Trimble Business Center

Release Notes

TBC Version 2023.10

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, 2023** 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

- **Enhanced background maps** - The background maps provided by Trimble Maps Services displayed in this version of TBC match those currently displayed in Trimble Access and are of higher quality and accuracy than background maps displayed in earlier versions. And, displaying them is easier than ever with the addition of the new Trimble Maps command in the Home > View ribbon.

Coordinate System

- **Coordinate System Database (CSD) enhancements** - Since the release of TBC v5.90, the default Coordinate System Database (current.csd) installed with the application has been enhanced as follows:
  - Added NAD27 datum and zones for the city of Toronto (as predefined records)
  - Added EPSG Alias 2056 for CH 1903+ (LV 95)
  - Added Datum and Zone for Lyon Turin Project
  - Added alternative zones and EPSG aliases for Finland
  - Added ISO ID 979 for Kinematic Datum IGS20
  - Time-dependent transformation for South Africa

- Updated Geoid Model for Romania

- Updated Displacement Model for Japan

- Fixed Swiss Geoid 2004 HTRANS

- Added LDP Zones for Ohio DOT

- Updated Datum Grid and Geoid Model for Austria

- Added EPSG codes for NZGD2000 projected coordinate systems

- Support S-JTSK / Krovak East North

- Added Geoid Model GCG2016 for Germany

- **Trimble Geodetic Library enhancements** - The Trimble Geodetic Library used in TBC has been enhanced as follows:

  - Discrepancies in the grid point scale factor (k) computed in TBC as compared to what is computed by NGS were resolved.

  - Map projection convergence calculations now match NGS answers.

  - A bug was resolved wherein time-dependent transformations could provide incorrect results for non-English locales.

GIS

- **Exchange GIS elliptical arcs and cubic bezier curves** - TBC now supports the GIS exchange, import/export, and display of elliptical arcs and cubic Bezier curves used to display graphic features in TBC. (Note: To correctly write features with elliptical arcs back to the data source from TBC, a projected coordinate system is required in both the TBC project and the data source.)

- **Preview GIS feature geometry** - Preview the geometry used to display features queried from a GIS data source prior to import to determine whether the query parameters specified in the Read Features from GIS command pane are correct, and, if not, make corrections before proceeding. This enhanced workflow lets you work more efficiently and with more precision when importing GIS feature geometry.

- **Update GIS feature geometry and attributes** - Feature geometry and attributes already imported into your project from a GIS data source are automatically updated when you re-import data from the same GIS data source, eliminating the need for the process to re-import the entire data set and greatly streamlining the feature geometry update workflow.

CAD

- **Streamlined IFC structure** - TBC has implemented a more intuitive and streamlined method for organizing and managing BIM objects in IFC (Industrial Foundation Class) models. Now, when you select a BIM object in your project made up of individual geometry objects (CAD and IFC mesh objects), the individual member objects are selected as well, but they are no longer displayed in the Project Explorer individually and can no longer be selected individually in the graphic views. This greatly reduces the number of objects with which you might need to interact and eliminates the chance of accidentally moving them away from the model. It is also more aligned with how Trimble Access and Trimble Connect manage BIM objects.

  Note: When opening a project created in an earlier version of TBC in which the member objects have been moved, be sure to select to reset the anomalous data when prompted. This will ensure your project is in sync with the latest schema. (To open the prompt at any time to resync your data, press F12 and enter the command name: UpdateBIMDataCmd).

- **Align text with a line** - In the Properties pane, you can now set a Text Along property to Yes for a text object and then select a line (including arc segments) to align the text with. When you move the line, the text moves with it.

- **Updated help on how to build Smart Text codes** - The Smart Text Codes help topic and TBC Smart Text Quick Reference Guide (in the TBC community) have been updated with descriptions of the seven fields/arguments you can include between the commas in a smart text code.

Data exchange

- **Exchange data with Trimble Access using Connected Workspace** - The new Connected Workspace command provides an alternative to using Trimble Sync Manager, a desktop-based application that enables a seamless data synchronization workflow between TBC and Trimble Access via the Trimble Connect cloud platform. Connected Workspace, which is an on-board TBC command that also uses the Trimble Connect cloud platform, is being released in a limited-features version (import from Trimble Access only; no export back) in this release of TBC for users to try out. (Trimble Sync Manager will continue to operate as normal.) In subsequent TBC releases, the Connected Workspace command will replace Sync Manager entirely, providing a smoother and more efficient workflow, and an overall better user experience when performing a data exchange between TBC and Trimble Access.

Survey and COGO

- **Download files from the new UNAVCO services** - TBC has been updated to support the download of reference station data for baseline processing from the newly revised UNAVCO services, which now requires a user login for each 8 hours of use.

- **Import polylines based on points from Trimble Access** - Import from a Trimble Access job file (.jxl) polylines that dynamically change positions based on any changes to the coordinates for the underlying points.

- **Support for Trimble Access "measure-to-surface" points** - You can now import and process points recorded in Trimble Access using the Measure to Surface command, which simply measures the difference in distance from one or more points to a specified surface. This enables you to, for example, easily compare topo shots to an original ground surface model, or measure the clearance from the top of a tunnel to the road surface. If necessary, measure-to-surface points can be easily converted into survey points in your project.

Surfaces

- **Composite surface calculation improvements:**

  - Surface holes are now supported when creating the composite surface.

  - Edges between contributing surfaces are no longer offset (unless required to prevent a vertical wall); this reduces the number of surface flags that are generated.

  - Surface triangulation has been improved (with extra edge breaklines) so that the source surfaces connect properly in the composite surface's cross-sectional views. Surface vertices are actually reduced because there are fewer overlapping breaklines.

Point Clouds

- **Advanced point cloud filtering** - Use the new Advanced Point Cloud Filtering command to filter a point cloud by creating a new region based on the detected point elevations within rectangular sampling cells of a specified size applied across the point cloud. This can be helpful, for example, when trying to create a separate point cloud region for bare ground that does not include low-lying grass and other vegetation, but instead includes only the lowest points in the cloud, at ground level. Optionally, apply the advanced filter to a subset of points in the selected point cloud by specifying a polyline along with horizontal/vertical offsets to shorten processing time and generate more focused, cleaner output.

- **Customize point cloud classification** - Use the new Training tab in the Extract Classified Point Cloud Regions command pane to create custom point cloud classification models you can use to automatically extract new point cloud regions and/or adjust existing automatically extracted point cloud regions to your specific data. You do this by providing manually corrected/classified region examples (for example, fire hydrants or electrical boxes) to train and validate the model yourself using deep-learning technology, resulting in an output model with the highest quality possible based on your input sample data.

- **Pavement condition inspection** - When working with Mobile Mapping data, use the new Inspect Pavement Condition command to perform an automatic inspection of a selected section of scanned roadway pavement to identify visible conditions on the road's surface that may require attention (such as alligator and linear cracks, depressions, corrugations, rutting, potholes, and bumps) and extract them as features with attributes into the project.

  Extracted condition features are displayed in graphic views and in the Project Explorer, where they are grouped by sample units to aid in their real-world location. You can specify the thresholds for low-, medium-, and high-level severity conditions (based on, for example, the depth and width of a pothole) so that extracted condition features are appropriately labeled in the Properties pane and in reports. This also enables severity labeling based on the ASTM Pavement Condition Index for both entire inspected sample units and, optionally, each of the segments contained within them. Additionally, you can select to display in the graphic views a heat map (point cloud) indicating elevation differences between the real and the estimated ideal pavement surface. Analysis results can be printed to a Pavement Condition Inspection report that can easily be shared with others.

- **Export point cloud inspection with heat map or true color** - The Scan Inspection command enables you to graphically display positioning deviations between multiple point cloud regions (or mesh and surface objects and a point cloud region) by applying a differential color map ("heat map"). Now, when you export a point cloud in E57, LAS, or LAZ format to which an inspection heat map has been applied, you can select to export the point cloud with the heat map colors or true color so it can be viewed appropriately when imported into another project. This is a helpful feature for anyone who collaborates with others when working with inspections, as-built designs, monitoring, and/or tunneling.

- **Enhanced Drape Objects on a Point Cloud command** - The Drape Objects on a Point Cloud command, which has been available to vertically elevate each of the vertices defining a CAD line, alignment, or trajectory to a point or group of points in a point cloud, has been enhanced as follows:

  - In addition to lines, you can now select to elevate one or more CAD points to the point cloud using all of the available search strategies.

  - Apply a specified horizontal offset to CAD linear objects during the elevation process.

  - Select to automatically create points for CAD linear objects when the interval between nodes on the polyline exceeds a specified distance.

  - Select to elevate GNSS and Mobile Mapping trajectories.

Photogrammetry

- **True othophotos** - Create true orthophotos that provide impressive sharpness and consistency with the following enhancements:

  - Cleaner edges with high resilience against noise

  - More consistent colors and a calmer appearance

- Automatic handling of challenging input data

- Higher resource efficiency and reduced node disk space requirements by up to 60%

▪ **More efficient resource usage** - Experience reduced disk space and better resource usage when working with photogrammetry projects. Large projects are faster to set up due to reduced data import and image preparation time. Disk space is reduced for true orthophoto single-node projects up to 20%.

Tunnels

▪ **Industry-standard color scheme for tunnel inspection maps** - Tunnel inspection maps displayed in the Tunnel Inspection View now use a more industry-standard default color scheme to display delta values. This reduces time for the manual creation of color schemes when preparing tunnel construction quality control reports. You can easily change the color mapping scheme if necessary.

▪ **Reverse stationing direction in tunnel reports** - When creating a Tunnel As-Built Report, you now have the option to enter a start station greater than the end station to reverse the stationing direction to run from the end station to the start station. The viewing direction and offsets in the report are reversed, resulting in positive offsets to the left and negative offsets to the right. This is a great benefit when, for example, a tunnel is being constructed from the end station to the start station (for example, construction is proceeding from station 2+500 towards station 1+000).

▪ **Tunnel Undulation Report** - The new *Tunnel Undulation Report* enables you to use point cloud or total station data to measure the evenness/smoothness of an as-built tunnel mesh to, for example, analyze a shotcrete surface before the membrane system for waterproofing is applied. This is done as a quality check to identify out-of-tolerance areas requiring attention. Simply select the as-built mesh, specify the maximum bar length to be used for measurements, and specify the waviness tolerance that, if exceeded when measuring the deepest point from the bar, will cause the measured area to be flagged and included in the report.

Mobile Mapping

▪ **Enhanced run views** - Now, when viewing run views, only camera positions (camera markers) are displayed, not the trajectories.

▪ **Pavement condition inspection** - When working with Mobile Mapping data, use the new Inspect Pavement Condition command to perform an automatic inspection of a selected section of scanned roadway pavement to identify visible conditions on the road's surface that may require attention (such as alligator and linear cracks, depressions, corrugations, rutting, potholes, and bumps) and extract them as features with attributes into the project.

Extracted condition features are displayed in graphic views and in the Project Explorer, where they are grouped by sample units to aid in their real-world location. You can specify the thresholds for low-, medium-, and high-level severity conditions (based on, for example, the depth and width of a pothole) so that extracted condition features are appropriately labeled in the Properties pane and in reports. This also enables severity labeling based on the ASTM Pavement Condition Index for both entire inspected sample units and, optionally, each of the segments contained within them. Additionally, you can select to display in the graphic views a heat map (point cloud) indicating elevation differences between the real and the estimated ideal pavement surface. Analysis results can be printed to a Pavement Condition Inspection report that can easily be shared with others.

Third-party tools

Feature: ANZ Toolbox commands

- **New ANZ Toolbox commands** - These commands have been added to the toolbox:

  - **Create Xlines** – The Create Xlines command enables you to select a control line or alignment and create perpendicular lines at nominated intervals and user defined locations. Nominate the width of the XLine either side of the control line.

  - **Explode 3D Objects** – The Explode 3D Objects command allows you to select 3d solid objects and explode them into component lines and points. The command breaks them into top, bottom, and vertical side objects on separate layers so that the data can be used as source data for surface models.

  - **Create Slope Markers** - The Create Slope Markers command helps you select a control line and two other lines, generally the top and toe of an embankment and create markers between them perpendicular to the control line at nominated intervals.

  - **Convert to Polygon** - The Convert to Polygon command allows you to convert closed CAD polylines and Linestrings into Polygons. This command will convert horizontal and vertical arc data to straight line segments in the process.

  - **Create 3D Utility Chambers** - The Create 3D Utility Chambers command enables you to create one or many 3D utility chambers. These can be circular or Rectangular and apply a wall thickness, floor thickness and depth to the objects.

  - **Edit 3D Utility Chambers** - The Edit 3D Utility Chambers command helps you edit existing 3D utility chambers. This allows you to change the dimensions and apply new wall thickness, floor thickness and depth to the objects.

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 or higher graphics card (for example, NVIDIA Quadro P4000) recommended when working with Aerial Photogrammetry, Mobile Mapping, and Scanning modules
	Note: 4 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.)