

Operating Instructions Tankvision NXA85, NXA86B Terminalvision NXS85

Tank Gauging
Maintenance





- Make sure the document is stored in a safe place such that it is always available when working on or with the device
- Avoid danger to individuals or the facility: read the "Basic safety instructions" section carefully, as well as all other safety instructions in the document that are specific to working procedures

The manufacturer reserves the right to modify technical data without prior notice. The Endress+Hauser sales organization will supply you with current information and updates to these instructions.

Change history

BA00393G_17.17

- Valid for software version: 18.1.1
- Changes to the previous version:
Unification of the W&M and the non W&M software packages.

BA00393G_18.18

- Valid for software version: 18.1.1
- Changes to the previous version:
Compatibility with Windows 10 and Windows Server 2016

BA00393G_19.19

- Valid for software version: 18.2.5
- Changes to the previous version:
Version number updated

BA00393G_20.20

- Valid for software version: 18.3.1
- Changes to the previous version:
Document maintenance and version number updated.

BA00393G_21.22

- Valid for software version: 18.3.2
- Changes to the previous version:
Enhanced Backup and Restore utility, featuring scheduled backups.

BA00393G_22.25-00

- Valid for software version: 18.3.2
- Changes to the previous version:
Minor changes

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1 About this document


1.1 Document function

This manual should support during the configuration of the tank gauging and terminal management softwares Tankvision Professional NXA85, Tankvision LMS NXA86B and Terminalvision NXS85.

1.2 Target audience

Beside basic PC operating knowledge no special training is needed to perform the Tank Gauging System operations. Nevertheless it is recommended receiving a training on the system by Endress+Hauser.

1.3 Software versions and certification

 Due to the certification process with weights and measures agencies, the latest software version might only be certified at a later stage. Also some features might be incompatible with the weights and measures regulations and can therefore not be combined.

1.4 Symbols

1.4.1 Safety symbols

DANGER

This symbol alerts you to a dangerous situation. Failure to avoid this situation will result in serious or fatal injury.

WARNING

This symbol alerts you to a potentially dangerous situation. Failure to avoid this situation can result in serious or fatal injury.

CAUTION

This symbol alerts you to a potentially dangerous situation. Failure to avoid this situation can result in minor or medium injury.

NOTICE

This symbol alerts you to a potentially harmful situation. Failure to avoid this situation can result in damage to the product or something in its vicinity.

1.4.2 Electrical symbols

 Direct current

 Alternating current



Ground connection

A grounded terminal which, as far as the operator is concerned, is grounded via a grounding system.

 **Protective earth (PE)**

Ground terminals that must be connected to ground prior to establishing any other connections.

The ground terminals are located on the interior and exterior of the device:

- Interior ground terminal: protective earth is connected to the mains supply.
- Exterior ground terminal: device is connected to the plant grounding system.

1.4.3 Symbols for certain types of information

Tip

Indicates additional information



Reference to documentation



Notice or individual step to be observed

1., 2., 3.

Series of steps



Result of a step

1.4.4 Symbols in graphics

1, 2, 3, ...

Item numbers

1., 2., 3.

Series of steps

A, B, C, ...

Views

1.5 Documentation




For an overview of the scope of the associated Technical Documentation, refer to the following:

- *Device Viewer* (www.endress.com/deviceviewer): Enter the serial number from the nameplate
- *Endress+Hauser Operations app*: Enter serial number from nameplate or scan matrix code on nameplate.

The following document types are available in the Downloads area of the Endress+Hauser website (www.endress.com/downloads), depending on the device version:

Document type	Purpose and content of the document
Technical Information (TI)	Planning aid for your device The document contains all the technical data on the device and provides an overview of the accessories and other products that can be ordered for the device.
Brief Operating Instructions (KA)	Guide that takes you quickly to the 1st measured value The Brief Operating Instructions contain all the essential information from incoming acceptance to initial commissioning.
Operating Instructions (BA)	Your reference document The Operating Instructions contain all the information that is required in various phases of the life cycle of the device: from product identification, incoming acceptance and storage, to mounting, connection, operation and commissioning through to troubleshooting, maintenance and disposal.
Description of Device Parameters (GP)	Reference for your parameters The document provides a detailed explanation of each individual parameter. The description is aimed at those who work with the device over the entire life cycle and perform specific configurations.

Document type	Purpose and content of the document
Safety instructions (XA)	Depending on the approval, safety instructions for electrical equipment in hazardous areas are also supplied with the device. These are an integral part of the Operating Instructions.  The nameplate indicates which Safety Instructions (XA) apply to the device.
Supplementary device-dependent documentation (SD/FY)	Always comply strictly with the instructions in the relevant supplementary documentation. The supplementary documentation is a constituent part of the device documentation.

1.6 Registered trademarks

Microsoft®, Windows® and Edge®

Microsoft®, Windows®, Edge® and the Microsoft logo are registered trademarks of the Microsoft Corporation.

Modbus®

Registered trademark of SCHNEIDER AUTOMATION, INC.

Java®

Registered trademark of Sun Microsystems, Inc.

Mozilla® Firefox®

Registered trademark of the Mozilla Foundation

Enraf, Honeywell, Rosemount, Emerson, L&J, GPE, Varec are registered trademarks and trademarks of these organizations and companies.

All other marks are property of their respective owners.

2 Basic safety instructions

2.1 Requirements for the personnel

The personnel for installation, commissioning, diagnostics and maintenance must fulfill the following requirements:

- ▶ Trained, qualified specialists must have a relevant qualification for this specific function and task.
- ▶ Are authorized by the plant owner/operator.
- ▶ Are familiar with federal/national regulations.
- ▶ Before starting work, read and understand the instructions in the manual and supplementary documentation as well as the certificates (depending on the application).
- ▶ Follow instructions and comply with basic conditions.

The operating personnel must fulfill the following requirements:

- ▶ Are instructed and authorized according to the requirements of the task by the facility's owner-operator.
- ▶ Follow the instructions in this manual.

2.2 Intended use

2.2.1 Intended use of Tankvision Professional NXA85 software

Tankvision Professional is specifically designed for operators of bulk storage facilities, marketing terminals, refineries and pipelines. It is designed to handle all the data acquisition, supervisory control and monitoring required in a single fully integrated solution.

Tankvision Professional integrates all major types of tank measurement instruments into one system.

All measured and calculated tank parameters are accessible to your tank farm and terminal operators as well as to connected host systems.

Multi-user operation is provided by the inbuilt Web Server offering the opportunity to access data at any connected location (local/remote) e.g. for administrative and accounting purposes.

2.2.2 Intended use of Tankvision LMS NXA86B software

Tankvision LMS is a total LNG Tank Storage and Management solution for Peak Shaving, Receiving and Production LNG facilities. The LMS system has been designed to interface to all instruments commonly found on LNG storage tanks, and to collect and present the instrument data through a range of intuitive graphical user interfaces. A typical LNG Tank will have a wide range of measurement instruments to measure Liquid Level, Liquid Density, Liquid and Vapour Temperature, Liquid and Vapour Pressure, Skin Temperature and much more.

Typically each tank would be fitted with an LTD gauge, two further level gauges configured as a Primary and Secondary, and an Alarm Gauge. The LTD gauge is a servo operated unit mounted on the tank roof. The purpose of the LTD gauge is to take accurate profiles of temperature and density throughout the liquid, and whilst not profiling provide continuous liquid level, temperature and density measurement. The Primary and Secondary gauges can be either servo and or radar operated units also mounted on the tank roof. The purpose of these gauges is to provide continuous liquid level measurement, and average liquid temperature measurement. They provide redundancy on the measurement of level and temperature. The average liquid temperature is derived from a

multi point temperature sensor device. The alarm gauge is often a servo or radar based gauge configured to provide volt free contact alarm status to an independent system.

An LMS system can operate in a simple standalone configuration or as a fully redundant system where security and integrity are of paramount importance. The LMS system has a flexible and scalable architecture allowing it to be tailored to a number of different applications easily.

2.2.3 Intended use of Terminalvision NXS85 software

Terminalvision is a terminal management and loading monitoring software designed to meet the requirements of depots and terminals. Interfacing to most vendor devices used for access control, batch controllers, flow computers, and weighbridges, Terminalvision provides a secure and controlled loading and off-loading procedure for all movement types. Terminalvision also enables site control and overview, allowing operators to access details of all gantries, loading arms, vehicles, drivers, and products in use on site.

Terminalvision can be provided as a simple standalone station for small depots, or be configured on larger sites as a full Client/Server system where multiple operator stations are required. Printers can be distributed throughout the system, for example placed within the terminal control room and control rooms for internal reporting, as well as at the exit gate for the automatic printing of BOLs.

2.3 IT security

The manufacturer warranty is valid only if the product is installed and used as described in the Operating Instructions. The product is equipped with security mechanisms to protect it against any inadvertent changes to the settings.

IT security measures, which provide additional protection for the product and associated data transfer, must be implemented by the operators themselves in line with their security standards.

3 Incoming acceptance and product identification

3.1 Incoming acceptance

On receipt of the delivery:

1. Check the packaging for damage.
 - ↳ Report all damage immediately to the manufacturer.
Do not install damaged components.
2. Check the scope of delivery using the delivery note.
3. Compare the data on the nameplate with the order specifications on the delivery note.
4. Check the technical documentation and all other necessary documents, e.g. certificates, to ensure they are complete.



If one of the conditions is not satisfied, contact the manufacturer.

3.2 Product identification

The following options are available for identification of the software:

- Nameplate specifications
- Order code with breakdown of the software features on the delivery note
- Enter serial numbers from nameplates in *Device Viewer*
(www.endress.com/deviceviewer): All information about the software is displayed.

For an overview of the technical documentation provided, enter the serial number from the nameplate in the *Device Viewer* (www.endress.com/deviceviewer).

3.2.1 Nameplate

The information that is required by law and is relevant to the product is shown on the nameplate, e.g.:

- Manufacturer identification
- Product name
- Order code
- Extended order code
- Serial number
- Barcode

3.2.2 Manufacturer address

Endress+Hauser SE+Co. KG
Hauptstraße 1
79689 Maulburg, Germany
Place of manufacture: See nameplate.

3.2.3 Order code and product version



To find out the version of your software, enter the order code indicated on the nameplate in the search screen at the following address:
www.products.endress.com/order-ident

4 Introduction

The likely maintenance tasks that will have to be carried out are:

- Regular Backups of the database and configuration files
- Restoring the database and configuration files in the event of a system problem
- Applying Service Pack updates



Maintenance of the system should be carried out using the administrator account and appropriate password – failure to do so will cause problems.

4.1 Frequency of backups

Like any information system the most important maintenance task is performing regular backups. The regularity should be determined by the user; it generally depends on the criticality of the system to your operation. It also has some dependency on which features of the tank gauging or terminal management software are enabled on your system.

The modules that potentially generate large quantities of data are the trending and movement modules. Where heavy use of these features is made it is recommended that backups are performed weekly as a minimum.

4.2 Hardware inspection

Clearly the hardware on which the tank gauging or terminal management software itself is running may require periodic inspection and maintenance such as checking integrity of cables, making sure fan filters are free of dust and indeed cooling components are indeed operational. Storage medium used for backup purposes should also be maintained regularly.

4.3 Software updates

Updates to the tank gauging software may be periodically issued, in the form of service packs. These updates may add new functionality or fix existing issues and should be installed as and when they are issued.

5 Backup

The user configured data for tank gauging or terminal management software is stored in a number of different locations, depending on the type of data and which sub-system it is used for.

These include:

- **SQL Server** - the main tank gauging or terminal management software databases are stored within SQL server
- **Files** - some of the communications and system services within tank gauging or terminal management software system store their configuration data within XML format files
- **Trend Data** - stored trend data files. This feature is only valid for Tankvision Professional NXA85 and Tankvision LMS NXA86B

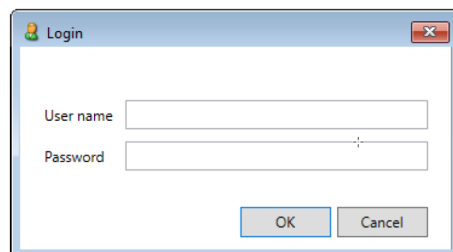
The system provides a utility, **Backup**, to simplify the backup procedure and make it easy to restore from a previous backup in the event of a system problem.

During a backup, the utility will automatically save all required files to a compressed file in a user specified folder. The user requires no knowledge of which files are required for the backup. The name of the backup file is automatically generated using the current date and an index number, e. g.: **Backup_22Apr21#1**. If more than one backup file is created on a given day in that folder the backup can be identified by the index number which is incremented each time.

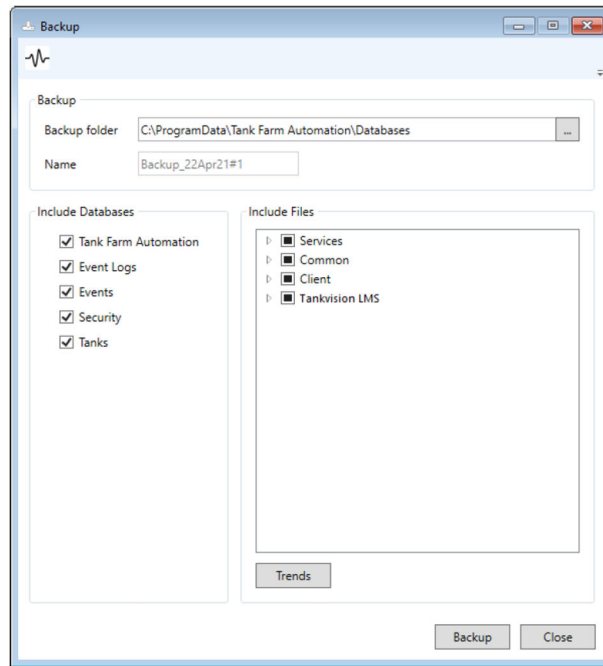
5.1 Starting the Backup utility

To run the **Backup** utility, use the Windows Start button to select the menu option: Start → Endress+Hauser → Backup

The **Backup** utility can only be run if the current user access rights allow it, otherwise access will be denied. If no user is currently logged in then a dialog will be displayed prompting the login.



When a valid account has been entered, the utility will be displayed.



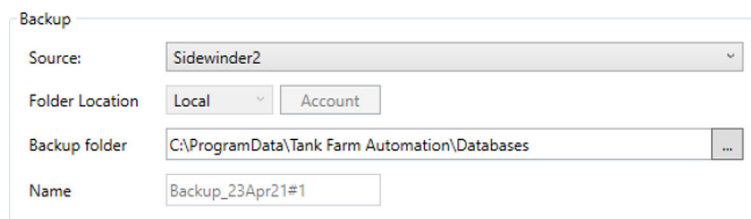
The toolbar on this window will only be visible if the license for tank gauging or terminal management software includes Scheduled Backups.

5.1.1 Backup

NXA85 and NXA86B

The options within the **Backup** section will vary depending upon the installation of tank gauging or terminal management software. The options shown above are for a **Standalone System** or a single **Server installation**. For a redundant **Server** or **Client** installation there is the option of backing up either the local machine or a remote server.

In these cases there are some additional options in the **Backup** section:



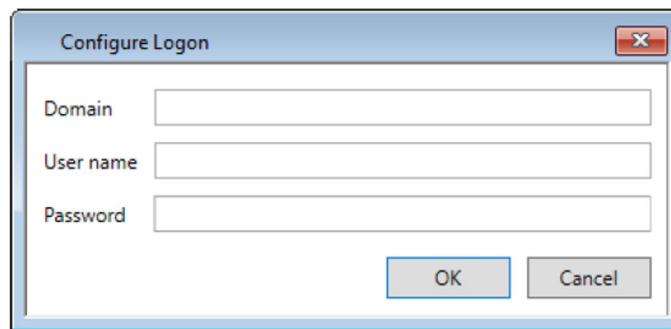
NXS85

The options within the **Backup** section will vary depending upon the installation of Terminalvision. The options shown above are for a **Standalone System** or a **Server installation**. For a **Client** installation there is the option of backing up either the local machine or a remote server.


The **Source** field is a list of machines that can be backed up.

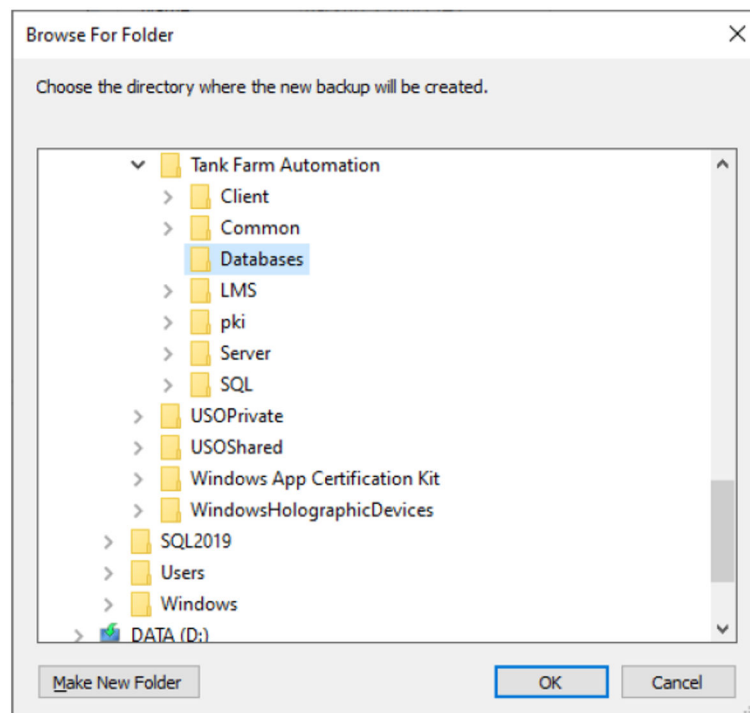
The **Folder Location** fields are used to determine the location where the backup will be created. If it is the local machine which is being backed up then these options are unavailable as the backup must always be created on that machine. However, if it is a remote server which is being backed up then there is the option to either create the backup on the machine from which the backup utility is being run **Local**, or on the server itself as **Remote**. If the backup is to be created on the server, then it may be necessary to enter

credentials to allow access to the folder in which the backup is to be created. To change the credentials used to access the file system on the server, click on the **Account** button. The following screen will be displayed:

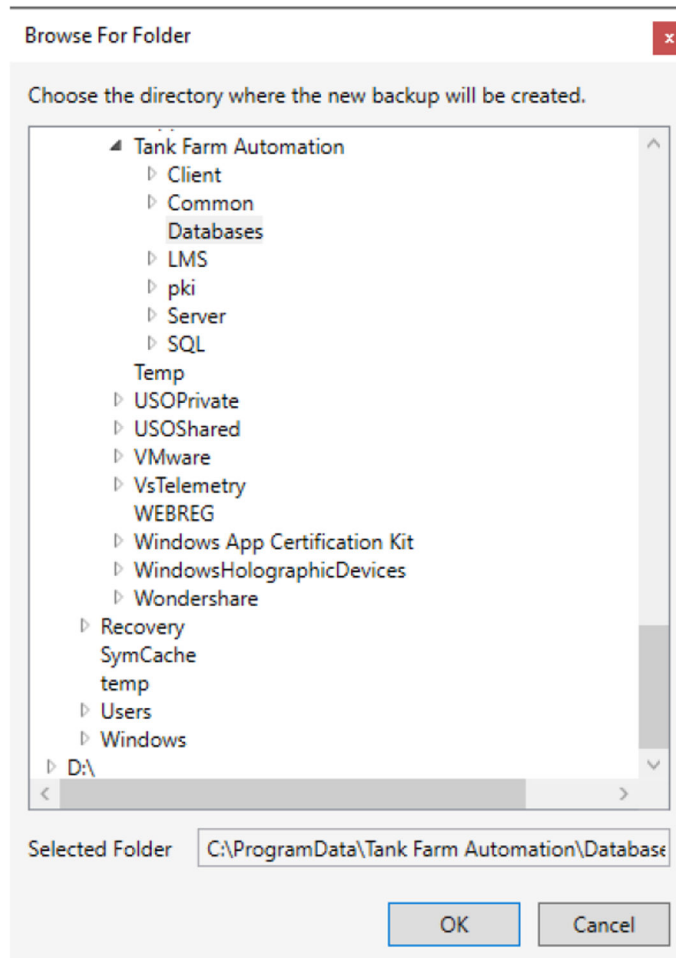


Enter the account details to be used to access the file system on the server and then click **OK**.

The **Backup Folder** field is used to enter the folder in which the backup is to be created. It is possible to browse for a folder by clicking the browse button . If the machine being backed up is the machine on which the backup utility is being run, then the standard Windows **Browse for Folder** screen will be displayed:



If it is a remote server which is being backed up, then a customised **Browse for Folder** screen will be displayed allowing selection of a folder on the remote server:



If the required folder cannot be seen it may be necessary to configure the user account used to access the server as described above.

The **Name** field shows the name of the backup file that will be created. This is for information only and cannot be changed.

5.1.2 Databases

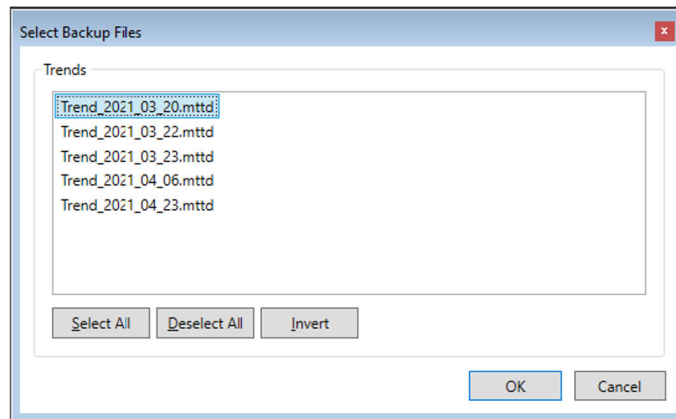
The Include Databases section allows selection of the databases to be backed up. By default all available databases will be selected. To select or deselect a database click on the name of the database. Databases that will be backed up are indicated with a tick ☒.

If it is a client machine which is being backed up this section will not be displayed.

5.1.3 Files

To select or deselect a configuration file, click on the name of the configuration file.

If **Trend Files** are to be included in the backup it is necessary to select them by clicking the **Trends** button. The following screen will be displayed:



The **Include Files** section allows selection of the configuration files to be backed up. If the required configuration file is not visible, expand the required area, e. g.: **Services**, **Common**, **Client** or **Tankvision Professional**. Configuration files that will be backed up are indicated with a tick ☒.

To select a **Trend file** click on the trend file name. To select multiple trend files hold the **Ctrl** key down and click on each required trend file.

To select a block of trend files click on the first required trend file name and then hold the **Shift** key down and click on the last required trend file.

To select all of the trend files click on the **Select All** button.

To clear the current selection click on the **Deselect All** button.

To invert the current selection (i. e. deselect the selected trend files and select the unselected trend files) click on the **Invert** button.

Once all of the required trend files to be backed up are highlighted click the **OK** button.

5.1.4 Save/Discard Changes

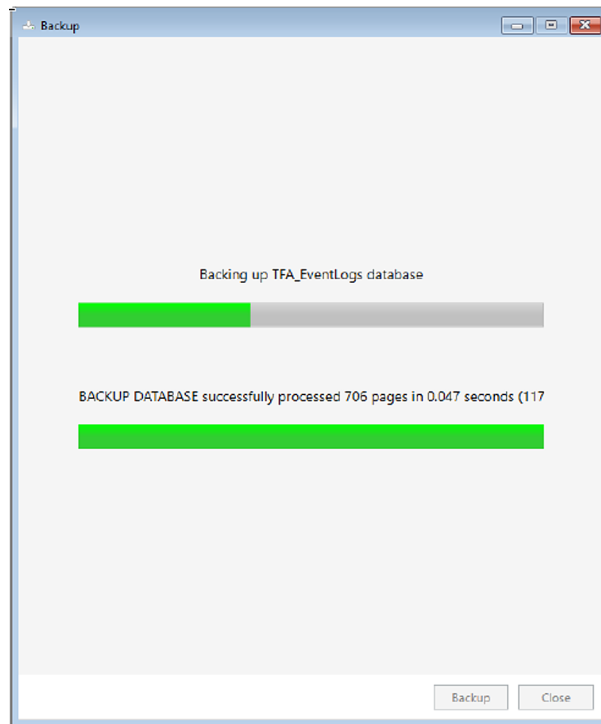
To save the changes to the scheduled backup configuration and close the configuration window, click **OK**.

To save the changes and leave the window open, click the **Apply** button.

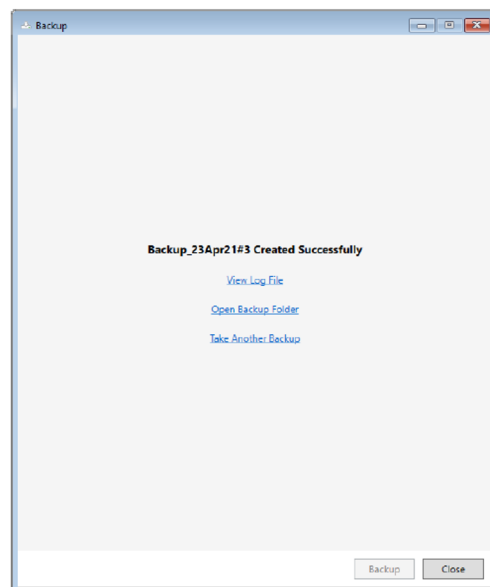
To discard the scheduled backup configuration changes, click the **Cancel** button.

5.2 Creating the Backup

Once the location of the backup has been entered and the required databases and configuration files selected, click the **Backup** button. The screen will change to indicate the progress of the backup:



Once the backup has completed the screen will change again to give some options on what can be done next:

**View Log File**

Opens the log file taken during the backup in the default text editor.

Open Backup Folder


Opens Windows file explorer displaying the folder in which the backup was created.


Take Another Backup

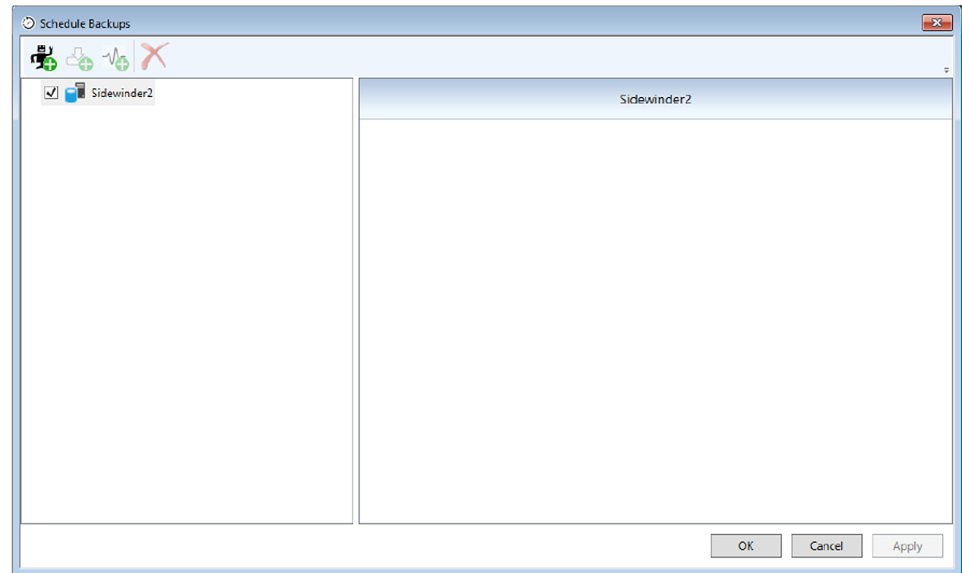
Changes the screen back to the original state allowing a further backup to be configured.

5.3 Scheduled Backups


It is possible to schedule backups to take place on a regular basis.


 Scheduled backups are a licensable option. If this option is not available please contact your supplier for details.

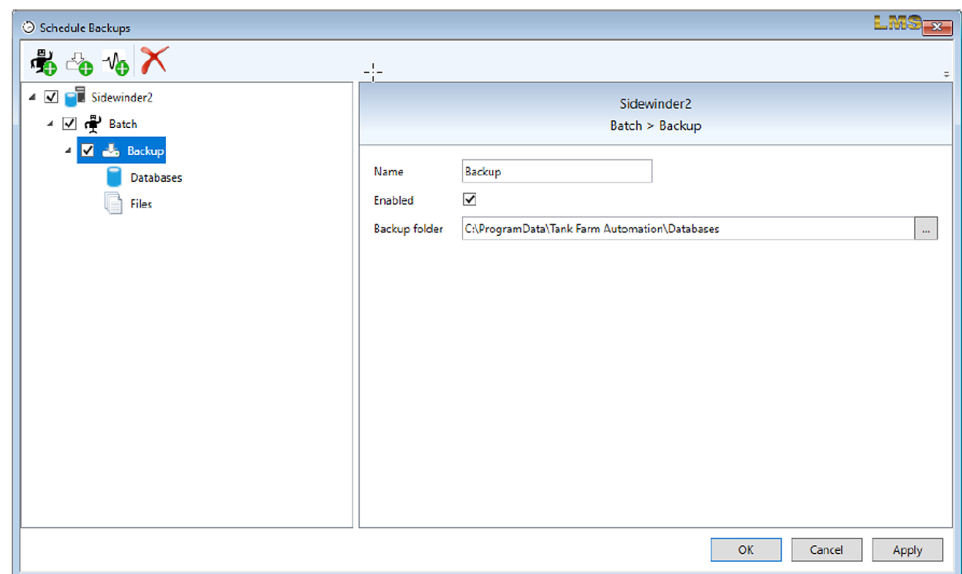
To configure details of scheduled backups, click on the **Schedule Backups** button  on the toolbar. The following screen will be displayed:



There will be an entry in the list on the left for each tank gauging software server.

 Client machines cannot be backed up on a scheduled basis. If it is necessary to take regular backup of the configuration files on a client it is recommended that this is done using a batch file run from the Windows Task Scheduler.

To create a new backup task for a server, select the required server and then click the **Add Batch** button  on the toolbar. A new batch will be created for that server including a default backup task:



5.3.1 Batch

To edit details of the batch, click on the batch entry in the list on the left hand side. Details of the batch will be displayed in the right hand panel:

Name

Batch

Transaction Log Directory


C:\ProgramData\tank farm automation\common\logs

...


Prefix Log Name With Date

☒

Name
The text used to identify the batch.

Transaction Log Directory
The folder to which the transaction log will be written when a scheduled backup is performed. To browse to a folder, click the browse button .

Prefix Log Name With Date
If this option is selected then the date when the backup is performed will be prepended to the transaction log file name.

 If this option is not selected then the same name will be using for the transaction log file each time, overwriting the previous log file.

5.3.2 Backup task

To edit details of the backup task, click on the backup task entry in the list on the left hand side. Details of the backup task will be displayed in the right hand panel:

Name

Backup

Enabled

☒


Backup folder


C:\ProgramData\tank farm automation\databases

...

Name
The text used to identify the backup task.
This is not the name of the backup file that will be created. The name of the backup file will be automatically generated as described in section **Backup**.

Enabled
Indicates whether the backup task should be performed as part of the batch. This allows backup tasks to be temporarily disabled instead of needing to delete them and create a new one when they are required again.

Backup Folder
The path to the folder in which the scheduled backups are to be created. To browse to a folder, click the browse button .

If additional backup tasks are required, they can be added by selecting the batch (or one of its components) in the list on the left hand side and then clicking the **Add Backup** button  on the toolbar.


5.3.3 Databases

To select which databases will be backed up as part of a backup task, click on the **Databases** entry under the corresponding backup task in the list on the left hand side. The databases that can be backed up are displayed in the right hand panel.

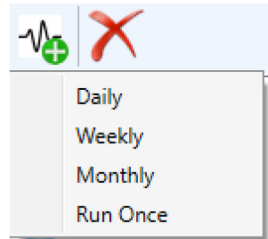
5.3.4 Files

To select which configuration files will be backed up as part of a backup task, click on the **Files** entry under the corresponding backup task in the list on the left hand side. The configuration files that can be backed up are displayed in the right hand panel.

5.3.5 Triggers

To add a new trigger to a batch, select the batch (or one of its components) in the list on the left hand side and then click the **Add Trigger** button  on the toolbar.

A list of available triggers will be displayed:



Click on the type of trigger required to add it to the batch.

5.3.6 Daily Trigger

To edit details of a **Daily Trigger**, click on the trigger in the list on the left hand side. Details of the trigger will be displayed in the right hand panel:

Name	<input type="text" value="Daily Trigger"/>
Enabled	<input checked="" type="checkbox"/>
Time	<input type="text" value="0:00"/>

Name

The text used to identify the daily trigger.

Enabled

Indicates whether this trigger should be used to trigger a scheduled backup. This allows the trigger to be temporarily disabled instead of needing to delete it and create a new one when it is required again.

Time

The time of day at which the scheduled backup is to be run.

5.3.7 Weekly Trigger

To edit details of a **Weekly Trigger**, click on the trigger in the list on the left hand side. Details of the trigger will be displayed in the right hand panel:

Name	<input type="text" value="Weekly Trigger"/>
Enabled	<input checked="" type="checkbox"/>
Day Of Week	<input type="text" value="Sunday"/>
Time	<input type="text" value="0:00"/>

Name

The text used to identify the weekly trigger.

Enabled

Indicates whether this trigger should be used to trigger a scheduled backup. This allows the trigger to be temporarily disabled instead of needing to delete it and create a new one when it is required again.

Day Of Week

The day of the week on which the scheduled backup is to be run.

Time

The time of day at which the scheduled backup is to be run.

5.3.8 Monthly Trigger

To edit details of a **Monthly Trigger**, click on the trigger in the list on the left hand side. Details of the trigger will be displayed in the right hand panel:

Name

Monthly Trigger

Enabled

☒

Day

First Day ▾

Day Of Month

0

Time

0:00

Name

The text used to identify the monthly trigger.

Enabled

Indicates whether this trigger should be used to trigger a scheduled backup. This allows the trigger to be temporarily disabled instead of needing to delete it and create a new one when it is required again.

Day

The day of the month on which the scheduled backup is to be run. Select from **First Day**, **Last Day** or **Specified Day**.

Day Of Week

Can only be entered when **Day** is set to **Specified Day**. The ordinal day of the month on which the scheduled backup is to be run.

If the day does not exist in a month then no scheduled backup will be taken for that month.

Time

The time of day at which the scheduled backup is to be run.

5.3.9 Run Once Trigger

To edit details of a Run Once Trigger, click on the trigger in the list on the left hand side. Details of the trigger will be displayed in the right hand panel:

Name

Run Once Trigger

Enabled

☒

Time

27/04/2021 14:19

Name

The text used to identify the run once trigger.

Enabled

Indicates whether this trigger should be used to trigger a scheduled backup. This allows the trigger to be temporarily disabled instead of needing to delete it and create a new one when it is required again.

Time

The time of day at which the scheduled backup is to be run.

6 Restore

The data for the tank gauging or terminal management software configured by the user is located in different locations depending on the type of data and which sub-system it is used for.

The data includes:

SQL Server

The main the tank gauging or terminal management software databases are stored within SQL server.

Files

Some of the communications and system services within the tank gauging or terminal management software store their configuration data in XML format files.

Trend Data

Stored trend data files.

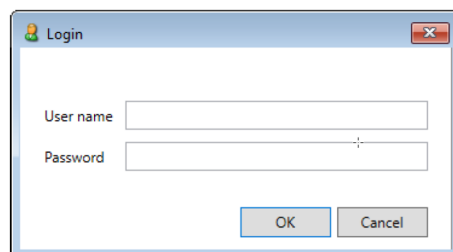
This feature is only valid for Tankvision Professional NXA85 and Tankvision LMS NXA86B.

The system provides a utility, **Restore**, to restore a backup for the system. See Backup chapter.

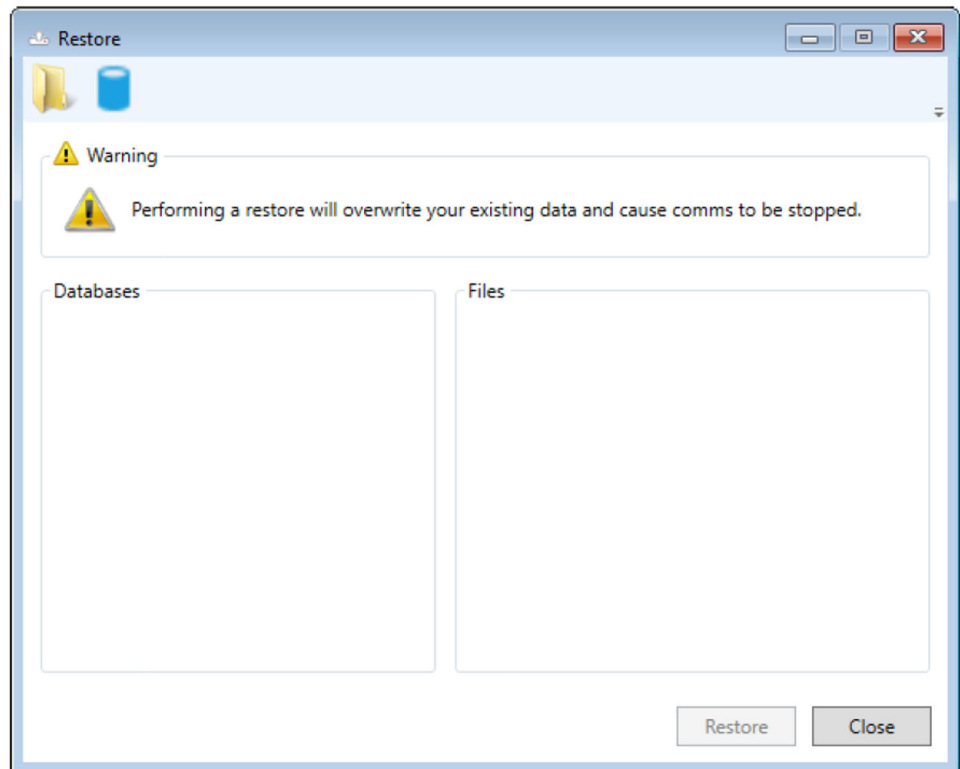
6.1 Starting the Restore utility

To run the **Restore** utility, use the Windows Start button to select the menu option: Start → Endress+Hauser → Restore


The **Restore** utility can only be run if the current user access rights allow it, otherwise access will be denied. If no user is currently logged in then a dialog will be displayed prompting the login:

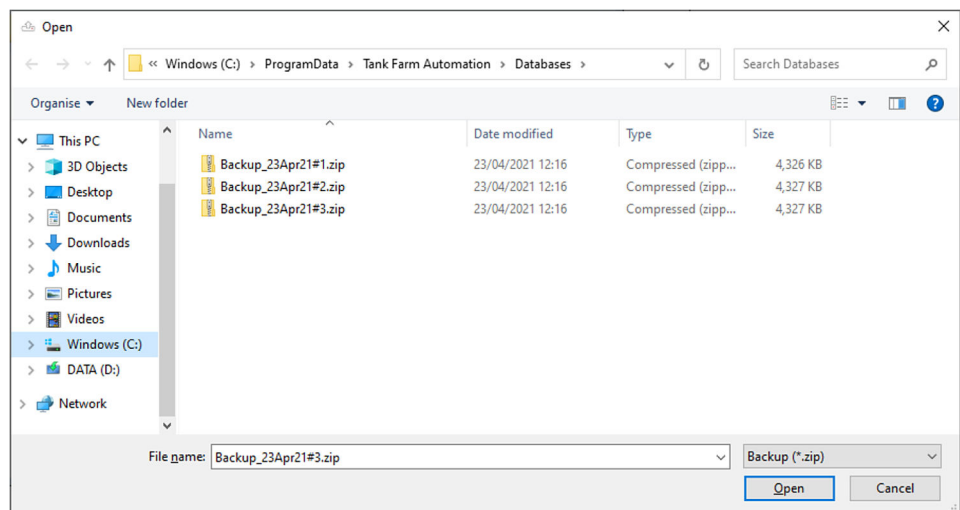


If the valid user name and password is entered the next window will appear:




6.1.1 Open Existing Backup

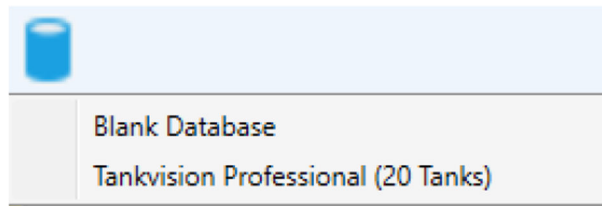
To open an existing backup, click on the **Existing Backup** button  on the toolbar. The standard Windows Open File screen will be displayed to allow selection of the existing backup to be opened:



Select the backup file to be opened and then click the **Open** button.

6.1.2 Preconfigured Database

To select a preconfigured database to restore, click on the **Preconfigured Database** button  on the toolbar. A list of available preconfigured databases will be displayed:



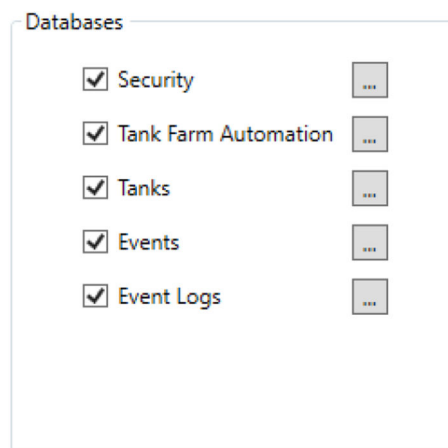
Select the required preconfigured database to open it.

6.1.3 Selecting Items to Restore


Once a backup has been selected, either by opening an existing backup or by selecting a preconfigured database, the items to restore from the backup can be selected.

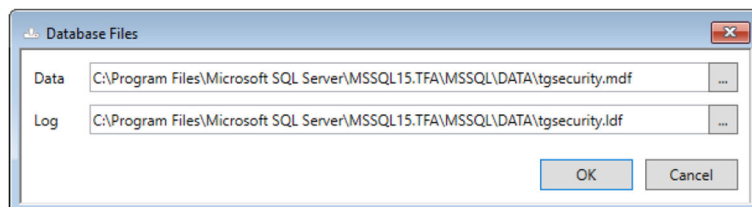
Databases

The list of databases that are available to restore are displayed in the **Databases** section:



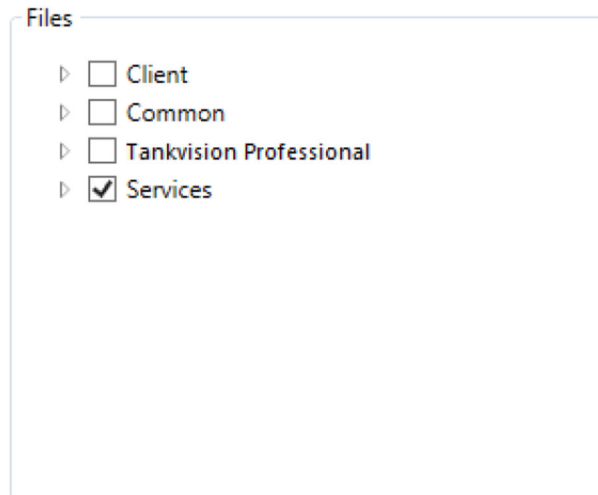
This section will not be displayed if the Tankvision Professional installation is **Client Only**. To select or deselect a database click on the database name. The databases that will be restored are indicated with a tick ☒.

To change the file paths where the databases will physically reside on the computer, click on the browse button . A screen will be displayed allowing the file paths to be modified:



Files

The list of configuration files that are available to restore are displayed in the **Files** section:



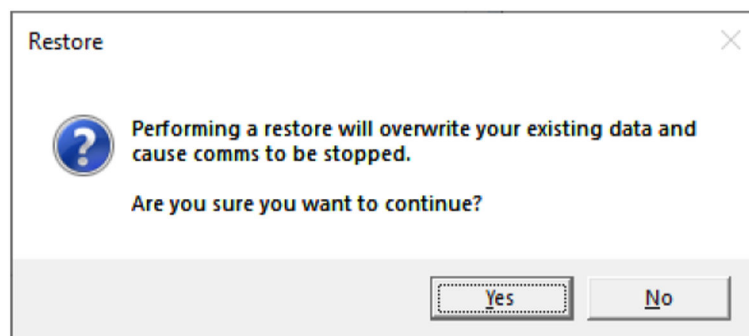
This section will not be displayed if a preconfigured database is being restored. If the required configuration file is not visible, expand the required area (**Services**, **Common**, **Client**, **Tankvision Professional**).

Configuration files that will be restored are indicated with a tick ☒.

To select or deselect a configuration file, click on the name of the configuration file.

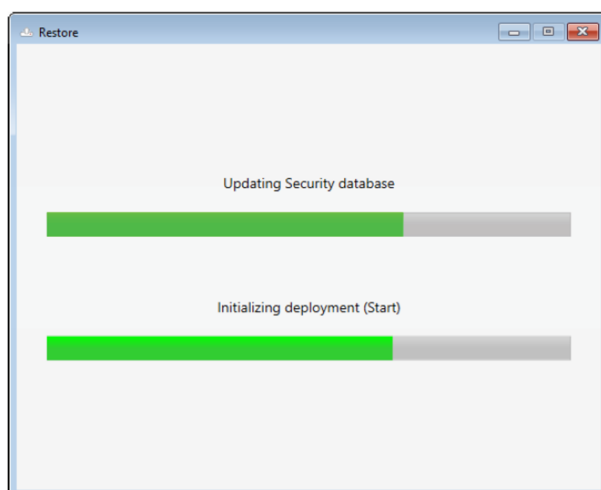
6.1.4 Restore Selected Items

If all the items to be restored have been selected, click on the **Restore** button to begin the restore process. If the restore utility is being run on a the tank gauging or terminal management software server, a warning message will be displayed:

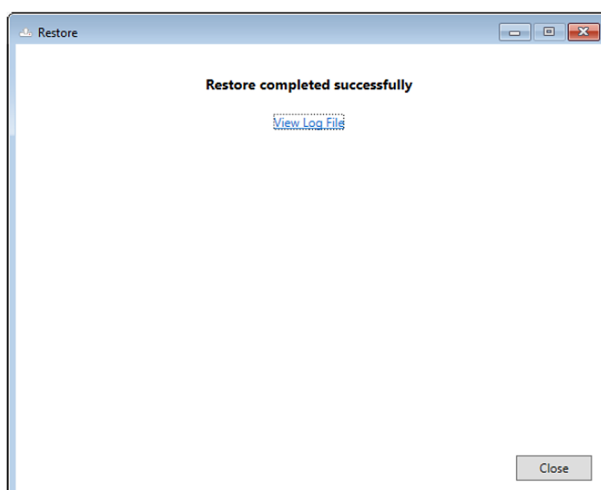


Click **Yes** to continue.

The screen will change to indicate the progress of the restore:



Once the backup has completed the screen will change again to give some options on what can be done next:



To view the log file that was generated during the restore, click on the **View Log File** option. The log file will be displayed in the default text viewer.

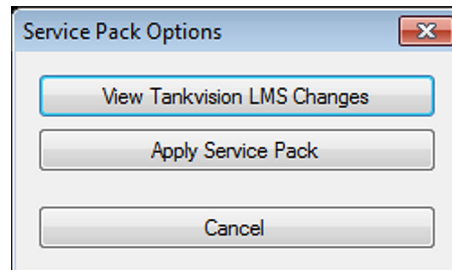
To exit the **Restore** utility, click on the **Close** button.

7 Applying Service Pack updates

1. Locate the folder where the service pack resides (must be on the local PC) and double click on the file icon.

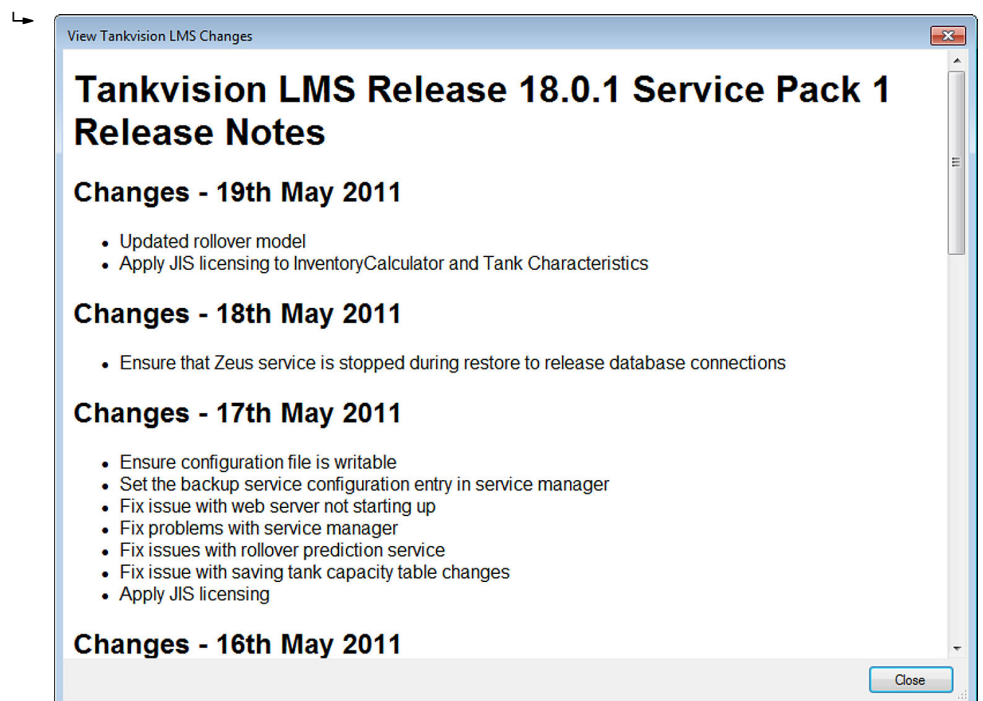


The following screen shows the options:



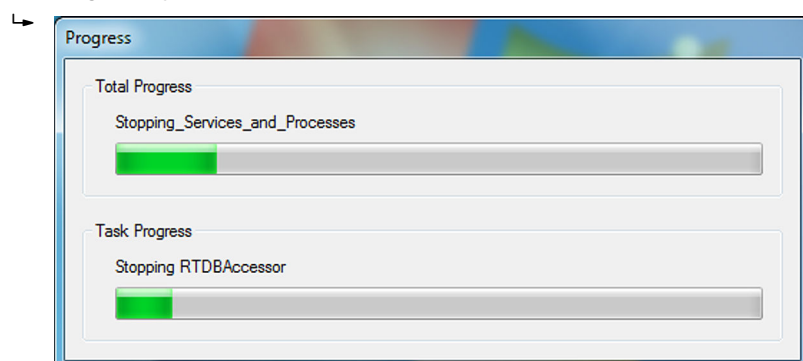
Service pack options for Tankvision LMS

2. Clicking **View Tankvision Professional Changes**, **View Tankvision LMS Changes** or **View Terminalvision Changes** shows the release notes:

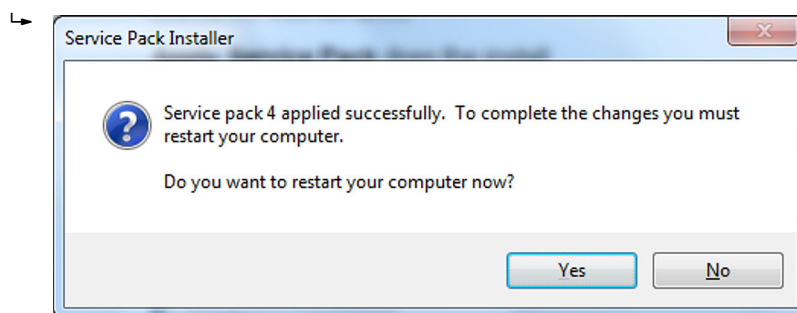


Release notes for Tankvision LMS

3. Clicking **Apply Service Pack** initiates the installation.



4. When finished, restart the computer to complete the install as recommended in the final window:





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