ADMINISTRATOR'S GUIDE

Trimble Positions software suite: Trimble Positions Desktop add-in

Version 10.2.2.1
Revision A
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Trimble

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Release Notice

This is the August 2014 release (Revision A) of the *Trimble Positions Desktop Add-in Administrator's Guide*. It relates to version 10.2.2.1 of the Trimble Positions Desktop add-in.

Introduction

The Trimble® Positions™ software suite adds support for Trimble high-accuracy GNSS receivers using Esri ArcGIS for Windows Mobile and ArcPad technology.

An add-in for the Esri ArcGIS for Desktop 10.2 application, the Trimble Positions Desktop add-in is used:

- to set up the required projects, devices, and sessions.

- for the day-to-day management of data collected using the Trimble Positions Mobile extension, the Trimble Positions ArcPad extension, or a custom field application built using the Trimble Positions toolkit.

- postprocessing collected GNSS data.

- assuring position accuracy is met.

- updating the GIS geodatabase.

This guide contains:

- information required to install the Trimble Positions Desktop add-in.

- instructions on how to set up the Trimble Positions database.

This guide presumes you have the necessary administrator privileges to carry out the configuration for the various databases and folders. It also assumes a working knowledge of ArcGIS for Desktop 10.2 and database administration concepts.

Note – Trimble Positions Desktop add-in version 10.2.2.1 users are expected to have a basic knowledge of and training in ArcGIS for Desktop version 10.2 and to be familiar with their GIS.

Overview of the Trimble Positions software suite and related Esri software

The following sections illustrate the components of the Trimble Positions software suite and the Esri software and applications.

Trimble Positions Desktop add-in and ArcGIS for Windows Mobile technology
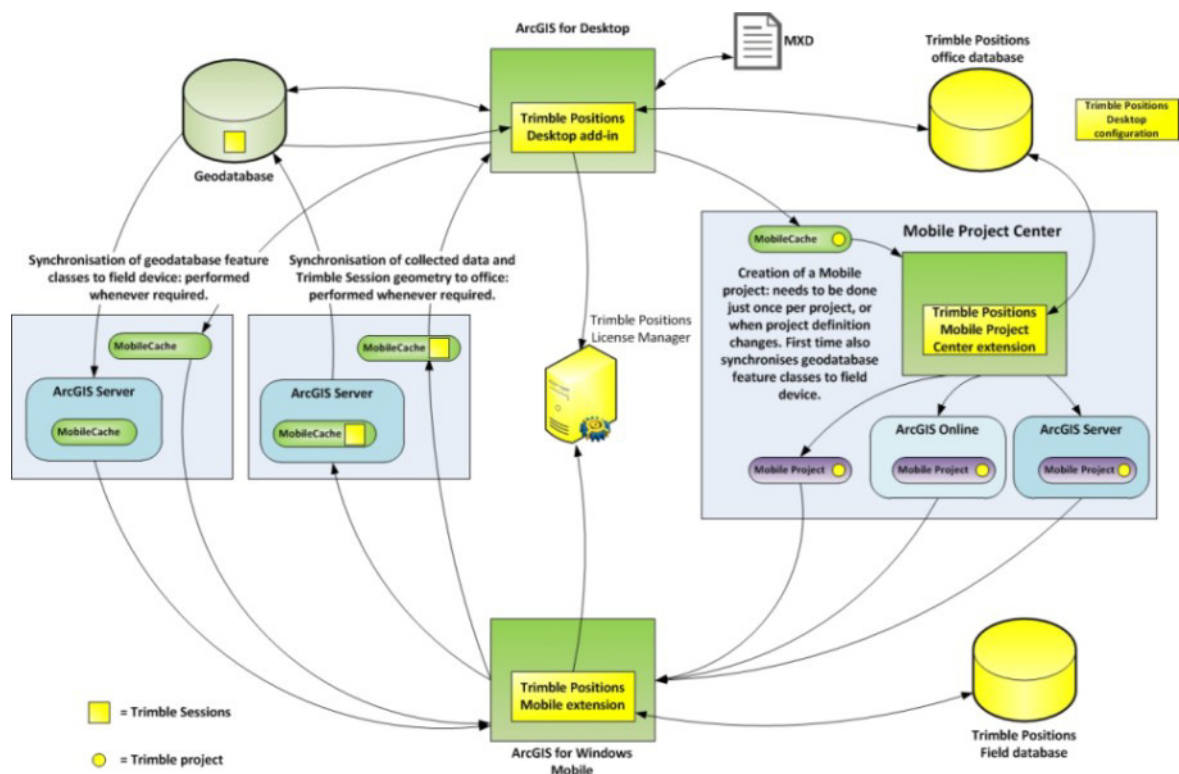

Figure 1.1   Data flow using Esri ArcGIS for Windows Mobile technology

Esri ArcGIS Mobile technology allows field users to be connected to the office using ArcGIS for Server. This connection allows projects and project data to be synchronized between the field and office, and then from the office to other field users.

For organisations that do not use ArcGIS for Server, synchronization of projects and project data is done using a combination of the Synchronize Mobile Cache mobile geoprocessing tool and file copy operations between the office computer and field devices.

ArcGIS Online is supported to allow project definitions and feature data to be published and gives field users the ability to collect data for those projects. Users must still use ArcGIS for Server or file transfer in connection with the Mobile geoprocessing tools to transfer data between the field and the office.

The Trimble Positions software suite extends and enhances ArcGIS Mobile technology with the ability to collect high-accuracy feature geometry that can be postprocessed and verified for accuracy, and update the raw positions stored in the GIS. The Trimble Positions software suite consists of 4 main components:

- Trimble Positions Desktop add-in
- Trimble Positions Mobile Project Center extension

- Trimble Positions Mobile extension

- Trimble Positions toolkit and run-time components

Field workers will use an ArcGIS Mobile field application to collect feature geometries and attributes. Trimble Positions software suite components within the field application capture GNSS measurements and related data required to rebuild and update feature geometries after postprocessing. Those data are organized into sessions. Transfer, management, and processing of GNSS data is organized around sessions. Trimble Positions configurations and session data are contained in a special feature class, TrimbleSessions. This feature class must be stored in the geodatabase, the map document, and the mobile project.

Trimble strongly recommends that you store Trimble Positions session data as an attachment to the TrimbleSessions feature class. If attachments are not enabled, the Trimble Positions Desktop add-in will attempt to copy the complete GNSS session data into the GnssData field in the TrimbleSessions feature class, but this will require more memory to be used in the field device and may fail in certain circumstances.
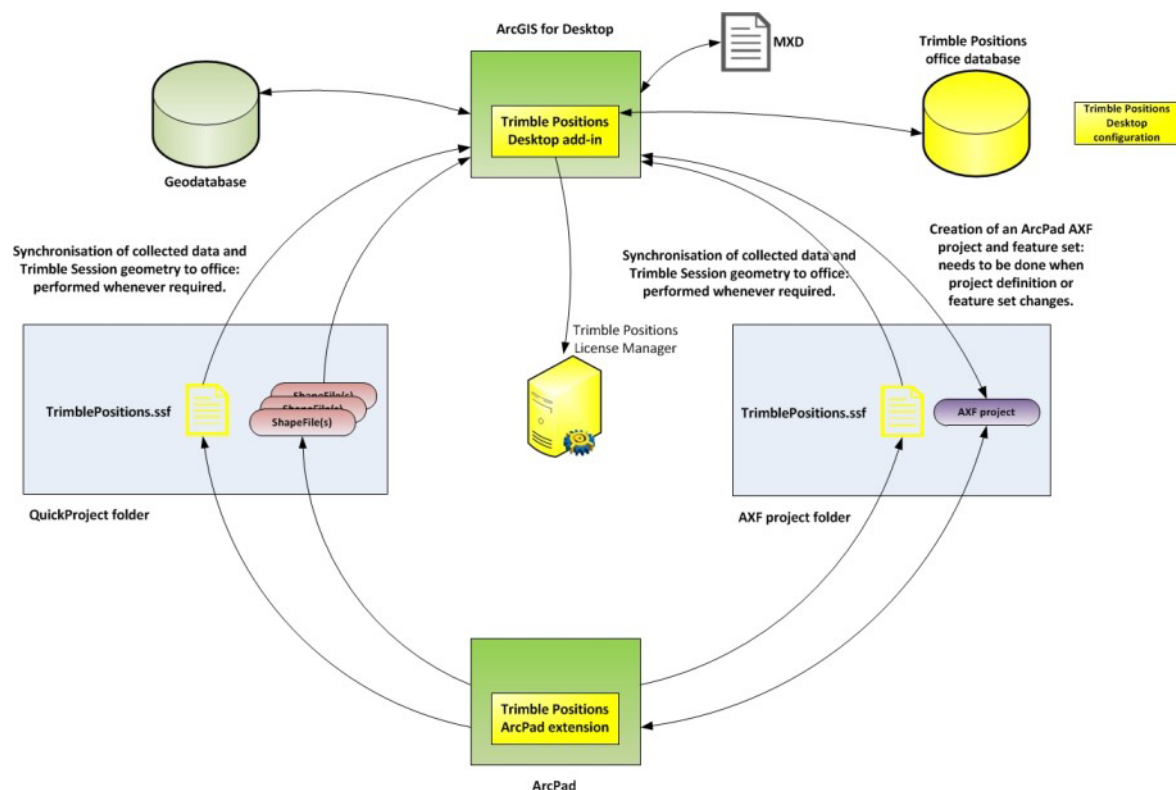
Trimble Positions Desktop add-in and ArcPad technology

Figure 1.2   Data flow using Esri ArcPad technology

Version 10.2.2.1 of the Trimble Positions Desktop add-in supports the ArcPad 10.2 data flow. This allows ArcPad and ArcGIS for Desktop users to take advantage of the Trimble GNSS high-accuracy data collection workflow with the latest Trimble GNSS receivers and ArcGIS for Desktop version 10.2 software.

The Trimble Positions software suite extends and enhances ArcPad technology with the ability to collect high-accuracy feature geometry that can be postprocessed and verified for accuracy, and update the raw positions stored in the GIS. For the ArcPad workflow, the Trimble Positions software suite consists of two main components:

- Trimble Positions Desktop add-in
- Trimble Positions ArcPad extension

Field workers will use the ArcPad field application with the Trimble Positions ArcPad extension to collect and update feature geometries and attributes. Trimble Positions software suite components within the field application capture GNSS measurements and related data required to rebuild and update feature geometries after postprocessing. Those data are organized into sessions. Transfer, management, and processing of GNSS data is organized around sessions. Trimble Positions ArcPad extension session data are contained in SSF files. When returned from the field, the SSF files are written into the Trimble Positions office database, and the related features into the geodatabase for later processing, verification, and updating.

Installing the Trimble Positions Desktop add-in

The Trimble Positions Desktop add-in is delivered in an installation package as a download from www.trimble.com.

The Trimble Positions Desktop add-in should be installed on any office computer where ArcGIS for Desktop 10.2 office-side operations (for example, project creation and session management including postprocessing) will be executed.

The office computer must have one of the following operating systems:

- Windows® XP SP3
- Windows 7 SP1

The office computer must also have the following:

- Esri ArcGIS for Desktop version 10.2
- an ODBC connection to a database (Microsoft SQLServer 2008, Oracle 10/11g, or Microsoft Jet)

To install the Trimble Positions Desktop add-in:

1. Download the Trimble Positions Desktop add-in from www.trimble.com.

2. If you have Trimble Positions office software version 1.0 or a previous version of Trimble Positions Desktop add-in installed, you must uninstall it. Configurations relating to earlier versions of Trimble Positions Desktop add-in are retained and will be used with version 10.2.0.1.

3. Follow the on-screen instructions to install the Trimble Positions Desktop add-in.

4. Use the *Trimble Positions License Administrator* utility in *Start / All Programs / Trimble / Trimble Positions Desktop add-in* to license the add-in, by either activating a Single-Use license or by using a floating or borrowed license from the Trimble Positions License Manager.

    ***Note** – The Trimble Positions License Manager is included in the installation package but must be installed separately. The License Manager is ideally installed on a computer that can be accessed continually by all Trimble Positions software suite users.*

5. Open the *Trimble Positions Desktop Configuration* software: go to *Start / All Programs / Trimble / Trimble Positions Tools / Desktop Configuration*, and configure your installation (see Setting up the Trimble Positions database below.)

6. Start ArcGIS for Desktop 10.2.

7. Before you open a Map document (MXD file), make sure that the Trimble Positions Desktop add-in is enabled; on the ArcGIS for Desktop 10.2 menu bar, select *Customize / Extensions / Trimble Positions*.

8. Refer to the *Trimble Positions Desktop Add-in User Guide* for setting up map documents and other daily operations.

Setting up the Trimble Positions database

The Trimble Positions Desktop add-in uses an ODBC-compliant database to store project and session data. To set up a connection to a database and create a required database schema, use the *Trimble Positions Desktop Configuration* tool and the *ODBC Data Source Administrator* applet.

The *Trimble Positions Desktop Configuration* tool is used to:

*   display the name of an ODBC data source that is currently selected to connect to an office database;

*   test the connection to a current data source; and,

*   select an existing data source and provide a username and a password, if required; or,

*   create a new data source and related Jet (Microsoft Access) database. The newly created ODBC data source and database file will have matching names. The schema will be created in a database.

ODBC components of the Windows operating system must be properly set to enable smooth operation of the Trimble Positions Desktop add-in. You can use a Microsoft tool called ComponentChecker to make sure that proper ODBC components are installed. (Go to http://www.microsoft.com/download/en/details.aspx?displaylang=en&id=1953).

Trimble highly recommends that you set up a Microsoft SQL Server or Oracle database to store the Trimble Positions database. Only use a Jet database for a personal, non-concurrent, or non-shared Trimble Positions database, due to performance limitations.

Also, make sure that ODBC drivers that are appropriate for the particular version of your database system are installed. Inappropriate ODBC setup or wrong version of a driver may affect the operation of the Trimble Positions Desktop add-in.

1. To start the *Trimble Positions Desktop Configuration* tool, select *Start / All programs / Trimble / Trimble Positions Tools / Desktop Configuration.*
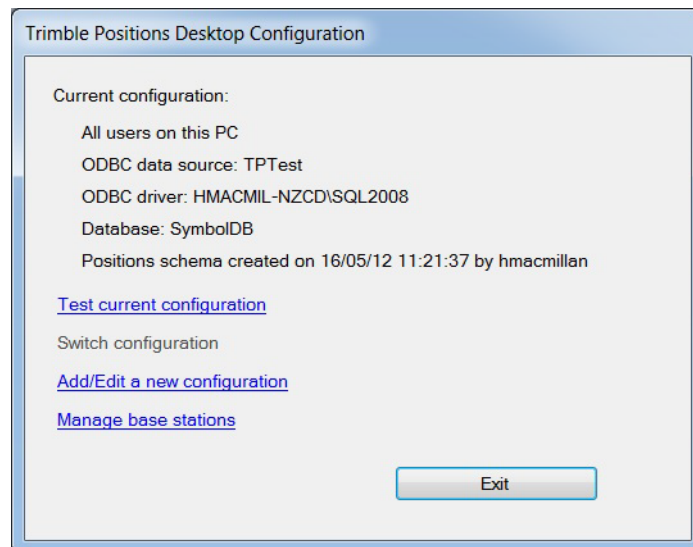
Note – *To change the current configuration, the application must be used with administrator privileges. If you do not have administrator privileges, most of the application's controls will be disabled.*

2. Click *Add/Edit a new configuration*.

3. There are two configuration types you can create:

    – Single-user: this profile will be associated with the current user. This is useful when creating a configuration profile that can roam within an organisation over many PCs, or when using an infrastructure based on virtual machines or using Citrix.

    – All users on the PC: the configuration profile will be stored locally on this PC and must be manually replicated to other PCs.

4. To create the Trimble Positions database and set up the database connection, do one of the following:

    – If you do not have an existing Trimble Positions database you want to connect to, select *Create a new Jet database for me.*

    – If you have an existing Trimble Positions database, select the *I will set up a database connection myself (Advanced)* option.

    a. In the *ODBC Data Source* drop-down list, select the name of the ODBC data source for the Trimble Positions database.

       If the database is not listed, click *Manage ODBC data sources*, and in the *ODBC Data Source Administrator* applet, select the System DSN tab. Select the required database from the list.

       > *Note – 64-bit operating systems contain two independent ODBC environments, one 32-bit and one 64-bit. Esri ArcGIS for Desktop is a 32-bit application and the Trimble Positions Desktop add-in will work in a 32-bit process. For that reason, the Trimble Positions Desktop Configuration tool will invoke the 32-bit ODBC applet when you click Manage ODBC data sources. Do not use the 64-bit ODBC applet found in your system's Control Panel as data sources created in it will not be available to the Trimble Positions Desktop add-in.*

Tip – To start the *ODBC Data Source Administrator* applet at any time, select *Start / Control Panel / Administrative Tools.*

b. In the *Trimble Positions Desktop Configuration* tool, do one of the following:

– If the database has restricted access, enter the user name and password you use to access the database.

– If you are using Integrated Windows authentication, leave the user name and password boxes empty.

If this is the first time you are connecting to the database from the Trimble Positions Desktop add-in, a message warns that there is no application schema in the data source, and asks if you want to create it now.

c. Click *Test data source.*

If the connection is successful, a message displays informing you that the selected data source is correctly set. If this fails, make sure you have entered the configuration data correctly, and that your database is accessible and running before trying again.

d. Click **OK** to dismiss the message.

e. Click **Apply**.

f. Click **Test current configuration**. If the connection is successful, a message displays informing you that the selected data source is correctly set. If this fails, make sure you have entered the configuration data correctly, and that your database is accessible and running before trying again.

If both types of configuration are available on the PC, you can switch between configurations by clicking on **Switch configuration**.

⚠ **CAUTION –** This may delete all Trimble Positions data from the selected data source.

The *Trimble Positions Desktop Configuration* tool stores the current configuration in a file named *system.config* in one of the following locations:

• for Windows 7, in C:\ProgramData\Trimble\Positions\10.2.2.1

• for Windows XP, in C:\Documents and Settings\All Users\Application data\Trimble\Positions\10.2.2.1

Jet databases, if used, are also stored here.

Note – The Trimble Positions Desktop Configuration tool creates the Trimble\Positions\10.2.2.1 folder if it does not already exist, and sets write-access permissions for the folder and files it contains for the current user account only. If other users are likely to use the Trimble Positions Desktop add-in, you must manually set appropriate access rights.

Using SQL Server

SQL Server default concurrency handling is much more prohibitive than that of Oracle. If multiple users are concurrently accessing the same data in a SQL Server database, some database operations can be blocked which will be seen as **ODBC Query timeout**… error messages. To resolve this problem, use the following SQL statements after creating a database to change the default isolation model for the Positions office software database:

ALTER DATABASE [DatabaseName] SET ALLOW_SNAPSHOT_ISOLATION ON
ALTER DATABASE [DatabaseName] SET READ_COMMITTED_SNAPSHOT ON

Managing base stations within the Trimble Positions database

The Trimble Positions database contains the list of base stations downloaded from the Trimble FTP server, as well as user-defined base stations. Use the Trimble Positions Desktop Configuration tool to manage these base stations.

1. To start the Trimble Positions Desktop Configuration tool, select *Start / All programs / Trimble / Trimble Positions Tools / Desktop Configuration*.
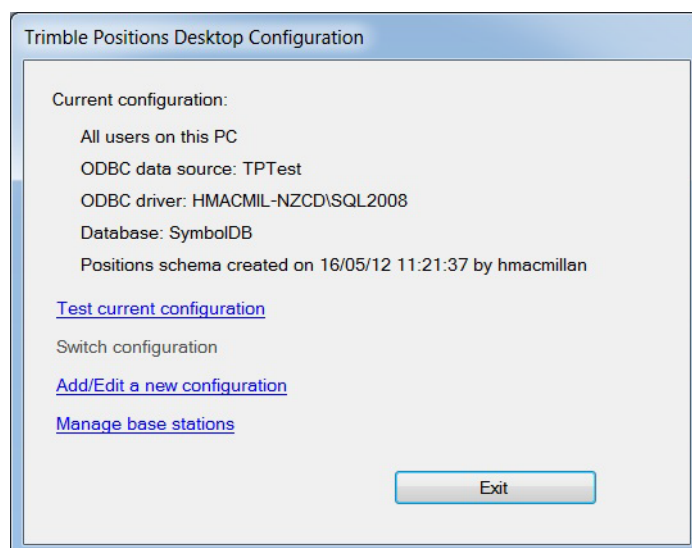
2. Click *Manage base stations.*
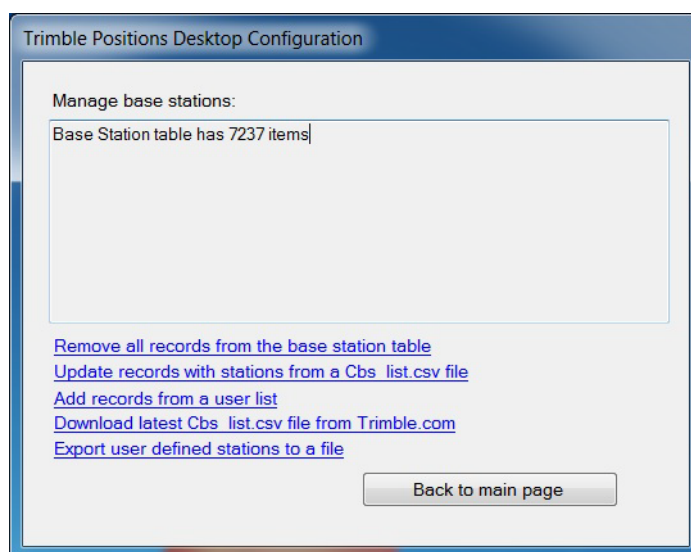
The number of base stations currently defined in the list is displayed.

3. After managing the base station data, click *Back to main page.*

Clearing all base station definitions

To clear the list, click *Remove all records from the base station table.*

Note – This removes all stations, including those defined by the user (see Saving user-defined station definitions, below, for saving user-defined stations before they are removed).

Updating the list from the Trimble FTP server

1. To get the latest list from the Trimble FTP server, click *Download latest Cbs_list.csv file from Trimble.com*. This opens an FTP session in your default web browser. Save the contents of the page to a convenient file folder.

2. To populate the database with the downloaded list, click *Update records with stations from a Cbs_list.csv file*. Navigate to the folder where the Cbs_list.csv file is located, and select the file.

Updating the list from user-defined stations from GPS Pathfinder Office software and GPS Analyst extension

1. To populate the database with base stations previously defined by the user in GPS Pathfinder® Office software or GPS Analyst™ extension, nominally stored in a file named user_list.xml, click *Add records from a user list.*

2. Navigate to the folder where the user_list.xml file is located.

3. Select the definition file to use.

Saving user-defined station definitions

1. To save user-defined base stations, click *Export user defined stations to a file*.

2. Select the folder and file name to use, and click **Save**.

   A confirmation message appears showing the folder and filename of the XML file.

Setting up Trimble Positions software suite logging

The Trimble Positions software suite logs information about significant events to a log file to enable easier troubleshooting. The log file can be found at:

- On a Windows 7 machine

  – C:\Users\<user>\AppData\Roaming\Trimble\Positions\10.1\PositionsDesktop AddIn.log.

  – C:\Users\<user>\AppData\Roaming\Trimble\Positions\10.1\PositionsMPCExt ension.log

  – C:\Users\<user>\AppData\Roaming\Trimble\Positions\10.1\TrimblePositions Config.log.

- On a Windows XP machine

  – C:\Documents and Settings\<user>\Application Data\Trimble\Positions\10.1\ PositionsDesktopAddIn.log

  – C:\Documents and Settings\<user>\Application Data\Trimble\Positions\10.1\ PositionsMPCExtension.log

  – C:\Documents and Settings\<user>\Application Data\Trimble\Positions\10.1\ TrimblePositionsConfig.log

Finding additional information

If you have a problem and cannot find the information you need in the product documentation, contact your Trimble reseller.

Documentation and downloads

- Trimble Positions Desktop Add-in User Guide
- Trimble Positions ArcPad Extension Administrator's Guide
- Trimble Positions ArcPad Extension User Guide
- Trimble Positions Mobile Extension Administrator's Guide
- Trimble Positions Mobile Extension User Guide
- Trimble Positions Mobile Project Center Extension Administrator's Guide
- Trimble Positions Mobile Project Center Extension User Guide

- Trimble Positions Toolkit Developer's Guide
- Trimble Positions Desktop Add-in Release Notes
- Trimble Positions ArcPad Extension Release Notes
- Trimble Positions Mobile Extension Release Notes
- Trimble Positions Mobile Project Center Extension Release Notes
- Trimble Positions Toolkit Release Notes

Appendix A: Positions software suite workflow overview for ArcGIS mobile

The following table provides an overview of the steps required to install and use the Trimble Positions software suite in an Esri ArcGIS Mobile environment. The steps in bold are covered in detail in this guide. For all other steps, refer to the other Trimble Positions software suite documentation, as listed above.

Initial administration tasks		Install and license ArcGIS for Desktop 10.2 on each office computer.
		Install ArcGIS for Windows Mobile 10.2.0 (this is to get the Mobile toolbox for ArcGIS for Desktop installed, and to install the Esri Mobile Project Center utility) on each office computer and Windows Mobile device.
		Download Trimble Positions Desktop add-in 10.2.0.1.
		Optionally, install the Trimble Positions License Manager to a computer(s) that is/are accessible from the office computer (and field devices).
		On each office computer that has ArcGIS for Desktop 10.2 installed, install and license Trimble Positions Desktop add-in.
		Download Trimble Positions Mobile extension 10.2.0.1.
		On each mobile device that has ArcGIS for Windows Mobile 10.2.0 installed, install and license Trimble Positions Mobile extension 10.2.0.1.
		On office computers that have the Esri Mobile Project Center installed, install Trimble Positions Mobile Project Center extension 10.2.0.1.
		Optionally, create a new Microsoft SQL Server or Oracle database, if an enterprise database is required and not yet created.
		Configure Trimble Positions Desktop database (*Start / All Programs / Trimble / Trimble Positions Tools / Desktop Configuration*).
		Start ArcGIS for Desktop and enable Trimble Positions Desktop add-in.
		If not already done during a previous installation, add TrimbleSessions to each geodatabase using Trimble Positions Desktop add-in.
Desktop add-in tasks when enabling Map documents		Open map document.
		Add feature layers to Map from geodatabase.
		Add TrimbleSessions to Map using Trimble Positions Desktop add-in.
		Check Map for compatibility using Trimble Positions Desktop add-in.
		Create a Mobile Cache using Mobile geoprocessing toolbox tool.
		Create Field Configuration(s).
Mobile Project Center extension user tasks for each new or modified mobile project		Open Mobile Project Center (*Start / All Programs / ArcGIS / ArcGIS for Windows Mobile / Mobile Project Center*).
		Create a new Project.
		Import operational layers from Mobile Cache.
		Configure layer for data collection and metadata autofill fields.
		Configure TrimbleSessions Data Collection Layers' Accuracy-Based Logging thresholds, and Field Configurations.
		Configure Project extents.
		Save Project.
		In Trimble Positions Desktop add-in, associate Project and Map.

Regular transfer tasks between field and office	Transfer Project definition and Mobile Cache to Windows Mobile field device.
	Collect data using Trimble Positions Mobile extension 10.2.0.1 for ArcGIS for Windows Mobile 10.2.0.
	Transfer Mobile Cache to office computer.

Regular Desktop add-in user tasks	If not already created, in Trimble Positions Desktop add-in, create processing profile(s).
	If not using ArcGIS for Server, use Mobile geoprocessing toolbox Synchronise Mobile Cache tool.
	In Trimble Positions Desktop add-in, Manage devices and optionally associate with a processing profile.
	In Trimble Positions Desktop add-in:
	• Check for new sessions
	• Postprocess against chosen processing profile
	• Verify against required accuracy thresholds
	• Modify geometry (unlink, exception)
	• Update GIS geodatabase
	Save and close Map document.

Appendix B: Positions software suite workflow overview for ArcPad AXF

The following table provides an overview of the steps required to install and use the Trimble Positions software suite in an Esri ArcPad workflow using AXF files. The steps in bold are covered in detail in this guide. For all other steps, refer to the other Trimble Positions software suite documentation, as listed above.

Initial administration tasks	Install and license ArcGIS for Desktop 10.2 on each office computer.
	Install ArcPad 10.2 (this is to get the ArcPad Data Manager toolbox for ArcGIS for Desktop installed, and to install the ArcPad Datum Configuration tool) on each office computer and Windows Mobile device.
	Download Trimble Positions Desktop add-in 10.2.0.1.
	Optionally, install the Trimble Positions License Manager to a computer(s) that is/are accessible from the office computer (and field devices).
	On each office computer that has ArcGIS for Desktop 10.2 installed, install and license Trimble Positions Desktop add-in 10.2.0.1.
	Download Trimble Positions ArcPad extension 10.2.0.1.
	On each mobile device that has ArcPad 10.2 installed, install and license Trimble Positions ArcPad extension 10.2.0.1.
	Optionally, create a new Microsoft SQL Server or Oracle database, if an enterprise database is required and not yet created.
	Configure Trimble Positions Desktop database (*Start / All Programs / Trimble / Trimble Positions Tools / Desktop Configuration*).
	Start ArcGIS for Desktop and enable Trimble Positions Desktop add-in.
Setting up datum geotransformations	Open the Trimble Positions Desktop Administration Datum Transformations dialog.
	Associate default transformations to WGS-84 for the datums and projections you use in your work.
Desktop add-in tasks when enabling Map documents for AXF check-out	Open map document.
	Add feature layers to Map from geodatabase.
	Check Map for compatibility using Trimble Positions Desktop add-in.
Creating an ArcPad project and checking-out an AXF project	Create a new ArcPad Project in Trimble Positions Desktop add-in.
	Select the feature layers for the project.
	Configure each layer's accuracy threshold and metadata autofill fields for GIS update.
	Associate the Trimble Positions ArcPad project with the MXD document.
	Set the Trimble Positions Arcpad project to be the current project.

Regular transfer tasks between field and office	Check-out Trimble Positions ArcPad project.
	Copy AXF project folder to the field device.
	Collect data using Trimble Positions ArcPad extension 10.2.0.1 and ArcPad 10.2.
	Copy AXF project folder with TrimblePositions.SSF file(s) to the office computer.
Regular Desktop add-in user tasks	If not already created, in Trimble Positions Desktop add-in, create processing profile(s).
	In Trimble Positions Desktop add-in, check-in AXF project folder and associated SSF file(s) to Trimble Positions office database and the geodatabase.
	In Trimble Positions Desktop add-in, Manage devices and optionally associate with a processing profile.
	In Trimble Positions Desktop add-in:
	• Postprocess against chosen processing profile
	• Modify offsets, if required
	• Verify against required accuracy thresholds
	• Modify geometry (unlink, exception) if required
	• Update GIS geodatabase
	Save and close Map document.

Appendix C: Positions software suite workflow overview for ArcPad QuickProjects

The following table provides an overview of the steps required to install and use the Trimble Positions software suite in an Esri ArcPad workflow using QuickProjects. The steps in bold are covered in detail in this guide. For all other steps, refer to the other Trimble Positions software suite documentation, as listed above.

Initial administration tasks	Install and license ArcGIS for Desktop 10.2 on each office computer.
	Install ArcPad 10.2 (this is to get the ArcPad Data Manager toolbox for ArcGIS for Desktop installed, and to install the ArcPad Datum Configuration tool) on each office computer and Windows Mobile device.
	Download Trimble Positions Desktop add-in 10.2.0.1.
	Optionally, install the Trimble Positions License Manager to a computer(s) that is/are accessible from the office computer (and field devices).
	On each office computer that has ArcGIS for Desktop 10.2 installed, install and license Trimble Positions Desktop add-in 10.2.0.1.
	Download Trimble Positions ArcPad extension 10.2.0.1.
	On each mobile device that has ArcPad 10.2 installed, install and license Trimble Positions ArcPad extension 10.2.0.1.
	Optionally, create a new Microsoft SQL Server or Oracle database, if an enterprise database is required and not yet created.
	Configure Trimble Positions Desktop database (*Start / All Programs / Trimble / Trimble Positions Tools / Desktop Configuration*).
	Start ArcGIS for Desktop and enable Trimble Positions Desktop add-in.
Setting up datum geotransformations	Open the Trimble Positions Desktop Administration Datum Transformations dialog.
	Associate default transformations to WGS-84 for the datums and projections you use in your work.
Regular transfer tasks between field and office	Collect QuickProject data using Trimble Positions ArcPad extension 10.2.0.1 and ArcPad 10.2.
	Copy ArcPad QuickProject folder with TrimblePositions.SSF file(s) to the office computer.

Regular Desktop add-in user tasks	If not already created, in Trimble Positions Desktop add-in, create processing profile(s).
	Open (blank) Map document.
	In Trimble Positions Desktop add-in, import ArcPad QuickProject and associated SSF file(s) to Trimble Positions office database and the geodatabase.
	Configure each layer's accuracy threshold and metadata autofill fields for GIS update.
	In Trimble Positions Desktop add-in, manage devices and optionally associate with a processing profile.
	In Trimble Positions Desktop add-in:
	• Postprocess against chosen processing profile
	• Modify offsets, if required
	• Verify against required accuracy thresholds
	• Modify geometry (unlink, exception) if required
	• Update GIS geodatabase
	Save and close Map document.