

Manual | EN

TS1150

TwinCAT 2 | Backup

Supplement | System

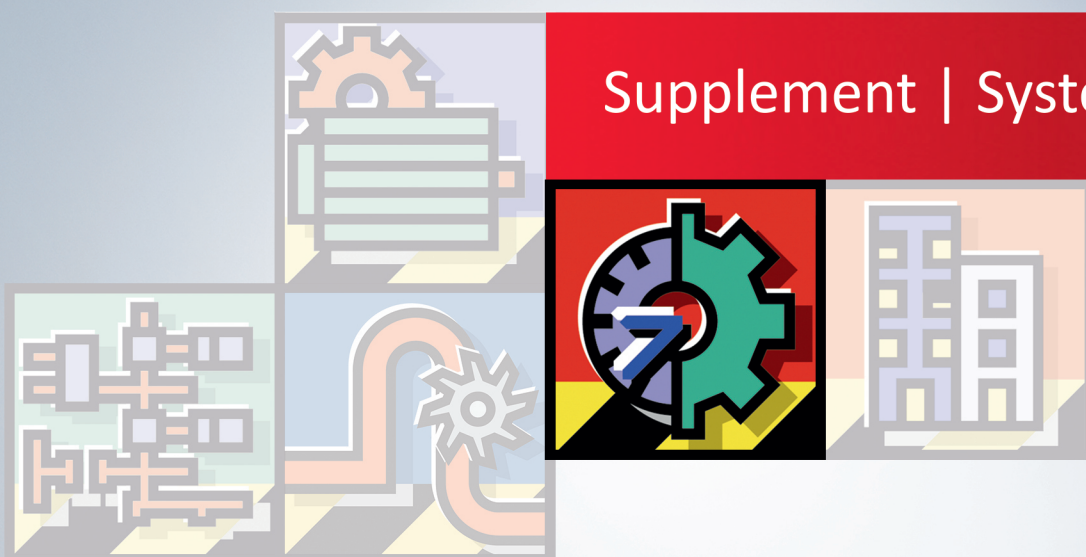


Table of contents

1	Foreword	5
1.1	Notes on the documentation.....	5
1.2	Safety instructions	6
1.3	Notes on information security	7
2	Introduction.....	8
3	TwinCAT Backup configuration	9
3.1	Profile Update.....	9
3.2	Creating a new configuration	10
3.3	Configuration options.....	11
3.4	Delete configuration.....	19
3.5	Displaying and modifying the configuration	20
3.6	Installing TwinCAT during a restore process	21
4	TwinCAT Backup OnDemand	24
4.1	OnDemand	24
4.2	Service Start/Stop.....	24
5	TwinCAT Restore.....	26
5.1	Restore	26
5.2	Restore from CD.....	28

1 Foreword

1.1 Notes on the documentation

This description is only intended for the use of trained specialists in control and automation engineering who are familiar with applicable national standards.

It is essential that the documentation and the following notes and explanations are followed when installing and commissioning the components.

It is the duty of the technical personnel to use the documentation published at the respective time of each installation and commissioning.

The responsible staff must ensure that the application or use of the products described satisfy all the requirements for safety, including all the relevant laws, regulations, guidelines and standards.

Disclaimer

The documentation has been prepared with care. The products described are, however, constantly under development.

We reserve the right to revise and change the documentation at any time and without prior announcement. No claims for the modification of products that have already been supplied may be made on the basis of the data, diagrams and descriptions in this documentation.

Trademarks

Beckhoff®, TwinCAT®, TwinCAT/BSD®, TC/BSD®, EtherCAT®, EtherCAT G®, EtherCAT G10®, EtherCAT P®, Safety over EtherCAT®, TwinSAFE®, XFC®, XTS® and XPlanar® are registered trademarks of and licensed by Beckhoff Automation GmbH.

Other designations used in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owners.

Patent Pending

The EtherCAT Technology is covered, including but not limited to the following patent applications and patents:

EP1590927, EP1789857, EP1456722, EP2137893, DE102015105702
with corresponding applications or registrations in various other countries.



EtherCAT® is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany

Copyright

© Beckhoff Automation GmbH & Co. KG, Germany.

The reproduction, distribution and utilization of this document as well as the communication of its contents to others without express authorization are prohibited.

Offenders will be held liable for the payment of damages. All rights reserved in the event of the grant of a patent, utility model or design.

1.2 Safety instructions

Safety regulations

Please note the following safety instructions and explanations!
Product-specific safety instructions can be found on following pages or in the areas mounting, wiring, commissioning etc.

Exclusion of liability

All the components are supplied in particular hardware and software configurations appropriate for the application. Modifications to hardware or software configurations other than those described in the documentation are not permitted, and nullify the liability of Beckhoff Automation GmbH & Co. KG.

Personnel qualification

This description is only intended for trained specialists in control, automation and drive engineering who are familiar with the applicable national standards.

Description of symbols

In this documentation the following symbols are used with an accompanying safety instruction or note. The safety instructions must be read carefully and followed without fail!

DANGER

Serious risk of injury!

Failure to follow the safety instructions associated with this symbol directly endangers the life and health of persons.

WARNING

Risk of injury!

Failure to follow the safety instructions associated with this symbol endangers the life and health of persons.

CAUTION

Personal injuries!

Failure to follow the safety instructions associated with this symbol can lead to injuries to persons.

NOTE

Damage to the environment or devices

Failure to follow the instructions associated with this symbol can lead to damage to the environment or equipment.



Tip or pointer

This symbol indicates information that contributes to better understanding.

1.3 Notes on information security

The products of Beckhoff Automation GmbH & Co. KG (Beckhoff), insofar as they can be accessed online, are equipped with security functions that support the secure operation of plants, systems, machines and networks. Despite the security functions, the creation, implementation and constant updating of a holistic security concept for the operation are necessary to protect the respective plant, system, machine and networks against cyber threats. The products sold by Beckhoff are only part of the overall security concept. The customer is responsible for preventing unauthorized access by third parties to its equipment, systems, machines and networks. The latter should be connected to the corporate network or the Internet only if appropriate protective measures have been set up.

In addition, the recommendations from Beckhoff regarding appropriate protective measures should be observed. Further information regarding information security and industrial security can be found in our <https://www.beckhoff.com/secguide>.

Beckhoff products and solutions undergo continuous further development. This also applies to security functions. In light of this continuous further development, Beckhoff expressly recommends that the products are kept up to date at all times and that updates are installed for the products once they have been made available. Using outdated or unsupported product versions can increase the risk of cyber threats.

To stay informed about information security for Beckhoff products, subscribe to the RSS feed at <https://www.beckhoff.com/secinfo>.

2 Introduction

Since existing backup systems that use the hard disk images for restoring are inadequate in many cases, for example, because the I/O devices of the backup PC and those of the PC to be restored differ, TwinCAT Backup was developed.

In addition to files, directories and settings, TwinCAT configurations are also backed up with TwinCAT Backup. Users can specify additional components that they wish to back up. Furthermore, essential operating system-specific information is backed up. These include user settings, profiles, network settings and much more. The backup can be carried out on any media connected to the PC. This can be a hard disk, a floppy disk, a CD writer or a network drive.

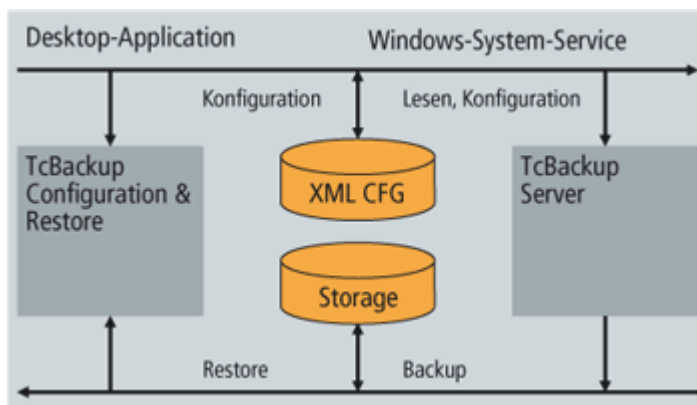
In the event of a restore, all files and settings are copied to a new computer on which an operating system is already installed. In addition, TwinCAT is installed and configured. This also includes the automatic creation of a System Manager configuration and the creation of a boot project. Installations can be customized.

If fieldbus cards differ (e.g. if the cards are plugged into different PCI slots), the backup tool will attempt an automatic adaptation. It is even possible to carry out an automatic update between certain fieldbus cards. The backup is configured in XML.

The following documentation explains the configuration of the TwinCAT Backup system.

The TwinCAT Backup system consists in principle of two components:

- a TcBackupServer service
- and a configuration and restore interface for setting the TcBackupServer.



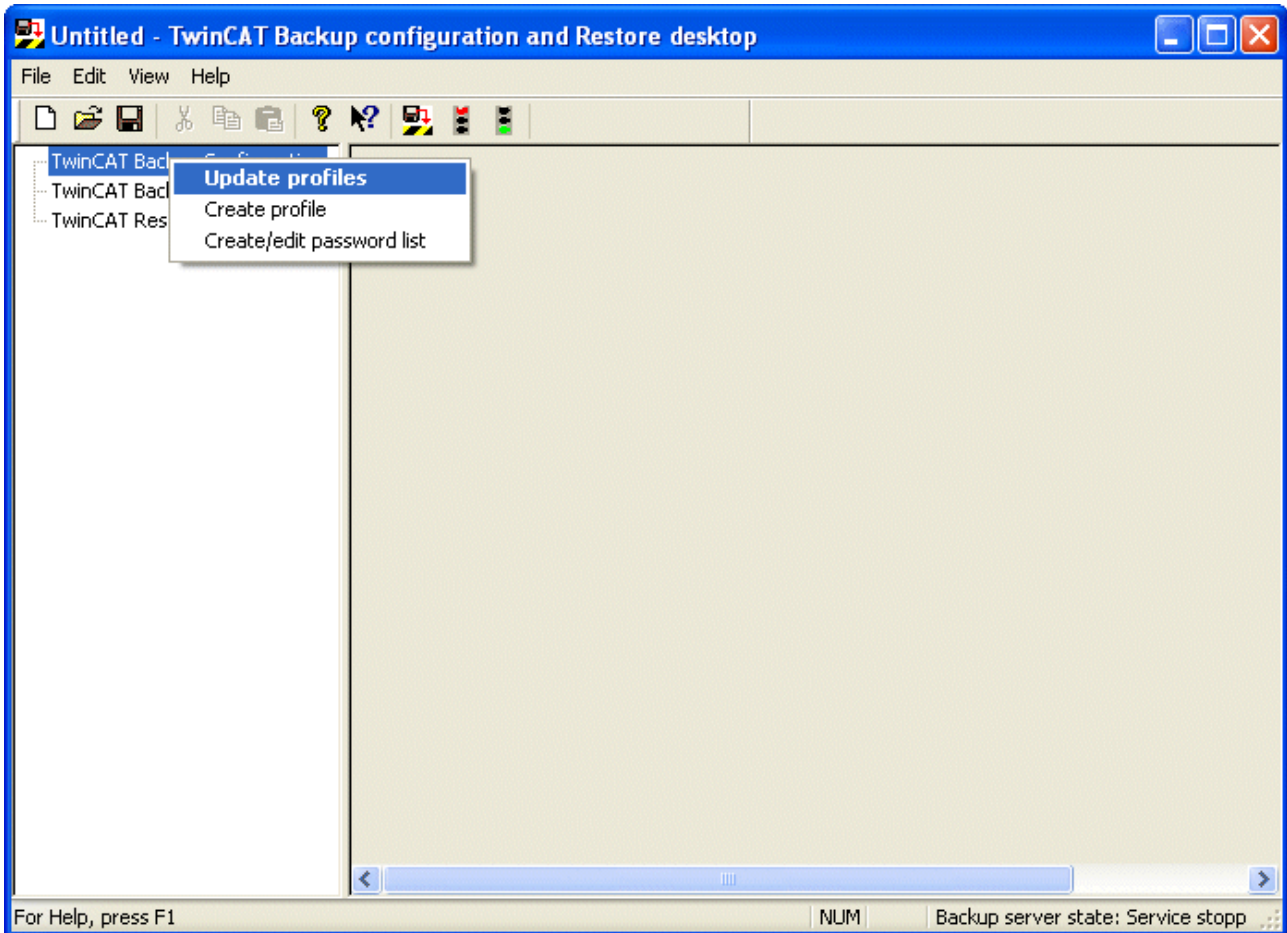
The configuration software is used to set the backup information and to reload (restore) the backup.

The server service is the component that reads the backup configuration and gathers the data that is to be backed up to form a TwinCAT Backup Storage.

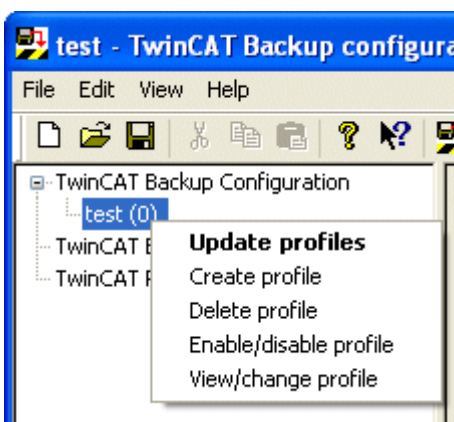
3 TwinCAT Backup configuration

3.1 Profile Update

In order to display the backup profile files that have been created, the tree structure is rebuilt through the "Update profiles" context menu.



If profiles exist, they are displayed underneath the configuration entry. After this it is possible to edit and manage the profiles.



Create profile: create new profile

Delete profile: delete profile

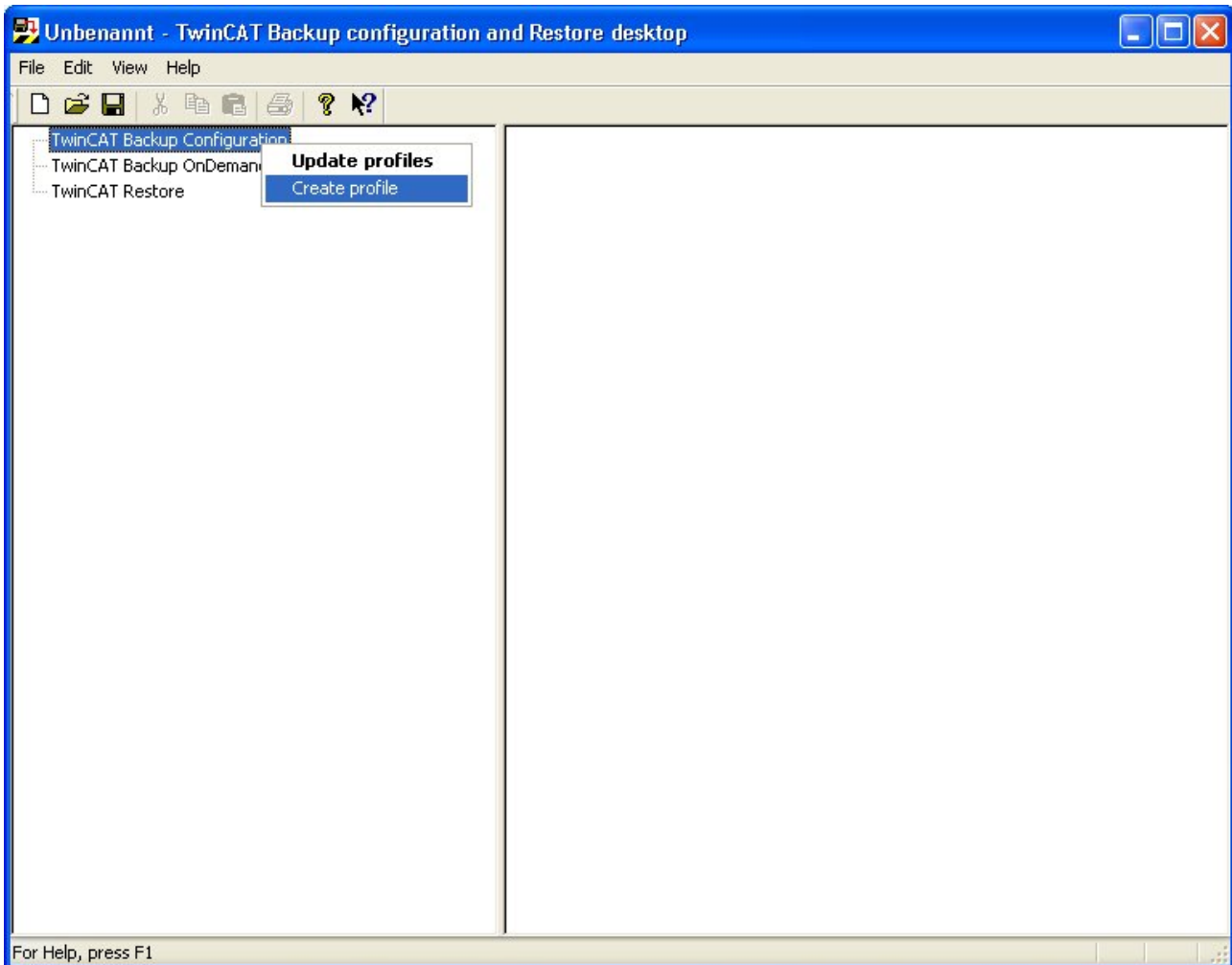
Enable/Disable profile: enable/disable profile

View/change profile: view/change profiles

3.2 Creating a new configuration

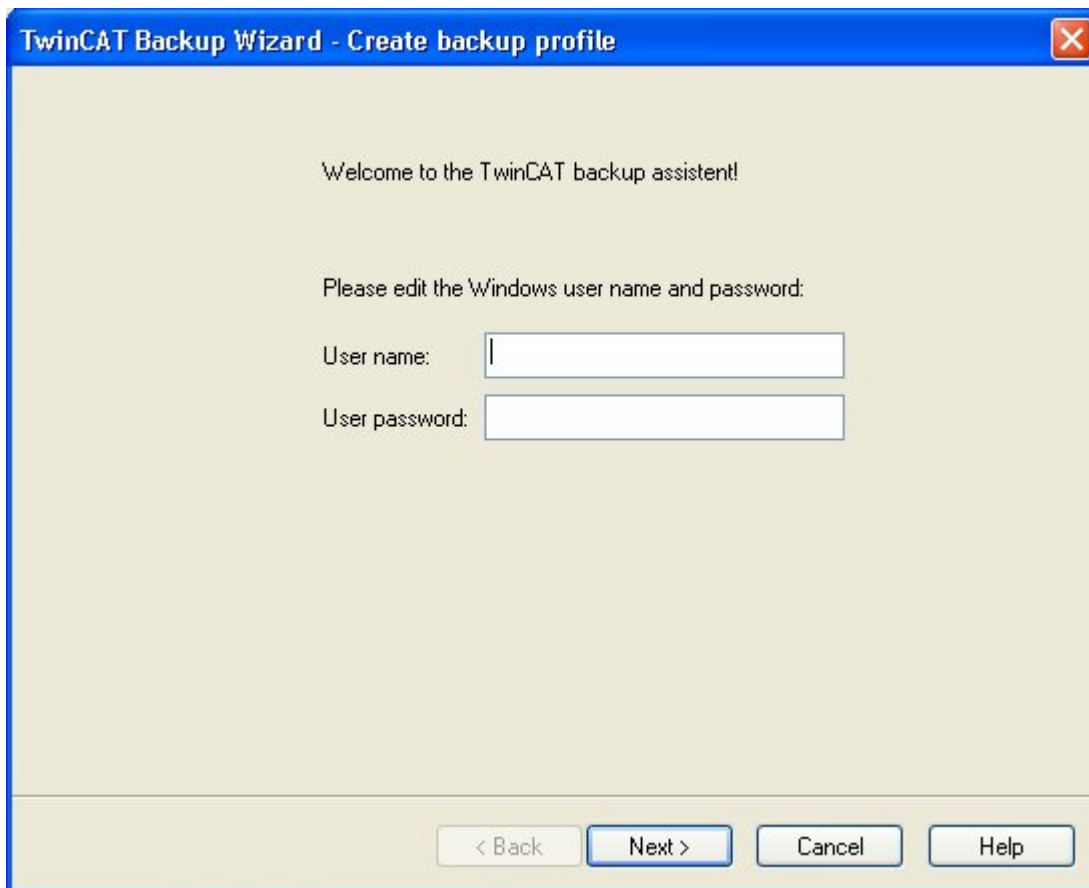
In order to be able to back up a system's data, it is first necessary to configure a profile that contains information about the options applying to the backup.

A new backup profile is created through the selection of "TwinCAT Backup Configuration - Create profile".



The configuration is made with the help of wizards that collect the desired backup data.

The user account used should have administrator rights so that sufficient access rights are available for restoring and system reboot.



3.3 Configuration options

The configuration options offered during the wizard setting are described below.

User data

Valid user data is necessary from the system in order to facilitate auto-boot processes on the part of the operating system (for instance, to integrate bootable setups). The settings are used for the Windows autoboot options.

Enter your Windows user name and password here. Confirm the password and select "Next >".

The screenshot shows a dialog box titled "TwinCAT Backup Wizard - Create backup profile". The window has a blue title bar with a close button (X) in the top right corner. The main content area is light beige and contains the following text and form elements:

Welcome to the TwinCAT backup assistant!
Please define a user. This setting is used for a potential reboot process.

Please edit the Windows user name and password:

User name:

User password:

Confirm passw.

At the bottom of the dialog, there are four buttons: "< Zurück", "Weiter >" (highlighted in blue), "Abbrechen", and "Hilfe".

Profile name and directory path

Symbolic names are required in order to identify the backup configurations. The path data specifies the directory in which the backup archive (which is available when the process is executed) will be stored.

Enter the path name and confirm with "Next >".

The screenshot shows a Windows-style dialog box titled "TwinCAT Backup Wizard - Create backup profile". The main heading is "Select storage name" with the instruction "Please select a profile name on which your backup should be stored." Below this, there are several input fields and a checkbox:

- "Type in the profile name:" followed by a text box containing "test".
- "Type in the storage path:" followed by a text box containing "C:\TwinCAT\Backup\Storages\" and a "Select..." button.
- "Type in user and password for network access:" followed by a checkbox labeled "Disable connect".
- "User name:" followed by an empty text box.
- "User password:" followed by an empty text box.
- "Confirm passw.:" followed by an empty text box.

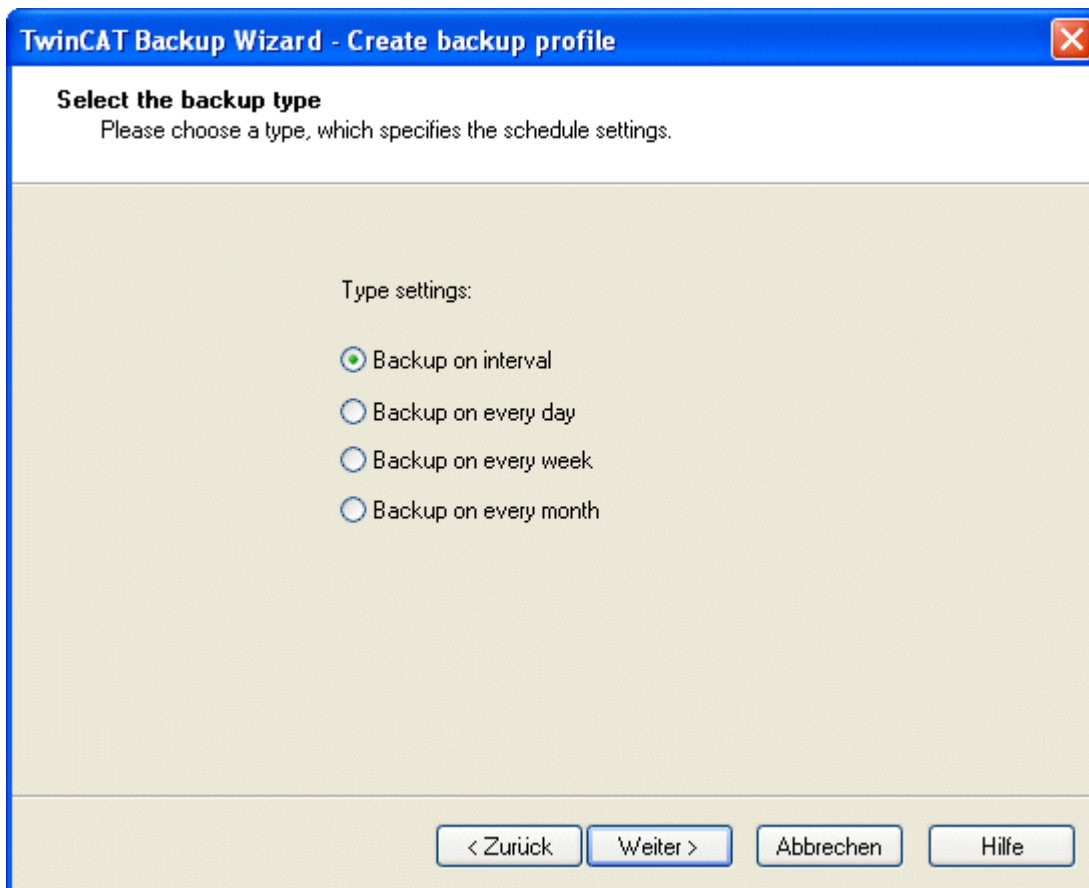
At the bottom of the dialog, there are four buttons: "< Zurück", "Weiter >", "Abbrechen", and "Hilfe".

Type selection

The type selection determines the time settings with which backups will be executed. The available options are:

- Backup on interval: cyclic backup after a selected interval
- Backup on every day: daily backup
- Backup on every week: weekly backup
- Backup on every month: monthly backup

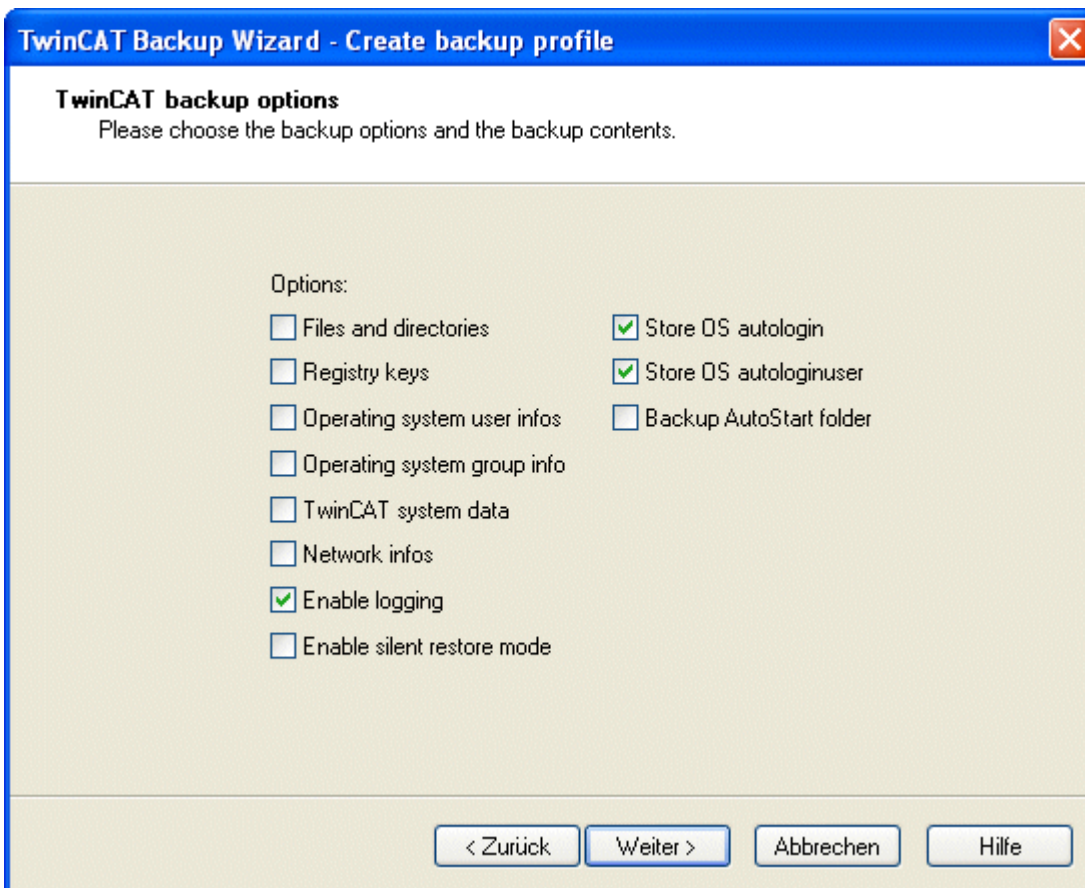
Select a type.



This setting provides the basis for the start selection in the "Time setting [► 18]" category.

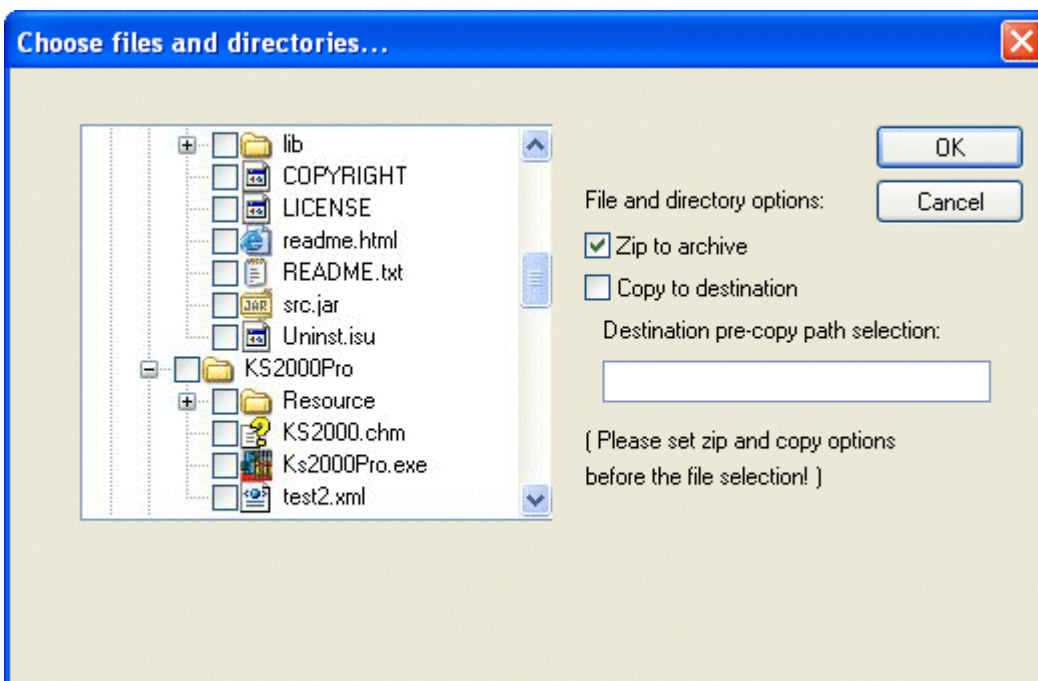
Preselection of the backup data

Information about the backup data is collected with the help of this Wizard.



This permits the backing up of:

- Files and directories: selection for directories and files



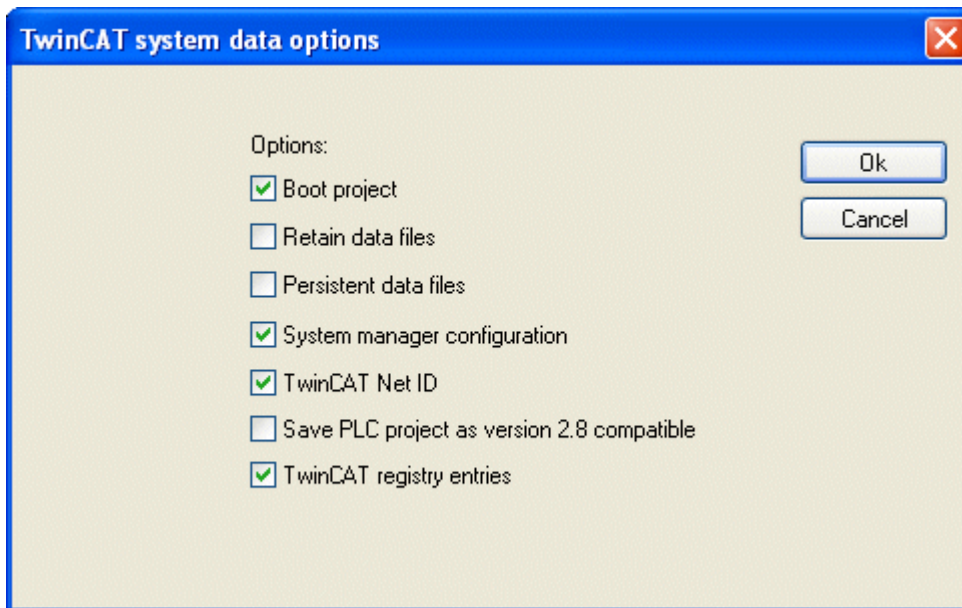
NOTE

Observe order

It is important that the copy and copy path options are selected **before** selecting the directories and files! Otherwise these files will only be available in the backup archive.

- Registry keys: settings for the Windows registry

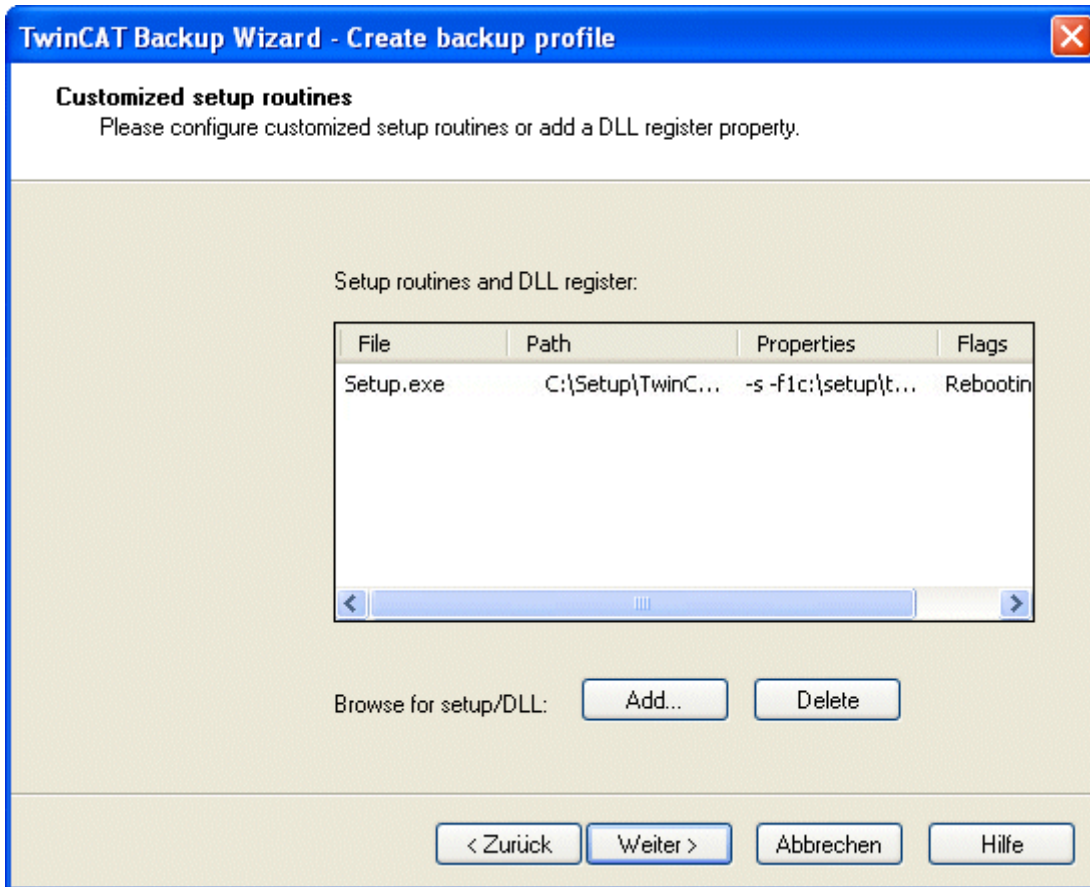
- Operating system user infos: Windows user accounts
- Operating system group info: Windows user groups
- TwinCAT system data: TwinCAT relevant data such as boot project, retain data, persistent data, System Manager configuration, TwinCAT Net ID, PLC project backup compatible with TwinCAT 2.8, TwinCAT Registry entries.



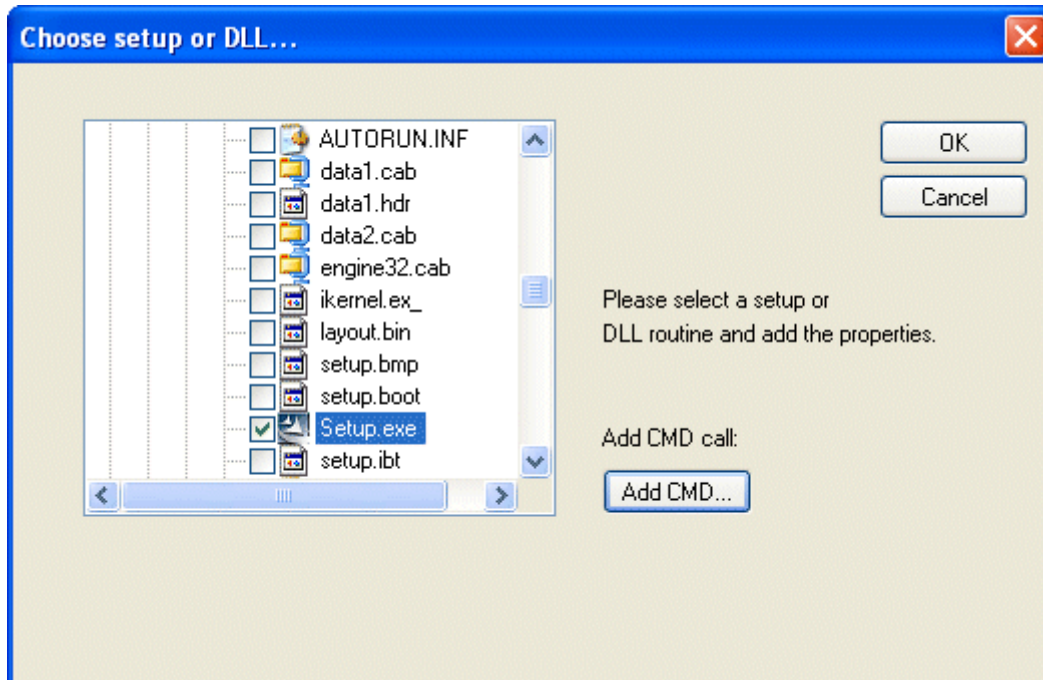
- Network infos:
- Enable logging: recording messages while backing up
- Enable silent restore mode:
- Store OS autologin:
- Store OS autologinuser:
- Backup AutoStart folder:

Integrating setups and DLL registration

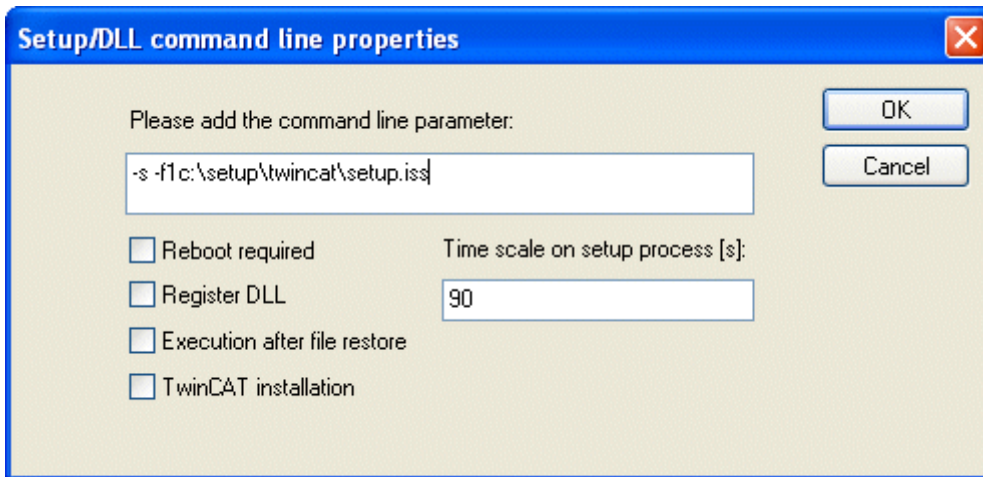
Setups and the option of DLL registration can be integrated into the backup. This information is executed at restore time.



- Setups such as, for example, InstallShield installations



After selecting the setup and confirming with OK, the following dialog opens:



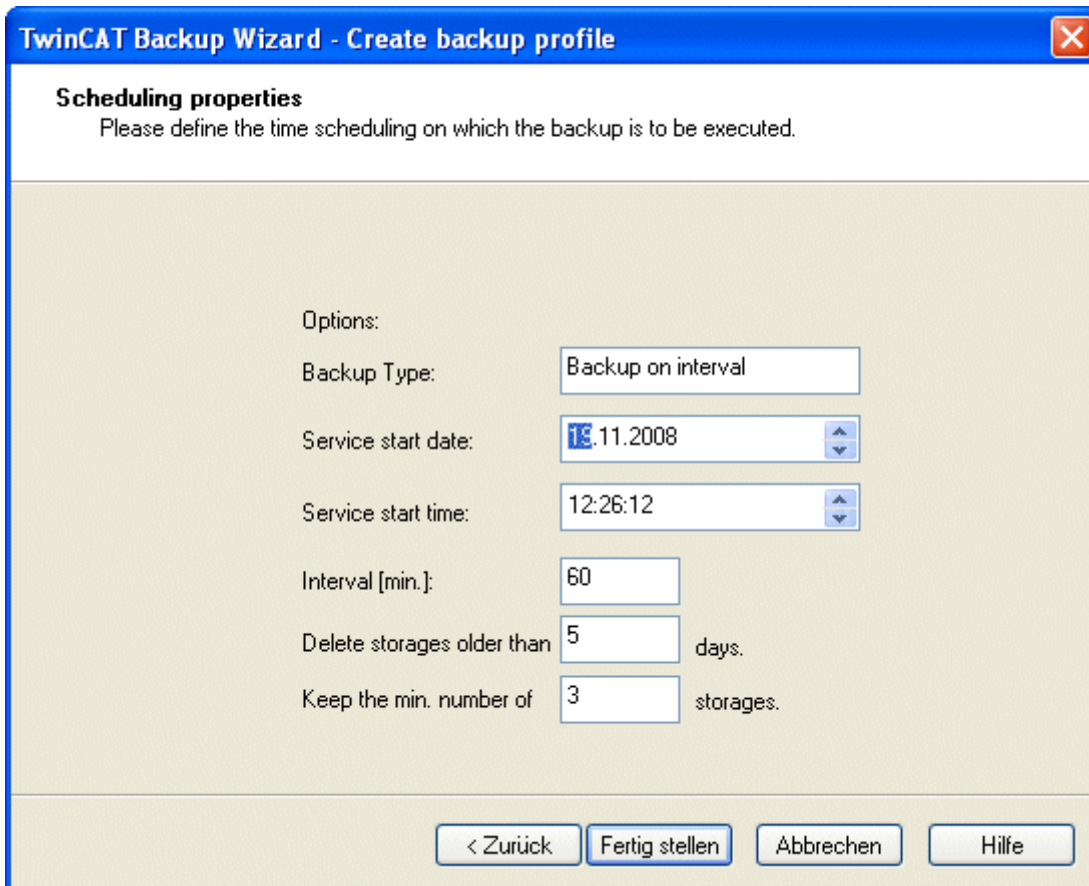
User-independent execution of installations requires some parameters as shown in the example. At this point too, the options must be set before selecting the file ("Setup.exe"). User-independent installations are those that can be made without input. Many installation programs offer options of this type. Parameterization is then implemented through command line parameters. The following options are available:

- Reboot required: this option indicates that the system will have to be restarted after execution of the installation or after a restore procedure.
- Register DLL: DLL registration can be set up via the "DLL register" in a similar way to setup routines. The DLL is selected by means of the selection tree
- Execution after file restore:
- [TwinCAT Installation \[► 21\]](#): Install TwinCAT during restore
- Time scale on setup process:

Time setting

Time setting

The selection of the time setting completes a new backup profile.



TwinCAT Backup Wizard - Create backup profile

Scheduling properties
Please define the time scheduling on which the backup is to be executed.

Options:

Backup Type: Backup on interval

Service start date: 18.11.2008

Service start time: 12:26:12

Interval [min.]: 60

Delete storages older than 5 days.

Keep the min. number of 3 storages.

< Zurück Fertig stellen Abbrechen Hilfe

Only the start time needs to be set:

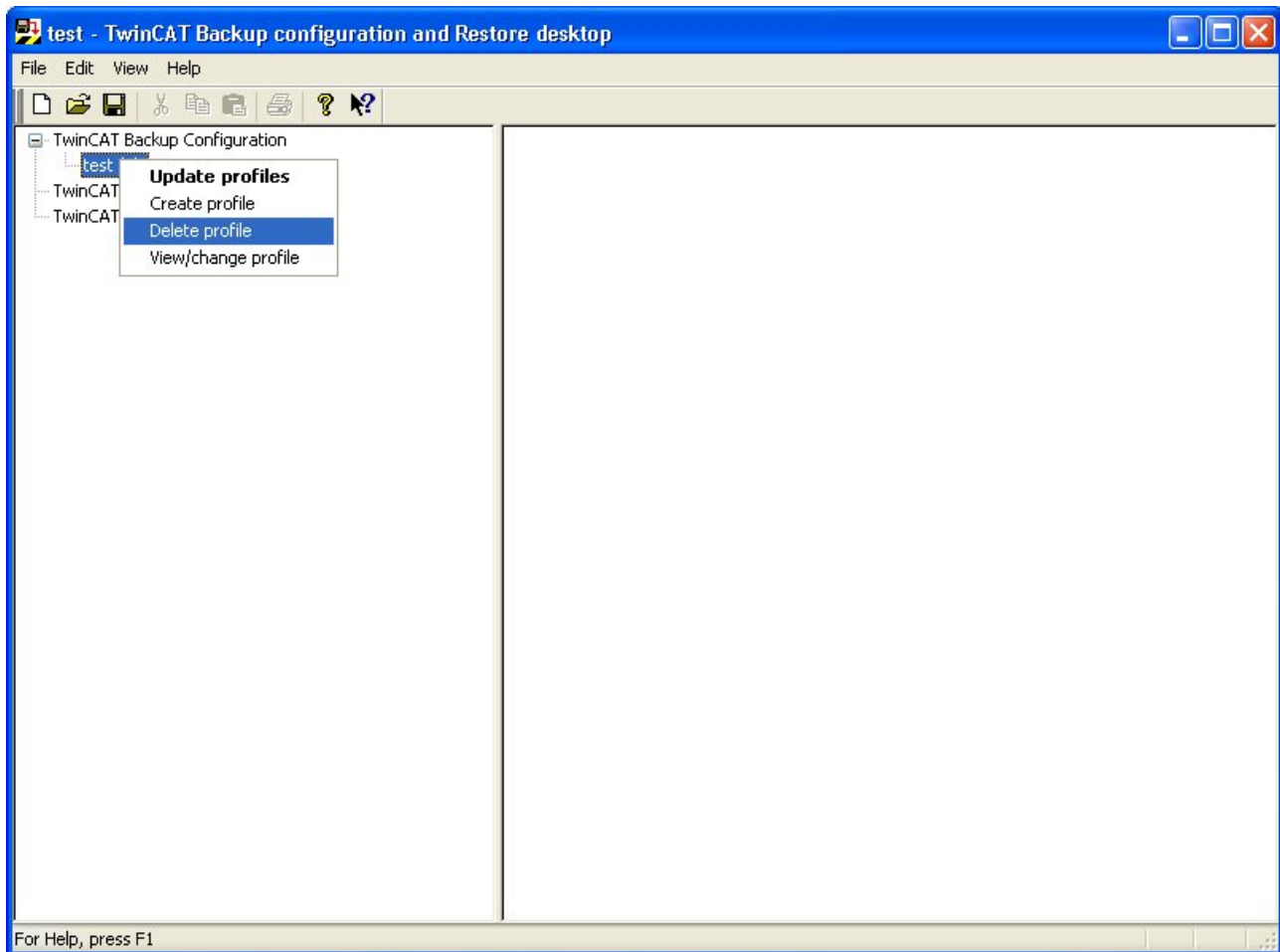
- Service start date and time: backup start day and time

The further scaling is set via the backup type (in this case Backup on interval was selected), but can be changed:

- Interval: time interval in minutes after which the backup is performed again.
- Delete storages older than "xx" days: deletes storages older than "xx" days.
- Keep the min. number of "xx" storages: defines the minimum number of storages to keep.

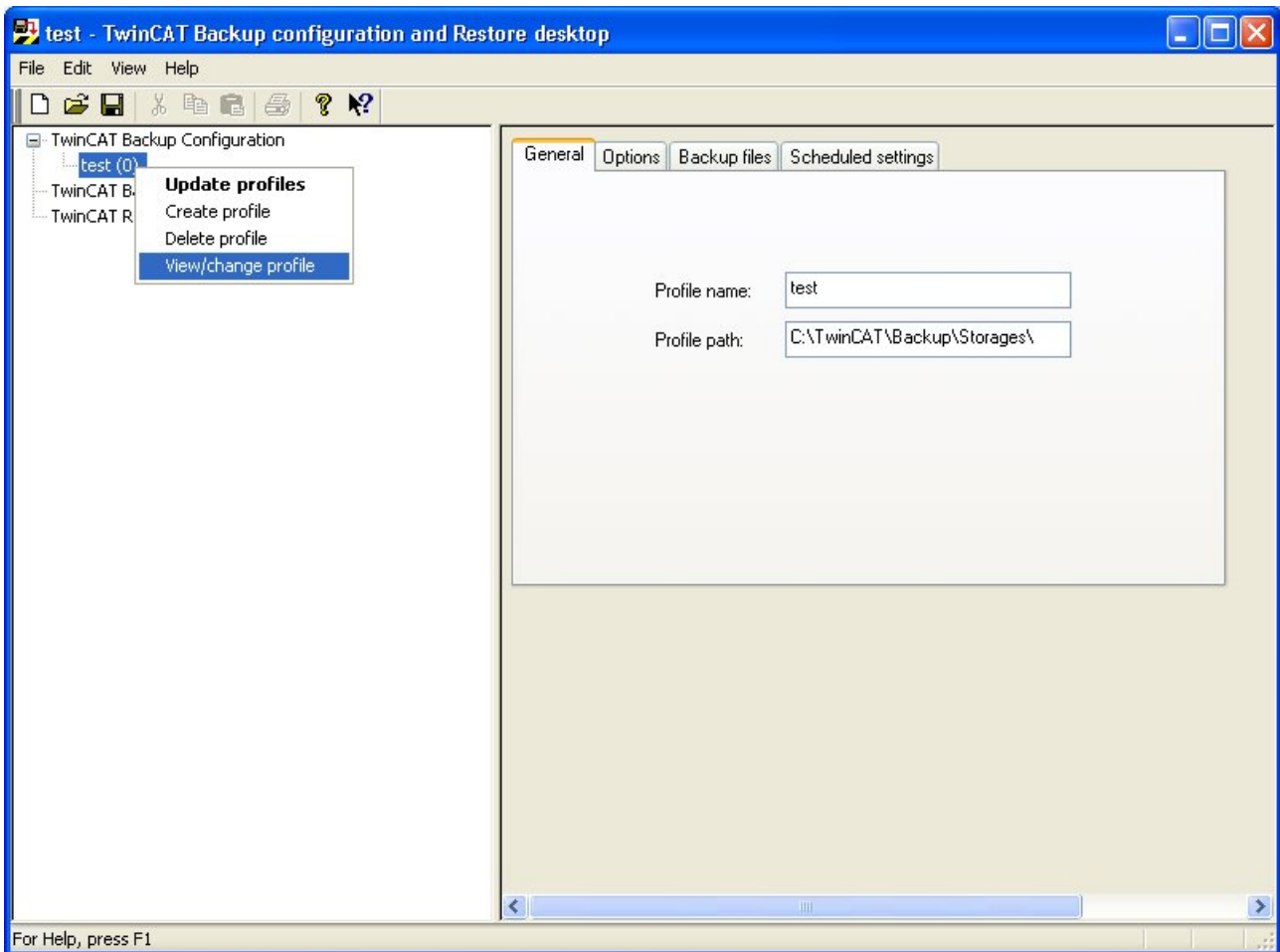
3.4 Delete configuration

A backup configuration that is no longer used can be deleted in the context of the corresponding profile.



3.5 Displaying and modifying the configuration

The configuration can be displayed and modified via "View/change profile". The corresponding information is available on the tabs 'General', 'Options', 'Backup' and 'Scheduled settings'.

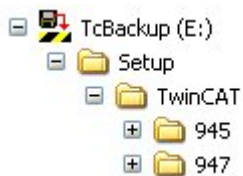


A more detailed description of this information can be found at [Configuration options \[▶ 11\]](#).

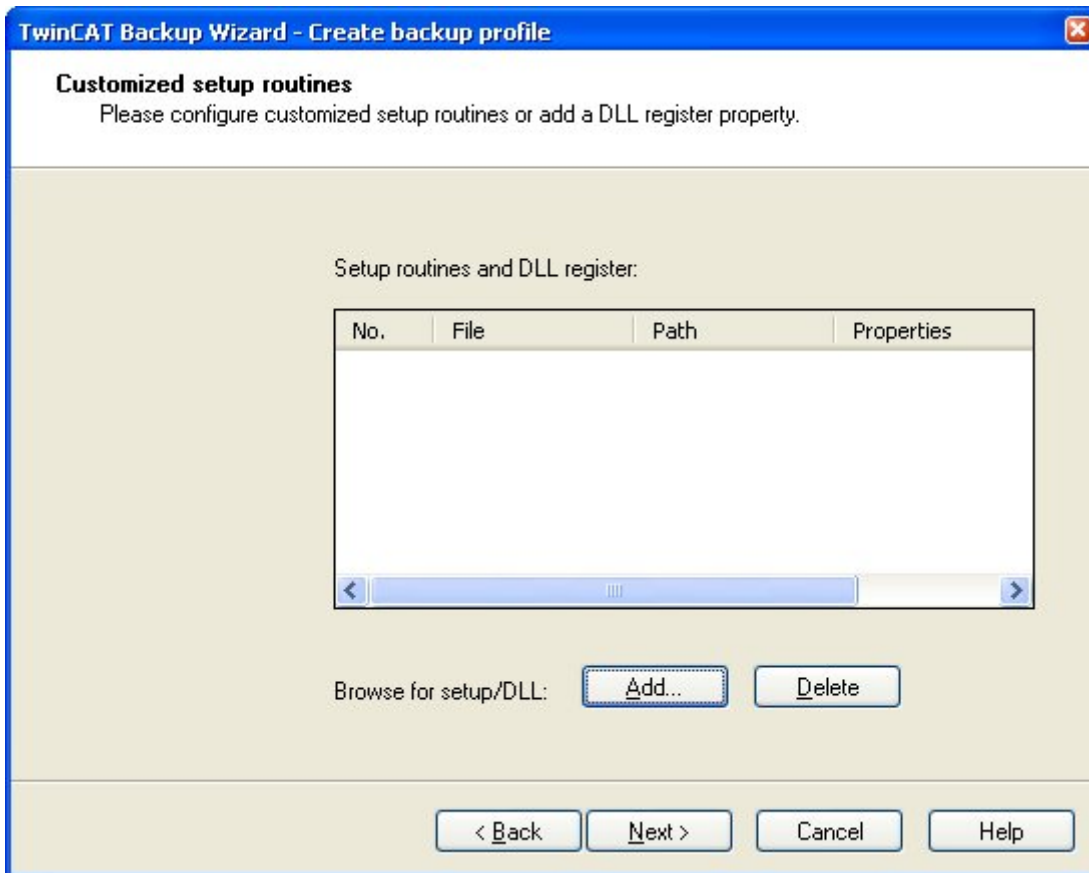
3.6 Installing TwinCAT during a restore process

If a TwinCAT Build is to be installed for a restore procedure, this must be configured in TcBackup. Certain conditions must be satisfied to make a complete installation possible:

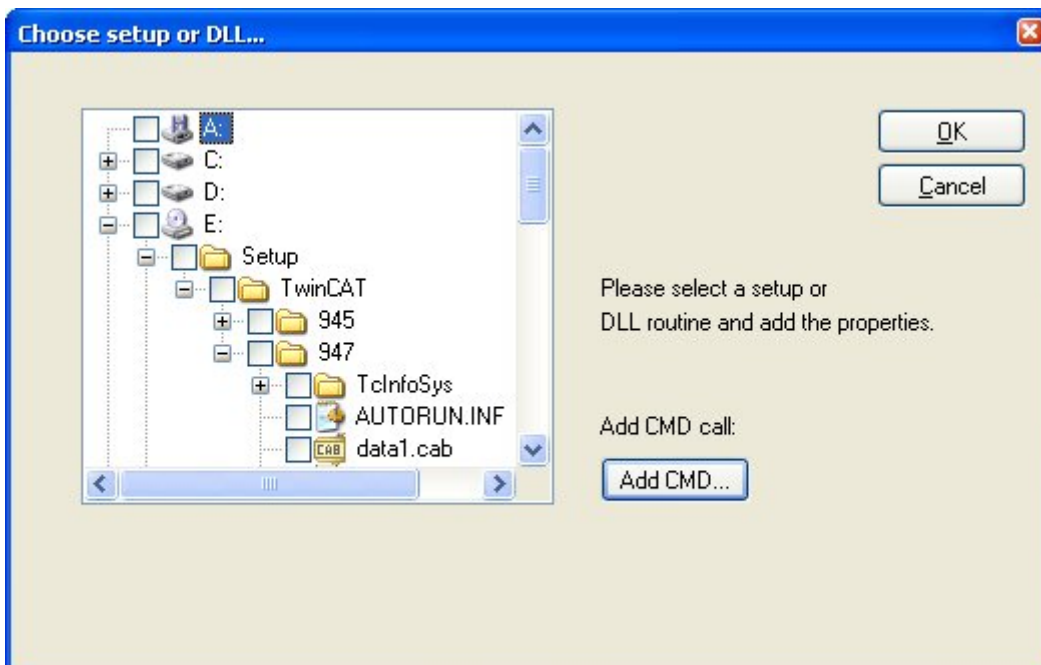
- An automatic installation script file ("*.iss") must be available. By default, a TwinCAT version is installed on hard disk C:\, corresponding to the level.
- The extracted TwinCAT "OneFile" versions must be stored on the CD as follows:



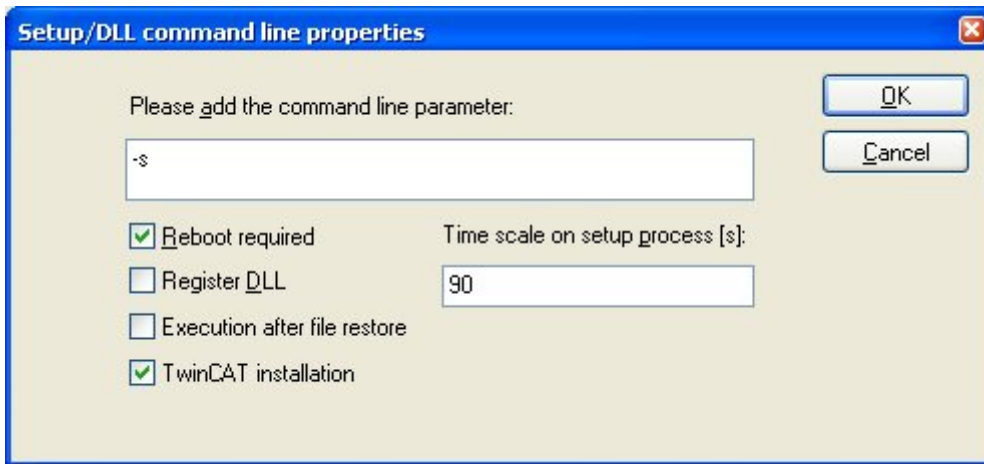
1. Add the TwinCAT installation in the backup configuration via 'Add...':



2. Browse for the 'Setup.exe' for the installation:



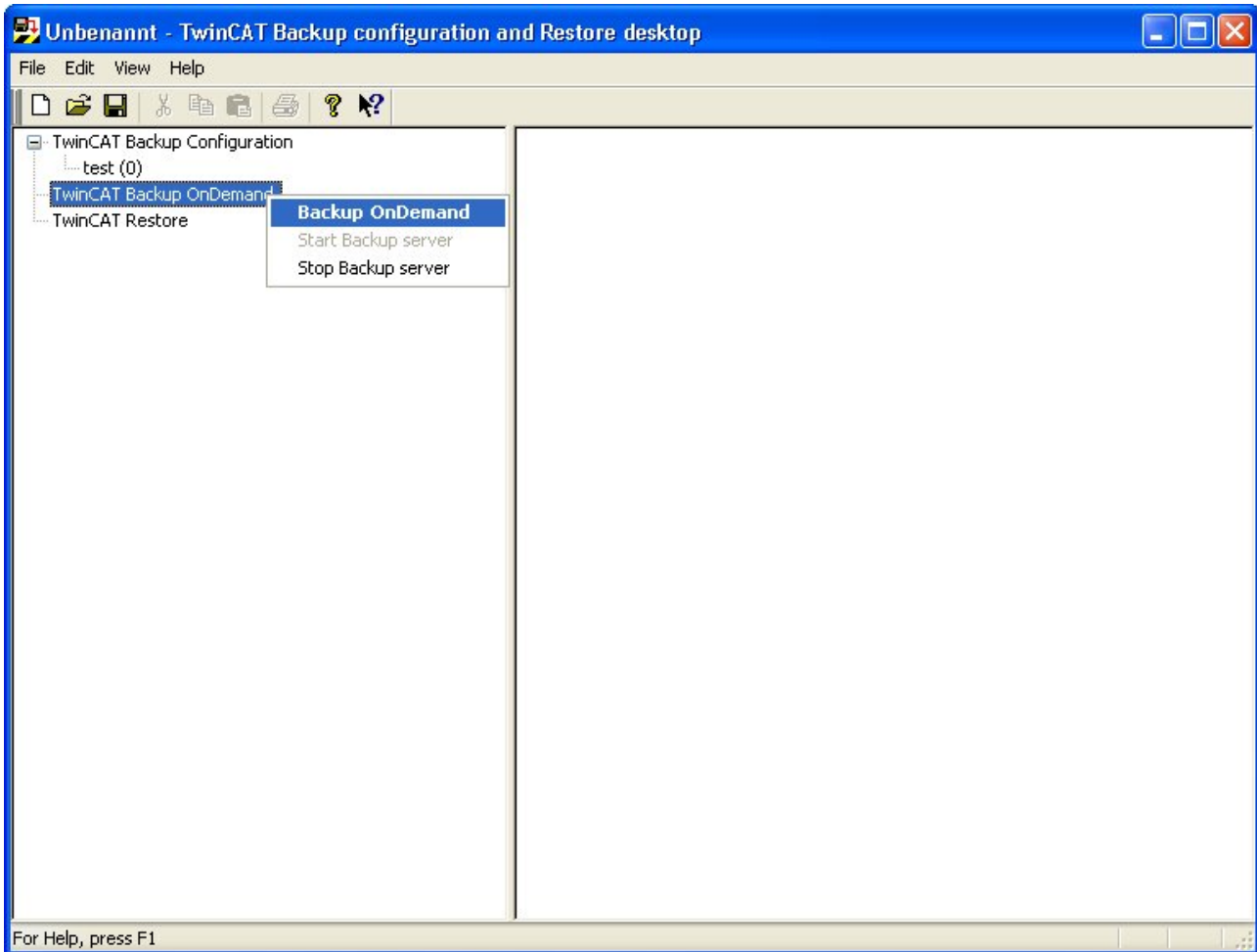
3. Set the parameters as follows:



4 TwinCAT Backup OnDemand

4.1 OnDemand

A backup can be started immediately by selecting "Backup OnDemand". All the profiles that have been created are then processed one after another, without considering the time settings (in Scheduled Settings).



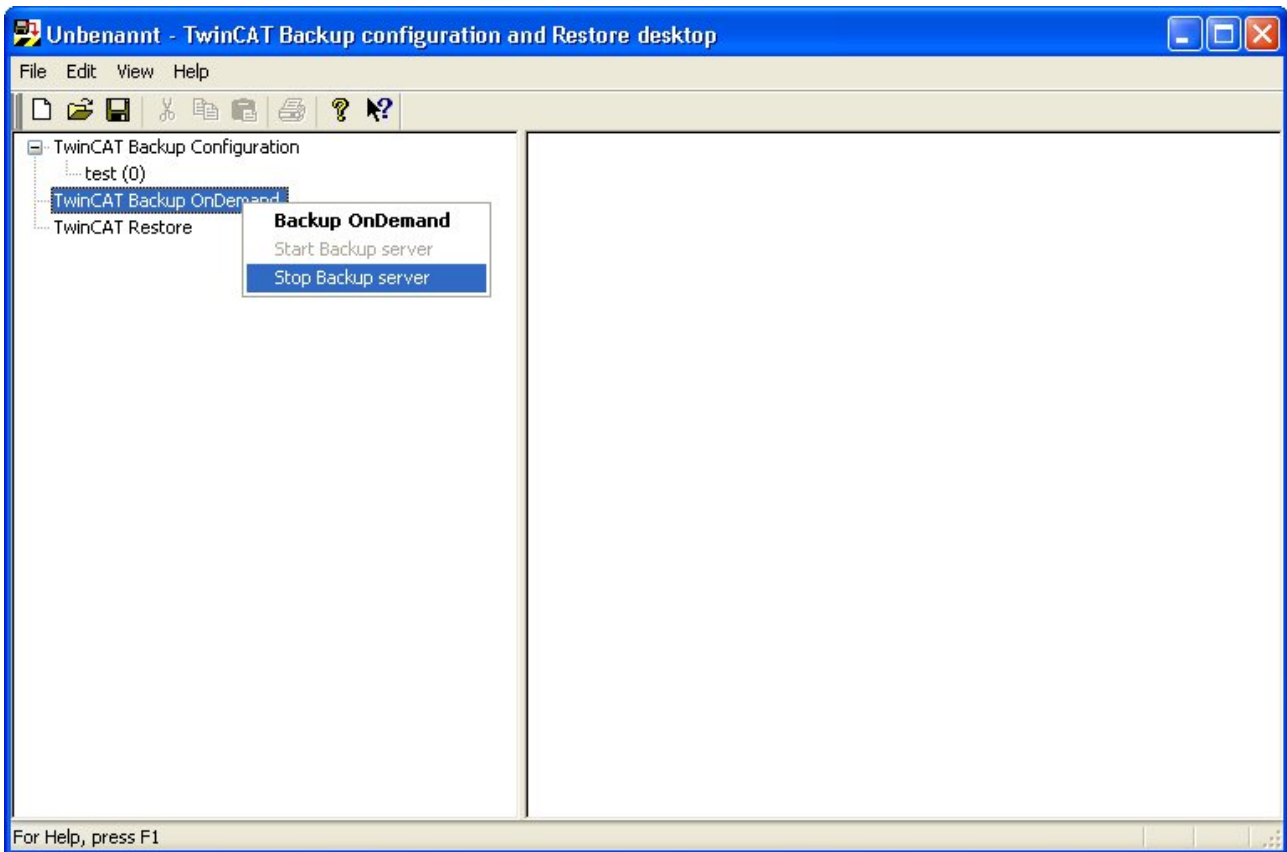
Operation via the toolbar:



Starts the OnDemand backup service.

4.2 Service Start/Stop

The status of the backup server service can be seen in the "TwinCAT Backup OnDemand" context menu. The service can be started and stopped as required. No backup services are carried out when it is stopped.



Operation via the toolbar:



Stops the backup service



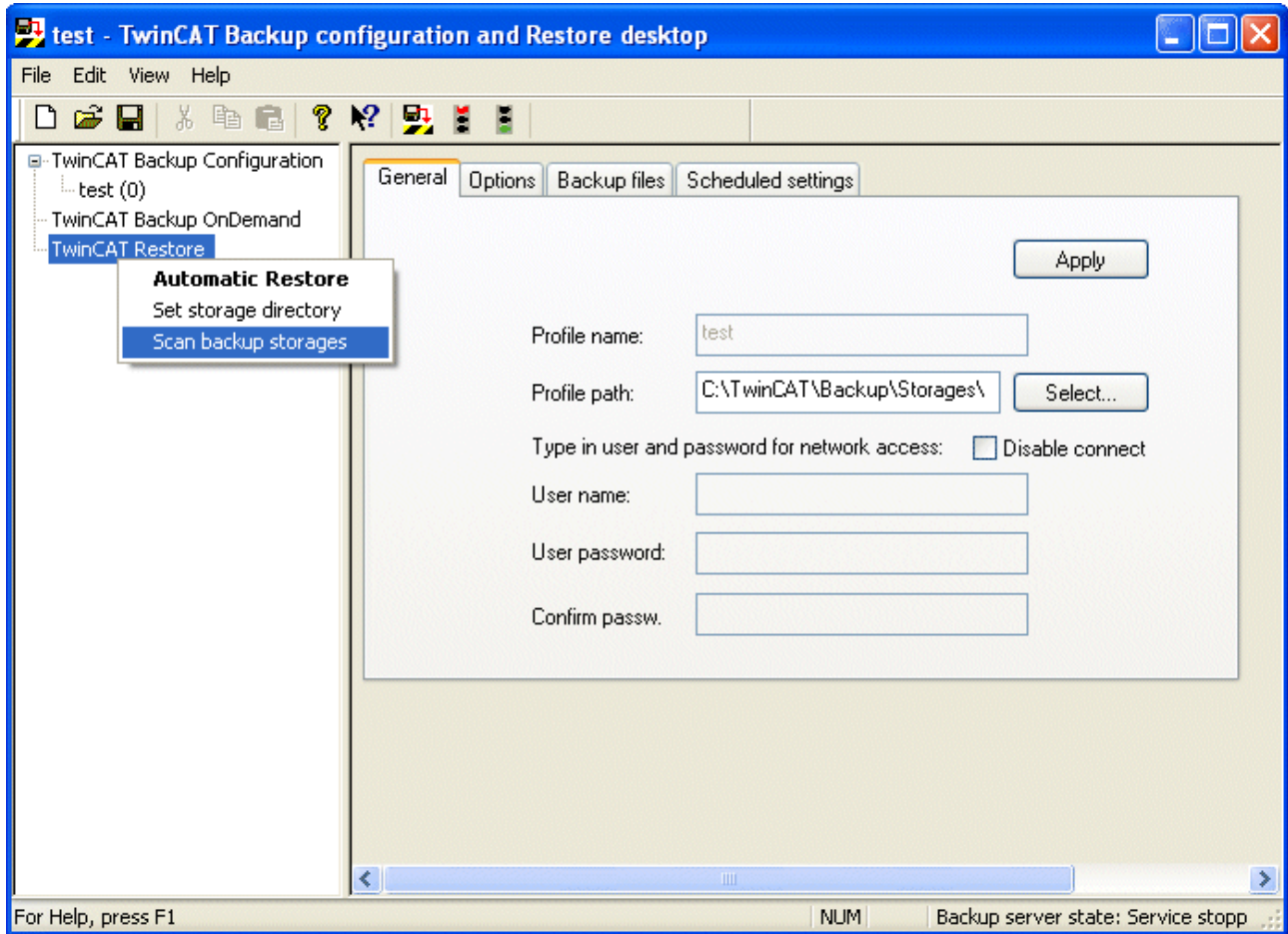
Starts the backup service. The backup is executed at the time specified under Scheduled Settings.

5 TwinCAT Restore

5.1 Restore

With the restore, all data and settings are restored.

Restore requires a backup archive to have already been saved (TwinCAT Backup Storage *.tbs). Open this archive with "Scan backup storages":



The archives are now linked under TwinCAT Restore.

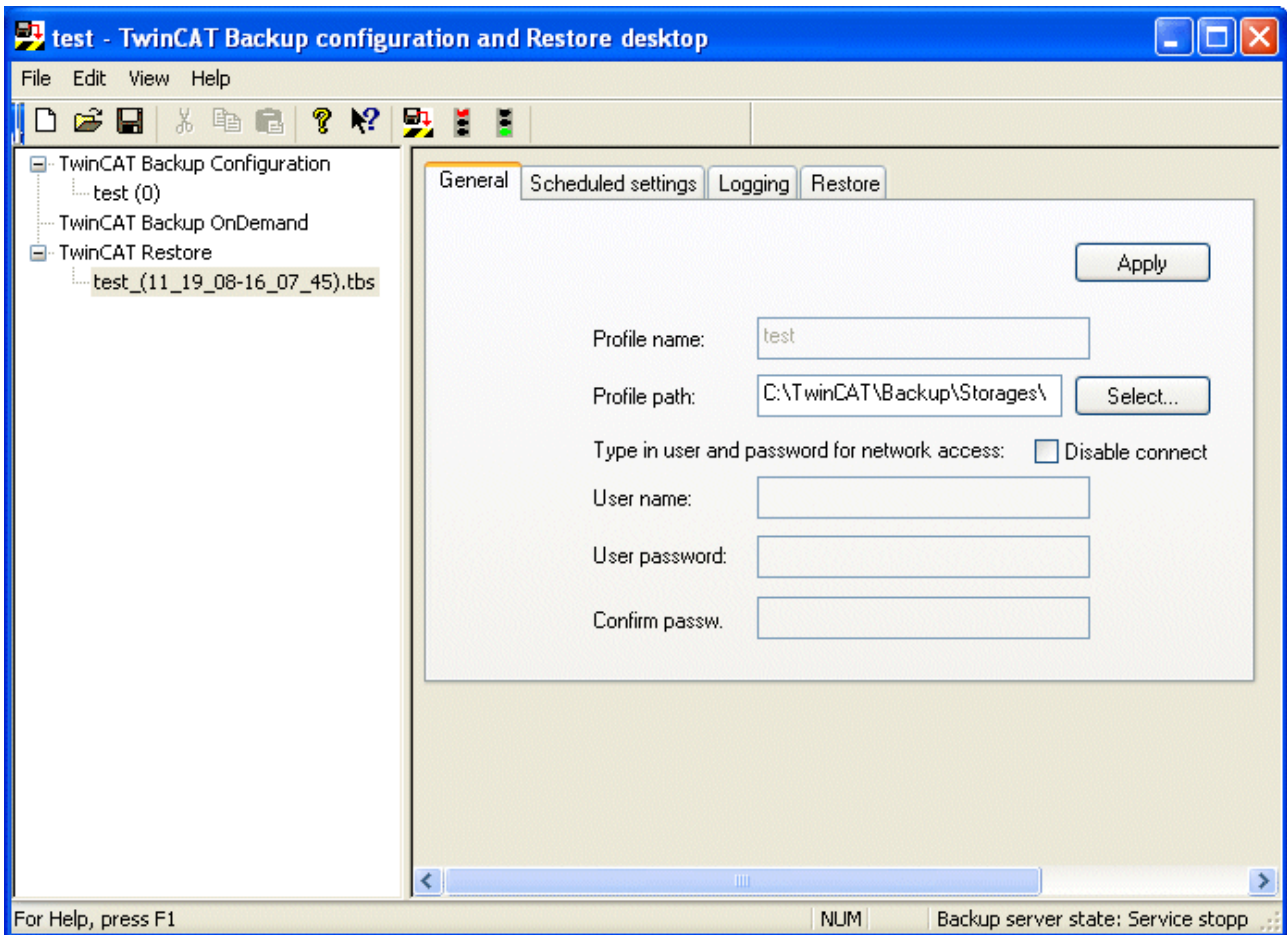
To view the settings, select "View backup storage".

To start the restore, select "Restore backup storage".

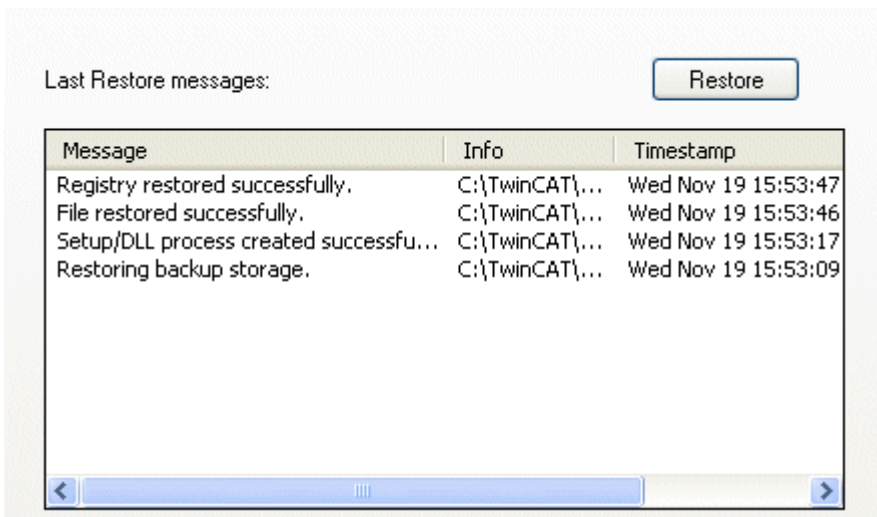
The TwinCAT recovery CD is created with "Create TwinCAT recovery CD".

The backup archive *.tbs can be deleted with "Delete backup Storage".

If you have selected "View backup storage", you can read the archive data on the tabs. The storages are usually stored in the directory preselected for them. If necessary, the path must be adjusted in the context on the 'General' tab.



After you start the restore, the processing order is as follows, provided that the data is available:



- Performing installations and DLL registrations
- Restore directories and files
- Restore the System Registry
- Restore the user and group data
- Restore the TwinCAT system data

5.2 Restore from CD

It is also possible to restore an archive from a CD. A file named "TcBackupCD.zip" is supplied with TwinCAT. When extracted, it provides a template that can be used to create an AutoPlay CD-ROM. The following files must be stored in the root directory of the CD:

<CD-ROM Drive Root:\>

- AUTORUN.INF
- TcBackupRestoreCfg.exe
- TcBackupRestoreCfg.ico
- zlib.dll
- AdsDll.dll
- "TwinCAT Backup Storagename".tbs

The TwinCAT backup archive "TwinCAT Backup Storagename.tbs" must first be configured and created. The archive is then also copied to the CD root. When the CD is inserted, TcBackup automatically searches for a backup Storage, provided the operating system's AutoPlay function has been activated.

More Information:
www.beckhoff.com/ts1150

Beckhoff Automation GmbH & Co. KG
Hülshorstweg 20
33415 Verl
Germany
Phone: +49 5246 9630
info@beckhoff.com
www.beckhoff.com

