMap® desktop. LP360 for ArcGIS® requires the Basic level of ArcMap®. This remains a 32-bit product. LP360 will not be available for ArcGIS Pro unless/until ESRI® releases a deep application programmers’ interface. The 2020.2 LP360 release is certified on versions of ArcGIS desktop from 10.0 to 10.8. LP360 for ArcGIS® contains a subset of the full functionality of LP360. We strongly recommend using the native Windows version of LP360 unless you are absolutely required to use ArcGIS.
- LP360/True View EVO – This is the native 64-bit Windows version of LP360. It has no software prerequisites other than Windows. It executes on Windows x64, Version 10 and later.

LP360 is available in five capability (licensing) levels:

- Viewer (Windows, ArcGIS®) – This is a free viewer level of the software. It is available to anyone for standalone Windows and to ArcGIS users who have at least one LP360 application on current maintenance.
- Basic (Windows, ArcGIS®) – This is the basic level, suitable for visualization, Quality Check and some derived product generation.
- Standard (Windows, ArcGIS®) – This level adds interactive classification, 3D editing and analysis capabilities.

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- Advanced (Windows, ArcGIS®) – This level adds advanced point cloud “tasks” and automatic classification routines.
  - LP360 for sUAS<sup>1</sup> (Windows) – This version is feature identical to LP360 Advanced but is limited to a maximum aggregate point cloud size of 4 km<sup>2</sup> (approximately 1,000 acres), a size sufficient for most practical sUAS projects.

LP360 and LP360 for ArcGIS® are available in two licensing models:

- Node Locked – The software is assigned to a specific machine and can be executed only on that machine
- Floating – The software can be loaded on any machine and up to the number of owned floating licenses can be simultaneously run. A license can be checked out from the server as a “Roaming” license for situations where the workstation will not have access to the internet for floating license use.

True View EVO is available in four licensing levels (note that a new level called “True View Explorer” will be released at a future date):

- True View EVO Unlimited – All the features of LP360 Advanced as well as all True View EVO functions
- True View EVO - All the features of LP360 Advanced as well as all True View EVO functions but (like LP360 for sUAS), limited to point cloud areas of 4 km<sup>2</sup> or less.
- True View EVO Lite – All of the features of LP360 Standard with tools to support True View sensors in the 100, 200 and 300 series as well as select guest sensors (currently the DJI Phantom 4 RTK and M210 RTK). It is limited to an aggregate 4 km<sup>2</sup> point cloud area.
- True View Explorer (future licensing level) – A free viewer level of True View EVO that will be released at a future date

### ***The Feature Matrices:***

The follow matrices reflect features and functions that appear in the 2020.2. Note that features new to 2020.2 are **highlighted in yellow**. With each release of the software, we make numerous bug fixes and performance enhancements. These are generally listed in the Release Notes but not in these feature matrices. The matrices show the licensing level of each feature for LP360.

Some features are “works in progress” that are subject to change or even removal from future versions. These features are labeled as Experimental (EXP).

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<sup>1</sup> small Unmanned Aerial Systems

<b>Project Management Functions</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>2</sup>	True View EVO
Set project Path variable for use in Point Cloud Task I/O Manager	V	B	L
Modify paths in project file (“Repath”) for correcting moved projects	V	B	L
Re-enable dialog warnings	V	B	L
Set Project Spatial Reference System	B	*	E
Set Layer Spatial Reference System	B	*	E
Set default values for the source point classification flags for filters	S	S	E
Open projects containing LAZ compressed files	V	B	E
Cloud-hosted License Manager	V	B	E
Ability to “roam” a floating license	V	B	L
Self-management of node-locked licenses	V	B	L
Ability for corporate IT to view license usage (floating licenses)	V	B	L
Set Project Default Class Names	V	B	L

<b>Data Import, Load, Export</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>3</sup>	True View EVO
Load Points from LAS format file (Version 1.0 to 1.4)	V	B	X
Import points from ASCII files, converting to LAS or Shape	V	B	X
Load points from LizardTech MG4 format and convert to LAS (Viewer supports single file import only)	V	B	X
Open/Display multiple LIDAR files simultaneously	V	B	X
Support multiple, separate layers of LAS data for comparative analysis	V	B	X
Generate reduced resolution data sets (pyramids) for both LAS data and imagery, enabling rapid access during zooming	V	B	X
Selectively load/unload point data (file based) from Table of Contents	V	B	X
Files can be opened for viewing (Read Only)	V	B	X
Files can be opened for modification (Read/Write)	S	S	E

<sup>2</sup> \* indicates features supplied by ArcGIS Desktop

<sup>3</sup> \* indicates features supplied by ArcGIS Desktop

<b>Data Import, Load, Export</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>3</sup>	True View EVO
Inspect LAS header data in the file Open dialog and optionally export to the clipboard for direct copy into Excel®	V	B	X
Automatically segregate data into layers based on compatible LAS formats	V	B	X
Open most image sources supported by GDAL <sup>4</sup> including N band, 16 bit per pixel and Float	V	*	X
Inspect Image header data in the file Open dialog and optionally export to the clipboard for direct copy into Excel®	V		X
Automatically group imagery into layers based on compatible properties	V		X
Load Shape Files, 2D	B	*	L
Load Shape Files, 3D	B	*	L
Load DWG files, convert to Shape	B	*	L
Load KML/KMZ and convert to Shape	B	*	L
Load DGN files and convert to Shape	B	*	L
Transform feature spatial reference system on import	B	*	L
Automatically set Layer, Project Spatial Reference System (SRS) based on input data SRS (if present)	B	*	L
Import raster DEM, converting to LAS	B		L
Transform raster DEM SRS on import	B		L
Set LAS class of imported raster DEM when converting to LAS	B		L
Import files in LAZ format and convert to LAS	B	B	L
Export files from LAS format into compressed LAZ format	B	B	L
Export LAS/LAZ data via Right Click Menu in the Table of Contents	B	B	L
Export Feature Layers to Shape file via Table of Contents Right Click Menu	B	B	L
Export Feature Layers to DGN file via Table of Contents Right Click Menu	B	B	L
Export Feature Layers to DXF file via Table of Contents Right Click Menu	B	B	L
Export Feature Layers to KML file via Table of Contents Right Click Menu	B	B	L
Open Table of Contents layer locations in Windows Explorer	B	B	L
Reorder a LAS layer as a Nested, Indexed Point Octree (NIPO) - <b>EXP</b>	B		L
NIPO layers can be opened for viewing (Read Only)	B		L
NIPO layers can be opened for modification (Read/Write)	B		L
Open Corrupted LAS Files for repair in LAS File Analyst	S		L

<sup>4</sup> Geospatial Data Abstraction Library, a commonly used data import/export library

<b>Project Manager<sup>5</sup></b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>6</sup>	True View EVO
Create named Table of Contents Groups (TOCG)	V		X
Display Project Manager as an “always active” (“non-modal”) dialog	V		X
Add layers to a Base group that can be displayed with all TOCG	V		X
Enable/Disable display of Base layers in a particular Group	V		X
Add user-defined layer descriptions	V		X
Display layer types	V		X
Create “temporal” layers by assigning a date on a per layer basis	V		X
Automatically synchronize the Table of Contents with the <i>selected</i> Group	V		X
Automatically order layers within a group based on layer type	V		X
Reorder layers in a TOC by “drag and drop” in a TOCG	V		X
Filter TOCG members by various attributed (EXP)	V		X
Show Active TOCG at the top of the TOC	V		X
Save/Restore Project Manager settings with the Project	V		X
Automatically create True View Cycle TOCG			X

<b>Live View (Visualization Filter)</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>7</sup>	True View EVO
Live View – Dynamically update views as view parameters are modified	V	B	X
Set point size base on legends or by override value	V	B	X
Synchronize selected views (lock views to use the same filter)	V	B	X
Create custom named filters	V	B	X
Filter by Classification	V	B	X
Change classification color	V	B	X

<sup>5</sup> New tool in 2020.2

<sup>6</sup> \* indicates features supplied by ArcGIS Desktop

<sup>7</sup> \* indicates features supplied by ArcGIS Desktop

<b>Live View (Visualization Filter)</b>	<b>LP360</b>	<b>LP360 for ArcGIS<sup>7</sup></b>	<b>True View EVO</b>
(V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)			
Filter by Classification flag	V	B	X
Filter by Edge of Flight line flag	V	B	X
Choose flag logic (AND, OR)	V	B	X
Set point display size on an individual class basis	V	B	X
Display number of points in each classification (file scan)	V	B	X
Toggle points on/off based on return combinations	V	B	X
Filter points based on point source ID (e.g. Scan Line)	V	B	X
Set Point Source ID display color	V	B	X
Display number of points in each Point Source ID (file scan by scan line)	V	B	X
Set Point Source ID point size on a per ID basis	V	B	X
Filter points by Intensity ranges (user selectable, multiple ranges)	V	B	X
Color intensity range by solid color	V	B	X
Sample display to set intensity range (optionally clip by standard deviation)	V	B	X
Create multiple intensity ranges based on user specified criteria	V	B	X
Set user defined name for each intensity band (optional)	V	B	X
Set user defined elevation bands	V	*	X
Color elevation band by solid color (e.g. flood zone visualization)	V	B	X
Sample display to set elevation range (optionally clip by standard deviation)	V	B	X
Create multiple elevation ranges based on user specified criteria	V	B	X
Filter points by scan angle	V	B	X
Sample display to set scan angle range (optionally clip by standard deviation)	V	B	X
Create multiple scan angle ranges based on user specified criteria	V	B	X
Filter by GPS Time Stamp	V	B	X
Filter by User field (used in laser systems to distinguish channel)	V	B	X
Filter points by RGB values ranges (user selectable, multiple ranges)	V	B	X
Color RGB ranges by solid color	V	B	X
“Radio Button” mode added to select filters – allows quick QC for attributes such as flight line	V	B	X
Filter by User Data	V	B	X
Display number of points by User Data value (file scan)	V	B	X
Set User Data display color	V	B	X
Set User Data point size on a per value basis	V	B	X

<b>Live View (Visualization Filter)</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>7</sup>	True View EVO
Filter by GPS Time ranges (user selectable, multiple ranges)	V	B	X
Sample display to set GPS Time range	V	B	X
Create multiple GPS Time ranges based on user specified criteria	V	B	X
Filter points by Color ranges (user selectable, multiple ranges, Hue Saturation, Luminosity)	V	B	X
Display Color ranges (Hue Saturation, Luminosity) by solid color	V	B	X
Sample display to set color range (Hue Saturation, Luminosity) (optionally clip by standard deviation)	V	B	X
Set user defined name for each color band (optional)	V	B	X

<b>Visualization – All Views<sup>8</sup></b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>9</sup>	True View EVO
Change View backdrop color	V	*	X
Filter display by: Class, return combination, elevation bracket, Intensity ranges, Classification Flags, Point Source ID, scan angle, GPS time, RGB ranges, User field	V	B	X
Display points by elevation	V	B	X
Display points by classification	V	B	X
Display points by intensity	V	B	X
Display points by return combinations	V	B	X
Display points by point source (e.g. Flight Line)	V	B	X
Display points by RGB values	V	B	X
Display points colorized by file source	V	B	X
Personalize color-coding schemes for display	V	B	X
Modulate any display mode by point Intensity (blend intensity into display)	V	B	X
Step-wise zoom in, zoom out, pan, fit	V	B	X
Continuous zoom of display	V	*	X

<sup>8</sup> LP360 incorporates three major views – Map (planimetric), Profile and 3D

<sup>9</sup> \* indicates features supplied by ArcGIS Desktop

<b>Visualization – All Views<sup>8</sup></b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>9</sup>	True View EVO
Toggle Breakline enforcement on/off from toolbar button	V	B	X
Synchronize active LAS Layer mode with Table of Contents	V	B	X
Override any display mode on a per-point basis with color by classification (Classification Blending)	V	B	X

<b>Map View Visualization</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>10</sup>	True View EVO
Support multiple collections (folders) of LAS data in potentially multiple formats	V	B	X
In multi-layer LAS sessions, toggle the Active LAS layer	V	B	X
Display LAS file boundaries	V	B	X
Display points by elevation color bands	V	B	X
Display by elevation with “flood fill” (show flood zones based on Z)	V	B	X
Display points colorized by file source	V	B	X
2D length measurement	V	*	X
Create and display shaded Triangulated Irregular Network (TIN)	V	B	X
Create and display TIN Wireframe	V	B	X
Display points superimposed on shaded/wireframe TIN	V	B	X
Set separate display filters for TIN and Points (allows, for example, point vegetation superimposed on a Ground TIN)	V	B	X
Dynamically generate and display contours	V	B	X
Dynamically generate and display smooth contours	S		E
Step-wise zoom in, zoom out, pan, fit	V	B	X
Quick move to previous/next zoom level	V	B	X
Zoom to rectangle	V	B	X
King’s Move via toolbar arrow buttons	V		X
Point Information readout (select point and display properties)	V	B	X
Set vertical display clipping plane (used for mobile mapping)	V		X

<sup>10</sup> \* indicates features supplied by ArcGIS Desktop



<b>Map View Visualization</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>10</sup>	True View EVO
Display backdrop imagery	V	*	X
Display rotated images	V	*	X
Set “NODATA” transparency or color in images	V	*	X
Replace an image pixel value or range of values with transparency or a color	V	*	X
Enhance imagery by automate stretch	V	*	X
Support Web Mapping Services (WMS) backdrop imagery	V	*	X
Support standard catalog of WMS/WMTS Servers	V	*	X
Link to custom WMS Servers such as True View Reckon	V	*	X
Set layer transparency via Table of Contents (TOC) right click menu	V	*	X
Toggle polygon fill, set fill color	V	*	X
Set point cloud to Monotonic colorization	V	B	X
Set monotonic color	V	B	X
Toggle Hill shade of TIN from the View Toolbar	V	B	X
Superimpose user defined graticule	V		X
Set color, size, origin, zoom toggle for user defined graticule	V		X
Lock band mapping for multispectral images (Mono viewing of a channel)	V	B	X
Independent channel clipping for multispectral images	V	B	X

<b>Profile View Visualization</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>11</sup>	True View EVO
Create arbitrary profile view graphically by drawing in Map View	V	B	X
Support all visualization modes supported in the Map View except TIN	V	B	X
Support all point filter modes supported in the Map View	V	B	X
Display vertical and/or horizontal graticules	V	B	X
Modify graticule line styles, colors, label fonts	V	B	X

<sup>11</sup> \* indicates features supplied by ArcGIS Desktop

<b>Profile View Visualization</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>11</sup>	True View EVO
Display 3D vector graphics	V	B	X
Measure	V	B	X
Drape points with line	B	B	L
Set separate sources for Points and Drape Line	B	B	L
Drape profile by point source ID (used for laser swath QC)	B	B	L
Set visualization clipping plane (for mobile mapping data)	B		L
Dynamically move, rotate profile via mouse wheel, arrow keys	V	B	X
Dynamically synchronize Map View and 3D View to Profile View (move in lock-step for QC)	V	B	X
Dock/Undock Profile View window, move to separate monitor	V	B	X
Set point cloud to Monotonic colorization	V	B	X
Set monotonic color	V	B	X
Area measurement tool	V	B	X
Extended cursor cross-hair option	V	B	X
Quick set grid spacing	V	B	X

<b>3D View Visualization</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>12</sup>	True View EVO
Define 3D view by dragging rectangle in top view	V	B	X
Undock 3D View, move to separate monitor	V	B	X
Zoom, pan, rotate 3D View	V	B	X
Support all visualization modes supported in the Map View	V	B	X
Support all point filter modes supported in the Map View	V	B	X
Set elevation flood fill	B	B	X
Display 3D Vector graphics	B	B	X
Clip 3D features to the selected view area	V	B	X

<sup>12</sup> \* indicates features supplied by ArcGIS Desktop

<b>3D View Visualization</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>12</sup>	True View EVO
Drape imagery from Map View (Image fusion)	B	B	X
Drape vectors from Map View (vector fusion)	B	B	X
Dynamically generate and display 3D contours	V	B	X
TIN hill shading	V	B	X
Set sun azimuth and elevation for shaded relief visualization	V	B	X
Line of sight visualization		B	X
Toggle polygon fill, set fill color	V	B	X
Set point cloud to Monotonic colorization	V	B	X
Set monotonic color	V	B	X

<b>Breakline Enforced Visualization</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>13</sup>	True View EVO
Support multiple breakline layers	B	B	X
Support points (“mass points”), polylines, polygons as breaklines	B	B	X
Use designated layers of closed polygons to denote date voids (for example, water bodies)	B	B	X
Use selected attribute to override Z for elevation	B	B	X
Perform on-the-fly Topology correction when using multiple breakline layers	B	B	X
Exclude “buffer class” points from breaklines	B	B	X
Enforce islands and holes in breakline models	B	B	X
Display breakline enforced stockpile toes in 3D view	B	B	X
Toggle breakline enforcement on/off from toolbar button	B	B	X

<sup>13</sup> \* indicates features supplied by ArcGIS Desktop

<b>LIDAR QC and Annotation Tools</b>	<b>LP360</b>	<b>LP360 for ArcGIS<sup>14</sup></b>	<b>True View EVO</b>
(V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)			
Inspect Point via information readout	V	B	X
Inspect TIN via information readout	V	B	X
Inspect image via information readout	V	*	X
Inspect vector via information readout	V	*	X
Visualize contours superimposed on wire frame model of TIN	V	B	X
Quick access QA/QC toolbar	B	B	L
“Jump” views by user specified amount on key click	B	B	L
Synchronize Map, 3D and Profile views during review	B	B	L
Center views on mouse click	B	B	L
Create “Issues” shape file	B	B	L
Add user defined issue types	B	B	L
Annotate issues using rectangle, circle, polygon	B	B	L
Modify an issue’s attributes	B	B	L
Point statistics computation and report generation	B	B	L
Display colorized by point density (point density testing)	B	B	L
Export raster file(s) colorized by point density (point density testing)	B	B	L
Export float raster files containing point density maps	B	B	L

<sup>14</sup> \* indicates features supplied by ArcGIS Desktop

<b>LAS File Analyst<sup>15</sup></b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>16</sup>	True View EVO
Load LAS metadata into Analysis Table from right click TOC menu	S		L
Support LAS 1.0 – 1.4 for analysis	S		L
Examine all metadata fields of LAS header	S		L
View project totals for project relevant attributes (number of points, points by return, min and max dimensions, etc.)	B		L
Scan file contents and display all scan-derived attributes (point by return, etc.)	S		L
Scan all point data record fields and display in sortable columns (e.g. Z, classification, return, Intensity, ...)	S		L
Display top ten used point source IDs by file	S		L
Set LAS tests via options dialog and test for LAS compliance	S		L
Test for inconsistencies between file header content and actual file content	S		L
Repair files based on user-selectable repair criteria	S		L
Manually set ESPG and/or WKT Spatial Reference System data	S		L
Update user fields in file headers (GUID, Generating System, etc.)	S		L
Export LAS File Analyst tables to CSV files	S		L
Edit Point Source ID	S		L
Renumber flight lines by setting start, increment number	S		L

<b>Vertical/Horizontal Accuracy Testing</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>17</sup>	True View EVO
Import Control Points from an ASCII file, creating a Shape File	B	B	L

<sup>15</sup> LAS File Analyst is a tool used for testing LAS files for compliance for programs that demand correct LAS metadata (e.g. the USGS 3DEP program) and for general QC. It can also perform basic repairs on LAS Files

<sup>16</sup> \* indicates features supplied by ArcGIS Desktop

<sup>17</sup> \* indicates features supplied by ArcGIS Desktop

<h1>Vertical/Horizontal Accuracy Testing</h1> <p>(V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)</p>	LP360	LP360 for ArcGIS <sup>17</sup>	True View EVO
Assign Control Point data from 2D or 3D Shape Layer	B	B	L
Navigate through control point list, centering views	B	B	L
Support Horizontal, Vertical and Full (HV) control/check points (“Types”)	B	B	L
Automatically exclude control/check points based on coded types	B	B	L
Generate Control Report, optionally export report	B	B	L
Navigate control points via control point report rows, including Type mode (navigate by Horz, Vert or Full)	B	B	L
Withhold points	B	B	L
Filter control surface by class, returns, elevation bracket	B	B	L
Compute vertical difference between control point and LAS surface using both TIN and Inverse Distance Weighted (IDW) methods	B	B	L
Interactive measurement of horizontal Control/Check Points in the Map View	B	B	L
Compute residuals between control points and measured points (both Horizontal and Vertical)	B	B	L
Compute NMAS/VMAS and ASPRS/NSSDA accuracies	B	B	L
Display by delta Z in overlap regions (relative accuracy testing)	B	B	L
Export raster of delta Z between flight lines for synoptic visualization of relative accuracy	B	B	L
Export float raster image of elevation differences between flight lines	B	B	L
Drape profile colorized by point source ID (used for laser swath QC)	B	B	L
Seamline analysis tool for quantitative analysis of vertical deviations between seamlines		S	
Standard Deviation of the Mean (SDOM) added to computations (for debiasing point clouds)	B	S	L
For True View Sensors, print sensor serial number and calibration date in accuracy report			L

<b>Project Metadata Generator</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>18</sup>	True View EVO
User input of project name, description, notes	S		L
Extract project spatial reference system (SRS)	S		L
Extract project units	S		L
Extract total LAS extent	S		L
Extract list of project LAS files	S		L
Compute project nominal point spacing (NPS)	S		L
Export Project Metadata as XML or JSON	S		L
Export detailed LAS metadata by file	S		L

<b>Product Generation</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>19</sup>	True View EVO
Filter source points by any combination of Class, Return Combinations, Elevation Range, Intensity, Classification Flags, Scan Angle, Point Source ID, User Data, GPS Time and Color	B	B	L
Export Points in LAS 1.0 – 1.4 format	B	B	L
Export Points in Shape, DGN, DXF, ASCII format	B	B	L
Promote compatible previous LAS versions to LAS 1.4, Point Data Record Formats 6, 7 and 8	B	B	L
Export LAS files in one-to-one correspondence with source LAS files	B	B	L
Create surfaces using Triangulated Irregular Network (TIN) method	B	B	L
Create surfaces using Inverse Distance Weighting (IDW) method	B	B	L
Apply breakline enforcement using shape layers during surface creation	B	B	L
Perform “on-the-fly” topology correction when creating surfaces from multiple breakline layers	B	B	L
Apply LAS point buffers to breaklines during surface creation	B	B	L
Create and export elevation data in binary raster, XYZ raster, ASCII XYZ	B	B	L

<sup>18</sup> \* indicates features supplied by ArcGIS Desktop

<sup>19</sup> \* indicates features supplied by ArcGIS Desktop

<b>Product Generation</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	<b>LP360</b>	<b>LP360 for ArcGIS<sup>19</sup></b>	<b>True View EVO</b>
Create and export elevation data in GeoTIFF, IMG	B		L
Create and export elevation data in ESRI® format		B	L
Create and export elevation difference (delta between two elevation surfaces) data	B	B	L
Create and export slope surface in binary raster, XYZ raster and ASCII XYZ	B	B	L
Create and export slope surface in GeoTIFF, IMG	B		L
Create and export Aspect surface in binary raster, XYZ raster and ASCII XYZ	B	B	L
Create and export Aspect surface in GeoTIFF, IMG	B		L
Create and export Hill Shade surface in binary raster, XYZ raster and ASCII XYZ	B	B	L
Create and export Hill Shade surface in GeoTIFF, IMG	B		L
Create and export Contours in shape format	B	B	L
Create and export smoothed Contours in shape format	B	B	L
Create and export intensity images (LIDAR “orthos”) in binary raster, XYZ raster and ASCII XYZ	B	B	L
Create and export intensity images (LIDAR “orthos”) in GeoTIFF, IMG	B		L
Create, export profile draping line in Shape, DXF, DGN and ASCII format	B	B	L
Export raster of delta Z for synoptic visualization of relative accuracy	B	B	L
Export raster of point source ID Counts for dZ analysis	B	B	L
Export dZ value for analyzing LIDAR swath overlap	B	B	L
Export colorized raster of density for synoptic LAS point density testing	B	B	L
Export raster of numerical point count for density testing	B	B	L
Export raster of numerical point density for density testing	B	B	L
Set Coordinate Reference System (CRS) of exported LAS files	B	B	L
Export feature layers from the TOC <sup>20</sup> in DXF format	B		L
Nyquist compliant product export for dense point clouds (multi-threaded)	B		L
Create RGB raster image from colorized point cloud (rapid ortho)	B		L
Export rasters in Cloud Optimized GeoTIFF format	B		L

<sup>20</sup> Map View Table of Contents



<b>Map View Interactive Point Classification</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>21</sup>	True View EVO
Filter source points by any combination of Class, Return Combinations, Elevation Range, Intensity, Classification Flags, Scan Angle, Point Source ID, User Data, GPS Time and Color	S	S	L
Move from Filtered source to specified destination class	S	S	L
Set classification flags (withheld, synthetic, overlap, model key point) of destination points <sup>22</sup>	S	S	L
Adjustable paint brush sizes	S	S	L
Classify by rectangular paint brush	S	S	L
Classify by circular paint brush	S	S	L
Classify points within a user drawn polygon	S	S	L
Classify points regardless of Map View zoom level	S	S	L
Set reclassification input filter to pre-filter by the Map View display filter	S	S	L
Dynamically highlight points to be reclassified in the Profile and 3D views	S	S	L
Allow reclassification when not at 100% resolution	S	S	L
Toggle between allowing and disallowing classification of non-visible points	S	S	L

<b>Profile View Interactive Point Classification</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>23</sup>	True View EVO
Filter source points by any combination of class, Return Combinations, Elevation Range, Intensity, Classification Flags, Scan Angle, Point Source ID	S	S	L

<sup>21</sup> \* indicates features supplied by ArcGIS Desktop

<sup>22</sup> Overlap flag available in LAS 1.4 only

<sup>23</sup> \* indicates features supplied by ArcGIS Desktop

<b>Profile View Interactive Point Classification</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>23</sup>	True View EVO
Set classification flags (withheld, synthetic, overlap <sup>24</sup> , model key point) of destination points, User Data, GPS Time and Color	S	S	L
Classify points above user drawn line	S	S	L
Classify points below user drawn line	S	S	L
Classify points within user drawn polygon	S	S	L
Classify points via “paint brush” (small, medium, large)	S	S	L
“Remember” individual destination settings for classification tools	S	S	L
Set option to classify on forward, back movement of profile view	S	S	L
Set option to preserve classification line and automatically classify while stepping through the data	S	S	L
Set reclassification input filter to prefilter by the Map View display filter	S	S	L
Classify points regardless of Map View zoom level	S	S	L
Dynamically highlight points to be reclassified in the Map and 3D views	S	S	L

<b>Feature-Based Classification<sup>25</sup></b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>26</sup>	True View EVO
Filter source points by any combination of Class, Return Combinations, Elevation Range, Intensity, Classification Flags, Scan Angle, Point Source ID, User Data, GPS Time and Color	S	S	L
Set classification flags (withheld, synthetic, overlap, model key point) of destination points	S	S	L
Classify by file-based feature set	S	S	L
Classify by user selected features	S	S	L
Classify by point feature	S	S	L

<sup>24</sup> Overlap flag available in LAS 1.4 only

<sup>25</sup> This moved to a Point Cloud Task (PCT) as of 2014.1

<sup>26</sup> \* indicates features supplied by ArcGIS Desktop

<b>Feature-Based Classification<sup>25</sup></b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>26</sup>	True View EVO
Classify by line feature	S	S	L
Classify by polygon feature	S	S	L
Dynamically adjust classification rules based on user specified type field	S	S	L
Classify “within distance of” (2D and 3D features)	S	S	L
Classify “completely within” for closed features	S	S	L
User defined buffer distance for spatial relationships (2D and 3D)	S	S	L

<b>Conflate Z from Point Cloud<sup>27</sup></b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>28</sup>	True View EVO
Assign Z to points	S	S	L
Assign Z to polylines	S	S	L
Assign Z to polygons	S	S	L
User defined vertex spacing	S	S	L
Compute Z from nearest point	S	S	L
Compute Z from statistical analysis of nearby points	S	S	L
Compute Z from TIN (surface) of nearby points	S	S	L
Set Z to a user specified constant value	S	S	L
Assign No Data to vertices within void areas	S	S	L
Classify points within a user specified distance of conflated features	S	S	L
Compute individual vertex Z or compute an average Z (summary Z) for entire feature	S	S	L
On-the-fly refresh/redisplay for summary Z features	S	S	L
Override conflation rule by manually digitizing in the profile view	S		L

<sup>27</sup> The Feature Edit tools in LP360 (standalone) offer an interactive conflation experience

<sup>28</sup> \* indicates features supplied by ArcGIS Desktop

<b>Breakline/Hydro Feature Editing</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>29</sup>	True View EVO
Designate user selected features as breaklines	B	B	L
Create breakline by feature draping	S	S	L
Create stream center line with downhill constraints	S	S	L
Apply statistical validation during downstream digitizing	S	S	L
Water body flattening (lakes, ponds)	S	S	L
Water body flattening with downhill constraints (flatten river polygons)	S	S	L
Indicate deviation from point cloud during downstream modeling by populating vertex M values	S	S	L
Digitize retaining wall	S	S	L
Digitize culvert	S	S	L
Support multi-level “water on right” feature collections	S	S	L
Topologically correct Z of crossing lines on same feature layer	S		L
Toggle breakline enforcement on/off from toolbar tool	B	B	L

<b>General Feature Tools</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>30</sup>	True View EVO
Select Clockwise or Counter-Clockwise geometry via Table of Contents Right Click Command	S		L
Reverse feature geometry (CW, CCW) via Table of Contents Right Click Command	S		L
Copy (clone) a feature layer via Right Click tool in the TOC	S		L
Merge two or more feature layers via Rick Click tool in the TOC	S		L
Export to DXF via Table of Contents Right Click Command	S		L

<sup>29</sup> \* indicates features supplied by ArcGIS Desktop

<sup>30</sup> \* indicates features supplied by ArcGIS Desktop

<b>General Feature Tools</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>30</sup>	True View EVO
Remove TOC feature layer from Table of Contents using Right Click Command	S		L
Delete files associated with TOC Feature Layer using Table of Contents Right Click Command	S		L
Repath files via TOC Right Click command	S		L
Assign Project Spatial Reference System to Layer(s) via Right Click Command	B		L
Assign Layer Spatial Reference System to Project via Right Click Command	B		L

<b>Schema Editor</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>31</sup>	True View EVO
Add new attribute	S		L
Rename Attribute	S		L
Delete Attribute	S		L
Change order of attributes	S		L
Modify Attribute properties	S		L

<sup>31</sup> \* indicates features supplied by ArcGIS Desktop

<b>Feature Analyst – Attribute Editor<sup>32</sup></b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>33</sup>	True View EVO
Synchronize selection between Map View and Feature Analyst Feature Table (FAFT) at Feature, Part or Vertex level	S		L
Edit Attributes “in-place” using FAFT	S		L
Undo attribute additions/edits in FAFT	S		L
Center Map, Profile and 3D view based on selected row in FAFT by Feature, Part or Vertex	S		L
Fit Map, Profile and 3D views based on selected row in FAFT – Feature, Part, Vertex	S		L
Set display precision of coordinates and M values via options	S		L

<b>Feature Analyst - Edit Tools<sup>34</sup></b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>35</sup>	True View EVO
View feature attributes by Feature, Part or Vertices	S		L
Synchronize selection between Map View and Feature Analyst Feature Table (FAFT) at Feature, Part or Vertex level (e.g. step through Features, Parts or Vertices for detailed QC)	S		L
Undo attribute additions/edits in FAFT	S		L
Center Map, Profile and 3D view based on selected row in FAFT by Feature, Part or Vertex	S		L
Fit Map, Profile and 3D views based on selected row in FAFT – Feature, Part, Vertex	S		L
Set display precision of coordinates and M values via options	S		L
Select profile orientation (parallel, Perpendicular) for vertex navigation	S		L

<sup>32</sup> These are tools that are available in the Standalone versions of LP360. They are generally accomplished by an ArcGIS tool in the ArcGIS versions of LP360. These tools were referred to as Feature Attribute tools in previous versions.

<sup>33</sup> \* indicates features supplied by ArcGIS Desktop

<sup>34</sup> These are tools that are available in the Standalone versions of LP360. They are generally accomplished by an ArcGIS tool in the ArcGIS versions of LP360. These tools were referred to as Feature Attribute tools in previous versions.

<sup>35</sup> \* indicates features supplied by ArcGIS Desktop

<b>Feature Analyst - Edit Tools<sup>34</sup></b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>35</sup>	True View EVO
Dynamically update Feature, Part and Vertex entries while interactively editing a feature	S		L
Copy Feature, Part or Vertex table to the clipboard (for transfer to Excel)	S		L

<b>Feature Analyst - Analysis Tools<sup>36</sup></b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>37</sup>	True View EVO
Display Features, Parts, Vertices in Feature Analyst Feature Table (FAFT)	S		L
Display perimeter, area and direction (for polygons) for features and parts	S		L
Display X, Y, Z,  Z , M,  M , Segment Length, XY Angle,  XY Angle , Slope,  Slope , Z Angle,  Z Angle  in vertex tab of FAFT	S		L
Sort by attributes of X, Y, Z, M,  M , ...	S		L
Test General attributes (Self-Intersecting, CW, CCW)	S		L
Test Planar attributes (XY angles)	S		L
Test Downhill, Uphill	S		L
Test Flat (flat waterbody test)	S		L
Test various Z attributes (Z,  Z , Slope,  Slope , Z angle, etc.)	S		L
Test size attributes (length, area, perimeter)	S		L
Test Measure (M) values – (Min, Max, Equals)	S		L
Sort by failures	S		L
Window Center or Fit on selected failures	S		L
Dynamically update FAFT when performing edits in the Map/Profile view, including test results	S		L
Export QC Shape file with a point feature per QC violation	S		L
Display images associated with a True View sensor			L
Display Image EXIF data via image right click tool			L

<sup>36</sup> All new to LP360 2017.1

<sup>37</sup> \* indicates features supplied by ArcGIS Desktop

<b>Feature Edit Tools</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>38</sup>	True View EVO
Create Feature Layer (with and without M value support)	S		L
Multi-level undo for edits and deletes	S		L
Select Feature(s) by intersection and polygon	S		L
Select features by lasso	S		L
Quick resolve selected features and layers	S		L
Delete Selected Features	S		L
Dynamically display feature edges and vertices while editing (“rubber-banding”) in Map and Profile views	S		L
Move feature in Map View	S		L
Move/Add/Delete single, multiple vertices in Map View	S		L
Move/Add/Delete single, multiple vertices in Profile View (both Z and X,Y)	S		L
Set geometry edit properties (color, weight)	S		L
Override Z while digitizing in 3D (force Z below a surface)	S		L
Reverse feature geometry (CW, CCW) tool	S		L
Create feature (point, polyline, polygon)	S		L
Create feature (point, polyline, polygon) with Measure (M) values	S		L
Create features from features (create points, polylines, polygons from different geometry types – e.g. points from polylines)	S		L
Suppress creation of duplicate points when creating features from features	S		L
Split feature tool	S		L
Reshape feature tool	S		L
Set Z by key in value	S		L
Shift X, Y, or Z by key in values	S		L
Automatically adjust vertex Z from assigned conflation Point Cloud Task (Auto Z) during vertex edit or while digitizing new feature	S		L
Assign a pre-set constant Z value to vertices during vertex edit or while digitizing new feature	S		L
Thin vertices based on Ramer-Douglas-Peucker algorithm (3D error tolerance vertex culling)	S		L
Respace vertices to user specified value	S		L

<sup>38</sup> \* indicates features supplied by ArcGIS Desktop



<b>Feature Edit Tools</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>38</sup>	True View EVO
Snap to Vertex and/or line while digitizing or editing a feature	S		L
Create topologically correct crossing when digitizing or editing features	S		L
Split Line or Polygon with vertices within a specified tolerance of the spilt deleted (allow splitting of features at a vertex without creating closes spaced vertices)	S		L
Buffer tool – create polygon geometry by buffering point, polyline or polygon geometry	S		L
“Just In Time” (JIT) parameter dialogs added to Feature Edit tools	S		L
Assemble multipart geometry	S		L
Disassemble multipart geometry	S		L
Merge Lines	S		L
Double Line drain (river flattening) as a feature edit tool	S		L
Union geometry	S		L
Intersect geometry	S		L
Top of seawall collection tool	S		L
Automatically maintain catenary constraints when moving catenary end points (EXP)	S		L

<b>Standard Point Cloud Tasks</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>39</sup>	True View EVO
Filter source points by any combination of Class, Return Combinations, Elevation Range, Intensity, Classification Flags, Scan Angle, Point Source ID, User Data, GPS Time and Color	S	S	L
Apply classification macros by envelope, rectangular or circular stamp, user defined circle, Polygon layer(s), project	S	S	L
Preview point cloud tasks in Preview Window prior to actual application	V	V	L

<sup>39</sup> \* indicates features supplied by ArcGIS Desktop

<b>Standard Point Cloud Tasks</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>39</sup>	True View EVO
“Batch” movement of points from source classes to a destination class	S	S	L
Elevation bracketed classification above a surface TIN defined by a class (classify by height above surface)	S	S	L
Draw 2D Point, Polyline or Polygon	S	S	L
Collect LAS data statistics (Class, Nominal Point Spacing, Source file, .....) <sup>40</sup>	B	B	L
Conflation of Z based on all Point Cloud Task methods including interactive sketching of Points, Lines, Polygons	S	S	L
Volumetric analysis with cut/fill graphical image	S	S	L
Output Volumetric LAS file based on Volumetric analysis	S	S	L
Line vertex smoothing and respacing	S	S	L
Cross-section generator with optional clipping to enclosing polygon	S	S	L
Populate LAS Intensity field based on LAS RGB fields (needed for Pix4D workflows)	S	S	L
Classify by Feature 2D & 3D (see separate feature table for details)	S	S	L
Ground cleaner (for cleaning up ground classifications)	S		L
Attribute Editor – Allows an in-line modification of feature attributes (for example, labeling polygons that are created by a prior PCT)	S		L
Planar Statistics – test goodness of fit of points to an arbitrary plane	S	B	L
Classify by cell-based point statistics (min, max, mean, random)	S	S	L
Transform Spatial Reference System (within same datum) of LAS files	S	S	L
Apply user defined Translate, Scale, Rotate to LAS files (used, among other things, for removing Z bias from point clouds)	S	S	L
Generate grid with various clipping options (to polygon, to LAS data)	B	B	L
Reproject rasters (within the same Datum), “cookie-cut” raster layer using polygon definition file, cut out raster area by drawing arbitrary polygon, JPEG compress, create overviews	S	S	L
Duplicate Points Classifier for finding duplicate points (points with coincident geometry) and reclassify or flag the resultant points	S	S	L
Classify by elevation quartiles, with Interquartile range (IQR) outlier classification (EXP – currently part of cell-based statistics classifier but will move to a dedicated PCT)	S	S	L
Merge two LAS layers PCT (can also be used to create a new LAS layer from a filtered source layer) with optional LAS format version change and output tiling.	S	S	L

<sup>40</sup> Effective with 2017.1, this PCT can be placed in a Macro – for example Grid PCT followed by Stats PCT yields a QC sample grid of LAS data.

<h2 style="margin: 0;">Advanced Point Cloud Tasks</h2> <p style="margin: 0;">(V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)</p>	LP360	LP360 for ArcGIS <sup>41</sup>	True View EVO
Planar region detection and classification (used e.g. for building extraction)	A	A	E
Vectorize (and optionally square) point groups (Point group tracing & squaring)	A	A	E
Low point detection and classification (low noise filter)	A	A	E
Isolated points detection and classification	A	A	E
Ground detection and classification (automatic ground filtering) via Adaptive TIN algorithm	A	A	E
Vertical accuracy-based Model Key Point (MKP) extraction ("intelligent" thinning)	A	A	E
Rail detection, classification, alignment feature creation with new at-grade spanning option	A	A	E
Automatic Toe Extraction (for stockpile volumetrics) with grow/shrink option	A	A	E
Automatic classification of overhead points (e.g. conveyors) while automatically extracting stockpile toes	A	A	E
Proximity classifier – classify points in one cloud based on their proximity to points in a second cloud – supports full application of filters to both source and destination	A	A	E
Automatic point cloud data smoothing – used for reducing statistical noise in point clouds while preserving features.	A	A	E
Automatically classify power line points (EXP)	A		E
Automatically create power line catenary features (EXP)	A		E
Automatically partition extracted power lines into Groups (EXP)	A		E

<sup>41</sup> \* indicates features supplied by ArcGIS Desktop

<b>Experimental Tools/Features<sup>42</sup></b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>43</sup>	True View EVO
Copy a selected dynamic contour to the active feature edit layer	S		E
Draw contours of only a single specified elevation	S		E
Copy a selected dynamic contour to the active feature edit layer	S		E
Draw contours of only a single specified elevation	S		E

<b>Batch Tools<sup>44</sup></b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>45</sup>	True View EVO
LASGuid.exe – Assign GUID to LAS file	V	B	X
LDDump.exe – Dump the LAS Header or point records	V	B	X
LDFitLine.exe – Assign point source IDs to all points in a file	V	B	X
LDImport.exe – ASCII conversion	V	B	X
LDMerge.exe – Concatenate LAS files	V	B	X
LDMvCls.exe – Basic classification change	V	B	X
LDPyramid.exe – Construct LP360 overviews for LAS files	V	B	X
LDReorder.exe – Spatially reorder LAS files	V	B	X
LDThin.exe – Unintelligent thinning	V	B	X
LP360ExpLAS.exe - Export	B	B	L
LP360PntDen.exe – Point Density	B	B	L
LP360Stats.exe – Statistics Extractor	B	B	L
LPRunPCT – Allows PCTs to be run from the command line <sup>46</sup>	B	B	L

<sup>42</sup> These tools are for experimental use only. They are subject to defects and removal from the product. Use at your own risk!

<sup>43</sup> \* indicates features supplied by ArcGIS Desktop

<sup>44</sup> Tools marked “V” under LP360 do not require a license to run

<sup>45</sup> \* indicates features supplied by ArcGIS Desktop

<sup>46</sup> The licensing level to actually run the PCT depends on the individual PCT license requirement (as shown under the PCT tables in this document)

<b>Batch Tools<sup>44</sup></b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>45</sup>	True View EVO
LDEExport – Allows export of all derivative products (LAS, Image, Contours, etc.) from the command line	B	B	L
LPScanInfo – Allows read of a LAS file and creation of the associated '.scan' file containing point count information from the command line	B	B	L

<b>ArcGIS Toolbox Tools</b> (V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)	LP360	LP360 for ArcGIS <sup>47</sup>	True View EVO
Define LAS File Projection - Define or assign a projection for one or more LAS files.		B	
Reproject LAS Files - Reproject the points in a LAS files into the desired coordinate system		B	
Scale LAS File- Scale the x, y and/or z components of the points within a LAS file		B	
Shift LAS File- Shift the x, y and/or z components of the points within a LAS file		B	

<sup>47</sup> \* indicates features supplied by ArcGIS Desktop

<h1>True View Sensor Tools</h1> <p>(V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)</p>	LP360	LP360 for ArcGIS <sup>48</sup>	True View EVO
Import Wizard for True View 3DIS <sup>49</sup> "CYCLE" data			E
Import "Guest" data to a True View data format: Supports DJI Phantom 4 RTK, DJI M210 RTK			L
Add True View Cycle Log as a feature layer in the Map View			L
Display True View 3DIS images in Feature Analyst			E
Process Applanix POS data via a True View embedded Wizard (True View 3DIS)			E
PPK Process differential GNSS data: True View 150, 250, P4 RTK, M210 RTK <sup>50</sup>			L
Support for "pay as you go" Applanix SmartBase and Trimble PP-RTX processing			L
Automatic and Interactive tools for defining the portions of flights to be processed (flight line definition)			L
Automatic and Interactive tools for defining images to be retained for export to photogrammetry tools			L
Geocode True View 3DIS LIDAR data from POS and range data including range/angle clipping and True Track swath adjustments			E
Colorize True View 3DIS point clouds from 3DIS camera data by point tracing			E
Survey base station location manager ("Nail Manager")			L
Set base station location by automatically reading an OPUS report			L
Organize True View Projects by Active Cycle, Active Flight			L
Image Export packaging tool to organize images for subsequent processing in photogrammetric tools			L
Automatically cull images outside of flight lines for export to SfM tools			L
Warn if base station location is not "near" the selected Survey Nail location			L
Process a Position/Orientation-augmented ortho in Agisoft Metashape			L

<sup>48</sup> \* indicates features supplied by ArcGIS Desktop

<sup>49</sup> 3D Imaging Sensor – fused camera/LIDAR sensor

<sup>50</sup> This functionality effectively replaces ASPSuite for the DJI P4 RTK and M210 RTK

<h1>True View Image Explorer</h1> <p>(V = Viewer, B = Basic, S= Standard, A = Advanced, X = EVO Explorer, L = EVO Lite, E = EVO)</p>	LP360	LP360 for ArcGIS <sup>51</sup>	True View EVO
Display/Hide Image Explorer “always available” (“non-modal”) dialog			X
Display all True View images that “see” a LAS point by <i>selecting</i> the point			X
Display all True View images that “see” a 3D feature point by <i>selecting</i> the point			X
Set number of main view panes to 1 or 2			X
Set maximum number of overview image windows			X
Set automatic “pan to selected point” display update mode			X
Set default display magnification to 1:1 or 2:1			X
Display “marker” in photos that indicates the location of the selected 3D point within the image			X
Choose primary display images from overview windows			X
Automatically drive to points or vertices from within Feature Analyst			X
Automatically drive to Control/Check points from within the Control Report dialog			E

<sup>51</sup> \* indicates features supplied by ArcGIS Desktop