Trimble Business Center

Release Notes

Version 5.10

www.trimble.com

Welcome to Trimble Business Center 5.10

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.

This version of TBC includes numerous enhancements. See "New features" for more information.

Installing or updating

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

Note:
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 (excluding data collected with Trimble-branded Mobile Mapping hardware, which requires an appropriate license). It does not allow you to use any licensed features. To view your license after installation is complete, select Support > License > License Manager. For a description of the features available in each licensed configuration, see "Licensed Features" in the online Help.

Warning!
When installing Trimble Business Center and various support applications (for example, Microsoft DirectX and Windows Mobile Device Center), you may be prompted to reboot your system multiple times to ensure the proper installation of these applications. To prevent the possibility of lost or corrupted data, it is highly recommended that you save all files and close all other applications prior to performing this installation.

- **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 2019 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:

- Ensure your computer can connect to the network server where the HASP multi-user network license is installed. When you run the software after installation is complete, it will automatically search the network to locate the license.
- Ensure no HASP hardware key is connected to your computer during installation.
- See your administrator for more information.

  Note to Administrators: For instructions on installing a HASP network key (multi-user license) and viewing and managing license information, in the TBC ribbon, select Support > License > License Manager. Then, in the License Manager dialog, select the Network Licensing Read Me link.

New features

Following are the new features included in this version of Trimble Business Center. The features are organized by their related ribbon tabs. To view context-sensitive help at any time while using TBC, press F1.

Data management

- **Point sort order in exported JXL file** - The Trimble Field Software exporter (jobXML) has been enhanced to allow you to specify the order in which points are sorted in the exported JXL file. If you are exporting points that do not include linework-producing feature codes, you can select the "Chronological" option to export the points in the order in which they were created. If you are exporting points that do include linework-producing feature codes, you can select the "Feature processing" option to export the points in the order required to recreate accurate feature linework in the destination application. (See "Export JobXML Files (.jxl)" in the TBC Help.)
- **Large orientation change flag** - For each time a total station was reoriented in the field (for example, the instrument orientation was disturbed), TBC now compares the new orientation angle with the first one recorded. If a difference is detected that exceeds the value specified in the new "Reorientation tolerance" setting in Project Settings, a warning flag is displayed with the total station. In this case, it is recommended that you review the orientation property for each backbearing to identify and correct the problem (for example, disable one or more backsights), helping to ensure the accuracy of subsequent foresight observations.

- **Support for multiple-file export to external services** - When you export data to an external service (for example, Trimble Connect) wherein the applicable exporter creates multiple files, all of the related files are now exported (saved) to the external service location, not just a single file as in the past. You can configure profiles and options for external services in the Options dialog. You can export to an external service using the Save File Remotely command or by clicking the "Browse external service locations" button located next to the File Name field in the Export command pane. (See "External Service Profiles and Options" in the TBC Help.)
- **Support for BeiDou extended range** - TBC has been enhanced to support the newly extended range of BeiDou satellites from 35 to 63. This new range is compliant with the latest Interface Control Document (ICD) for the BeiDou Navigation Satellite System.

CAD

- **Create and edit feature definitions directly in TBC** - Feature definitions provide the instructions for mapping feature codes and control codes assigned to points in the field to their associated real-life features and attributes. All of the functionality required to create and manage feature definitions previously available only in the Feature Definition Manager application is now available directly in TBC. In addition to the ability to import a Feature Definition (.fxl) file to add feature definitions to your project's Feature Library, you can now create a Feature Library in your project "from scratch." You can view all of the objects in your project's Feature Library—including control codes, feature definitions, attributes, symbols, offset lines, and more—in an easy-to-follow hierarchical tree displayed under a new Feature Libraries node in the Project Explorer. You can then use the Properties pane to edit any object or create a new one. Optionally, you can export the changes to a new FXL file. The file can then be shared with other users in the office and in the field.
- **Simplified feature coding and attribution** - When using the Create Point command to create a new point in a project containing a Feature Definition Library, you can assign a feature code and specify attribute values, including media files, directly in the command pane—without the need to run the Process Feature Codes command or Assign Media Files command. In addition, you can edit the attributes in the point's Properties pane, again, without the need to run additional commands. This makes it faster and easier than ever to specify attributes and assign media files to a new point. (See "Create and Edit Points" in the TBC Help.)
- **Enhanced IFC 3D mesh support** - Support for Industry Foundation Class (.ifc) files, which you can use to import into your project architecture, engineering, and construction information created in a Building Information Management (BIM) system, has been enhanced as follows. These enhancements enable you to easily import an IFC 3D mesh and reference it to control points in your project. Then, you can export the mesh with the new position information for use as an Active Map in Trimble Access or in other third-party software.
  - **Import IFC 3D mesh data** - The IFC importer has been enhanced to provide cleaner (no extraneous line work) and more accurate 3D mesh renderings in the project. (See "Import Industry Foundation Class Files (.ifc)" in the TBC Help.)

- **Georeference IFC 3D meshes** - The Running Snap Mode Options dialog now includes the option to snap your selection to a vertex on an IFC 3D mesh, allowing you to more precisely reference the mesh using the Move Objects and Rotate Objects commands. (See "Work with Industry Foundation Class Files (.ifc)" in the TBC Help.)
- **Export IFC 3D mesh data** - An IFC exporter has been added that allows you to export IFC 3D meshes whose positions have changed as a result of referencing in TBC. (See "Export Industry Foundation Class Files (.ifc)" in the TBC Help.)

- **Labeling enhancements** - The Label Style Manager and Label Table Manager have been enhanced as follows:
  - You can add the content of the "Description 1" and "Description 2" point fields (displayed in the Point Properties pane) to point labels.
  - You can add ellipsoid distances to line labels.

  (See "Create and Edit Labels" and "Create and Edit Label Tables" in the TBC Help.)
- **Support for Trimble SketchUp 2019** - TBC fully supports importing, working with, and exporting files created with the newest Trimble SketchUp 2019. (See "Import SketchUp Files (.skp)" in the TBC Help.)
- **Detect crossing geometry** - Use the Detect Crossing Geometry command to identify and flag where lines cross each other planimetrically (same X and Y coordinate, but different Z level), and generate a list of the crossings in both the command and Flags Pane. Since intersections at the same elevation are generally valid, you can set a vertical tolerance (delta elevation), which is the maximum allowable distance between points of intersection. Intersections that exceed this tolerance are not flagged. Finally, you can generate a report of all of the crossing geometry with links back to the potential conflicts in the Plan View . (See "Detect Crossing Geometry" in the TBC Help.)
- **Smart text enhancements** - You can use the Smart Text tool in the Create Text and Edit Text commands to insert or edit embedded attribute text within text annotations and labels. Smart text displays values—such as elevations, areas, lengths, or stations—that are derived from objects in your project. Smart text also updates dynamically when those values change. The following enhancements have been made to the smart text functionality in TBC:
  - **Display in alternate units** - You can now add a unit specifier option to the smart text code to specify the length, area, or volume units used to display the data, overriding the default units specified in Project Settings. For example, if your Area Project Setting is "square meter", by adding *yd* to the end of smart text code, you can display area units in your smart text as square yards instead of square meters. In the following example, the unit specifier option *yd* has been added to the end of the code for an area property (*A*) that is using the object selection option (*O*), display units option (*T*), and decimal precision option (*3*): *@<A,O,T,3,yd>@*

- **Perform simple math computations** - Smart text now supports the inclusion of simple math computations in the smart text code that are intended to modify the values displayed in the smart text (as applicable). For example, you could include a math computation option that automatically adds 6 default units to a line length displayed in the smart text. In the following example, *|+6* has been added to the end of the code for a line length property (*L*) that is using the object selection option (*O*), display units option (*T*), and decimal precision option (*3*):
  @<L,O,T,3|+6>@
  In this example, if the Distance Unit setting in Project Settings is meters, 6 meters are added to the actual line length when displayed in the smart text, regardless of the unit type selected for the text display. If you had added *|+6ft* to the code, 6 feet would be added to the length regardless of the Distance Unit setting in Project Settings and unit type selected for the text display.

(See "Use Smart Text Codes within Text"' and "Smart Text Codes" in the TBC Help.)

Corridors

- **Slope by depth table** - In the Corridor Template Editor, use the Slope by depth table option to create a table of depth and slope values for a side slope (rather than creating a long list of conditional statements). Enter a slope, maximum depth, and name for each segment in the side slope (enter a negative value (-) when you want the slope to go down). The slope is used up to the indicated depth from the last point; then the next segment is used. This option enables you to create sloped side ditches. You can create multiple groups of slopes and depths, each with one or more rows of slopes and depths so that the tie has multiple segments. In addition, you can now have a side slope instruction tie to a target material layer (e.g., Finish, etc.) rather than a surface, as well as specify the direction from the segment the instruction is tied to. (See "Create Side Slope Instructions" in the TBC Help.)
- **Create side slopes -** Use the Create Side Slope command to create a cross-sectional template to be applied along a selected 'master' line so that you can model complex side slope geometry. The template geometry (multiple lines offset at a given interval from, and dependent upon, the master line) is defined using TBC's Corridor Template Editor. The linework created by this command can then be tied to one or more surfaces to model scenarios such as levees, curb-and-gutters, above-ground pipe coverage, and other structures where side slopes are needed. (See "Create Side Slopes" in the TBC Help.)

Takeoff

- **Custom Takeoff Report** - Use the Custom Takeoff Report command to create a simplified Microsoft© Word report with just the takeoff data you need (mass earthworks, site improvements, and topsoil quantities) in a familiar format. This version of the takeoff report:
  - Includes both planimetric and surface/slope area for a region
  - Includes additional remainders

- Excludes loose haulage volumes shown in the standard report
- Excludes count or cost quantities shown in the standard report
- Eliminates lengthy explanations of terms and concepts used in the standard report

Allows you to customize the report template for unique Microsoft Word output (See "Run a Custom Takeoff Report" in the TBC Help.)

Specialty solutions

GIS

- **GIS exporters provide option to copy attribute files/photos** - The ESRI File Geodatabase exporter and Shapefile exporter now provide the option to copy associated attribute files/photos into a subfolder included in the resulting output folder. This allows the files/photos to be accessed and viewed in other applications via a relative file path when the output folder is moved to a different computer that does not have access to the computer on which the source VCE project is stored. (See "Export Esri File Geodatabases (.gdb)" and "Export Esri Shapefiles (.shp/.shx/.dbf/.prj)" in the TBC Help.)

Mobile Mapping

- **Single scanner support** - In its standard configuration, a Trimble MX9 mobile laser mapping system consists of two high-end laser scanners. TBC now fully supports a single scanner-configuration, including registration. (See "Work with Mobile Mapping Data" in the TBC Help.)
- **New MX9 Mobile Mapping exporter to TopoDot** - A new exporter for the MX9 system has been added for Mobile Mapping. It enables you to export scans and images to the TopoDot application. (See "Export MX9 Mobile Mapping Images and Point Cloud to TopoDot" in the TBC Help.)
- **MX9 Mobile Mapping exporters now include timestamp** - Exported scans can now optionally include the timestamp in LAS (.las) files for Trimble MX and TopoDot applications. (See any of the "Export MX9 Mobile Mapping" topics in the TBC Help.)
- **Rigid registration support** - The registration command for the MX9 system now supports two additional modes: the global registration performing a rigid transformation of an entire run, and the combination of the global registration with the already existing local registration. The Local registration mode from previous versions remains unchanged. (See "Register MX9 Mobile Mapping Run Trajectory" in the TBC Help.)
- **Keep track of the registration's history** - The registration command for the MX9 system allows you to define a name for the resulting trajectory. All trajectory versions and their properties are recorded under Run entities. (See "Register MX9 Mobile Mapping Run Trajectory" in the TBC Help.)

- **Export registration results in a CSV (.csv) file** - A new exporter for the MX9 system data allows you to copy parameters and residuals of a trajectory version issued from a registration into a CSV file. (See "Export a Registration Report (.csv)" in the TBC Help.)

Scanning

- **Scale factor correctly applied to registered scans** - Point clouds scans that were registered prior to or after import now scale correctly (the appropriate scale factor is applied) when they are georeferenced to a new location or the coordinate system specified for the project is changed—without breaking the registration. Also, you are no longer prompted to specify the units type to ensure correct positioning when importing an LAS point cloud file from a UASMaster project. (See "Georeference Point Cloud Scans" in the TBC Help.)
- **Grid scaling and positioning of LAS point clouds** - When you import a point cloud contained in an LAS/LAZ (.las/.laz) file, the file may not include enough information for TBC to determine the best way to ensure that appropriate grid scaling and positioning are applied to the cloud. In this case, the new Point Cloud Scale dialog displays, enabling you to select from options specifying how the point cloud was created. Based on your response, TBC determines the best method for importing the point cloud. This allows you to import and work with point clouds that were created in different manners in the same TBC project. (See "Import a Point Cloud File of Unknown Origin" in the TBC Help.)
- **Level compensation for scan stations** - When you import a 6D scan station (a scan station with six degrees of freedom) that supports level/tilt compensation, you can use the new "Leveled" setting in the Properties pane to turn the compensation feature on or off, regardless of the setting made in the field.
  - If level compensation is turned on, the registration and georeferencing commands do not compute X- and Y-axis rotation; only a 3D position shift and Z-axis rotation are computed and applied to the point cloud. The level compensator property is used to force the Z-axis direction to be plumb, making the point cloud level. In this case, a "leveled" flag is displayed with the station.
  - If level compensation is turned off, the registration and georeferencing commands compute X- and Y-axis rotation as well as a Z-axis rotation. A 3D position shift and a 3D rotation is computed and applied to the point cloud. (Note: By turning off level compensation prior to registration and/or georeferencing, you might achieve a better fit at the expense of introducing level-related errors.)
- **Enhanced point cloud selection performance** - When you make a rectangular or polygonal selection in a point cloud, your selection is highlighted more quickly than in previous versions of TBC. This is particularly noticeable when working with very large point clouds, and it allows you to perform related point cloud workflow tasks faster and with more confidence.
- **Point feature extraction enhancements** - The Extract Point Feature command has been enhanced as follows:

- The command now provides a fast and efficient way to perform a QA/QC review on automatic extraction selections immediately after extracting attributes, before actually creating the point features. To assist you in reviewing the selections, you can use controls or keyboard shortcuts to quickly and easily review each of the selections along a displayed path and make changes as necessary.
- You can select to view a feature selection in a limit box, which allows you to isolate the selection from its surroundings in the 3D View, helping you verify that the selection is correct.
- When extracting a point feature that includes an attribute for the diameter of the selected feature, you can now select how the diameter of the selected feature is to be measured. For example, you can specify that the diameter of the trunk of a tree feature be measured at the position where you click to select the feature or at a specified height above the ground.
- You can now view the progress of the feature extraction process in the TBC Status Bar.

(See "Extract Point Features from a Point Cloud" in the TBC Help.)

- **New Terrestrial scan exporter to TopoDot** - A new exporter for terrestrial scanning systems has been added that enables you to export scans and images to the TopoDot application.

Platform

- **TBC Macro and Extension Community website** - The Support tab in the TBC ribbon now includes a link to the "TBC Macros and Extension Community" website. This site allows you to search for the latest TBC macro and extension content, ask a question, view answers, or start a discussion. You can even engage your colleagues using beta macros to share your wisdom. (*Note:* Internal program changes in TBC v5.10 require that you update any Trimble Macro Language (TML) commands you may have previously downloaded from the website.)

Resolved issues

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

- ADAC exporter:
  - The Object ID button in the ADAC Settings dialog was not functioning.
  - In some situations, points were exported with incorrect elevations.
- 12Da import and export:
  - Meta-data (user attributes) on 12Da entities were not preserved on import and not displayed in the Properties pane for the corresponding object. In addition, the attributes were not preserved when re-exported to 12Da.

    - In some situations, when importing an alignment combing spirals were incorrectly calculated.
- The Adjust Photo Station command was not licensed correctly.
- Data exported to a VCL (.vcl) file was missing coordinate system information.
- The background map could not be changed in Project Settings > Plan View.
- Multi-sliced tunnel meshes did not display correctly in the Cutting Plane View.
- The Join Lines command was not working correctly is some situations.
- In rare situations, Trimble Business Center would not open as the "Restoring views" message continued to display.
- Mobile Mapping:
    - The software did not prevent the user from picking the wrong target for pairing with a control point during registration.
    - Registration failure errors were occurring on specific datasets.
    - Re-importing the same mission database file (*.mxdb) in the same TBC session caused an error.
    - Registration did not work if a single scanner was used during the data acquisition.
    - A clearer error message was required when the Sbet file could not be found for registration.
    - The altitude of points in scans generated from longer runs were not being computed with high accuracy.

Known issues

See "Known Issues" in the TBC Help for a complete list of known issues associated with the software and related utilities, along with possible workarounds.

Miscellaneous notes

- **Mobile Mapping Windows display** - When processing Mobile Mapping data, it is recommended that your Window's display scale and layout not exceed 100%.
- **Export Autodesk® ReCap® files** - To export an Autodesk ReCap file, you must have the latest version of ReCap 360™ Pro installed on your computer with a valid license. Unlike previous versions of ReCap 360 Pro, you can install the newest version before or after the installation of TBC and the two applications will sync automatically without the need to run a plug-in utility.

- **"Use for" property for total station observations** - In pre-v4.10 versions of TBC, the "Use for" property for total station observations applied only to backsights of Resection station setups. In all other cases, regardless of the "Use for" property selection, the "Horizontal and vertical" option was always used. Starting with TBC v4.10, the "Use for" selection in new projects applies to all observations for all station setup types.

  Note: If you use TBC v4.10 (or later) to open a project that was created in a pre-v4.10 version of TBC, the displayed "Use for" selection will function as it has in the past. Therefore, no changes to older projects are required. If you change the "Use for" selection for an observation, it will begin to function with the TBC v4.10 behavior for just that observation.

- **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 (.tspx) 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, you may need to specify a proxy server for your LAN using Internet Properties > Connections > LAN settings > Proxy Server.

System requirements

Operating system:	Microsoft Windows® 10 (64-bit version)

	Microsoft Windows 8 (64-bit version) **Note:** Starting with TBC v5.21, Microsoft Windows 7 is no longer supported.
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:	10 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 "Miscellaneous notes" section earlier in this document.

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.)