



Trimble Business Center

Release Notes

Version 3.90

www.trimble.com

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Welcome to Trimble Business Center

Trimble® Business Center (TBC) is a geospatial office software that enables users to complete field-to-finish workflows efficiently and with confidence. In a single software package, users can edit, process, and analyze GNSS, total station, level, scanning, terrestrial, and aerial imaging data to achieve the most accurate horizontal and vertical results. Users can also create a variety of deliverables, from 2D topographic plans, to surface and contour maps, to complex alignment/corridor designs.



Installing or updating

For installation or update instructions, see the appropriate bullet below.

Notes:

- Trimble Business Center (TBC) licensing information is contained in a Sentinel HASP hardware or software key connected to or installed on your computer. If no key has been connected or installed, TBC allows you to import and view data only. It does not allow you to use any licensed features. To view your license after installation is complete, select View License Manager on the Start Page. For a description of the features available in each licensed configuration, see "Licensed Features" in the online Help.
- After installation, be sure to select Check for Updates on the Start Page to ensure you have the latest updates for Trimble Business Center.

▪ **New users installing TBC to use with a single-user license:**

- a. Before you insert the new Sentinel HASP hardware key you received in your installation package, install TBC from the TBC installation package downloaded from the Trimble website.
- b. Before running TBC for the first time, insert the new Sentinel HASP hardware key into an available USB port on your computer.

All licensed features will be available when you run TBC. Your 1-year warranty begins the first time you open the software.

- **Existing users installing this version of TBC:**

Install TBC from the installation package downloaded from the Trimble website.

Important Note! This version is available to users whose current warranty expiration date is **1 May 2017 or later**. If your warranty expires prior to this date and you proceed with the installation, licensed features will not be available. Contact your distributor to purchase a warranty extension. In the TBC ribbon, select Support > License Manager to verify your warranty expiration date.

- **New users installing TBC to use with a multi-user license installed on a network:**

- a. Ensure the following:

- Your computer can connect to the network server where the Sentinel HASP multi-user network license is installed.
- There are no Sentinel HASP hardware keys connected to your computer.

- b. Install TBC from the TBC installation package downloaded from the Trimble website.

- c. Run TBC.

The software automatically searches the network for a Sentinel HASP network key. If a Sentinel HASP network key is found and the multi-user license limit has not been exceeded, the license is available for use and all licensed features in TBC are available. If a Sentinel HASP network key is not found or the multi-user license limit has been exceeded, licensed features are not available and an appropriate message is displayed when you attempt to use them.

Optionally, you can verify whether or not you have access to the multi-user license by selecting View License Manager on the Start Page. For more information on using the License Manager dialog, press F1 with the dialog open.

Note that each time you run TBC, the software will need to automatically access the multi-user license installed on the network.

Note to Administrators: For instructions on installing a Sentinel HASP network key (multi-user license) and viewing and managing license information, select Network Licensing Read Me on the Tools menu on the TBC Installation DVD.

New features

Following are the new features included in the various licensing options for this version of Trimble Business Center. See "Licensed Features" in the online Help to determine which of these new features are available with your license and to read more information about them. To view context-sensitive help at any time while using TBC, press F1.

Scanning module

- **Extract a single point cloud region from multiple features** - To provide better management of classified regions, the Point Cloud Region Classifier command now allows you to specify that only a single region be created for a "Buildings" classification or a "Poles and signs" classification when multiple features are found (instead of one region per feature, which is the default).
- **Automatically classify power lines** - To provide additional outputs, the Point Cloud Region Classifier command now supports a "Power lines" classification option (LAS classification 14). This is in addition to the current classification options: "Ground," "Buildings," "Poles and signs," and "High vegetation." The new option allows you extract all power lines in your point cloud into a single region.
- **CAD creation commands in the Cutting Plane View** - The Cutting Plane View has been enhanced to support the following CAD creation commands:
 - Create Linestring
 - Create Polygon
 - Best-Fit Line

The resulting CAD objects can be exported in DWG/DXF files or plotted using the Advanced Drafting module features.

- **Line editing commands in the Cutting Plane View** - The Cutting Plane View has been enhanced to support the following line editing commands:
 - Offset Line
 - Fillet Chamfer
 - Trim/Extend Lines
 - Clip Lines
 - Join Lines
 - Break Line
 - Variable Offset Line
 - Delete Line Segment

These commands ensure comprehensive editing capabilities for all lines displayed on the Cutting Plane View.

- **Transform commands in the Cutting Plane View** - The Cutting Plane View has been enhanced to support the following transform commands:
 - Move/Rotate/Scale Objects
 - Move Objects
 - Scale Objects
 - Rotate Objects
 - Copy Objects

- Edit
- Explode
- Transform by Points

These commands combine to ensure powerful transformation editing of CAD objects in the Cutting Plane View.

- **Sample point cloud regions by intensity**- Use the new Sample Region by Intensity command to create a point cloud region containing only the scan points whose luminance intensity falls within a range you specify using simple-to-use slider controls that show your changes in the 3D View as you make them. Scan points whose intensity is outside the selected range display in red, while points within the range display in the selection color, making it easy to identify the features you want include. This is useful if, for example, you want to sample a point cloud region so that it contains only street line markings, which typically will fall within a unique intensity range as compared to other features within the point cloud.
- **Create a plane definition from a CAD object or orthophoto** - The Plane Definition Manager has been enhanced to include a new plane definition type, "From object." you can use to define a plane based on a selected CAD object or orthophoto. This is helpful if, for example, you want to draw additional objects on the same plane as the selected object by recreating the plane on which the object was originally created.
- **Create curb and gutter points and linework from a point cloud** - When creating linestrings, polygons, and CAD points, you can use the new Point Cloud Smart Picking tool to roughly pick a scan point near a curb or gutter and have the software automatically compute the best face-of-curb or gutter flowline point and display that point in an editable curb and gutter cross-section view. If you are creating a linestring, you can continue to roughly select each point necessary to, for example, define linework that accurately represents the curb or gutter and can be properly feature coded and attributed for finished CAD deliverables. If you are creating standalone CAD points, you can use the points to, for example, create a best-fit line or measure offsets.

Data review and editing

- **Custom reporting enhancements** - Two new Microsoft® Word®-based customizable reports have been added to TBC: *Site Calibration Report* and *Earthwork Report*. As with all customizable reports, you can make modifications to the look and layout of these new reports as necessary (for example, add custom tables for data, measurement statistics, and media files). In addition, Earth-Centered-Earth-Fixed (ECEF) X, Y, and Z coordinates have been added to the customizable *Point List Report*. Together, these enhancements continue to make custom reporting an extremely flexible option.

- **Point Comparison Report** - You can generate the new Point Comparison Report for a selection of point-related objects that includes all of the point pairs that are within a user-specified proximity and flags those that exceed a user-specified horizontal and/or vertical tolerance value. This is useful for comparing measured and office entered data. For example, you can compare COGO point data entered from survey plans and plats to survey data collected on site to verify the accuracy.
- **Select similar objects** - Use the new Select Similar command to select objects (for example, CAD objects or survey points) that have properties matching the properties of a chosen object. Properties that can be used in the selection search include layer, line style/scale/weight, color, text style, dimension style, label style, label table style, and feature code. This makes it easier to manage and edit as necessary the objects in your project.
- **Match object properties** - Use the new Match Properties command to match (copy) properties assigned to a selected object (for example, a CAD object or survey point) to one or more other objects of the same type. Properties that can be matched include layer, line style/scale/weight, color, text style, dimension style, label style, label table style, and feature code. This allows you to efficiently standardize objects in your project with complete control of the properties.
- **Support for new stakeout option in Trimble Access** - TBC continues to provide full support for Trimble field solutions with the import of the new *Elevation* stakeout option included in a v5.71 (or later) JXL file. The new option is used for elevation stakeouts, enabling field users to measure positions relative to a flat plane.
- **View and export HRMS and VRMS from RTX-PP solutions** - You can now view and export (using the Export Format Editor) HRMS and VRMS precision values for a position computed using RTX-PP indicating the quality of the point. This enables you to view and manage RTX-PP position solutions the same as you view and manage GNSS position solutions. This also means that there is no longer a need to select a coordinate type during the import of an RTX solution file or when using the Send to RTX-PP command.

Survey computations and COGO

- **COGO collections and parcels enhancements** - The Create COGO command has been enhanced as follows:
 - Once you have created points and linework in a COGO collection, you can use the new Start by Offset - SO command to create a new line – based on an existing point in the collection. This is useful if, for example, you need to use a road centerline as a reference from which parcel boundaries are computed.
 - After creating parcels in a COGO collection, you can continue to draw additional linework and create additional parcels (that is, create linework and parcels in batches) in the same collection without affecting the names or properties of the previously create parcels. This supports a workflow in which, when working with large projects, you can create COGO linework and parcels in batches, while maintaining the integrity of your parcel naming and labeling scheme.

- Precision values are now displayed with the prefix "1:" to make them more easily understandable.
- You can easily apply a single projection-dependent Z rotation to all bearings/azimuths in a COGO collection that were created using an absolute command, such as Line by Bearing/Azimuth -LB, Arc by Bearing/Azimuth of Chord - ABC, Arc by Bearing/Azimuth of Radial - ABR, and Arc by Bearing/Azimuth of Tangent - ABT. This allows you to enter survey plan data in grid angles and automatically convert them into another angle system, such as plan or astronomic angles.
- If you are entering the same COGO linework creation command multiple times, you can simply type in command values on each new line without retyping in the command code. The previous command code is automatically entered when you start typing a value. This makes it faster and easier to enter repeated commands.
- Use check boxes to easily hide and show COGO points and/or linework. This is useful when you are trying to "clean up" your view to make it easier to view pertinent data and make selections. For example, you may want to hide points and linework after creating parcels or create construction points (not lines) for stakeout.
- To further verify the accuracy of data on survey plans and plats used to create a COGO collection and additional survey data collected at the site, you can
- Generate a Point Comparison Report that includes all of the point pairs that are within a user-specified proximity and flags those that exceed a user-specified horizontal and/or vertical tolerance value. This allows you to compare COGO point data entered from survey plans and plats to survey data collected on site to verify the accuracy.
- **Create legal descriptions** - Use the Legal Description Writer command to automatically generate a collection of textual legal descriptions for cadastral survey projects that include parcels (created with the Create COGO command) and/or polygons, or closed linework. The command is capable of describing complex geometry for multiple parcels and polygons using multiple starting points and paths. A fully customizable template specifies the distance, direction, angular, and area formats to be used in the legal descriptions, along with the specific phrasing to be used to describe the location of each parcel or polygon. This allows you to provide any customization required to create deed descriptions specifically for local and national land registry offices. Deliverables are provided in TXT and RTF file formats. The Description Writer provides a handy and powerful integrated workflow for creating legal descriptions right in TBC without the need for a third-party tool.

Feature coding and attribution

- **Import and export SOSI files** - Import and export linestrings and polygons with feature codes using the new SOSI Vector Data importer and exporter. This is part of the continuing effort to provide a large variety of data format support in TBC.

CAD and drafting

- **Three-point circle** - Use the Create Three-Point Circle command to make geometry creation faster and easier. This is especially useful when working with point clouds where you can use a limit box or cutting plane to specify a cross-section of a cylindrical object (for example, a tree trunk or light pole) and then select three points and/or coordinates on the circumference to generate the circle. This provides a useful alternative to the existing Create Circle command where you define a circle by specifying a center point and a radius.
- **Three-point rectangle** - Use the Create Three-Point Rectangle command to create a rectangle by selecting three existing points and/or coordinates. Two points define the corners for one side of the rectangle; the third point defines where to draw the opposite side of the rectangle. This is especially useful when working with point clouds where you can use a limit box or cutting plane to specify a cross-section of an object (for example, a building facade) and then select three points to generate a rectangle within the view. This provides a useful alternative to the existing Create Rectangle command where you define a rectangle by specifying points for two opposite corners.
- **Point label enhancement** - The Label Style Manager has been enhanced to support the creation of point labels that now include, along with previously supported values, global latitude, longitude, and height values, increasing the flexibility of this powerful labeling tool.
- **Text style preview** - The Text Style Manager has been updated to provide a preview of the currently selected text style so that you can be confident of what you will see prior to using a text style in your project. Any style property changes you make in the Text Style Manager are displayed immediately in the preview.
- **Drawing in ortho mode** - You can now create rectangular CAD geometry (for such objects as foundations, buildings, and so on) more efficiently by easily ensuring the linework created consists of exactly 90 degree angles.
 - **Ortho snap** - This snap option results in a new "free" point that is aligned either horizontally or vertically with the previous (anchor) point.
 - **Ortho tracking** - This snap option results in a new "free" point that is aligned either horizontally or vertically with the previous (anchor) point only when at least some portion of the pick aperture is positioned on the horizontal or the vertical line of the anchor point. The size of the pick aperture (specified in the Options dialog) determines the tolerance used for the snap.

When you select to use an ortho snap option, other selected snap options are still applicable when you make your pick, allowing you to override the restrictions of the ortho snap.

For ease of use, there is a shortcut button on the status bar located at the bottom of the TBC window to turn the ortho snap option on and off.

- **Dimension style preview** - The Dimension Style Manager has been updated to provide a preview of the currently selected dimension style so that you can view and verify changes as you make them. This enables you to work quickly and efficiently when creating or "fine tuning" a distance or angular dimension style before applying it in a graphic view.
- **Curved dimension labels** - The Dimension Style Manager has been updated to allow you to create angular and linear dimension labels that are curved as necessary to align with their associated dimension arcs, resulting in a closer visual relationship between the dimension and the CAD object, helping to minimize ambiguity.
- **Match object properties** - Use the new Match Properties command to match (copy) properties assigned to a selected object (for example, a CAD object or survey point) to one or more other objects of the same type. Properties that can be matched include layer, line style/scale/weight, color, text style, dimension style, label style, label table style, and feature code. This allows you to efficiently standardize objects in your project with complete control of the properties.
- **Select similar objects** - Use the new Select Similar command to select objects (for example, CAD objects or survey points) that have properties matching the properties of a chosen object. Properties that can be used in the selection search include layer, line style/scale/weight, color, text style, dimension style, label style, label table style, and feature code. This makes it easier to manage and edit as necessary the objects in your project.
- **Point elevation label precision in DWG and DXF exporters** - The DWG and DXF exporters have been enhanced to allow you to specify the decimal precision to be used for exported point elevation labels. This provides more flexibility when exporting CAD deliverables.

Surface and volume analysis

- **Points to Surface command enhancements** - The Report Delta Elevations table in the Points to Surface command, which is used to measure the distance from one or more points to a surface, now allows you to click any column header in the table to sort the rows based on ascending or descending values in the column. In addition, you can select only those rows in the table that you want to include in the Points to Surface Results report. These enhancements enable you to organize and display data in a manner that best suits your needs.

Corridor design

- **Super Elevation View** - Add and modify text objects, polylines, and linestrings in the super elevation view of an alignment. You can also add a frame (closed line) and create a dynaview in another view using the frame.
- **Create and Edit Shareable Slope Table** – Use the Create Shareable Slope Table command to create a new shareable slope table object. The object can be drawn as a line in the super elevation view of any corridor that is related to an alignment. Use the Edit Shareable Slope Table command to edit an existing shareable slope table object.

- **Corridor Earthwork Report** – View the surface areas of each material computed by multiplying the average slope length times the change in station and the same area adjusted for curve and grade slope. These new properties are only shown in the Excel report option.

Point clouds

- **Create orthophotos from point clouds** - Use the Create Orthophoto command to create an orthophoto (image) from a specified rectangle on a plane intersecting a dense point cloud. The orthophoto provides a flexible medium on which you can then make measurements and create linework for deliverables. You can export the orthophoto using the new Georeferenced Image exporter, or a DWG or DXF exporter, to share with other users.

Terrestrial photogrammetry

- **Create orthorectified images from station-based imagery** - Create a 2D orthorectified image from photo images captured with a Trimble S7, S9, or SX10 total station or other Trimble VISION enabled instruments. Select or define an appropriate plane to use for the image, draw a rectangle to specify the area to be covered, and select the pixel size. The orthorectified image provides a flexible medium on which you can then make measurements and create linework for deliverables. You can export the image using the new Georeferenced Image exporter, or a DWG or DXF exporter, to share with other users.
- **Export georeferenced images and orthoimages** - Use the new Orthoimage exporter to export georeferenced images and orthoimages (TIFF files and text files containing coordinate information) included in your project (for example, orthoimages created with the new Create Orthophoto command or Create Orthorectified Image command). This enables you to share the images with other users who can view them in a graphics viewer or import them into another application, such as a CAD package for drafting.

Mobile Mapping

- **Mobile mapping import** - The Process View enables now to resume an interrupted import.
- **Mobile mapping data navigation** - Two new features enabling to synchronize the 2D view (Plan View) and the 3D view (Run View) have been added for mobile mapping for greater visual control of your data:
 - **Center the Plan View** - Use the Center the Plan View command to center the Plan View to the current station position, or to a specific station position.
 - **Automatic trajectory tracking** - Use the Automatic Trajectory Tracking command to enable/disable the automatic trajectory following in the Plan View.

- **Mobile mapping picker tools** - Three new picker tools have been added to the mobile mapping Run View. All, when combined the photogrammetry measurement capabilities already present in TBC, let you create CAD entities like points, linestring, or similar entities on the mobile mapping data:
 - **Ground picker** - Use the Ground Picker to create CAD entities on a plane parallel to the vehicle and positioned on the ground beneath your current point of view (Station).
 - **Spatial picker** - Use the Spatial Picker to create CAD entities by measuring free 3D points from images.
 - **Vertical plane** - Use the Vertical Plane command to create CAD entities on a vertical plane, a plane defined by selecting two coordinates in the Run View.

CAD entities can then be associated to Features in the property window and synchronized with a GIS database in case you have a GIS license.

The three picker tools also enable using measuring tools for Points, Distance and Angles in the Run View. You can then save and export your measurements.

- **Mobile mapping manual camera calibration** - Use the Manual Camera Calibration command to calibrate or check your system calibration relative to imported control points. This is useful to perform prior to any mobile mapping project to verify that your system will provide calibrated data.

Machine Control

Export machine control data to Trimble Earthworks as well as the prior generation of field devices. Trimble Earthworks uses a project based file structure where the data is stored in a local folder, USB drive or on TCC. Legacy systems are still supported using a device based file structure. The following commands are specific to Trimble Earthworks.

- **Publish to Library** – Use the Publish to Library command to publish job site components and job site design data to a linked job site project in a project library. The project libraries can be hosted in a folder on your hard drive or in the cloud (TCC).
- **Library to USB** – Use the Library to USB command to copy field data files from a job site project in project library to a USB flash drive so that it can be used in the field. This feature helps to get your data into a machine.

General software enhancements

- **Improved command search** - The Command Pane (press F12), which provides a handy means to access any of the commands in TBC without the need to locate them in tab menus, has been enhanced to provide easier command searches. As you type in the command search field, a list displays that dynamically updates to show each command that includes the character string you have typed. This makes it easier and faster than ever to find the command you need, even if you are not sure of the complete command name.

- **Use the Delete key to delete objects** - You can now easily delete selected objects (for example, CAD objects, observations, survey points, and other selectable objects in your project) by simply pressing the Delete key. This is in addition to the current Delete command available in right-click context menus.
- **Context menu action commands** - Commands used to create and edit objects displayed in graphic views (including points, lines, labels, dimensions, and so on) now replicate the command's action buttons (for example, Apply, OK, and Close) in right-click context menus that display directly in the graphic view. Because you don't have to keep moving your cursor back to the command pane to complete an action, you can create and edit single and multiple objects faster and more efficiently.

In addition, the right-click context menu for the Polygon Select command now includes Enter Key and Escape Key options to allow you to save or cancel your selection without using the keyboard.

Resolved issues

Following are issues that have been fixed in this version of TBC:

- **Mobile Mapping** - The following Mobile Mapping-related issues have been resolved:
 - **Panoramic view display** - An issue concerning the horizontal offset in the panoramic view display due to the meridian convergence has been resolved. Note that this display issue had no impact on the export to Trimble TMX software.
 - **Mobile mapping import** - You can now import a Tridb project file with empty runs.

Known issues

Following are known issues in this version of TBC:

- **HTML panorama files do not display in Windows 10** - Panorama files created using the HTML format option in the Process Panoramas command do not display in Internet Explorer running in Windows 10 due to viewer incompatibility.
- **View refresh** - If you change focus from TBC to another application window on your desktop and then return focus to TBC, it is possible that the tab view will be black. In addition, if you "float" your cursor on the view, a string of cursor icons will be drawn. This is a graphic view refresh issue and can be resolved simply by panning or zooming on the view.

- **Cannot check in detachable HASP license early** - A HASP network key can be configured to allow users to check out a "detachable" instance of the multi-user license for a limited period of time, allowing the user to run the software without being connected to the network. In earlier versions of TBC, a detachable license could be checked back in (canceled) early, prior to the expiration date and time, making it available for other users. However, at this time, a detachable license cannot be checked in early (a system-time error message is displayed) and is checked in only on the expiration date and time. Then it is available for use by other users.
- **Windows 10's Anniversary Update** - Upgrading to Windows 10's Anniversary Update (version 1607) with the HASP drivers installed can cause the HASP license system to stop working for TBC. To resolve the problem, you must reinstall the HASP drivers. See the *HASP Troubleshooting Guide* for instructions.
- **Microsoft Edge web browser** - When TBC reports are displayed in a Microsoft Edge web browser, the links to objects within the application no longer work. It is recommended that you use a different browser to view TBC reports.
- **KMZ panoramas** - KMZ (.kmz) panorama files created in TBC do not display in Google Earth version 7.0 and later. For them to display correctly, it is recommended that you use an earlier version of Google Earth. Or, use the option to generate Google Earth KML Powered by InSphere.
- **HASP license key and Intel C602 chipset** - The HASP license key required to run TBC is not compatible with the Intel C602 chipset used in some server/workstation environments. The use of the HASP license key in combination with the C602 chipset will cause the application to crash.
- **SitePulse** - SitePulse has not been updated to support the newer VCL format created in this version of TBC. If you are using SitePulse, do not upgrade until you have installed an updated version of SitePulse.

Miscellaneous notes

- **Export Autodesk® ReCap® files** - To export an Autodesk ReCap file, you must have ReCap 360™ Pro installed on your computer with a current purchased license (not a trial version). If ReCap 360 Pro was not installed on your computer prior to installing TBC, you must install it and then link it to TBC by opening the *RCP* folder in the downloaded TBC Installation folder and double-clicking *Trimble_ReCap_Plugin.exe*.
- **Disabling a laptop integrated graphics card** - If you are using a laptop computer with both an integrated (on-board) graphics card (for example, Intel®) and a discrete graphics card (for example, NVIDIA®) enabled, TBC may freeze when you are working with point clouds. To avoid this problem, you must select to disable the integrated graphics card and use only the discrete graphics card when working with scan registration. Follow these steps:

- a. Open your Windows Control Panel, select BitLocker Drive Encryption, and select to suspend protection - if it is turned on. This is required to make the BIOS change required to disable the integrated graphics card.
- b. Restart your laptop computer and select to enter the BIOS setup utility as soon as the first image displays (prior to Windows launching) by pressing the appropriate shortcut key (for example, F1, F2, F10, ESC, or DEL). The BIOS shortcut is typically displayed briefly on the screen during startup.
- c. Once in the BIOS setup utility, navigate to the location of the graphics card control and use the appropriate method to disable the integrated graphics card. The method for doing this will vary depending on the BIOS setup utility. You can search the Internet for specific instructions.

For example, for a Dell® laptop implementing NVidia Optimus™ technology, you would select Settings > Video > Switchable Graphics in the BIOS setup utility, and then uncheck the Enable Switchable Graphics check box.

- d. Save changes and exit the BIOS setup utility to continue computer startup.
- e. If BitLocker Drive Encryption was suspended, turn it back on.

Additional notes:

- Your laptop computer consumes more power when using the discrete graphics card exclusively. If it is running in battery mode, you should re-enable the integrated graphic card when you are done working with scan registration.
- Do not use Device Manager to disable the integrated graphics card. Device Manager disables the card just for Windows, not for the entire motherboard, causing the integrated graphics card to still load first.
- Some laptops do not allow you to disable the integrated graphics card.
- **ArcGIS versions and Windows operating systems** - When using TBC to connect or write data to an ArcGIS Enterprise Geodatabase provider, see your ArcGIS user documentation to determine which versions of the ArcGIS products are supported on the various versions of the Windows operating system.
- **OpenCL Runtime driver** - OpenCL Runtime is a graphics accelerator driver required when TBC is performing automatic tie point matching or dense point cloud creation. If the driver is not installed, an error message is displayed indicating OpenCL Runtime cannot be found. In this case, you must download OpenCL Runtime from <https://software.intel.com/en-us/articles/opencl-drivers#phiwin> and install it on your computer using the instructions provided.
- **VCE compatibility** - As a general rule, you cannot open a VCE project file created in a newer version of TBC in an older version of TBC.
- **Windows 8 users** – Some components in TBC require Microsoft .NET Framework 3.5 to operate. If the .NET Framework 3.5 is not installed, you are prompted to install it when you install TBC. If your computer is connected to a domain that does not allow you to directly connect to Windows Updates on the Internet to enable and install .NET 3.5, you may need to change your group policy settings. See your system administrator for assistance.

For more information, see <http://technet.microsoft.com/en-us/library/dn482065.aspx>

- **Windows XP users** – Some components in TBC require Microsoft .NET Framework 4.5, which is not supported by the Windows XP operating system. To run this version of TBC, you must install a different operating system. See "System requirements" for complete operating system requirements.
- **TabletSync transfers** - If you use TabletSync to transfer large files (for example, panoramas) into TBC, it can take a long time for the upload to complete. As an alternative, you can shorten the transfer time by copying the files from the tablet onto a USB memory stick and copying the files from the stick into TBC.
- **TSPX file format** - TBC no longer supports the creation of TSPX (.tsp) files used to open TBC project data in Trimble RealWorks. As a workaround, you can export whole point clouds (not scans) to an .e57 or .las file format, which can be imported into RealWorks. You can export other types of data to an appropriate format (for example, points to .jxl, linework to .dxf, and images to .jpg) that also can be imported into RealWorks.
- **Proxy server settings** - If you receive an error when trying to access an external server to process data (for example, export KML graphic files to Trimble InSphere for use in panoramas displayed in Google Earth), you may need to specify a proxy server for your LAN using Internet Properties > Connections > LAN settings > Proxy Server.

System requirements

Operating system:	<p>Microsoft Windows® 10 (64-bit version)</p> <p>Microsoft Windows 8 (64-bit version)</p> <p>Microsoft Windows 7 (64-bit version with Service Pack 1)</p>
Processor:	<p>Dual-core 1.80 GHz or better recommended</p> <p>Quad-core 2.80 GHz or better (for example Intel i7-860 2.8 GHz) recommended for Aerial Photogrammetry Module and Scanning Module</p>
Random access memory (RAM):	<p>2 GB or more recommended</p> <p>32 GB or more recommended for Aerial Photogrammetry Module and Scanning Module</p>

Hard disk space available:	5 GB or more recommended 100 GB or more on solid-state drive required for Aerial Photogrammetry Module and Scanning Module
Monitor:	1280 x 1024 or higher resolution with 256 or more colors (at 96 DPI)
I/O Ports:	USB 2.0 port required if HASP hardware key is used
Graphics:	DirectX 11 compatible graphics card with 512 MB memory or more OpenGL version 3.2 or later required when working with point cloud data (latest version recommended) 2 GB graphics card (for example, NVIDIA GTX 670) required when working with UAS data (Aerial Photogrammetry) and/or point cloud data

Important!

It is critical that you keep your graphics driver(s) updated if you are working with point cloud data.

Whether your computer has one or multiple graphics cards installed, you must ensure each has been updated with the latest driver provided by the card's manufacturer. The best way to determine if your driver needs to be updated and, if so, perform the update is to visit the card manufacturer's website. For more information, see "Update and Configure Your Graphics/Video Driver" in the online Help.

(If, instead, you decide to update your driver using the Windows Device Manager and the "Search automatically" option, the program may suggest using a Microsoft-approved WHQL version of the driver. However, to ensure you have the latest bug fixes and new features for your graphics card, it is recommended that you use the latest manufacturer version instead.)