Trimble Business Center

Release Notes

Version 5.80

TRANSFORMING THE WAY THE WORLD WORKS

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 **October 1, 2022** 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 included in this version of Trimble Business Center. To view context-sensitive help at any time while using TBC, press **F1**.

Miscellaneous

- **Select objects by layer group** - In the Select by Layer command, you can now select all of the objects on the layers in a layer group by pressing the [Shift] key when checking the box for one of the layers. All layers (and the objects that reside on them) in that layer's group will be selected. If the selected layer is not assigned to a layer group, there is no effect; only the individual layer is selected.

Data exchange

- **Tag (rename) imported files** - The Project Explorer lists all data files you bring in alphabetically under the Imported Files node. If an imported file naming convention is not ideal, such as when you import field data, you can now use the Tag property in the Properties pane to 'rename' and reorder imported file names by:
  - adding a prefix before the file name
  - adding a suffix after the file name
  - adding both a prefix and suffix around the file name
  - overwriting the file name with your own text
  - adding hidden metadata for the file (e.g., a station range covered by the data)

This feature lets you, for example, group topo files together, cross-sections together, etc.

- **Access Quadri connector commands on a new ribbon tab** - You can now access Quadri connector commands on the new Quadri ribbon tab. Formerly in a single Quadri Connector command, the functions have been separated and updated into a simpler, streamlined workflow:

    a. Check your installed versions of Quadri for Windows and Quadri Connector for TBC.

    b. Create and/or select a Quadri task.

    c. Specify TBC - Quadri data synchronization settings.

    d. Send and/or receive data to/from Quadri.

        - Retrieve initial objects from Quadri for Windows in TBC so you can use the variety of design, data prep, 3D modeling, and cleanup tools to improve them.

        - Use the Selection Explorer to select objects (e.g., points, lines, and surfaces). Then send this prepared design data to Quadri.

    e. Remove objects from a Quadri task and resync with Quadri.

- **RINEX 4 support** - TBC can import and process files from the latest RINEX version 4.00. This version of RINEX is a major revision of the format document to modernize the Navigation message files to be able to accommodate the new navigation messages from all the GNSS constellations, as well as system data messages, such as ionospheric corrections, earth orientation parameters and system time offsets. The Observation file format remains the same with some added QZSS signals and tracking codes to fully support the upcoming L1 C/B signal. The Meteo file format also remains the same. All RINEX file types also have new optional header lines to support FAIR data usage: Finding, Accessible, Interoperable and Reusable data.

Survey and COGO

- **COGO enhancements** - The Create COGO command, which enables you to create a COGO collection of linework in your project that you can use to create parcels, compute parcel closure, and generate legal descriptions, has been enhanced as follows:

    - **Create COGO collections from existing linework** - If your project already contains boundary CAD linework, you can simply select the linework to automatically create a COGO collection.

    - **Create nested COGO parcels** - You can create a parcel that is completely enclosed (*nested*) within another parcel, allowing you to handle more complex land boundary situations. In the Map Check Report, nested parcel areas are treated as transparent holes in the outer parcels in which they are enclosed, and they do not contribute to the outer parcel's area. The Legal Description Writer has also been enhanced to support nested parcels with new *Jump to Nested Area* parameters in the default template.

- **Custom reference start points for COGO collections** - When creating COGO linework, you have the option to start the creation of a new "absolute" COGO line segment (a line segment whose definition is not relative to the previous line segment) from a different reference start point than the last created point, which is the default. This provides added flexibility when creating COGO linework.

- **Streamlined COGO linework creation workflow -** When you enter a line, point, or arc command line (excludes start, line/arc extend, and sideshot-type commands), the command type controls stay open until you select to enter a different type of command. This streamlines the COGO creation process when entering multiple command lines of the same type.

- **Format and edit parcel names -** Each parcel name is now saved as a CAD multiline text object. When the Create COGO command pane is closed, you can select the text to display icons in the Plan View that allow you to move, resize, and/or rotate the text to fit appropriately within the parcel boundaries. You can also select the text, right-click, and select Properties to display the Properties pane where you can change the text and various text properties.

- **Support for WMS background maps** - Use the new Web Map Service command to connect to a WMS server and display geo-registered background map images (for example, JPEG or PNG) from one or more distributed geospatial databases according to the Open Geospatial Consortium (OGC) specification. After selecting a WMS server, simply select the area you want to cover and the coordinate system to apply, select the resolution and transparency to apply, and select the layers to display. This is a powerful tool for overlaying data and providing additional visual context in your Plan View.

- **GVX file exporter** - The GVX (GNSS Vector Exchange) file exporter, used to export GNSS vectors derived from varying GNSS survey methods and manufacturer hardware, has been enhanced to support the export of receiver and antenna serial numbers and firmware version, ensuring necessary metadata is included in the exported file.

GIS

- **Support for Trimble Access rectangular feature control coding** - TBC now supports processing of feature line control codes that specify a rectangular shape using a width parameter that is consistent with usage within Trimble Access. Prior to this release, the width parameter had to be included on the first rectangle feature corner point of two consecutive corners. Now the width can instead be included on the second feature corner point, as is typically done in Trimble access. TBC will process the rectangular feature correctly either way.

CAD

- **Enhanced SketchUp support** - SketchUp support has been enhanced as follows:

- Import and export SketchUp files (SKP/.skp) using the latest SKP library, enabling access to the most current functionality.

- The origin point coordinates for an exported model can now be retained in the SKP export file so that if the file is re-imported back into TBC, the model is imported at the correct location instead of 0,0,0.

Point Clouds

- **Trimble X12 support** - Import and process scan data and images collected with the new Trimble X12 3D laser scanning system, which provides unparalleled ease of use and exceptional quality of point clouds and imagery. The Trimble X12 provides two files for import into TBC for processing: a .tos file containing 3D points, and a .toi file containing images for point cloud colorization.

- **Shape-based feature extraction** - Use the new Extract Geometry command to draw or select an existing 2D closed CAD object whose shape and size you want to use as a template to locate and extract features of the same shape and size (for example, painted arrows on a roadway). You can select whether or not "found" features may be rotated or mirrored (flipped) from the selected shape's orientation.

- **Scan inspection enhancements** - The Scan Inspection command, which enables you to create customizable "heat map" overlays and reports that display positioning variations between point clouds and 3D and surface objects, has been enhanced as follows:

  - **Select mesh faces on 3D objects** - You can use the new "Internal Select" mode to easily select one or more mesh faces on a selected 3D object (not just the entire object mesh as before) to compare to a selected point cloud region, giving you more precise control over your inspection deliverables.

  - **Select multiple 3D or surface objects** - You can now select more than one 3D or surface object to compare to a selected point cloud region, ensuring a more efficient and faster way of creating highly usable inspection deliverables.

- **Extract manhole features from point clouds** - The Extract Point Feature command has been enhanced to enable you to extract closed manhole cover features from a point cloud manually or automatically and assign feature attributes. To help ensure the best results, you can specify whether data was collected using photogrammetry or laser scanning. When performing an automatic extraction, a handy slider control allows you to filter the extraction results to remove false findings by increasing or decreasing the extraction "confidence" level, ensuring the most accurate extractions.

Photogrammetry

- **Wingtra UAS support** - Import into your project images collected with various Wingtra® UAS models by simply dragging and dropping the Wingtra image folder into TBC (no need to create and import a JXL (.jxl) file as before). In TBC, you can process the data using imported ground control points, adjust the aerial photo stations, and create deliverables; or send the data to UASMaster for processing and deliverables creation.

- **UASMaster 13.x enhancements** - UASMaster 13.x, which is available to TBC users as a powerful alternative for processing, georeferencing, geo-imaging, geo-capturing, and geo-modeling UAS data, has been enhanced as follows:

  - **Faster ortho mosaicking in UASMaster** - After the significant improvement in SGM in version 12.2, in this version of UASMaster, project managers can enjoy better performance and speed up ortho mosaicking up to 35% and accelerate their productivity with the classical workflow.

  - **Extended Inpho capabilities for Windows Server and CITRIX** - Due to the rapidly growing imagery projects, we received more and more requests from project managers and organizations who would like to increase and ensure their productivity by running parallel projects in their high-performance and highly secured Server environments with multi-user access. In this version, the structure of files was changed from machine-scope to user-scope.

  - **New 3D mesh approach in UASMaster for higher quality** - UASMaster now comes with a new mesh generation algorithm to increase the realistic impression of 3D models based on smarter image selection in the matching. Furthermore, users can produce higher quality meshes due to a new mesh texturing technology. The significant change in visual consistency can be seen by reducing artifacts caused by moving objects (for example, cars, water reflection, and changing lighting conditions.

  - **Better performance for a cleaned-up true-orthophoto in UASMaster** - Thanks to the optimized borderline for true-orthophoto generation in this version, the best fitting processing area can be defined considering the available models and fold parameters. This reduces the processing time to an optimized level.

  Other miscellaneous improvements were made to this version of UASMaster to increase stability and usability.

Tunnels

- **Volume property added for tunnel design and as-built mesh** - Compare and verify your tunnel design and as-built tunnel mesh by viewing the new Volume property value for each in the Properties pane. (Note that average cross-sections are used when calculating volumes.) This allows tunnel construction and survey professionals to generate fast analytics on the construction activities for processes such as shotcrete volumes.

- **Create CAD tunnel cross-section diagrams** - Use the new Create CAD Tunnel Cross-Sections command to automatically generate 2D and 3D CAD cross-section diagrams from tunnel inspection maps. Simply select the inspection map you want to reference, enter the range of stations you want to include and the station interval, and specify layout properties for the diagrams. 2D cross-section diagrams display information in both images and text tables. 3D cross-section diagrams display information in images only. The diagrams help reduce the time required to create CAD-based deliverables from tunnel survey data, such as for construction verification and documentation of excavation, shotcrete, and final lining.

- **Specify the direction of arcs in tunnel shapes** - When creating or editing a tunnel shape, the new Arc Direction property enables you to select to "draw" an arc segment either in a *Standard* direction (the arc curves inward toward the tunnel alignment centerline) or in an *Inverted* direction (the arc curves outward from the tunnel alignment centerline). This option provides additional flexibility when creating tunnel designs such as for soft-ground sequential excavation projects where the tunnel excavation profile is performed in multiple stages. (Note: To include Arc Direction properties in an exported tunnel design TXL file, be sure to use the latest version of the TXL exporter. The resulting TXL file cannot be imported into earlier versions of TBC.)

- **Add pipe set outs for tunnel designs** - Properties have been added to the tunnel Shape Editor that enable you to define a new pipe set out type. (A *pipe umbrella* system is a pre-support measure used in weak ground conditions in conventional as well as mechanized tunneling.) Properties include horizontal/vertical offset, end horizontal/vertical offset, and length along the alignment. (Note: To include pipe set out properties in an exported tunnel design TXL file, be sure to use the latest version of the TXL exporter. The resulting TXL file cannot be imported into earlier versions of TBC.)

Monitoring

- **Customize display colors for monitoring point displacement vectors** - In the Project Explorer, right-click your Monitoring Project and select Project Settings. Under View, click the Monitoring tab to specify the colors to be applied to point displacement vector arrows displayed in graphic views. The colors indicate each point's displacement status based on user-defined thresholds: OK, warning, or alarm. Allowing for color customization helps cater to different visualization preferences and can ease usability for users experiencing color vision deficiency.

- **Enhanced Monitoring Report** - When creating a Monitoring Report showing point displacement over a period of time, you now have the option to select whether to display 1D, 2D, or 3D displacement values in the report. This is beneficial when a monitoring project is only dealing with certain dimensions, such as heights in a leveling project.

Mobile Mapping

- **Generate POSPac Position Fixes enhancements** - This feature improves the trajectories where the GNSS coverage is poor. It has been enhanced to:

  - Make the command visible in the contextual menu when selecting a mission node.

  - Display the path of the computed PFIX file.

- **Process Raw Trajectory Data enhancements** - This feature computes a Smoothed Best Estimate of Trajectory (SBET) using the raw inertial, GNSS satellites, and base station data for Trimble MX9 and MX50 GNSS trajectories. It has been enhanced to:

  - Integrate the PFIX file selection.

  - Provide detailed messages when an error happens during the trajectory computation.

  - Take into account everything related to the Epoch and datum, so the new SBET is aligned with the project properties.

  > **Note:** The feature is now included with the TBC Mobile Mapping subscription license and is packaged within the complete TBC or the Mobile Mapping option installation method. For perpetual Mobile Mapping license holders, this functionality still requires installation and licensing of Applanix's POSPac MMS application.

- **Mission's Trajectory Settings** - POSPac processing produces a file that describes the accuracy of the post-processed solution and contains the position, orientation and velocity RMS after smoothing. The name of the file is smrmsg_xxx.out (where xxx is the processing Kernel) and it is used to colorize segments of a mission according to the values of the RMS. The Trajectory Settings feature lets you change the color settings of the post-processed trajectory (according to the values of the RMS source) and to switch between the RMS colorization and the original colorization (Red for the Real-Time trajectory, and Green for the processed trajectory).

- **LAS exporter** - Export classified Mobile mapping point clouds by run with the options to:

  - Define a splitting distance.

  - Split the file into a piece of files.

  - Choose the LAS format.

  - Export the right laser and/or the left laser.

  - Sample the data.

  - Apply the ECEF coordinate system or not.

- **MX7 data import enhancement** - The generation of cubical images will not be the default option when importing the MX7 Mobile Mapping data.

Data Prep

- **Create a Global Vertical Design** - Use the Create Global Vertical Design command to quickly add one or more vertical design rules to a line or between two lines without needing to use the full Create Vertical Design or Edit Vertical Design commands. When adding a 'global' rule, the command pane prompts you for just the required parameters. The Properties pane also opens for you to specify or edit any other properties. Additional global rules you add will be children of the single global vertical design that is created by adding the first rule. Each project can have only one global vertical design.

Coordinate System

- **Updates to Coordinate System and Time-Dependent Transformation databases** -

  The newest Coordinate System Database installed with TBC includes the following enhancements:

  - Added EGM2008 geoids for:
    - Guyana
    - Eastern Caribbean
    - Bahrain
    - Egypt
    - Iraq
    - Israel
    - Jordan
    - Kuwait
    - Qatar
    - UAE

  - Added new geoid Pl-geoid-2021 for Poland

  - Cleaned up datums and zones used in the US

  - Updated datum JGD2011 for Japan

  - Fixed geoid model for Cyprus

  - Fixed wrong reference epoch for Prince Edward Island, Canada

- Updated EPSG ID for Swiss geoid models

  - Fixed "Swiss Geoid 2004 HTRANS" modeling LN02 Vertical System

  - Updated displacement model for Argentina

  - Added UCS-2000 Systems and EGM2008 Geoid for Ukraine

  - Updated displacement model for Northern Europe

  - Added new Slovenian reference frame

  - Added "System Cityring" for the Metro in Copenhagen

  - Add new System TMCI-5.5 for Ivory Coast

The newest Time-Dependent Transformation Database installed with TBC, which is used to transform between ITRF 2014 at the epoch of measurement and the global reference frame, includes the following enhancements:

- Added ITRF2020 and all successive realizations of WGS84, IGS, and RTX reference systems.

- **Improved interoperability with the latest Coordinate System Database** - TBC has been enhanced as follows to take full advantage of the latest Coordinate System Database (CSD):

  - The Trimble Coordinate System Database and Change Coordinate System Wizard have been enhanced to improve search by EPSG ID, enabling users to find UTM zones on NAD83(2011) or US state plane zones in feet.

  - Users can now change the Horizontal Datum when they click the Change button in Project Settings / Coordinate System / Datum Transformation.

  - The Geodetic Library has been updated to support Displacement Models with logarithmic terms required for Argentina.

  - An update was made to the global reference epoch used for Japanese Datum JGD2011, which is really 2011.395 or 1997, depending on the location.

Third-party tools

- **New ANZ Toolbox commands** - UPG and SITECH Construction Systems are actively helping to improve Trimble Business Center (TBC) for users in Australia and New Zealand. As part of this, they are continually developing commands and enhancements for the Australasian market which can be installed as extensions to (TBC).

  These new commands are licensed to the ANZ Toolbox Module:

  - **Measure Chainage/Offset** – The Measure Chainage/Offset command allows you to select a line or two points to create a line and then investigate objects for chainage and offset. Annotate to a layer and/or create a Microsoft Excel report.

  - **Measure XFall** – The Measure XFall command enables you to select a reference line to define what is meant by chainage and right angles, and then selects two strings to calculate the x-fall, width, and height difference between them.

  - **Insert/Delete Nodes** – The Insert/Delete Nodes command helps you to adjust linestring geometry by inserting and deleting nodes at defined locations.

  - **Reorder by Selection Order** – The Reorder by Selection Order command allows you to reorder point IDs by tracing a line over the required points. The function uses the point numbers of the points selected and simply re-orders them so that they increase in the same order as the order they were selected in. This can be used to fix field coding and pickup errors.

- **Reorder by Proximity** – The Reorder by Proximity command enables you to reorder point IDs based on the shortest distance to the next point. After selecting the first point in the string, the program automatically reorders the point numbers based on the next nearest point. This function can be filtered by search masks on the feature code or point ID's. Can be used to fix up field coding and pickup errors.

- **Set Line Direction** – The Set Line Direction command allows you to pick a reference line/alignment and then select linestrings that it will switch to run the same direction as the reference line/alignment.

- **Check Line Deflections** – The Check Line Deflections command enables you to search selected lines to find and highlight nodes that exceed a specified deflection angle. This command can be used to find string errors prior to sending data to the field or to display deflections as text on screen.

Bug fixes

The following major bugs **have been fixed** in this version of TBC:

- When importing aerial photogrammetry data from a DJI P1 UAS:

  - Antenna offsets were not applied correctly.

  - Photo images could be imported with an incorrect orientation.

  - RINEX files were ignored and not imported.

- The Stockpile Volume Report was not showing values in languages other than English.

- Endpoint snaps for breaklines, features, contours, etc. did not detect the elevation, requiring you to enter it manually.

- When working with Mobile Mapping:

  - Trajectory may have had discontinuities when using Swiss Geoid 2004 HTrans.

  - Scan properties did not show the spin and pulse frequencies for the left and right lasers.

  - Wrong signs displayed when importing JSON file from calibration.

  - Right and left laser data was visible even if one had been turned off when doing a registration with targets.

  - Target Type in the Point Cloud Smart Picking was not persistent for the next target to pick when doing a registration.

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.

System requirements

Microsoft operating system:	Windows® 10 (64-bit version)
	Windows 11 (64-bit version)
Processor:	Dual-core 1.80 GHz or better recommended
	Quad-core 2.80 GHz or better (additional cores with hyper-threading support highly recommended for Aerial Photogrammetry, Mobile Mapping, and Scanning modules)
	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 or more recommended for Aerial Photogrammetry, Mobile Mapping, and Scanning modules
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 500GB or more for Aerial Photogrammetry, Mobile Mapping, and Scanning modules
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)
	8 GB graphics card or higher (for example, NVIDIA Quadro P4000) required when working with Aerial Photogrammetry, Mobile Mapping, and Scanning modules
	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.)