Trimble Business Center

Release Notes

TBC Version 2025.10

www.trimble.com

Welcome to Trimble Business Center

Trimble Business Center (TBC) provides a complete office software solution for survey and construction professionals. Having the ability to work in a single software environment streamlines operational efficiency while minimizing the costs of data management, software maintenance, and training.

Important Note! This version of Trimble Business Center is available to:

- Perpetual license users whose current warranty expiration date is **July 1, 2025** or later. (If your perpetual license warranty expires prior to this date and you proceed with the installation, licensed features will not be available.)
- Subscription license users whose subscription is currently active.

If necessary, you can contact your distributor to purchase a warranty extension or renew your subscription. In the TBC ribbon, select Support > License Manager to view your warranty or subscription expiration date.

New features

Following are the new features and enhancements included in this version of Trimble Business Center. To view context-sensitive help in TBC while using any of the commands mentioned here, simply press **F1**.

Miscellaneous

- **System requirements for TBC version 2025.10** - The minimum required system specifications to run TBC have been updated. (See **System Requirements** in the help).
- **Higher data and command accessibility** - Click the lock icon at the top of the Command Pane to use the properties and context menus on graphical elements, which enables you to select objects, inspect and change their properties, and use the context menu. Click the lock again, or anywhere on the command pane, to get back to the command.
- **Deprecation of legacy API consumption URLs** - Legacy API calls have been updated. Users of TBC v5.50 and earlier can no longer publish WorksManager designs. Update to TBC v5.60 or later to continue to use the functionality.
- **Trimble SitePulse -** To address security vulnerabilities, support for SitePulse has been removed from TBC.
- **New prism type** - You can now import a JobXML file (.jxl) from Trimble Access (v6.32) that uses the Trimble mini prism. <ProduceAbbrev> computes measured points with the correct prism constant.

Data Exchange and management

- **Merge domain lists when exporting to Geodatabase XML** - When exporting to Geodatabase XML, if two or more feature definition attributes are the same, you can optionally merge them into a single domain entry. This streamlines the XML schema. (See **Export Geodatabase Files (.xml)** in the help).
- **Roundtrip lines, polylines, and polygons between the office TBC and the field (Trimble Access)** - The .jxl exporter and importer have been enhanced to include geometric features, including lines, polylines, and polygons, from GIS connections like Esri, Postgres, or Sql Server. The geometry and attributes data can be adjusted in the field and exchanged between TBC and Trimble Access. (See **Export Trimble JobXML Files (.jxl)** and **Import JobXML Files (.jxl)** in the help).
- **View and exchange project files** - A new command is available in the TBC Quick Access toolbar and in the pop-up context menu of the Project Explorer, which enables you to quickly and easily open the file folder in which all of the current project's files are stored, including data files, in Windows File Explorer. The new context sensitive command is also available on top of the Properties, Import, Export, Create 3D PDF, and Print Plan Set panes. The command opens the data or output folder in the File Explorer window. You can then add, copy, or delete files from the folder as necessary. (See **Export Data**, **Import Data**, **Project Explorer**, and **Select from the Project Explorer** in the help).
- **New user interface for Connected Workspace** - The user interface for Connected Workspace has been completely redesigned to make it easier for you to seemlessly integrate your workflow with Trimble Access and Trimble Connect. (See **Share Projects and Data Using Connected Workspace** in the help).
- **Export WorksManager design files** - You can now use a **WorksManager Design Exporter** to either export a WorksManager design file (.vcl) locally or upload it directly to **Trimble Connect** in a simple way that bypasses TBC's multi-step WorksManager workflow. This exporter allows you to create designs for Trimble field apps that include: SCS900, Siteworks, GCS900, Earthworks, PCS900, Roadworks, DPS900, and Groundworks, even if you do not have a WorksManager license. The output file matches what the TBC **WorksManager Design Manager Publish** command creates (with **Cleanup VCL file project** setting set to **Yes**), which eliminates all but the required object dependencies needed to create the various design file types required by the field apps. (See **Export WorksManager Design Files (.vcl)** in the help).
- **Export simple VCL files for civil workflows** - You can now use the Civil Workflows VCL exporter to export VCLs from which all possible object dependencies have been removed (which match VCLs created by the WorksManager Design exporter, with the exception these civil workflow VCLs are not converted into formats like SVD and SVL for legacy field systems, such as GCS). The exported 'clean' VCL can then be used by Trimble Siteworks and Earthworks https://construction.trimble.com/earthworks after being accessed in Trimble Connect (you can either export the VCL file to your local computer or upload it directly to Trimble Connect). (See **Export VCL Files (.vcl) for Civil Workflows** in the help).

Survey and COGO

- **Integrate points into geometry** - The Integrate Points into Geometry command, which automatically converts vertex coordinates for linestring-based polygonal objects and COGO parcels into points, has been enhanced to include a progress bar and a Cancel button. This allows you to monitor long processing times as necessary (for example, a large number of lines have been selected) and stop processing if necessary to enable other functions. (See **Integrate Points into Geometry** in the help).
- **Mapping point metadata to GIS** - The Map Metadata to GIS command, which enables you to map and upload (write) point observation metadata to a GIS data source, has been enhanced to filter out line and polygon feature types from selection, which are not supported and may cause errors. (See **Upload (Write) Observation Metadata to a GIS Data Source** in the help).
- **Traverse adjustment - Least-Square and Bowditch adjustments** - The Adjust Traverse and Adjust Network commands now allow you to compute a closed-link traverse which has an estimated initial azimuth. The control points along the traverse are used to automatically correct the unknown azimuth during the adjustment process.
- **Select objects in a surface** - On the Add/Remove Surface Members pane, use the new Select command to see which objects are part of the current surface. This allows you to quickly select all members of the chosen surface without having to go to the Project Explorer, saving time and effort. (See **Edit a Surface by Adding and Removing Members** in the help).

GIS

- **Add a unique identifier at each feature when writing feature data to a GIS connection** - When writing feature data to a GIS connection, each feature is now assigned a unique identification number that is based on a Project setting, such as the project Reference number entered in Project Settings > General Information, if a configuration is available. This allows you to tell which project each feature comes from, so you are able to filter the feature service data using this unique ID.
  - Set the Used Field Project setting in GISAttributeExension.json
- **Write only changed and new data to GIS -** When using the Write Features to GIS command to upload (write) processed feature data back to the GIS data source, you can now select to automatically upload only new or changed features. This eliminates the need to select the features individually. (See **Upload (Write) Processed Features to a GIS Data Source** in the help).

- **New Read Features from GIS report** - In the Write Features to GIS command, you can generate a report that provides details about uploaded features. Now you can also generate a similar report after running the Read Features from GIS command. The report provides descriptive warnings and errors resulting from the download, changes to feature definitions in the project library, added features, and added attributes, in an easy-to-read format. (See **Download (Read) Processed Features to a GIS Data Source** in the help).
- **Select a unique identifier from a file** - Using Project Settings > General Information > Reference number, you can now browse a file list and select a unique identifier for your project from a file. This eliminates errors that may occur when typing in the unique number manually. This can be especially useful, for instance, when selecting a unique project reference number to be assigned as IDs to features when writing feature data to a GIS connection. (See **Add a unique Identifier at each feature when writing data to a GIS connection** in these *Release Notes* and **Manage GIS Connection** in the help).
- **Specify height type on GIS import** - When importing GIS data in which there is no vertical coordinate system specified, you can now select to import the height as either orthometric or ellipsoidal. This ensures the data is imported into your project in the correct location. (See **Import Esri Shapefiles (.shp)** in the help).
- **Underscore automatically added to reserved word when creating a geodatabase** - When creating a .gdb file or Geodatabase XML, certain words are reserved and cannot be used as feature class names or column names. The Geodatabase exporter now automatically adds an underscore (_) to the end of any reserved feature name, attribute name, or column name within the Geodatabase file. (See **Export Geodatabase Files (.xml)** in the help).
- **Geodatabase XML export** - You can now use the new Create attachments export option to configure separate attachment tables for file and photo attributes per feature. Photos and files attached to TBC attributes are added to attachment tables in a geodatabase. (See **Export Geodatabase Files (.xml)** in the help).
- **Specify the linework type in a Feature Definition for Trimble Access** - TBC now supports two different workflows for the way linework is created and codes are stored in Trimble Access. When creating a feature code library in TBC or the Feature Definition Manager, the new **Store polylines with codes on lines** setting lets you choose from these options:
  - **No** (default) **-** Create feature coded linework with codes on points.
  - **Yes -** Store polylines with codes on lines.

  You can change this option in the **Feature Definition Manager** or the **Project Explorer** in TBC. (See **Feature Definition (.fxl) File Properties** in the help).

CAD

- **Enhanced angular dimension labeling** - When adding dimension labeling to angular lines using the Create Angular Dimensions command, you can now select to display only dimension text without the arrows. In addition, a new Text orientation option enables you to select to align dimension text labels perpendicular to the angular line. (See **Create and Edit Dimension Styles** in the help).
- **Linear and angular dimension arrow customization** - You can now set the direction of each arrow at the ends of linear and angular dimensions. When you export this data to a CAD (.dwg or .dxf) file, these arrow directions are included. When you re-import the data (e.g., in a CAD file), it retains the arrow directions. (See **Linear dimension properties** in the help).
- **Display point IDs, feature codes, elevations and more, even after labeling** - TBC now displays the auto-labeled points attributes which are selected in the View Filter Manager, regardless if the point has a label attached or not. This ensures that all attributes are displayed as desired.
- **Capture outlines from measured points or point clouds** - The new Capture Outline command enables you to quickly create plans (for example, floor plans) from interior and exterior measurements, simply by selecting measured points or points in a point cloud in your project. The command automatically connects those points to derive the room geometry and form walls and rooms. (See **Capture Outlines from Measured or Scanned Points** in the help).
- **Write extents in exported DXF/DWG files** - When exporting DXF and DWG files, the extents of the model are automatically set. This means that when you open a DXF or DWF file in CAD, it automatically displays the correct zoom area.
- **New line label type in the Label Style Manager** - You can now label a line's name in the Line Type drop-down list of the Label Style Manager. (See **Create and Edit Label Styles** in the help).
- **Duplicate Text** - You can now use the Duplicate command in the context menu to copy/paste existing text, and edit it as needed. (See **Create and Edit Text** in the help).
- **Symbols are now exported as blocks** - When exporting symbols created by labelling points or the **PointSymbol** command, they are now exported as blocks.
- **Label changes remain after feature code processing** - Changes to the graphic layout of a label, including position and attributes, now remain after processing the feature codes. Repositioning, deleting, or changing the attributes of labels sets the Locked feature of a point or line to "yes."
- **Simplified CAD sheet data export** - When exporting DWG and DXF files, you now have the option to quickly and easily export sheets and model information for the entire project simply by checking a new check box in the Export command. In addition, if you select one or more sheets in the Project Explorer to export, a message is displayed allowing you to specify that the whole project model data be exported as well. (See **Export CAD Files (.dxf/.dwg)** in the help).

- **Directly select a target object** - You can now rapidly select single objects using the Relayer Objects command to change their layer, which will speed up your workflow. (See **Relayer Object** in the help).

Point Clouds

- **Rendering cache size for point cloud display is removed** - The option to adjust the point cloud rendering cache size has been removed. TBC now automatically calculates the optimal cache size for each system. (See **Point Cloud Options** and **Understanding Point Cloud Data** in the help).
- **Enhanced point cloud DL training** - The Training feature in the Extract Classified Point Cloud Regions command has been enhanced. You now have the option of classifying entire validation files (slow but very accurate) or smaller sets of point clouds (fast but less accurate). Classifying smaller sets of point clouds during validation decreases the time needed for model training. Validation time is cut up to 6 times. New Training and Validation timers indicate elapsed training time, and a new Clear Tensorboard Charts button allows you to clear charts without deleting the models. (See **Train Custom Point Cloud Classification Models** in the help).
- **Point cloud classification enhancements** - The model for the classification of point clouds collected with terrestrial sensors has been improved. Classification of all regions is more accurate, including major enhancements for overpasses and traffic signs including cantilever signs, sign bridges, and signs with multiple posts.
- **Point cloud classification performance enhancement** - Point cloud classification performance has been increased, by utilizing more CPU and GPU resources.
- **International Roughness Index (IRI) Report enhancements** - In the report, you can now:
  - **Set labels for IRI units to m/km or mm/m** - For the Microsoft® Excel output, you can specify whether to show/label values in m/km or mm/m for metric projects.
  - **Set IRI thresholds for values in both warning and failure ranges** - Specify different thresholds for IRI values that are within a margin of error range (linework and text are shown in yellow) versus values that are unacceptable (linework and text are shown in red). You can set the thresholds to any value. (See **Run an International Roughness Index Report** in the help).

Note: The value for **Maximum interval between points** (in **Point Cloud Selection and Drape Options**) is no longer optional. When IRI calculations are based on paths with long, straight sections, IRI values can be lost, resulting in wrong results if no value for maximum interval between points is set or if the provided value is too high. This interval value is now required for every analysis.

- **Point cloud classification enhancements** - Point clouds now feature improved overpass classification and improved traffic sign classification. TBC now correctly classifies cantilevers, sign bridges, and signs with two posts.

- **Enhanced sign detection and extraction** - Automated sign extraction (Point Clouds > Extract Point Feature > Extraction type: Sign) has been enhanced. Sign extraction runs up to 50% faster. In addition, the new sign extraction algorithm requires point cloud region Signs, which improves the output quality. Signs with two posts and cantilever signs can now be extracted.

Photogrammetry

- **Automatic Ground Control Point (GCP) selection** - To measure ground control points (GCPs) for the absolute adjustment of aerial photo stations, you can now select to have the ground targets automatically detected and extracted for the adjustment, instead of selecting them manually in the graphic views. This function requires the use of signalized checkerboard targets. This new feature can save substantial time, depending on the number of control points being measured, and improve measurement accuracy for performing the adjustment. (See **Adjust Aerial Photo Stations** in the help).
- **Support for DJI M4E drone baseline processing** - TBC now supports the DJI M4E drone for baseline processing. (See **Understanding Aerial Photogrammetry Data** in the help).
- **Support for 3D Tiles meshes** - For your photogrammetry projects, you can now generate meshes with the format 3D Tiles using the **Create Deliverables** command. (See **Create Aerial Photogrammetry Deliverables** in the help).
- **Height shift for RTK flights** - The **Set Height Shift** command in the flight block context menu is used when the flight block contains images with low quality GNSS information and no UAS processing is running in the background. Usually RTK-processed results are high quality and don't require correction, but this feature is now capable of fixing a constant, accurate single height shift throughout the complete high-precision RTK flight data set. (See **Adjust Aerial Photo Stations** in the help).

Tunnels

- **View tunnel set outs in Plan View and 3D View** - You can now select to view all or specific types of tunnel set outs (for example, blast holes) in the Plan View and 3D View and view the 3D coordinates of the set out position in the Tunnel View. Optionally, you can customize the coloring used for the various set out types. This enhancement makes it quicker and easier to verify that set outs are defined correctly. (See **Add Horizontal Offset to a Tunnel, Add Set Outs to a Tunnel, and 3D View** in the help).

Mines

- **Mining Design Conformance Report** - Use the new Mining Design Conformance Report command to create a mine production report that compares the as-built surface with the design surface to provide extraction progress to stakeholders. After running the command, a colorized surface model is created as a result of comparing the design and as-built surface based on specified parameters. The report includes a 2D overview of the surface model with cross sections and a table containing the calculated area and volume. (See **Run a Mining Design Conformance Report** in the help).
- **Changes to Mining subscription** - Mobile mapping features have been removed from the Mining subscription, at a reduced price. See your Trimble sales representative for further details.

Mobile Mapping

- **Export pavement condition inspection results as vector files** - After extracting pavement defects using the Mobile Mapping > Inspect Pavement Condition command, you can now export pavement distresses and their geometric attributes, sample units, and segments with attribution as vector data. These changes make your pavement inspection workflow simpler and smoother. (See **Inspect Pavement Condition** in the help).
- **Pavement condition inspection integration with Esri** - You can now write pavement condition inspection outputs to Esri Feature Service or a geodatabase file. If the feature class names and feature definitions in the Esri database or feature service do not match with those in TBC, you can use a json file (PCIFeatureAliases.json) to map TBC's naming conventions to the GIS. This file is automatically generated the first time you export PCIs to a GIS file format. (See **Inspect Pavement Condition** in the help).
- **Pavement Condition Index review of analysis results** - You can now review segments that are below your target PCI (Pavement Condition Index) score value, and assign a specific treatment type for each. You can then export those segments as vectors with attributes (including found distresses and PCI score) and provide them to the field crew which is responsible for on-site repairs, or import the files into your GIS software. (See **Inspect Pavement Condition > Post QA/QC** in the help).
- **Automatically classify line type during automated lane line extraction** - When using the Extract Line Feature command to automatically extract lane lines from mobile mapping data (Automatic: Mobile Mapping), you can select the new Refinement Settings > Refine and Classify option to automatically classify the line type feature attribute for each extracted linestring (for example, solid, double solid, dashed, or double dashed) and display it in the line's Properties pane. It will also split extracted lane lines as they change type (for example from dashed to solid, or solid to double solid) and classify each linestring accordingly. (See **Extract Lane Line Marking Features from a Point Cloud** in the help).

- **QA segments from pavement condition inspection** - As part of the Inspect Pavement Condition command, you can now perform QA on PCI segments. The process enables you to verify which segments have been inspected, assign a treatment type, and export those segments which need treatment. (See **Inspect Pavement Condition** in the help).
- **Automatically classify line type during automated lane line extraction** - When using the Extract Line Feature command to automatically extract lane lines from a mobile mapping point cloud (Automatic: Mobile Mapping), you can select the new Refinement Settings > Refine and Classify option to automatically classify the line type feature attribute for each extracted linestring (for example, solid, double solid, dashed, or double dashed) and display it in the lines's Properties pane. It will also split extracted lane lines as they change type (for example from dashed to solid, or solid to double solid) and classify each linestring accordingly. (See **Extract Lane Line Marking Features from a Point Cloud** in the help).
- **Utility Modeling is now part of the Mobile Mapping subscription** - Utility Modeling is now available in the Mobile Mapping subscription at no additional cost. See your Trimble sales representative for further details.
- **Road network enhancement to pavement inspection** - The Pavement inspection command has a new Road Network segmentation mode. Now, in addition to auto segmentation, users can analyze roads based on user-input segmentation or existing road networks (defined as a linestring with segments with unique IDs, available as attributes). The analysis results are associated with segments from the user-defined file within the road network.
- **Point Number Incrementing** - The default point ID sequencing has been updated, as follows:
  - If the **Point ID** includes a number, it will, by default, automatically increment to the next unused number when you create a subsequent point. If the **Point ID** includes multiple numbers separated by, for example, hyphens or dashes, the right-most number is incremented.
  - If the **Point ID** includes only alpha characters, it will, by default, automatically append an incremented number to the alpha string when you create a subsequent point. If the **Point ID** includes multiple alpha strings separated by, for example, hyphens or dashes, the right-most alpha string is incremented.

  (See **Create and Edit Points** in the help).
- **Mission Registration** - The enhancement to the Global adjustment method now allows the same offset to be applied to all runs, rather than to those adjusted with the Ground Control Points (GCPs).
- **Export to TopoDot** - The LAS 1.4 format is capable of storing projection coordinate system information directly within the .las file using Well-Known Text (WKT) conventions. When exporting scans to TopoDot, separate .TXT files are generated alongside the LAS files, which contain the WKT information.
- **POSPac MMS and CL** - Applanix's POSPac MMS and Command Line have been updated to version 9.4.

Coordinate System

- **Updated Coordinate System Database** - The newest Coordinate System Database v111 includes the following enhancements:
  - Added support for REDGEOMIN (mining industry in Chile)
  - Added support for CR-SIRGAS in Costa Rica
  - Added alpha version of the State Plane Coordinate System of 2022 (SPCS2022)
  - Added new time-dependent transformation to give consistent results between RTX and the Dubai Virtual Reference Station (DVRS) network
  - Ensured all realizations of ETRF2000 are associated with ISO.DATUM:178 (to fix warning encountered using VRS in the Netherlands)
  - Added accurate datum grid transformation between ETRS89 and legacy datum used in Portugal
  - Added support for MOMRA VRS, still used in Saudi Arabia
  - Added low distortion projection zones for Oregon
  - Improved support for legacy datum "Ain el Abd 1970" still used in Saudi Arabia
  - Added Geoid Grid File (GGF) modeling Christchurch Drainage Datum (CDD)
  - Added new geoid model KNgeoid24 for Korea
  - Added new velocity model for Canada
  - Improved EPSG, Esri, and FME aliasing in UK, Illinois, South Africa, Philippines, Dubai, China, Slovakia, Czech Republic, Israel, and Columbia
- **Updated Coordinate System Database** - The newest Coordinate System Database v112 includes the following enhancements:
  - Added the latest geoid model "GSI Geoid 2024" for Japan
  - Updated the displacement model for Japanese datum JGD2011 to the 2025 version
- **Custom coordinate transformation export options** - The TBC Custom Exporter has been enhanced to provide three transformation options when exporting coordinates:
  - Do not transform coordinates
  - Transform coordinates to a specified coordinate system
  - Transform coordinates to a local system using a specified reference point

  These options provide flexibility when exporting point coordinates to other systems. (See **Export Data** in the help).

- **Coordinate system transformation on CSV import** - When importing CSV files with coordinate data, you can now optionally enter the coordinate system for the imported data so that it can be transformed into the project coordinate system (for example, to match your GIS coordinate system or in the case of an old coordinate system). (See **Import Data** in the help).
    - **Grid Factory integration in Coordinate System Manager** - Trimble Coordinate System Manager has been updated to create missing grid files from ASCII files, including offsets at any location, allowing users to import and edit any required Geoid, Datum, or Shift Grid file. Additionally, Trimble Coordinate System Manager can display grid file content as a heatmap. It provides a calculation tool you can use to test the resulting grid files, ensuring you get the expected coordinates compared to reference tools provided by your national agency. (See **Adding Geoid Models**, **Transformation Method: Datum Grid**, and **Adding Coordinate Systems** in the help).

Third-party tools

- **ANZ Toolbox** – New commands in the ANZ Toolbox include:
    - **Transform 3D Objects** – The Transform 3D Objects command enables you to select one or many 3D objects and rotate and/or translate them around a user-defined axis.
    - **Create Chord Lines** - The Create Chord Lines command allows you to select one or more linestrings and set a chord distance that will be applied in 2D or 3D from the start of the line to create individual line segments at that length.
    - **3D Object Report** - The 3D Object Report command enables you to select one or many 3D shell and IFC mesh objects and report their volumes, names, and selected 12d attribute information to a table and then to a CSV file.
    - **Grid Volume from Boundary** - The Grid Volume from Boundary command computes the volumes between two selected surfaces and within multiple selected boundaries using the grid volume method. The computations are much faster than the standard surface to surface, even with a small, defined grid interval. You are then also able to export a Microsoft® Excel report of the results.
    - **Simplify Linestrings** - The Simplify Linstrings command allows you to select one or more lines and remove unnecessary segments from the lines, as well as convert horizontally chorded linework to curvilinear linestrings, if possible. This is ideal for converting segmented road centerlines into true arc geometry so that a clean alignment string can be made.
    - **Adjust Profile** - The Adjust Profile command allows you to select one or many linestrings and apply a vertical adjustment to the profile of the string using several different methods. This command is particularly useful for creating new strings allowing for Hog adjustment in bridge decks.

Important notes and known issues

See the TBC Help for a complete, up-to-date list of important notes and known issues related to TBC.

- **Trimble Clarity support** - Trimble Clarity is being discontinued in 2025. Therefore, the Publish to Clarity command is no longer available in TBC. As an alternative to Trimble Clarity, the Trimble Reality Capture Platform Service (TRCPS) enables more effective collaboration and the secure sharing of massive reality capture datasets captured with terrestrial 3D laser scanning, mobile mapping, and UAV systems. Contact your sales representative for more information.

System requirements

Microsoft operating system:	Windows® 10 (64-bit version) Windows 11 (64-bit version)
Processor:	Dual-core 1.80 GHz or better minimum Quad-core 3.0 GHz or better recommended (additional cores with hyper-threading support highly recommended for Aerial Photogrammetry and Scanning modules) Intel Core Ultra 9 285K or equivalent for large Mobile Mapping data sets (for example, eight runs totaling 75 kilometers) **Important!** Because components of TBC make use of Intel-only multi-thread processing, AMD Ryzen processors are not supported.
Random access memory (RAM):	4 GB or more recommended 32 GB minimum, 128 GB or more recommended for Aerial Photogrammetry and Scanning modules 196 GB DDR5 for large Mobile Mapping data sets (for example, eight runs totaling 75 kilometers). LIDARQC run alignment process requires a high amount of memory for alignment of large projects. If only processing MX50 or MX60 data, smaller amounts of RAM

	are sufficient, but 128 GB would still be recommended.
Hard disk space available:	30 GB or more recommended 100 GB or more on solid-state drive required for Aerial Photogrammetry, Mobile Mapping, and Scanning modules The recommended SSD overall hard drive capacity is 2 TB or more for Aerial Photogrammetry and Scanning modules Storage: 12TB 7200rpm or higher HDD or SATA SSD for large Mobile Mapping data sets (for example, eight runs totaling 75 kilometers) Boot: Samsung 9100 Pro M.2 NVMe (or equivalent) for large Mobile Mapping data sets (for example, eight runs totaling 75 kilometers)
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) 10 GB or higher graphics card (for example, NVIDIA Quadro P4000) recommended when working with Aerial Photogrammetry and Scanning modules Nvidia RTX 5080 16GB GDDR7 or higher for large Mobile Mapping data sets (for example, eight runs totaling 75 kilometers) **Note:** 6 GB or higher NVIDIA graphics card with CUDA compute capability (5.0 or higher) required when working with point cloud classification. **Note:** If you are using a laptop computer with both an integrated (on-board) graphics card and a discrete NVIDIA graphics card enabled via Optimus technology, your computer must allow you to select to disable the integrated graphics card and use only the discreet graphics card when working with point cloud data. See "Disabling a laptop integrated graphics card" in the "Important Notes" topic in the TBC Help.

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.)