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LABWORKS LIMS v7.2

Installation Guide

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Contents

LABWORKS Overview

LABWORKS is a Laboratory Information Management System (LIMS). It is a database used for recording sample information and test results in a laboratory environment. LABWORKS essentially involves logging in a sample, entering test results for the sample, validating the sample, managing quality assurance for the sample, and providing invoices and/or reports for the sample.

LABWORKS is a modular application. Each set of related functions in LABWORKS is contained in a subset or smaller streamlined programs. For example, samples may be logged in by using a Single or Multi-Sample Login program. Sample results may be entered by using Results Entry or another Results uploading related program. Each of these modular programs is specialized for its function.

LABWORKS Desktop is a client/server application. There are two options for the client application: LABWORKS Desktop (thick client) and browser-based Webtop client with Desktop being primary. The client application interacts with the LABWORKS database to send, filter and read data. Additionally, the LABWORKS uses services that run on a server computer to authenticate users and provide and receive data. The server resides on the server computer that is running LABWORKS Services. The file server is a computer that contains files common to all users. The LABWORKS base files are stored on the file server. The LABWORKS database is accessed from a database server. The database options are: Microsoft SQL Server and Oracle.

About this Guide

The purpose of this document is to provide the installation procedures for the different software packages within the LABWORKS LIMS offerings.

To help with the understanding of the installation procedure, a Planning and Definition section has been added to this document. This will be used to define the location where the software will be located on the network. The Planning and Definition Worksheet will also show what testing is recommended prior to the start of the installation.

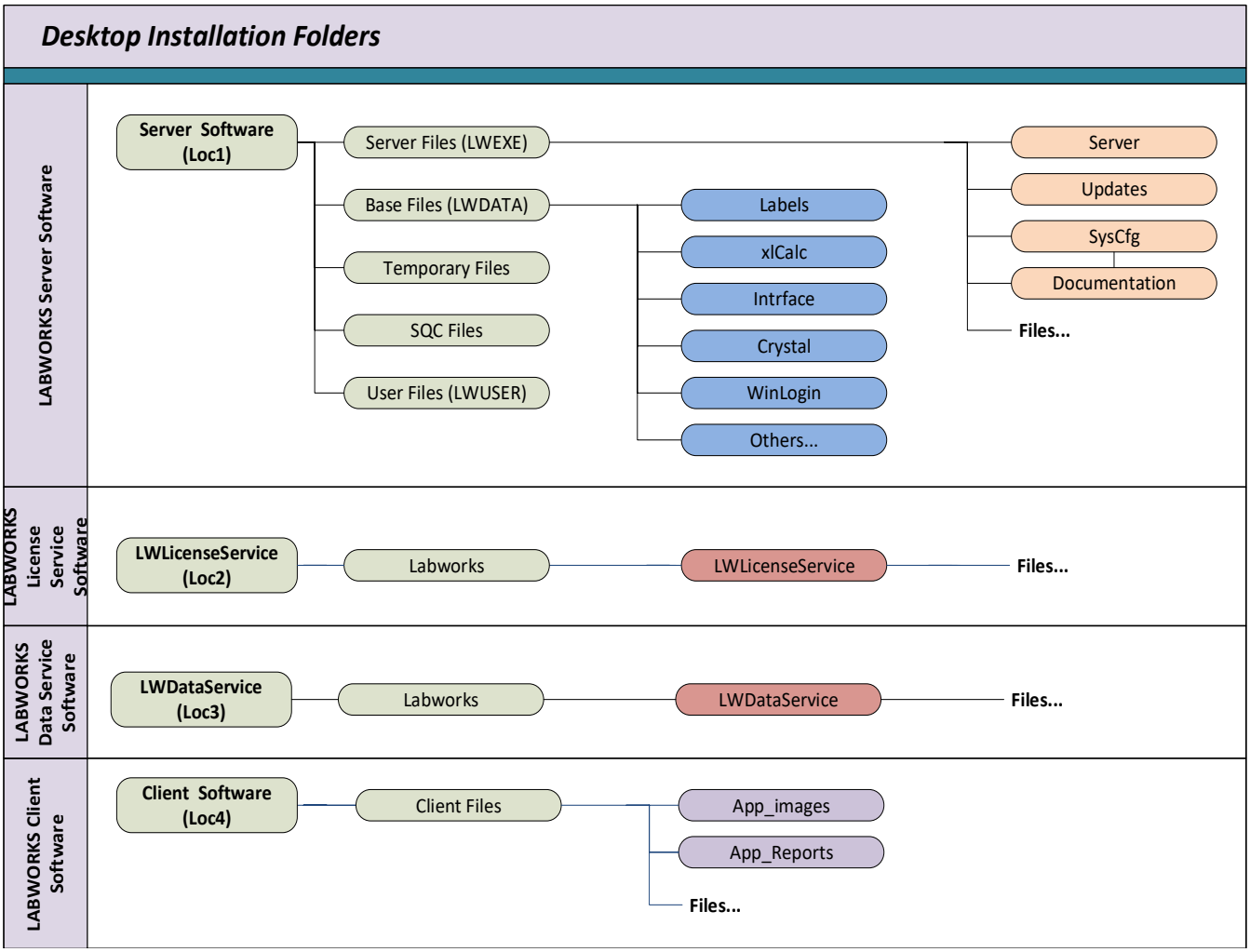
The section on Planning and Definition, LABWORKS Desktop Installation, and Appendices A and B are used to install the core product. These sections are required for a functional installation of LABWORKS on your system.

> ***Note:*** *It is suggested that Appendix A, B, and C should be printed, completed, and followed during the installation. The check list will ensure that a step in the installation process is not omitted during the installation.*

Planning and Definition

LABWORKS Desktop is the latest in a succession of versions of LABWORKS LIMS. It provides significant new functionality, usability and reliability and is built using the latest in software development tools. In accordance with these newer tools and technologies the installation footprint on the server and client are different from previous version. Even if you are a long time LABWORKS user, it is recommended you read the complete installation guide and complete the ***'Planning and Definition Worksheet'*** before starting your LABWORKS Desktop installation or upgrade.

The following diagrams show the different folders used to install the LABWORKS Desktop and LABWORKS Webtop software. During the installation, the folders for the Server software and Client software are installed in different locations and can be selected/changed during the installation. Folders for the Webtop, LWLicenseServices and LWDataServices software are predefined as explained in the following pages and cannot be changed.

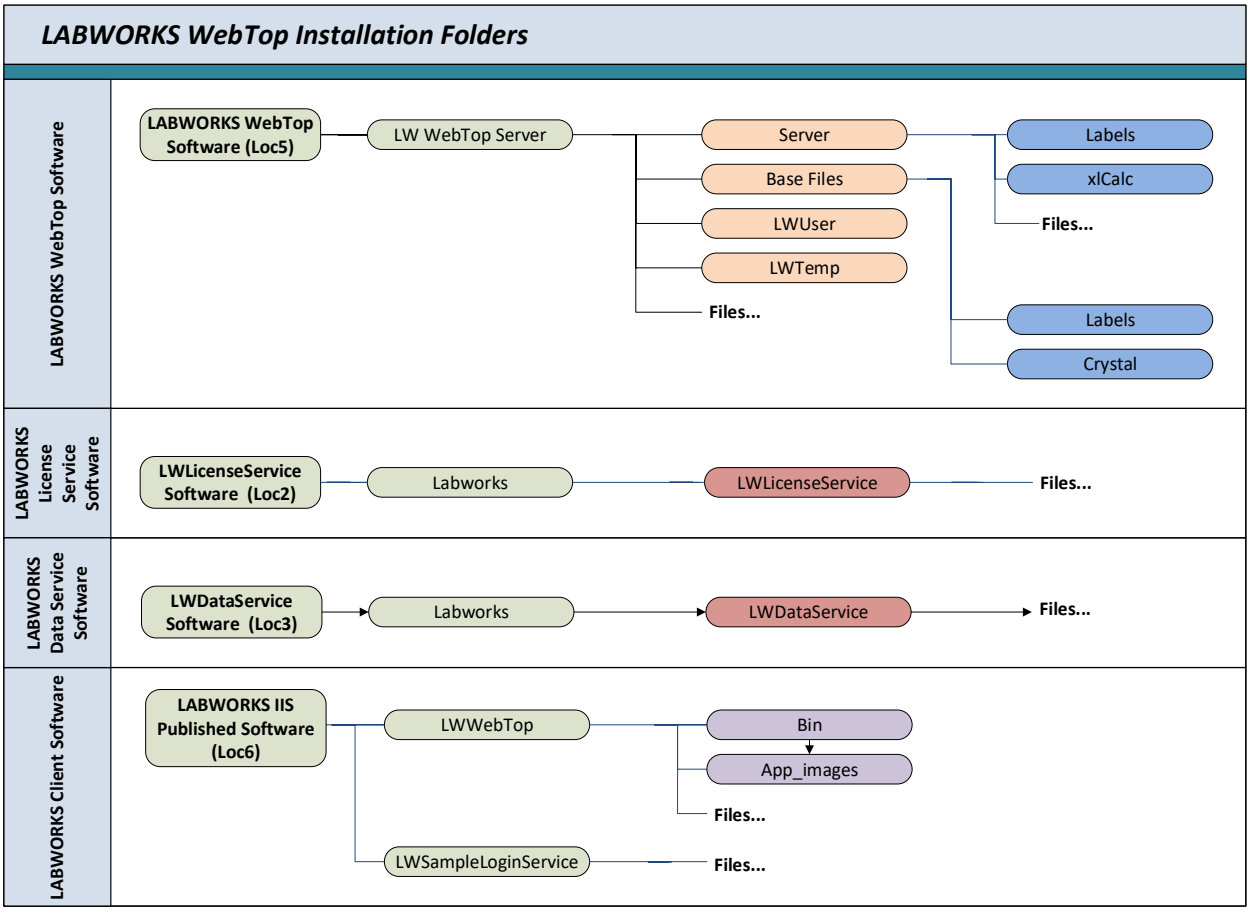


The LABWORKS Server Location (Loc1) could be different for each of the sub folders but for maintenance reasons it is suggested that you have only one folder defined on the server for the software. If the LABWORKS Server Location (Loc1) was defined as a version, then the grouping folder could be 'LABWORKS67' and the next installation would use 'LABWORKS68' or 'LABWORKS69' depending on the next version number.

After determining the LABWORKS Server Location (Loc1) then it is suggested that the Server Files be placed in LWEXE, Base Files in LWDATA, User Files in LWUSER, Temporary Files in LWTEMP, and SQC Files in the LWSQC folders. During the installation and Gateway Administrator operation these folders will be created.

The Planning and Definition Worksheet will require the location to be defined prior to the installation. If the 'LABWORKS Server Software (Loc1)' was defined to be **'C: \LABWORKS\'** then the Server Files folder would be **'C: \LABWORKS\LWEXE\'** and the Base Files folder would be C**: \LABWORKS\LWDATA\'**.

The default for the Client installation is **'C: \LABWORKS\Client'.** If user change the 'Client location (Loc4)' to other folder location (**D:\LABWORKS**) then the software location for the client would be **'D: \LABWORKS\Client\'**



The software location for the LABWORKS Webtop is controlled by either the LABWORKS software or the Internet Information Server (IIS). The 'LABWORKS Webtop Software (Loc5)' for the Webtop will be 'C:\Program Files (x86)\LABWORKS\' and the 'LABWORKS IIS Published Software (Loc6)' will be 'C: \inetpub\wwwroot\'. These folders are not changeable within the software. The installation of the Webtop software will create file main folders:

- *'C:\Program Files (x86)\Labworks\LWLicenseServices\'*
- *'C:\Program Files (x86)\Labworks\LWDataServices\'*
- *'C:\Program Files (x86)\Labworks\LWWebtop Server\'*
- *'C:\inetpub\wwwroot\LWWebtop\'*
- *'C:\inetpub\wwwroot\LWSampleLoginService\'*

Note: *If the LABWORKS server is also the IIS server then only one installation of the LWLicenseServices and LWDataServices will be installed.*

Required Sharing and Permission

The server folders need to be shared to the clients. The share should be set with required group based on Network Policy. Normally the Administrators (domain, backup, and other) groups will have Full Control access to the share and permission. Three additional groups should be added to the share to control the LABWORKS user access.

The permission on the share must be set to RWXD for the Groups required. (**RWXD** R = Read, W = Write, X = Execute, D = Delete)

Folder permission required					
	Folder	**LABWORKS Users**	**LABWORKS Super User**	**LABWORKS Managers**	**Admin. Account**
1	(Loc2) LWLicenseServices Location	N/A	N/A	N/A	Full Control
2	(Loc3) LWDataServices Location	N/A	N/A	N/A	Full Control
3	(Loc1)\LWEXE (Server Files)	RX	RX	RX	Full Control
4	(Loc1)\LWEXE\syscfg(Server Files)	RX	RX	RWXD	Full Control
5	(Loc1)\LWUSER (User Files)	RWXD	RWXD	RWXD	Full Control
6	(Loc1)\LWTEMP (Temporary Files)	RWXD	RWXD	RWXD	Full Control
7	(Loc1)\LWDATA (Base Files)	RWXD	RWXD	RWXD	Full Control
	Folder	**LABWORKS Users**	**LABWORKS Super User**	**LABWORKS Managers**	**Admin. Account**
1	(Loc2) Webtop LWLicenseServices Location	N/A	N/A	N/A	Full Control
2	(Loc3) Webtop LWDataServices Location	N/A	N/A	N/A	Full Control
3	(Loc5)\LWWebtop Server\LWEXE	Rx	RX	RX	Full Control
4	(Loc5)\LWWebtop Server\LWEXE\SysCfg	RX	RX	RWXD	Full Control
5	(Loc5)\LWWebtop Server\LWUSER	RWXD	RWXD	RWXD	Full Control
6	(Loc5)\LWWebtop Server\LWTEMP	RWXD	RWXD	RWXD	Full Control
7	(Loc5)\LWWebtop Server\LWDATA	RWXD	RWXD	RWXD	Full Control
8	(Loc6)\\LWWebtop\Reports	RX	RX	RWXD	Full Control
9	(Loc6)\\LWSampleLoginService	N/A	N/A	N/A	Full Control

LABWORKS Desktop Installation Prerequisites

Before You Start

LABWORKS Desktop is the latest in a succession of versions of LABWORKS LIMS. It provides significant new functionality, usability and reliability and is built using the latest in software development tools. In accordance with these newer tools and technologies the installation footprint on the server and client are different from previous version. Even if you are a long time LABWORKS user, it is recommended you read the complete installation guide

before starting your LABWORKS Desktop installation or upgrade. Complete the Planning and Definition section which can be used as a worksheet.

Installing LABWORKS is a multi-step process that involves performing a server installation, client installation on the server, creating a UNC path or mapped drive to the LABWORKS folder, running the update database tool, running the gateway administrator tool to configure workstations and LABWORKS databases, and finally performing a client installation on each workstation that is to run LABWORKS

LABWORKS installation involves the following steps:

- Step 1: Running LWServer.exe to install required folder, server software, and client installation.
- Step 2: Configure ApplicationSpec.xml
- Step 3: Create Folder Access and Permission
    - Define the UNC Path or create mapped drive to the LABWORKS folder.
- Step 4: Prepare the database by running the Microsoft SQL/Oracle Script and Update Tool.
    - 6.0/6.1/6.2/6.3/6.4/6.5/6.6/6.7/6.8/6.8.5/6.9/6.10/7.0/7.1/7.2 (Appendix D)
- Step 5: Run the Gateway Administrator Tool (LWSysCfg6.exe) to configure the LABWORKS software connection strings.
    - Configure the Database.
    - Configure Database Authentication.
    - Configure Global Database Availability.
- Step 6: Start LWLicenseServices/LWDataServices
- Step 7: Run Migration Utility to convert previous versions of LABWORKS 6.X to Latest version of LABWORKS.
- Step 8: Run NGMigrationTool to convert persisted groups to log batches. It is needed to be run in the case of updating from 6.9 or earlier to 6.10 or later version.
- Step 9: Run the ClientSetup.msi on each workstation that is to use LABWORKS

Note: *If you are using mapped drives then you must create a mapped drive on the server and then create the same mapped drive on each workstation that will run LABWORKS.*

Before you start your LABWORKS Desktop installation you will need the following:

- LABWORKS Desktop Installation Disk
- LABWORKS License/Control File (*.CTL)
- Completed Planning and Definition Worksheet
- Network Location/Share for Server Installation

If you are updating your existing LABWORKS LIMS program, back up your LABWORKS Base File folder and the database before beginning installation. LABWORKS is not responsible for any data loss or downtime caused by not creating backup files. Installation from the new LABWORKS CD should only begin after creation of a full backup of all existing files in your LABWORKS Server Files and Base Files and the actual database itself to tape, CD ROM, or other method.

It is recommended that you install any LABWORKS update on a test computer using a backup Base Files and database to test the program prior to installation on networks, servers, or multiple workstations. Even though

LABWORKS thoroughly tests the LABWORKS LIMS program in-house, there may be variables associated with your network, servers, workstations, environment, etc., that may present unforeseeable problems.

Server Installation

LABWORKS Desktop has 2 components of installation, the Server and the Client.

Server Installation

- The server installation copies files to a designated location. These files include: System configuration and conversion tools, the LWDATA folder, the license file and client installation point.

Server Files

- This is the location the LABWORKS server software will be located, normally referred to as LWExe. Within this folder, it will also contain the server documentation, system configuration, and updates.
- During the installation, the license (*.CTL) file will be copied from the license file path into the Server Files Folder for LABWORKS to use.
- This folder contains utilities for updating the LABWORKS Database Schema to latest LABWORKS version, Conversion utilities for previous versions. It also includes utilities for Language translation and management.

Base Files

- The Base File location is where the external files for the operation of LABWORKS will be located, normally referred to as LWData. These files include different types of reports, image files, and other files required for LABWORKS.

License File Path

- This is the location where the installation program can find the license (*.CTL) file to copy to the Server Files location.

Temporary Files

- Path that the lwcs640 component will use for temporarily operations, normally referred to as LWTemp.
- For best performance, these files should be local to the user. The default location is the Windows folder for temporary files.

User Files

- Path where the user will find files created during the normal operation of the LABWORKS software, normally referred to as LWUser. The user path could be a folder located in the LWUser that would be created based on LABWORKS or Operating System login name.
- Files created as the data source for Crystal reports will be in the user folders.
- For best performance, these files should be local to the user.
- The default location is the Windows user profile location.

SQC Files

- Path where the Northwest Analytical Software (NWA) will be located, which is normally referred to as LWSQC.

Database Server

- The database server, SQL or Oracle requires a database instance be created. The instructions for creating the LABWORKS database are available in a separate document.

LWLicenseServices

- This folder contains the LABWORKS License Service application. This service is used to authenticate users and provide database configuration information. This folder will be located in the “Program Files (x86)\Labworks\LWLicenseServices” folder.

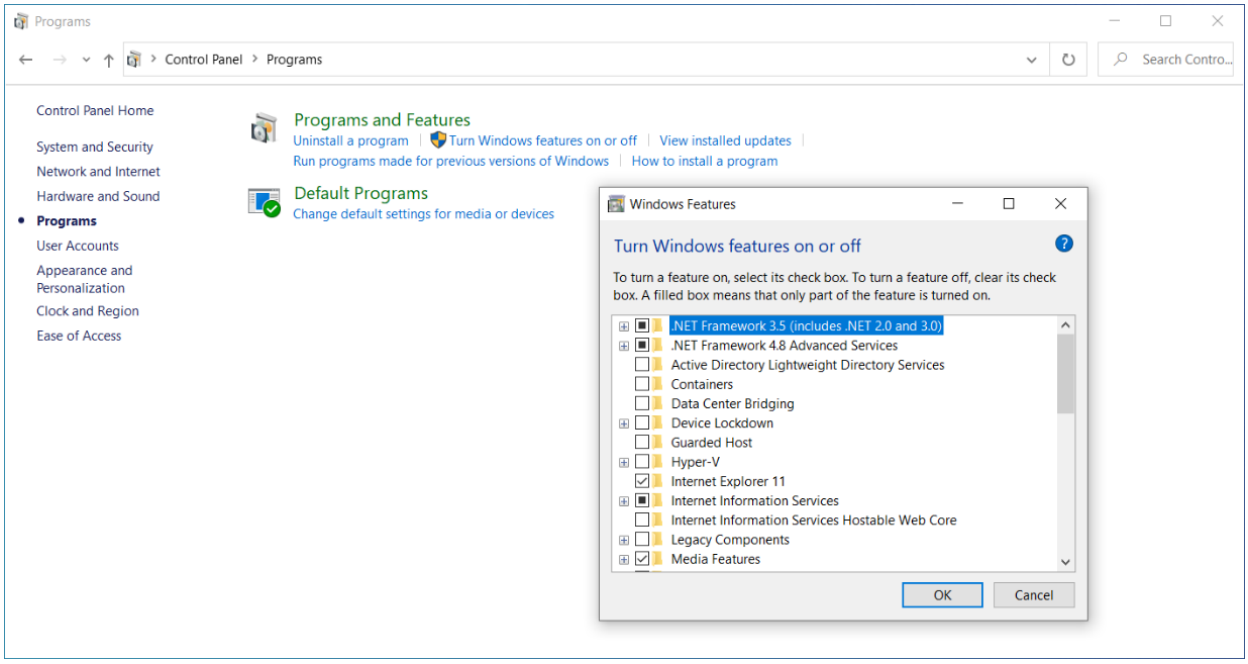
LWDataServices

- This folder contains the LABWORKS Data Service application. This service is used to provide data to the application. This folder will be located in the “Program Files (x86)\Labworks\LWDataServices” folder.

Installation Prerequisites

The following is based on a Windows Server 2016 64-bit machine:

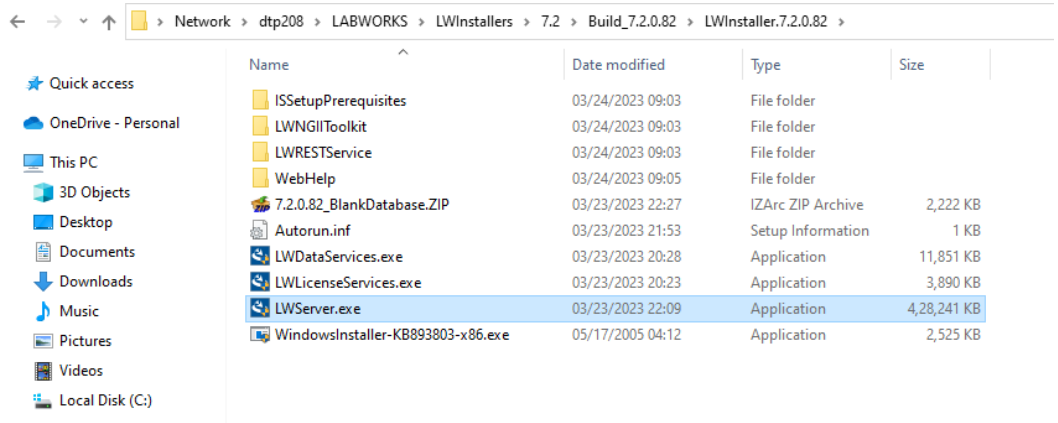
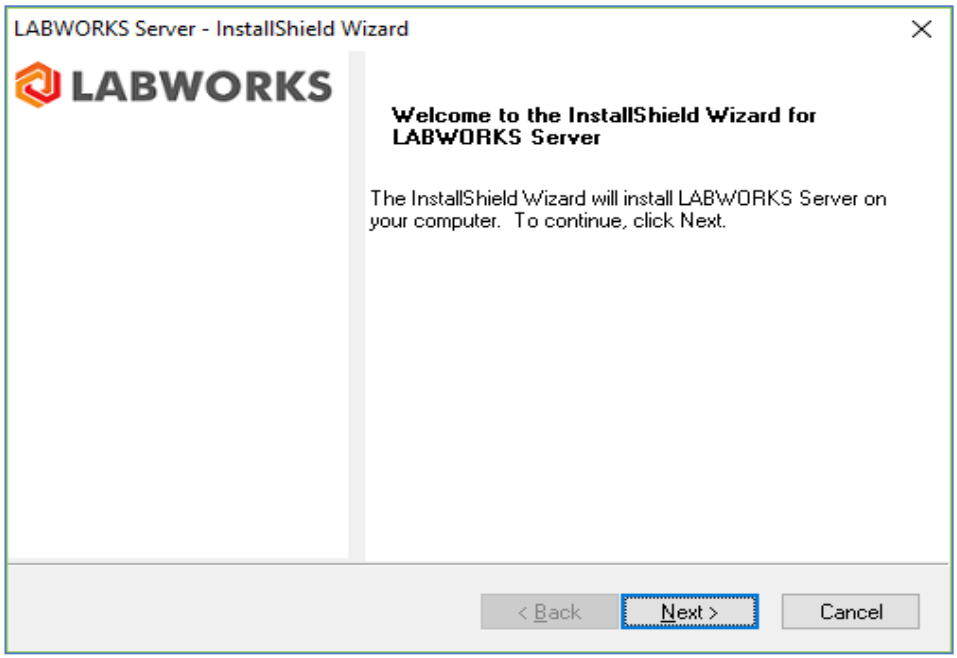
1. Dot Net Framework 4.7 needs to be installed on the Server.
    a. Control Panel → Programs → Turn Windows Features On/Off
2. Enable Dot Net Framework 3.5 on the Server.

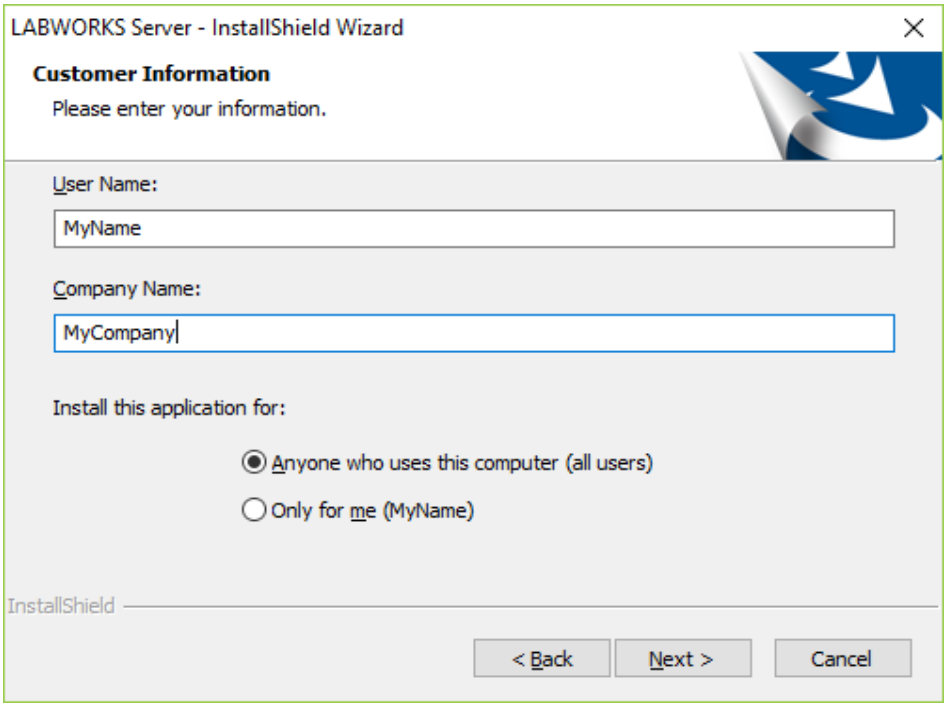
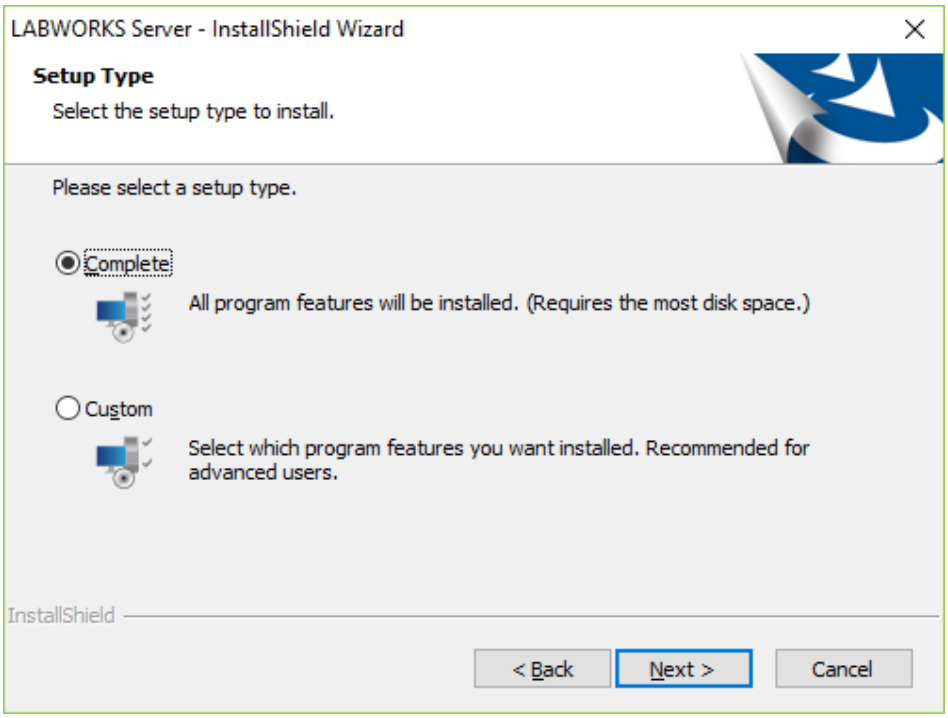


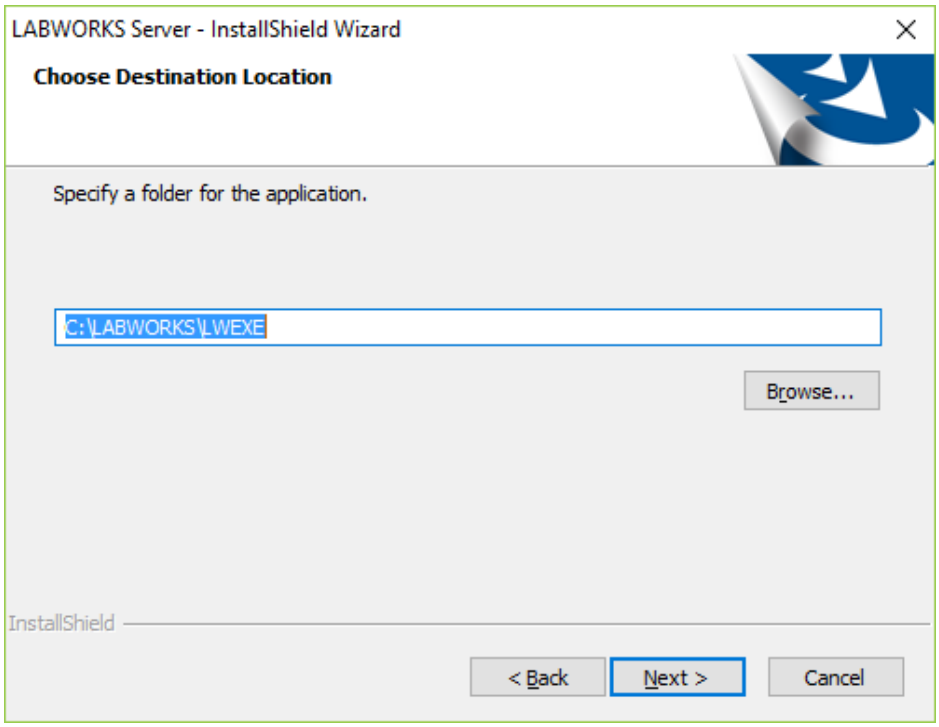
LABWORKS Desktop Installation

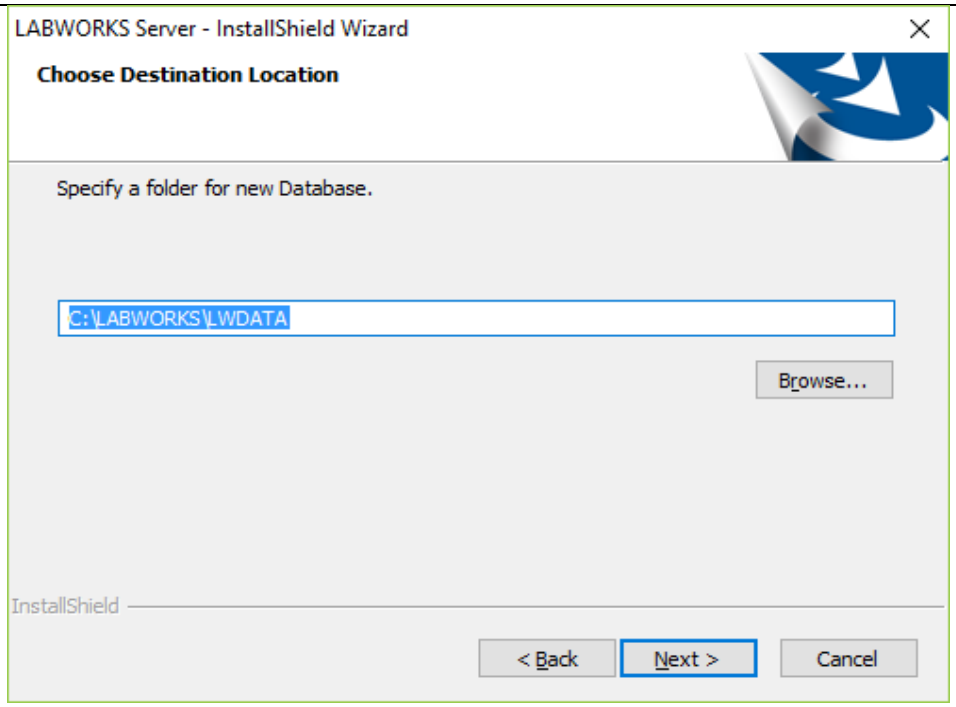
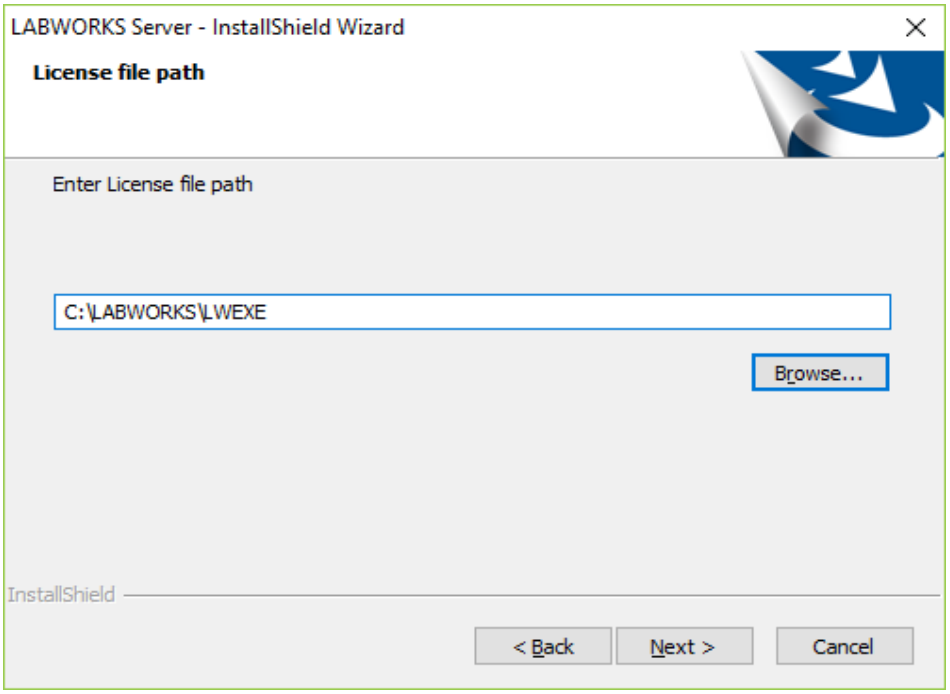
Step 1: Server Installation

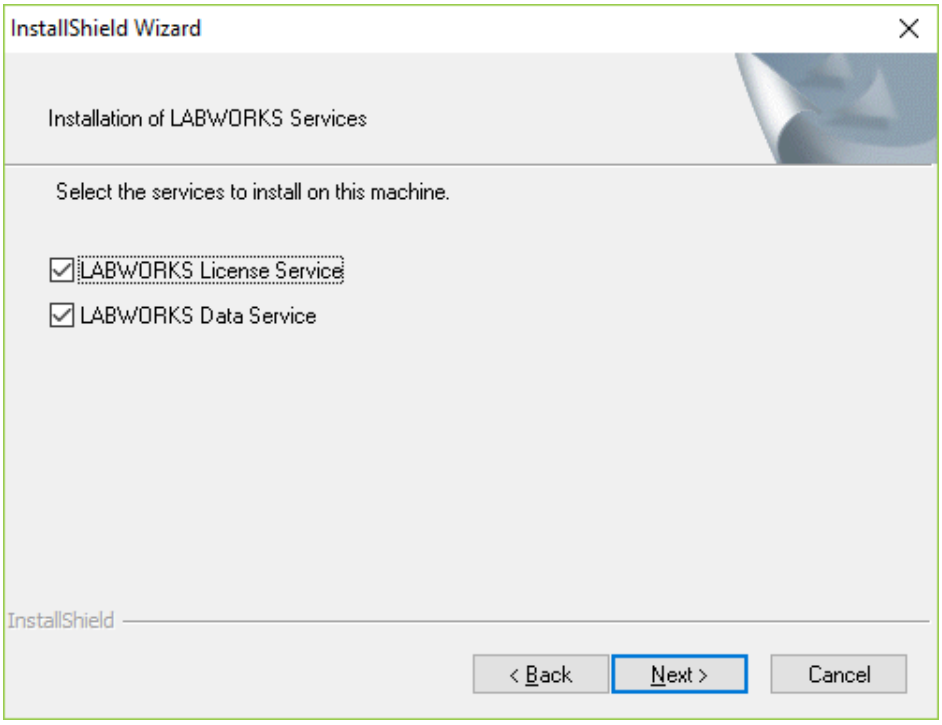
The LABWORKS setup program is LWServer.exe.

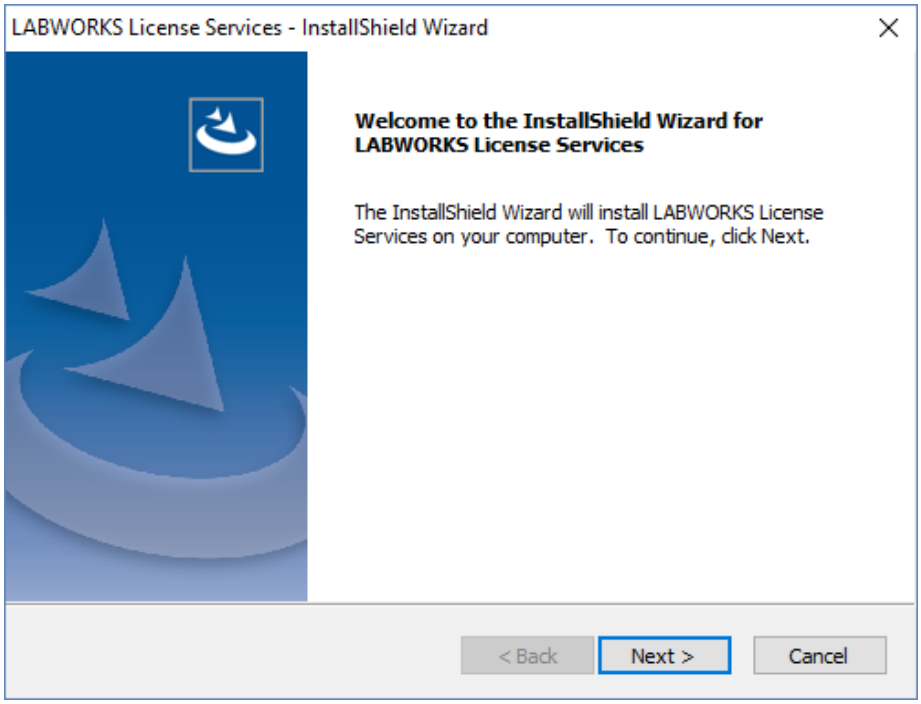
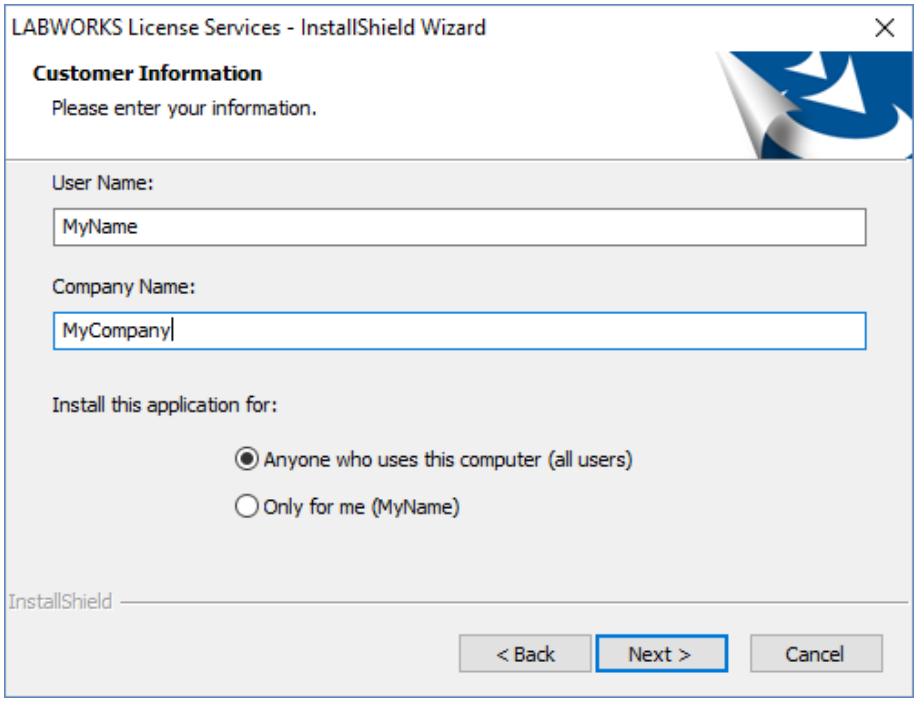
Step	User Input/Action	Expected Results
1	Right click on the LWServer.exe program. Select 'Run as administrator' to install. **Note:** Microsoft .Net Full Framework 4.7.2 is required.   Click 'Next'	Windows installer initiates the installation from the Setup program.

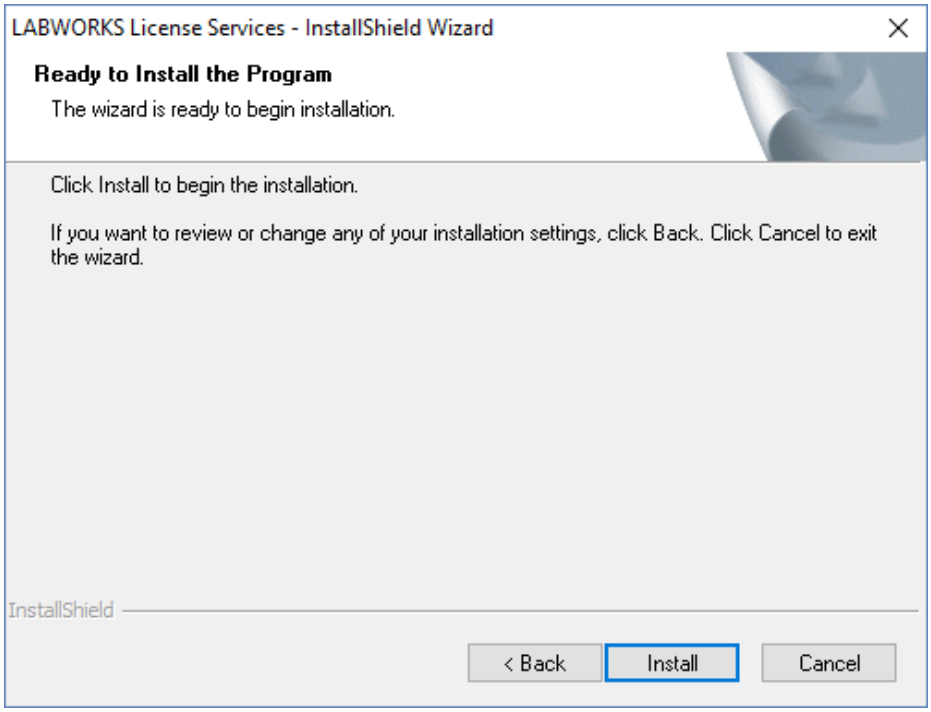
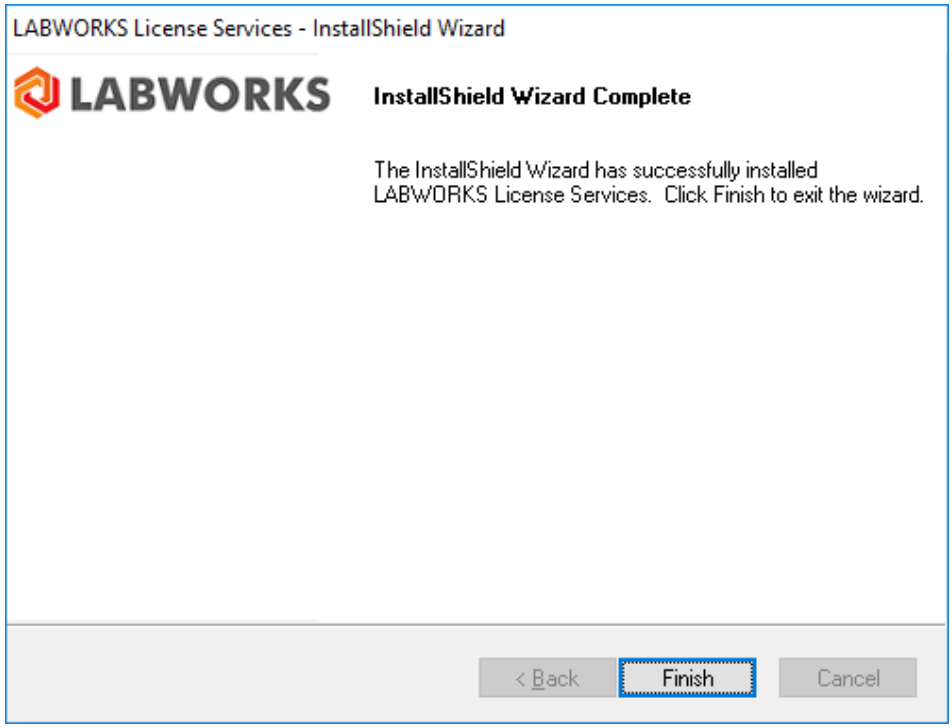
2	 Enter User Name and Company Name. Click 'Next'.	Customer Information dialog is displayed. User Name and Company name is entered.
3	 Select the Setup Type: • Complete: Created Client Install, System Admin Tools, New Database • Custom: Each piece can be selected separately. Click 'Next'.	Setup Type dialog is displayed. Setup Type is specified.

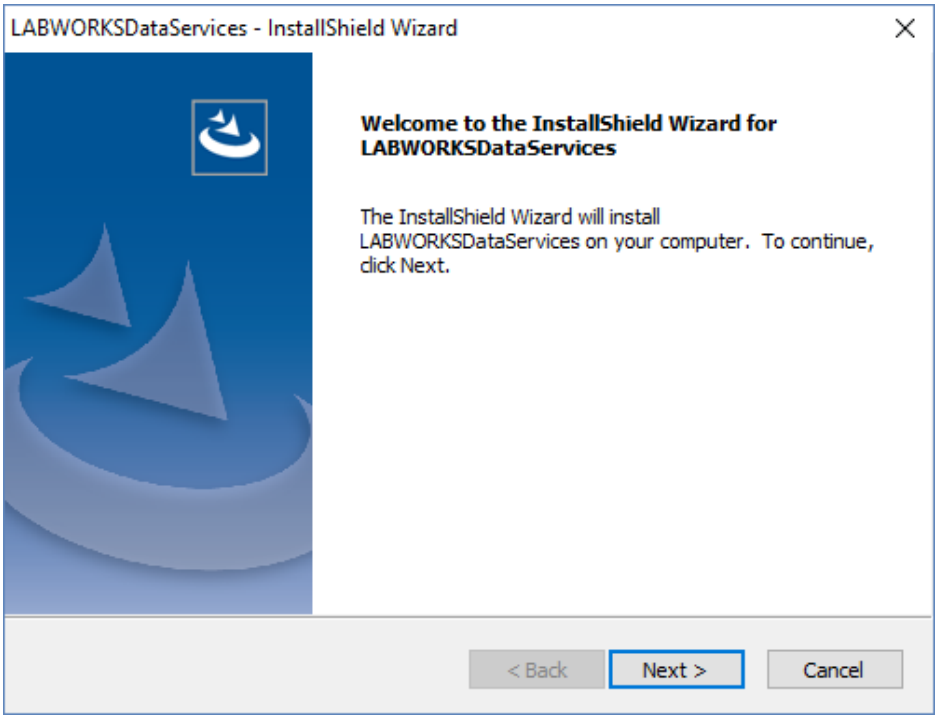
4	When Complete is selected, you are first prompted for the Application Folder (The location for the client install and System Admin Tools) For the server application folder, or type/select the 'Server Files' in the Desktop Server section of the Planning and Definition Worksheet. This is the Network File server location where all clients will have access. Click 'Next' to proceed. Please note that the above folder should also be a different folder from the previous versions of LABWORKS. This is not an absolute requirement but using a different folder from previous versions makes it easier to differentiate between previous versions and LABWORKS Desktop. All program names for LABWORKS Desktop are different from previous versions of LABWORKS to provide easier user and system migration.  For the database folder, type the 'Base Files' in the Desktop Server section of the Planning and Definition Worksheet. LABWORKS Desktop uses the same folder structure as previous version of LABWORKS. The install won't overwrite existing files. If you are upgrading from a previous version of LABWORKS you should make a copy of your LWDATA folder for use with LABWORKS Desktop. LABWORKS Desktop uses Crystals Reports 2013 for displaying reports, with an optional install of the Crystal XI Release 2 (11.5) report designer. When existing reports are modified using LABWORKS Desktop they are saved in the new format and cannot be used with previous versions of LABWORKS.	Choose Destination Location dialog is displayed. Destination folder is specified.

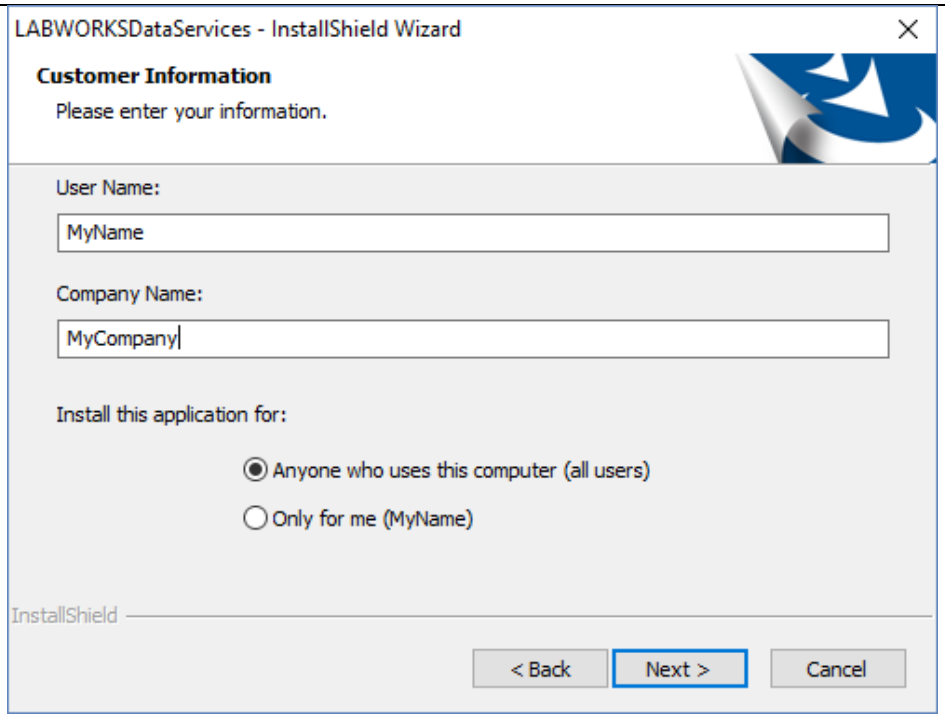
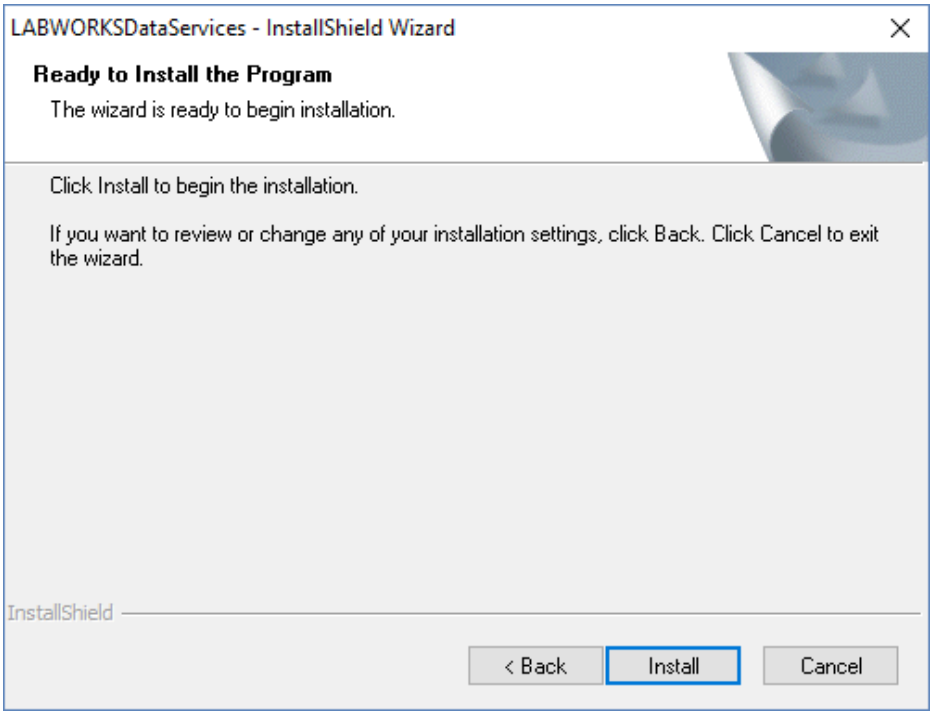
	 Click 'Next' to continue.	
5	 Select the location of your license file. This will most likely be from your Control File CD, which is supplied on a separate disk from the installation disk.	License file path dialog is displayed. Location of license file is specified.
6	LABWORKS recommends copying the license file from the CD to a folder on your network for easy access. Click 'Next' to proceed.	License file copied from CD to folder on network.

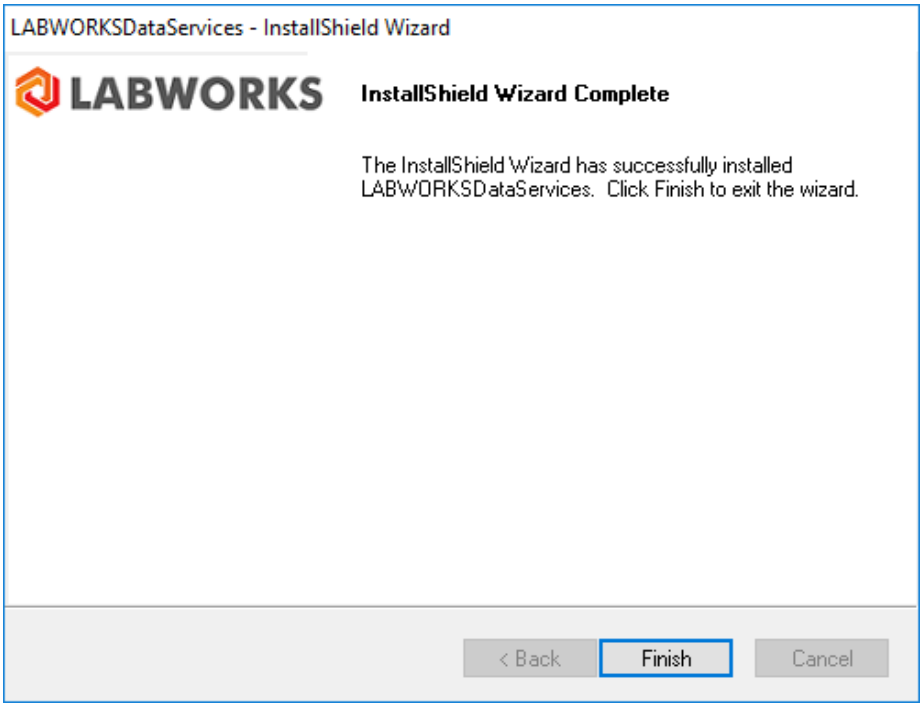
7	 For installation of LABWORKS License Service on same machine check the option 'LABWORKS License Service'. If you want to install the 'LWLicenseServices' on different machine uncheck the option. For installation of 'LABWORKS Data Service' on same machine check the option 'LABWORKS Data Service'. If you want to install the 'LWDataServices' on different machine uncheck the option. Click 'Next 'to continue. **Note: If LWLicenseServices/LWDataServices is not being installed, proceed to Step 18.**	Installation of LABWORKS Services dialog is displayed. LABWORKS services to install specified.
Installation of LW License Service		
8	The Server setup launches separate LWLicenseServices setup program, and the welcome screen appears with brief instructions.	The Welcome to the InstallShield Wizard for LABWORKS License Service dialog opens.

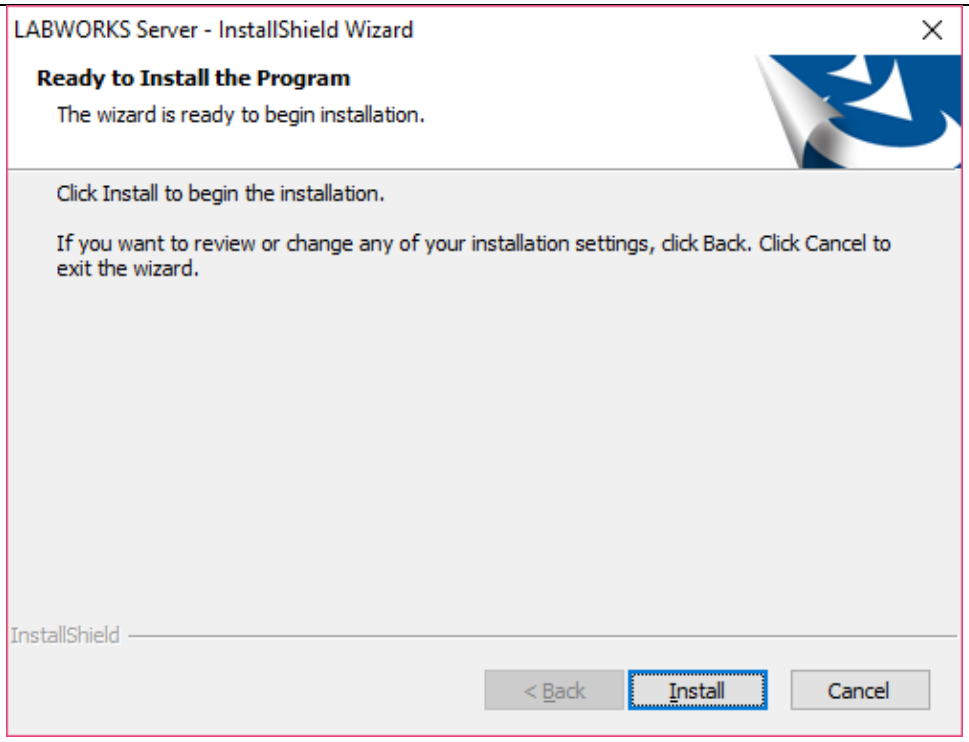
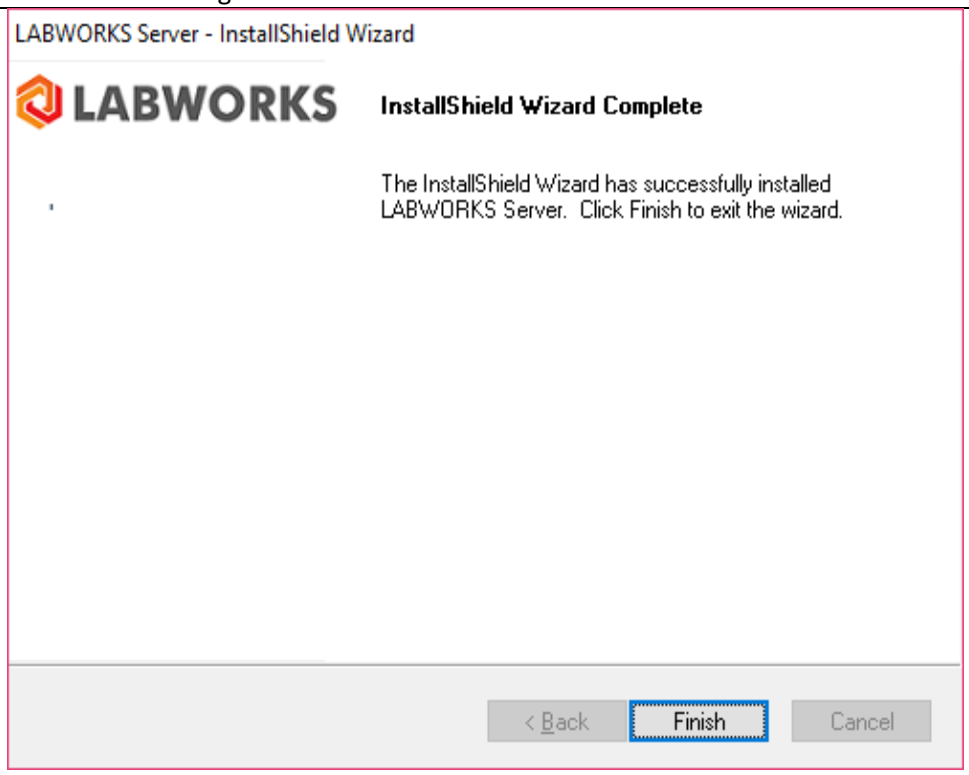
	 Click 'Next' to continue	
9	 Enter your User Name and Company Name. Click 'Next' to continue.	The Customer Information dialog is displayed. User Name and Company Name is specified.

10	 Click 'Install' to begin the installation.	The Ready to Install the Program dialog is displayed. The installation proceeds.
11	 When the installation is complete, click 'Finish' to exit.	The InstallShield Wizard Complete dialog is displayed. The installation is complete.

12	For installation of the LWLicenseServices on different machine run LWLicenseServices.exe from the CD on desired machine.	If applicable, LWLicenseServices installed on a different machine.
Installation of LW Data Service		
13	The Server setup launches separate LWDataServices setup program, and the welcome screen appears with brief instructions.  Click 'Next' to continue.	The Welcome to the InstallShield Wizard for LABWORKS Data Service dialog opens.
14		The Customer Information dialog is displayed. User Name and Company Name is specified.

	 Enter your User Name and Company Name. Click 'Next' to continue	
15	 Click 'Install' to begin the installation.	The Ready to Install the Program dialog is displayed. The installation proceeds.
16		The InstallShield

	 When the installation is complete, click 'Finish' to exit.	Wizard Complete dialog is displayed. The installation is complete.
17	For installation of the LWDataServices on different machine run LWDataServices.exe from the CD on desired machine.	If applicable, LWDataServices installed on a different machine.
18	LABWORKS Server program resumes and is ready to install.	The Ready to Install the Program dialog is displayed. The installation proceeds.

	 Click 'Install' to begin the installation.	
19	 When the installation is completed, click 'Finish' to exit.	The InstallShield Wizard Complete dialog is displayed. The installation is complete.

Step 2: Create Folder Access and Permission

Because LABWORKS is installed on a server, the LABWORKS Grouping Folder 1 defined in the Planning and Definition Worksheet needs to be shared.

We suggest that you use a UNC (Universal Naming Convention) path to the server for the LABWORKS folders.

- **Option 1**: Using a UNC Path for LABWORKS

  For example, if the LABWORKS Client Installation program is in the following folder: \LABWORKS\LWEXE, on Server 1, then the System Administrator must notify each user to log on, from their workstation, to the following shared folder: \\Server1\LABWORKS\LWEXE.

- **Option 2**: Create a Mapped Drive for LABWORKS

  If you are using a mapped drive to access the LABWORKS folder, then every user must use the exact same map and have the mapped drive already in existence before the user can connect to LABWORKS. If the mapped drive is not created for each profile prior to the LABWORKS Client Install, then the administrator will have to log in as each user profile and map the drive.

  To create the mapped location on the server, share the LABWORKS folder. Map this folder as a lettered drive, such as P:\. Then, for each workstation that is to run LABWORKS, create a mapped drive using the same drive letter and path on each workstation.

LABWORKS recommends the LABWORKS Server Application folder, <LWEXE>\Server (where <LWEXE> designates the path up to and including the \LWEXE folder) be set to Read-Only. The <LWEXE>\SysCfg folder must be set to Read/Write.

When using a UNC path for the LICENSE_FILE_PATH, please take note that even if the UNC path refers to a local drive, permissions and security are affected by the permissions and network security.

Step 3: Installing New Database

Create a New Database

The LABWORKS Desktop Installation CD contains a folder with starter databases.

- SQL Sever

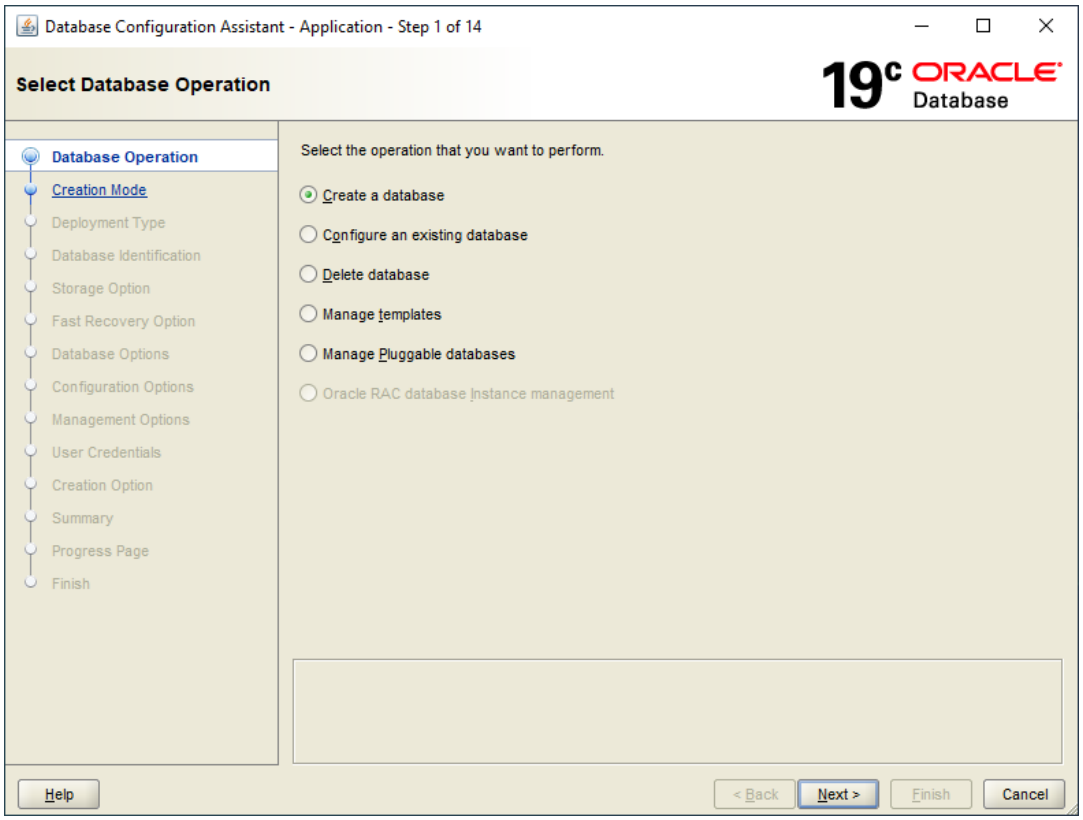
  Included with your LABWORKS Desktop installation is a BlankDatabase.zip file.

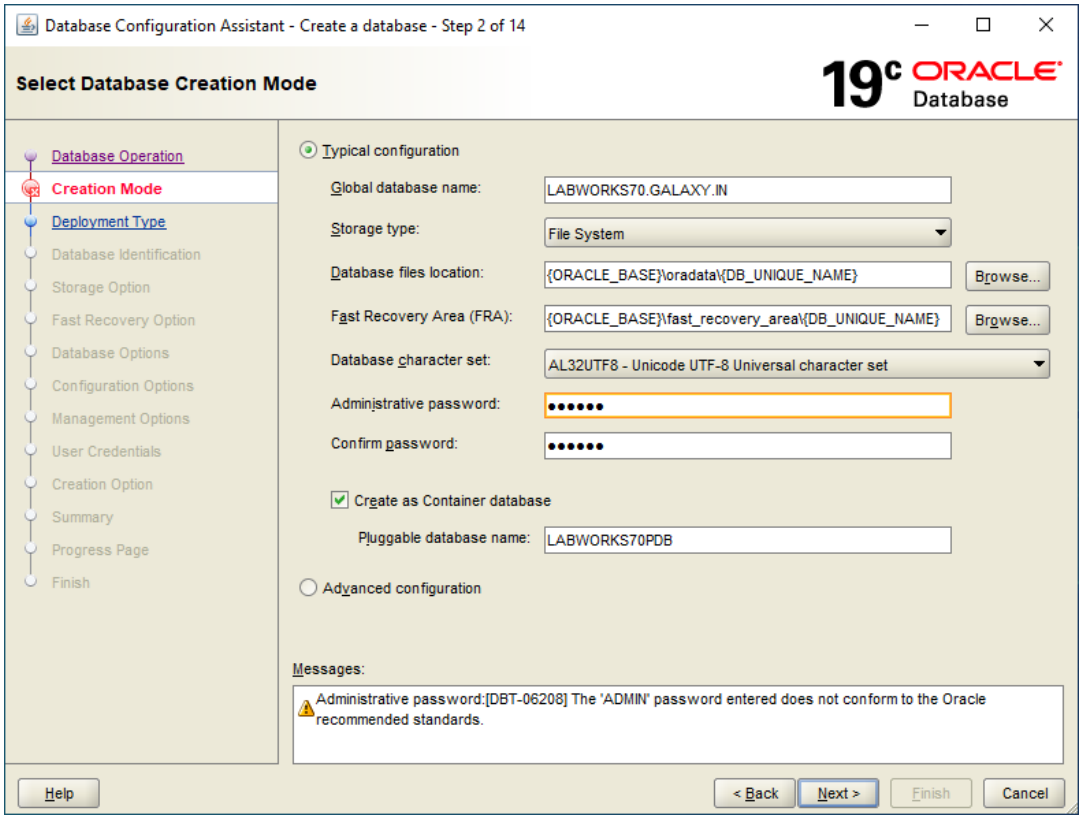
  Use SQL Server tools to restore the zipped database. Then ensure there is a SQL login with access to the database.

- Oracle

  A. Create pluggable database-

  1. Launch “Database Configuration Assistant” application as an administrator.
  2. Select “Create a database” option.





3. Click Next and Finish.

4. Start the sqlplus prompt and Log in as sys in the role of sysdba

```
Enter user-name: sys as sysdba
Enter password:
```

5. Make sure the pluggable database has an open mode of read write

```
SQL> select name,open_mode from v$pdbs;

NAME
--------------------------------------------------------------------------------
OPEN_MODE
----------
PDB$SEED
READ ONLY

LABWORKS70PDB
READ WRITE
```

6. Make sure the pluggable database stays in read write mode next time you open it

```
SQL> alter pluggable database LABWORKS70PDB save state;

Pluggable database altered.
```

7. Check the status of the database using the command prompt directly

```
C:\WINDOWS\system32>lsnrctl status
```

```
Service "  LABWORKS70.GALAXY.IN" has 1 instance(s).
  Instance "LABWORKS70 status READY, has 1 handler(s) for this service...
Service  LABWORKS70XDB.GALAXY.IN" has 1 instance(s).
  Instance "LABWORKS70", status READY, has 1 handler(s) for this service...
Service "   LABWORKS70PDB.GALAXY.IN" has 1 instance(s).
  Instance " LABWORKS70", status READY, has 1 handler(s) for this service...
```

8. In the status we can see that “LABWORKS70PDB.GALAXY.IN” service has instance name as “LABWORKS70”.
9. Connect to your new pluggable database. As we need to connect to the pluggable database, we need to use the instance name

```
SQL> connect sys/dtp277@LABWORKS70 as sysdba
Connected.
```

B. Create a user/schema named “LABWORKS”

1. Login into sqlplus with sys or system dba user then execute the following script for creating LABWORKS Schema.
2. SQL>CREATE USER LABWORKS IDENTIFIED BY password DEFAULT TABLESPACE "USERS" ACCOUNT UNLOCK;
   Note: in the above script password can be replaced to LABWORKS schema password
3. SQL>GRANT CONNECT, RESOURCE, DBA TO LABWORKS;
4. Import the database file: \BlankDatabase\Oracle\LABWORKS.DMP. The export was done by the user “LABWORKS” (Schema owner)
   C:\ imp LABWORKS/password@ORADB file=labworks65.dmp analyze=y FROMUSER=LABWORKS TOUSER=LABWORKS GRANTS=NO log=myerror.log
5. Run the below procedure using sqlplus. Or create a sql file and execute.

```
oracle begin
dbms_stats.gather_schema_stats(ownname=> 'LABWORKS' , estimate_percent=> 10 , cascade=> TRUE );
end;
/
exit
/
```

6. Create an Oracle service connection to the LABWORKS Database.

Note: LABWORKS Applications and Server Utilities require the Oracle Client 32-bit version be installed.

Step 4: Configure database authentication for Oracle 19c

When using Oracle 19c version, follow these steps:

- Run the command ALTER SYSTEM SET SEC_CASE_SENSITIVE_LOGON = FALSE in the Oracle database.
- Change a password for existing users.
- Make sure that PASSWORD_VERSIONS are compatible with 19c.
    - Run the following command in the database:
        - select USERNAME, ACCOUNT_STATUS, PASSWORD_VERSIONS from dba_users;
    - The output should look like this:

USERNAME	ACCOUNT_STATUS	PASSWORD_VERSIONS
DIP	EXPIRED & LOCKED	11G 12C
SYSKM	EXPIRED & LOCKED	11G 12C
ORACLE_OCM	EXPIRED & LOCKED	11G 12C
SYSDG	EXPIRED & LOCKED	11G 12C
SPATIAL_CSW_ADMIN_USR	EXPIRED & LOCKED	11G 12C
LABWORKS	OPEN	10G 11G 12C

Step 5: Gateway Administrator Setup

After the Server Installation has completed you must run the Gateway Administrator Tool, LWSysCfg6.exe, to set up LABWORKS user and workstation information. This information includes the location of the LABWORKS executables, locations and names of LABWORKS databases, and user file locations. The program is in the <LWEXE>\SysCfgfolder.

This section shows you how to use the Gateway Administrator to perform the following tasks:

- **Set up a new database** – This section shows you how to add a database to the Gateway Administrator and set Data Path information for the database.
- **Configure the database –** This section shows you how to configure the database by defining the type of database, type of connection to database, the database name; the server name, and the database user name and password.
- **Select database authentication options** – This section shows you how to configure LABWORKS to validate a user's ID and Password by using LABWORKS authentication or domain authentication.
- **Select global default database availability** – This section shows you how to select which databases will be visible, by default, to all users of LABWORKS.

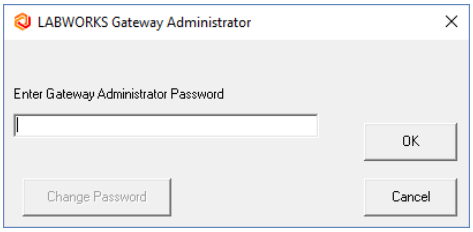
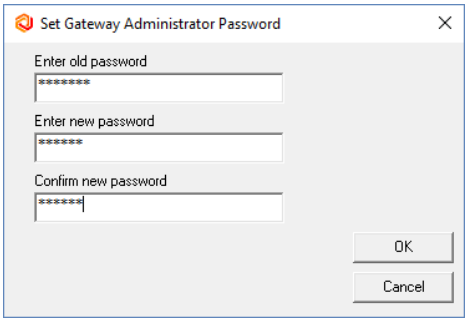
The Gateway Administrator requires the LABWORKS client be installed on the workstation where Gateway Administrator is run. The Gateway administrator can be run from a network client or from the server console as long as the LABWORKS client install has been completed and the user has proper network access.

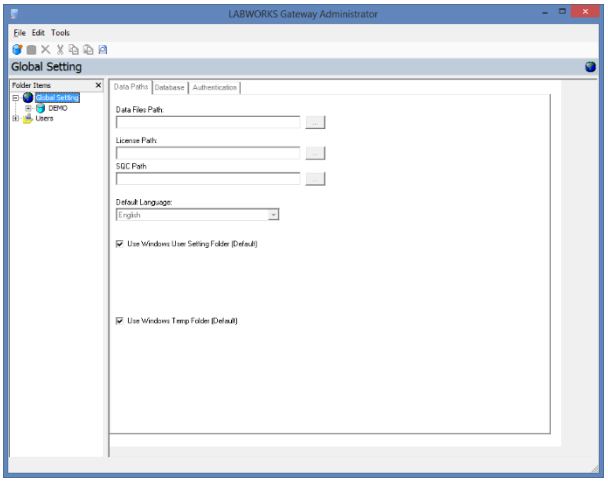
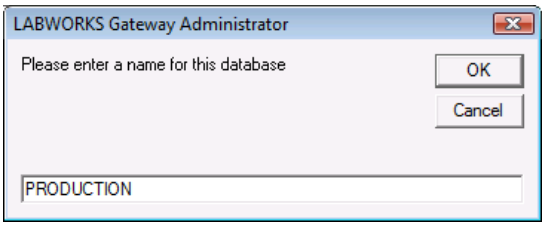
Access to the Gateway Administrator tool is controlled by network privileges and the program is also password protected. The first time you access the Gateway Administrator, if you are installing LABWORKS 6.8.5 Desktop or higher, the default password is **gateway**.

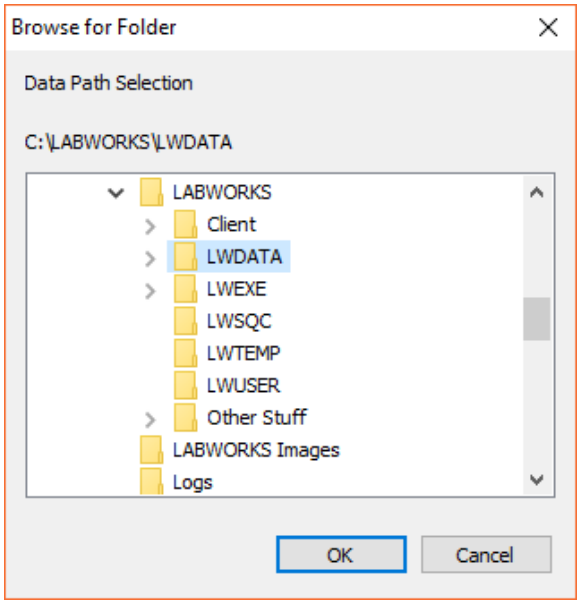
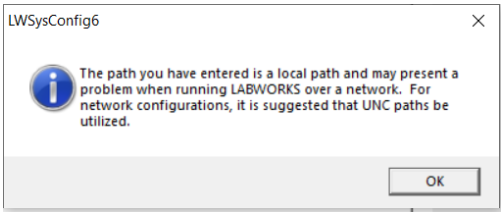
Set up a new Database

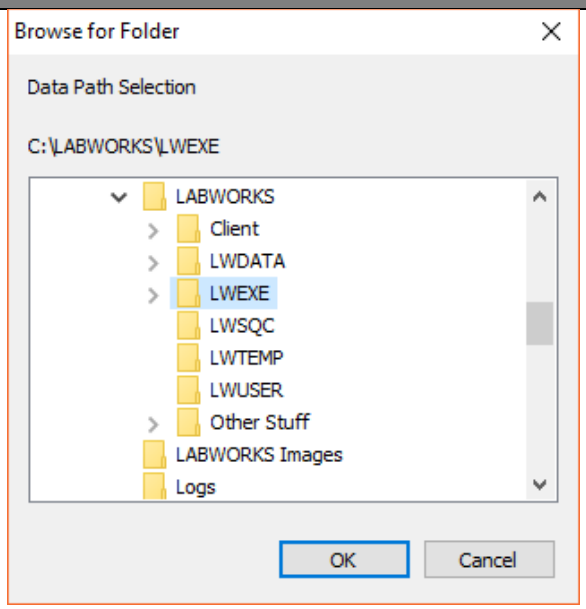
The Gateway Administrator allows you to specify which databases will be used in your LABWORKS system and how these databases will be configured. Setting up a new database is a four-part process that involves adding a new database to the Gateway Administrator program, setting data path information, configuring the database, and selecting database authentication. The following sections show you how to add a database to the Gateway Administrator and configure the database.

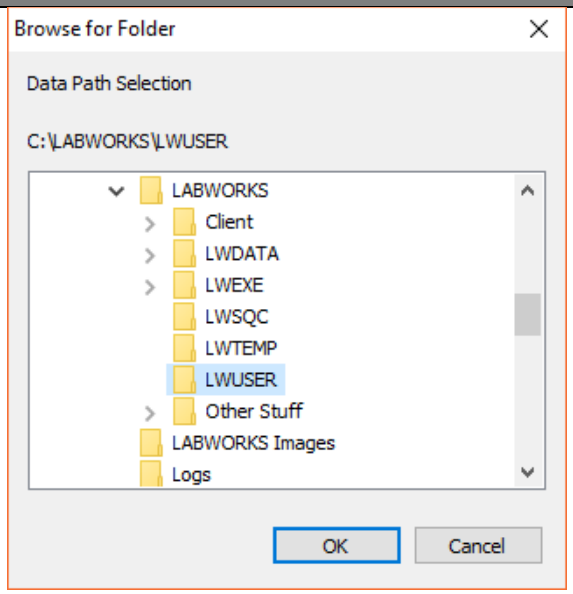
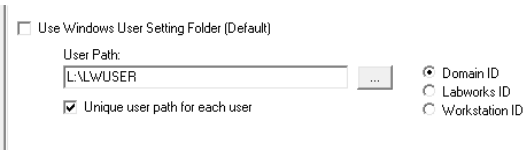
Add a New Database and Set Data Path Information:

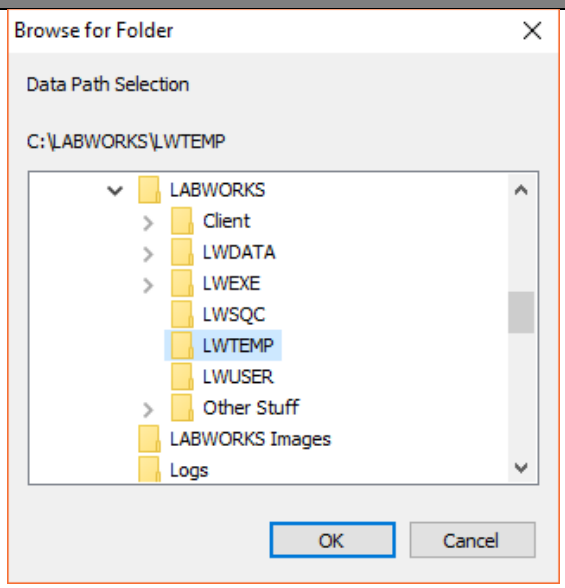
Step	User Input/Action	Expected Results
1	From the LABWORKS application folder, select <LWEXE>\SysCfg\LWSysCfg6.exe.	File selected.
2	Before the Gateway Administrator launches a message appears prompting you to enter the Gateway Administrator password.  Enter the Gateway Administrator Password. When you launch Gateway Administrator for the first time the default password is **gateway**. After you enter the password for the first time you will be prompted to change the password.  The new password must be case sensitive and can include special characters, except for the following: spaces, semicolons (;), commas (,), plus sign (+), and the percent sign (%). You must enter the new password in the Enter new password field and the Confirm new password field and then click 'OK'.	LABWORKS Gateway Administrator message appears prompting you to enter Gateway Administrator Password. Gateway Administrator Password is entered. Gateway Administrator Password is changed.

Step	User Input/Action	Expected Results
3	Once you have entered the correct password and clicked 'OK' the Gateway Administrator opens, and the Global Setting node is highlighted on the tree and has focus. When the Global Setting node is selected, the database setup panel on the right appears and consists of three tabs: a Data Path tab, a Database tab, and an Authentication tab. All tab pages and fields appear blank and are disabled when the Global Setting node is selected.  If you already have databases set up in Gateway Administrator, then you can expand the Global Setting node and then click on a database listed under this node to activate the database setup panel. The Data Path tab is enabled first. You must set up the data path information on the Data Path tab to activate the Database tab. Once the Database tab is enabled you must select the type of database, setup the database connection information, and test the connection on this tab. The Authentication tab remains inactive until the necessary information is entered on the Data Path and the Database tabs. Only after the Gateway Administrator is able to establish a connection to the defined database does the Authentication tab become active. From the Authentication tab you can select how you wish to authenticate users when they log into LABWORKS.	The Gateway Administrator opens. Database Setup panel appears in right hand pane.
4	From the Gateway Administrator click File>New. A pop-up window appears prompting you to enter a new name for the database:  	LABWORKS Gateway Administrator message appears prompting you to enter a new name

Step	User Input/Action	Expected Results
		for the database.
5	Enter a new name for the database you wish to set up and click 'OK'. The name you create for the database is the database name that users will see on the LABWORKS Login screen. The name can NOT contain spaces, semicolons (;), commas (,), plus sign (+), and the percent sign (%). The new database is added to the Global Setting node in the Gateway Administrator window and the database is selected by default. Information pertaining to the new database appears on the right-hand portion of the screen.	A new name is entered for the database.
6	Click … next to the Data Files Path field. The Data Path Selection window appears:  **Note**: if you pick a local path, it might not be reachable by other computers in the network, so it is recommended you pick a common path that can be accessed by all servers and clients. Failure to do so will result in the following warning message: 	The Data Path Selection window appears. Data Files path is specified.
7	Click … next to the License Path field.	The Client Program Path Selection window appears. The path to the License

Step	User Input/Action	Expected Results
	 This is the path to the License file.	file is specified.
8	If you have the Northwest Analytical Quality Analyst software package, a third-party software package used for SQC charting, then select an SQC Path.	If applicable, SQC Path is specified.
9	Select the Default Language from the corresponding drop-down menu. For example, if you select English as the default language, then this will be the language LABWORKS runs in unless you specify a different default language for a specific Workstation or User. If you do not want to see language choices at log in, you must click on the Users node and check the Hide language selection at runtime check box.	Default language is specified. OR, if applicable, 'Hidden language selection at runtime' option is enabled.
10	Click  next to the User Path field. The Client User Path Selection window appears:	The Client User Path Selection window appears.

Step	User Input/Action	Expected Results
		
11	Select the location for the User Path. The location of Server and User temporary files can affect application performance. Some parts of the application use temporary files to pass information between the middle tier and the user interface. Both programs execute on the client workstation. It is important that the temporary file read/write performance be as fast as possible. **The recommended option is to use the Windows defaults.** If required, specific files for these folders can be configured, and if you wish to append a unique path for each user or workstation, then check the Unique user path for each user box. When this option is checked you can then select the unique user path based on Domain ID, LABWORKS ID, or Workstation ID by clicking on the corresponding radio button. Based on your selection, LABWORKS will create a folder.  For example, if you select L:\LWUSER and Unique user path for each user DomainID, then the user temp path becomes L:\LWUSER\<DOMAINID>	The location for the User Path is selected.
12	Click  next to the Server Temp Path field. The Server Temp Path Selection window appears:	The Server Temp Path Selection window appears. The Server Temp path is specified.

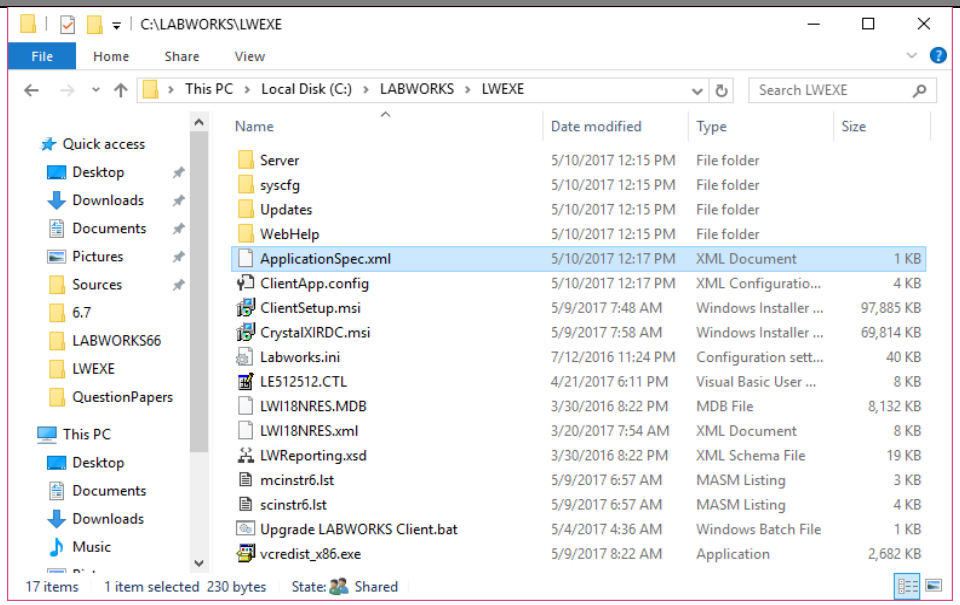
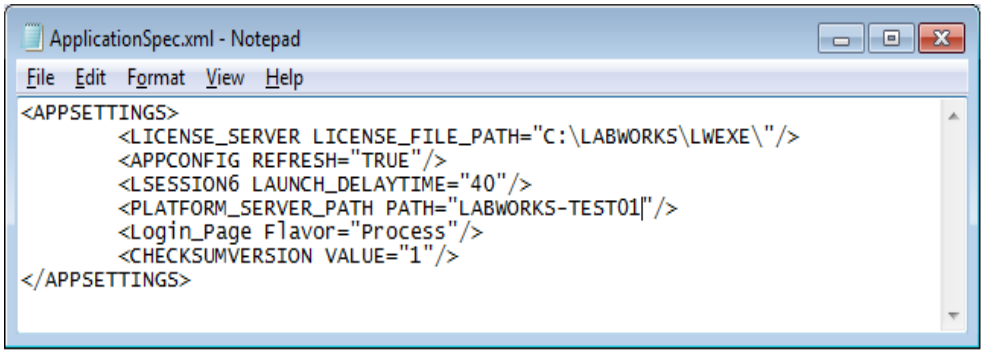
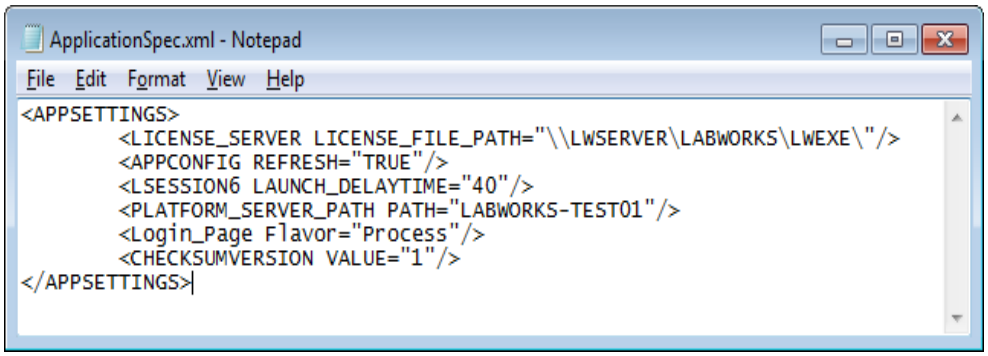
Step	User Input/Action	Expected Results
	 Select an existing path that you can write and delete temporary files to and from. This path must exist, and you must have rights to read, write, create, and delete files in this folder. (Many people simply use their LABWORKS user path). It is important that the temporary file read/write performance be as fast as possible.	

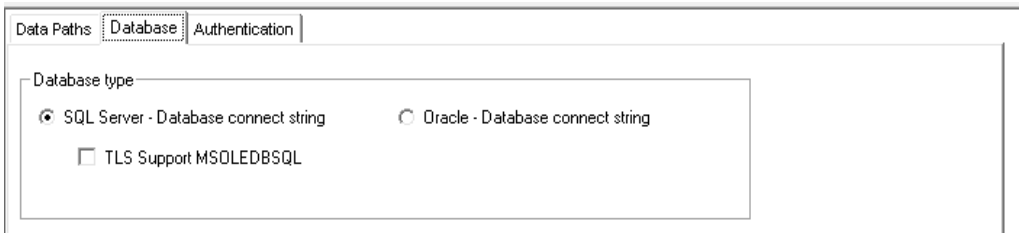
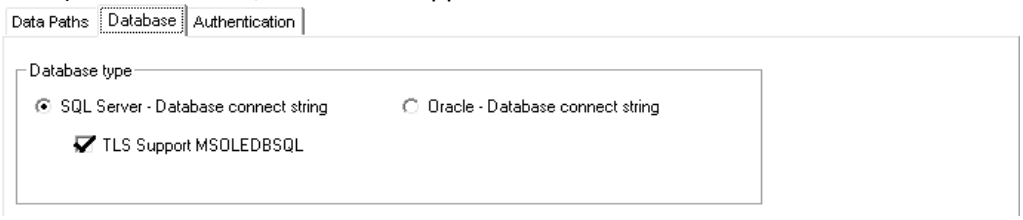
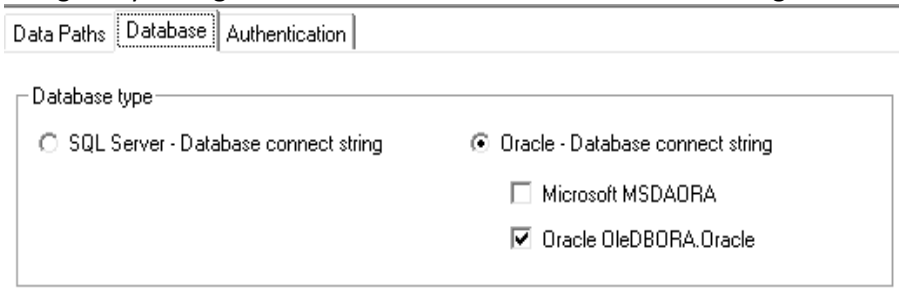
Step 6: Configure ApplicationSpec.XML, ClientApp.config, LWServiceConfig.xml

The Server installation creates the files 'ApplicationSpec.xml' and 'ClientApp.config'. The files are used to configure the path to the license file and services from the clients.

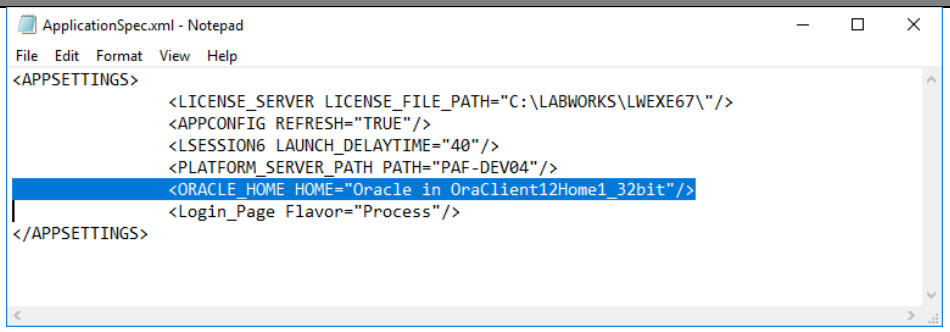
During the upcoming client installation step, these files are copied to the client workstation. By configuring it before doing the client installation, the client installation configuration is already correctly configured.

Step	User Input/Action	Expected Results
1	Open the file 'ApplicationSpec.xml' using notepad.	The Application Spec.xml is opened.

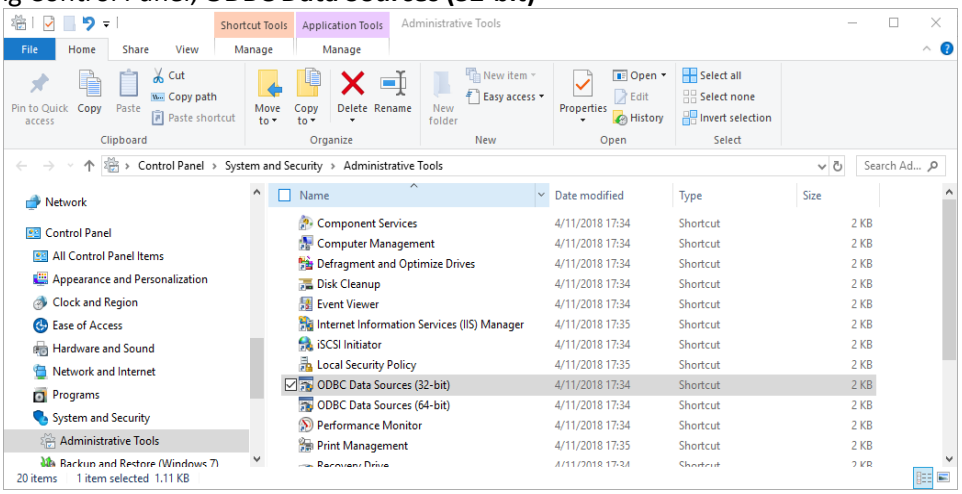
Step	User Input/Action	Expected Results
		
2	Enter the path the clients will use to access the license file and enter machine name of the server (e.g. **LABWORKS-TEST01** as shown in example below). In this example, the server shared the folder c:\labworks, and the client mapped the L: drive to that share. The path can be a mapped drive letter  OR as an UNC path.  Then copy ApplicationSpec.xml from Labworks/LWEXE and place it in the folder \Program Files (x86)\Labworks\LWLicenseServices and \Program Files (x86)\Labworks\LWDataServices.	Path is entered.

Step	User Input/Action	Expected Results
	For using SQL Server database with LABWORKS: Microsoft SQL ADO is the default connect string for Database Type SQL Server  **Note**: If you require TLS 1.2 Support, check "TLS Support MSOLDEDBSQL" 1) In LWSYSCFG, check "TLS Support MSOLEDBSQL"  2) Install following drivers on the workstation : i) MSOLEDBSQL (Used by .net applications) a. https://www.microsoft.com/en-us/download/details.aspx?id=56730 ii) ODBC FOR SQL 2017 (Used by legacy applications) (Install based on OS bitness) a. https://www.microsoft.com/en-us/download/details.aspx?id=56567 **For using Oracle OLEDB Driver with LABWORKS:** Prerequisite: Oracle Client 32 Bit, must include OLEDB Driver Configuration Using LWSysconfig select Oracle OleDBORA.Oracle Connect String  In ApplicationSpec.xml, add OracleHome	

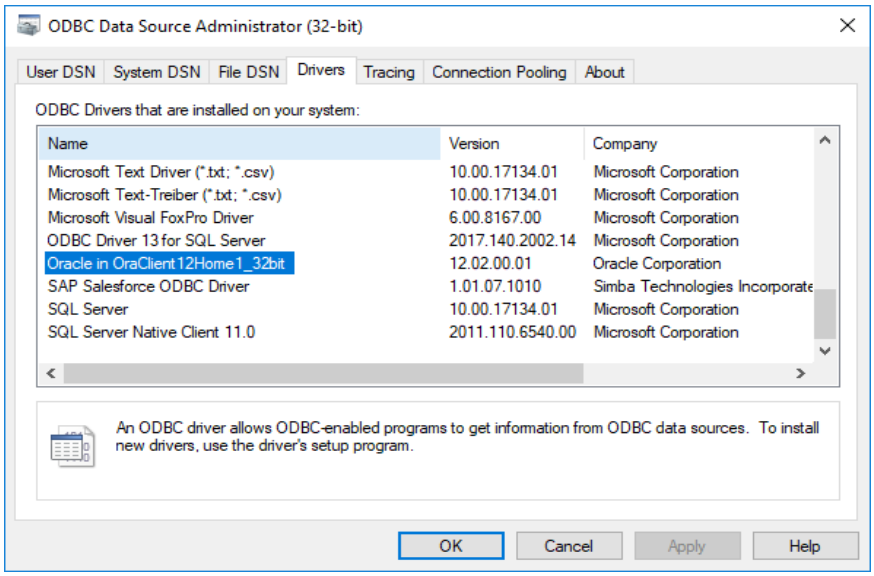
Step	User Input/Action	Expected Results

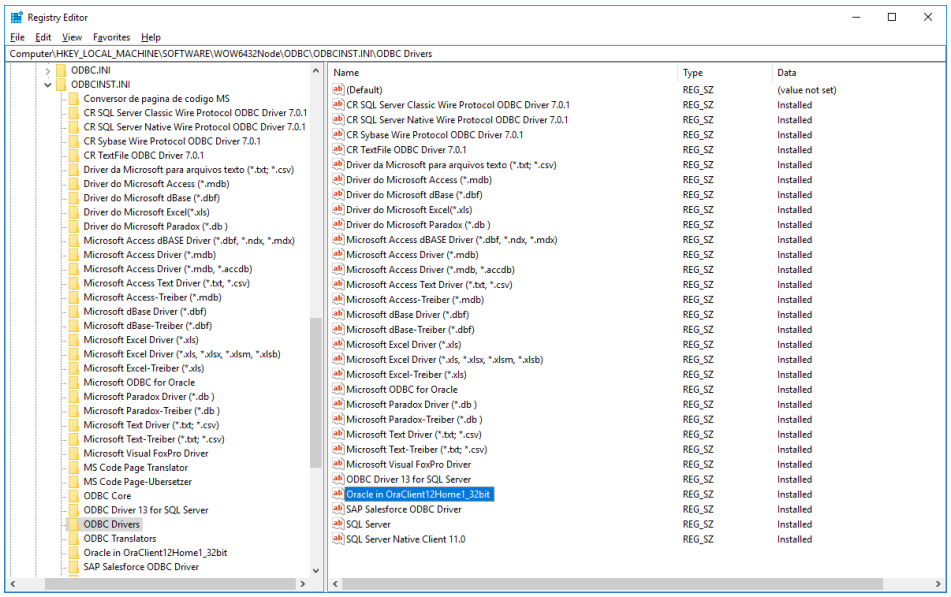


Where the Oracle Home Name is:
Using Control Panel, **ODBC Data Sources (32-bit)**



The Entry (highlighted below) is the Driver Name.

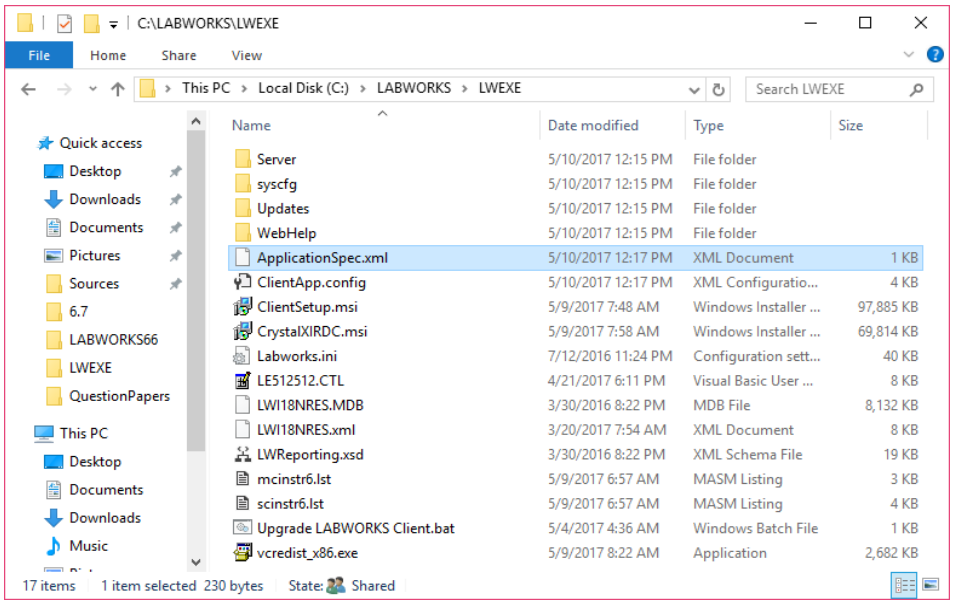
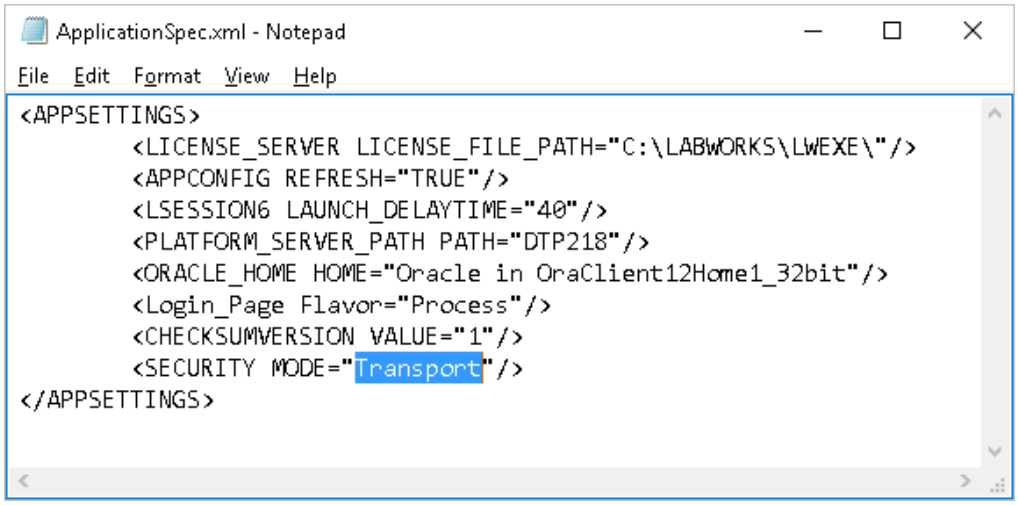


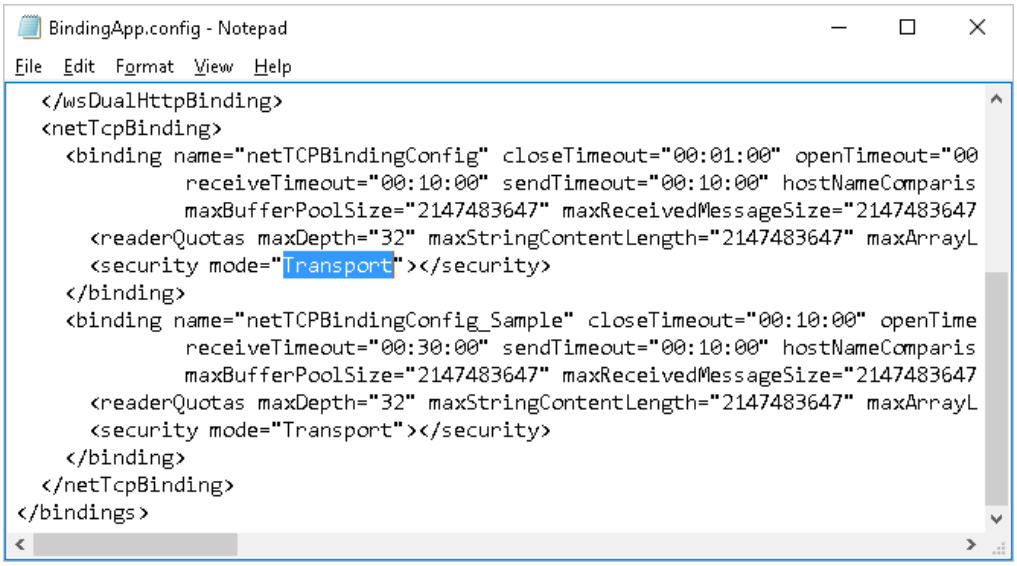
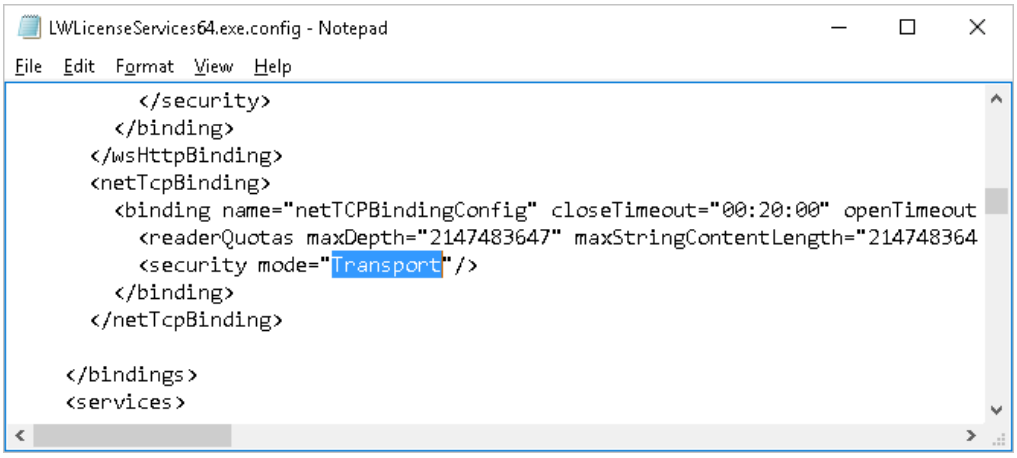
Step	User Input/Action	Expected Results
	Registry Entry: Computer\HKEY_LOCAL_MACHINE\SOFTWARE**WOW6432Node**\ODBC\ODBCINST.INI\ODBC Drivers 	

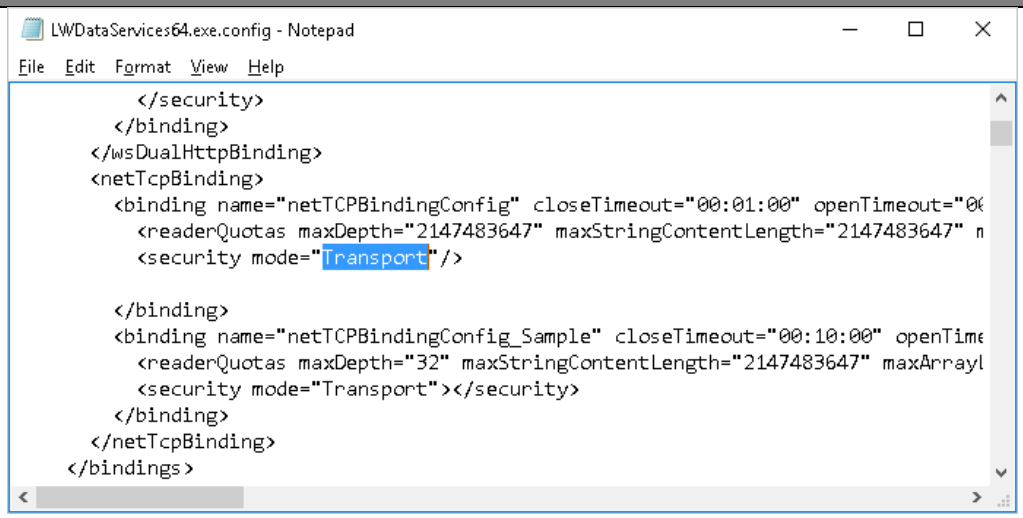
Step 7: Configure Service Security Mode as Transport

LABWORKS services (LWLicenseService and LWDataServices) has Security Mode as 'None' by default.

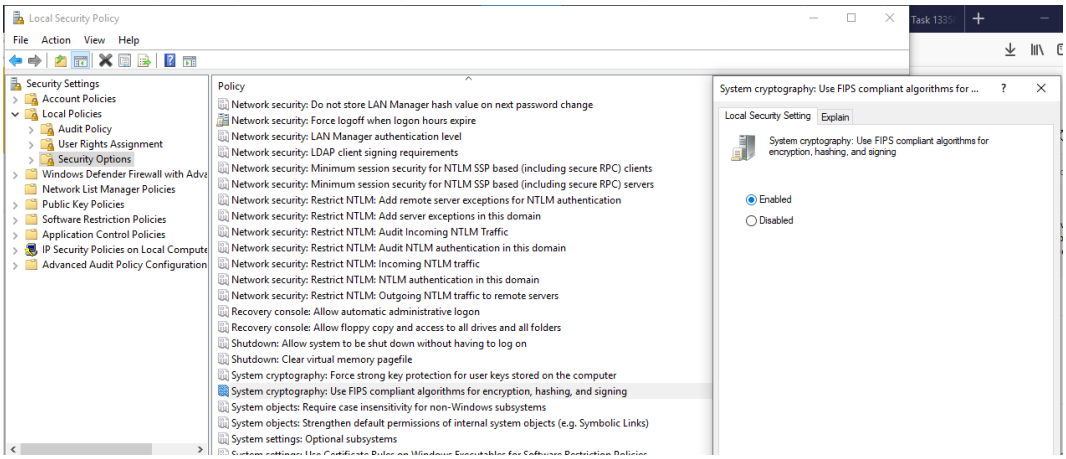
Follow below steps to configure LABWORKS services security mode to 'Transport':-

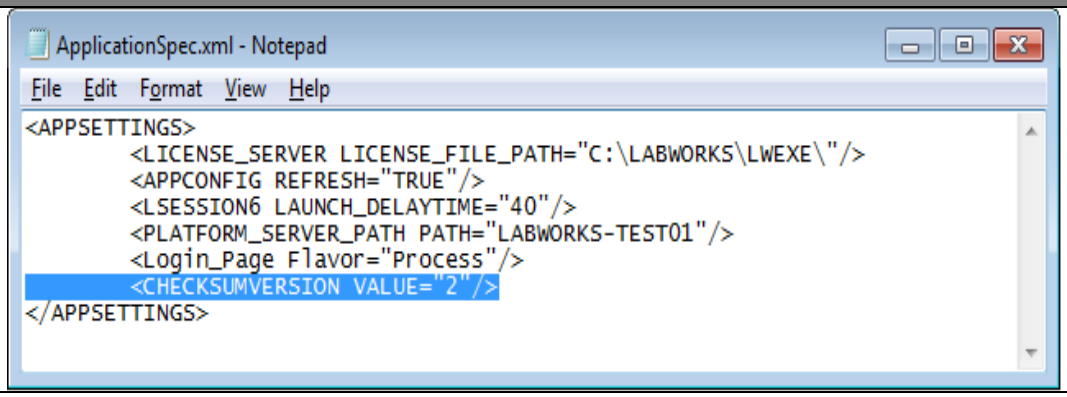
Step	User Input/Action	Expected Results
1	Open the file 'ApplicationSpec.xml' using notepad. 	The ApplicationSpec.xml is opened.
2	Enter the Security mode as 'Transport' in ApplicationSpec.xml  Then copy ApplicationSpec.xml from Labworks/LWEXE and place it in below folders- • \Program Files (x86)\Labworks\LWLicenseServices • \Program Files (x86)\Labworks\LWDataServices. • \LABWORKS\LWEXE\Server • \LABWORKS\Client	Security Mode is entered.

Step	User Input/Action	Expected Results
3	Open the file 'BindingApp.config' using notepad from \LABWORKS\Client. Enter the Security mode as 'Transport' in BindingApp.config  Then copy BindingApp.config from Labworks/Client and place it in below folder- • \LABWORKS\LWEXE\Server • \LABWORKS\Client	Security Mode is entered in BindingApp.config
4	Open the file 'LWLicenseServices64.exe.config' using notepad from \Program Files (x86)\Labworks\LWLicenseServices. Enter the Security mode as 'Transport' for 'netTCPBindingConfig' in LWLicenseServices64.exe.config 	Security Mode is entered in LWLicenseServices64.exe.config.
5	Open the file 'LWDataServices64.exe.config' using notepad from \Program Files (x86)\Labworks\LWDataServices. Enter the Security mode as 'Transport' for 'netTCPBindingConfig' and 'netTCPBindingConfig_Sample' in LWDataServices64.exe.config	Security Mode is entered in LWDataServices64.exe.config.

Step	User Input/Action	Expected Results
		
6	Restart LWLicenceServices and LWDataServices	

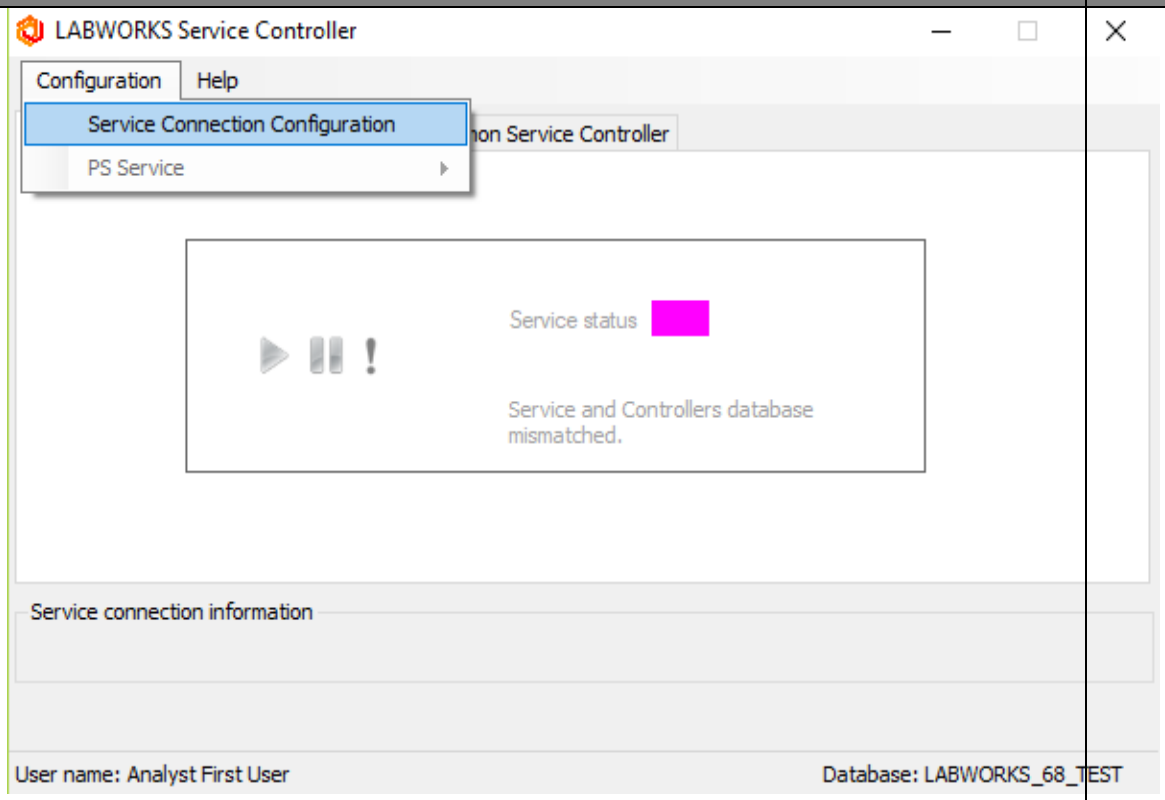
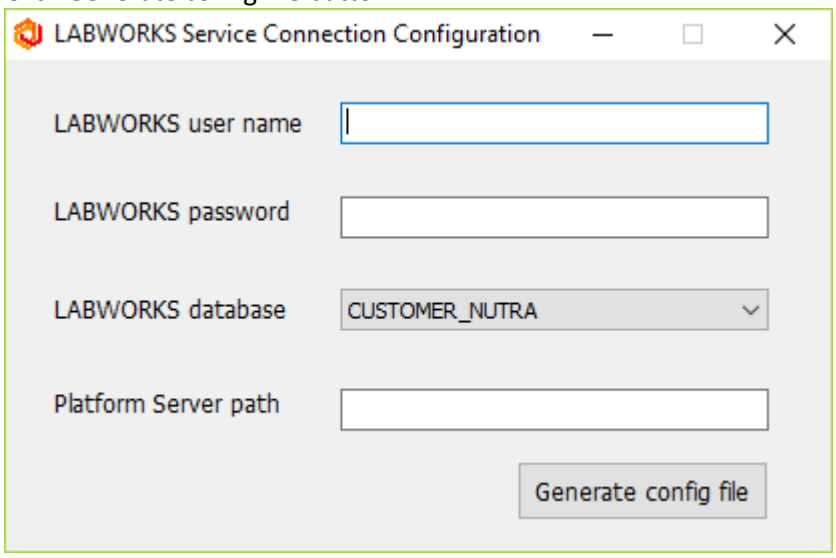
Step 8: FIPS Compliance

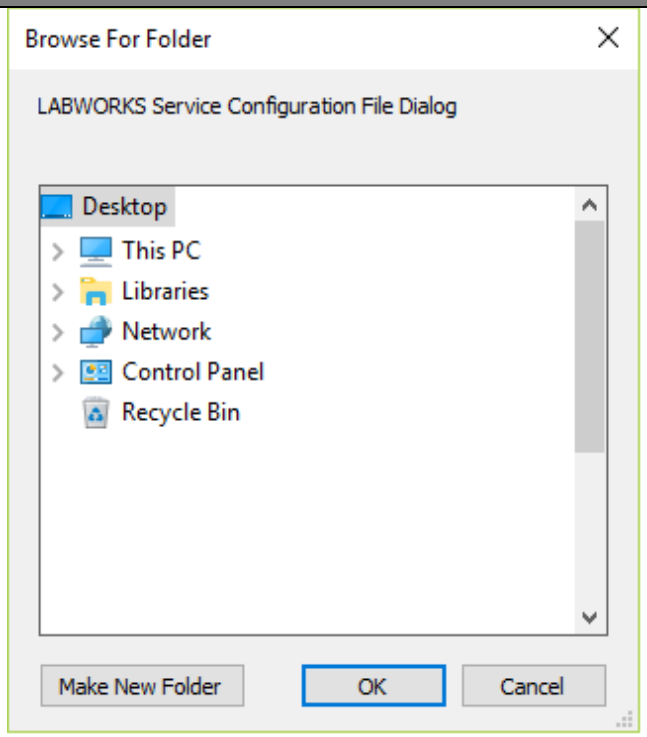
Step	User Input/Action	Expected Results
1	Enable FIPS on Client Machine 	
2	**For FIPS Compliant Installation (supported in LABWORKS version 6.10 onwards):** In ApplicationSpec.xml, add CHECKSUMVERION CHECKSUMVERSION VALUE=”1” for Non-FIPS compliant installation. (default value) CHECKSUMVERSION VALUE=”2” for FIPS compliant installation.	Path is entered.

Step	User Input/Action	Expected Results
		
3	Also, open 'ApplicationSpec.xml' located at \Program Files (x86)\Labworks\LWLicenseServices (where the LWLicense Service is installed) and perform the same changes as above.	Changes applied.
4	Also, open 'ApplicationSpec.xml'located at \Program Files (x86)\Labworks\LWDataServices (where the LWDataServices is installed) and perform the same changes as above.	Changes applied.
5	Copy 'ApplicationSpec.xml 'from<LWEXE> to <LWEXE>\Server (where the LWServiceControllers is installed) and perform the same changes as above.	
6	Set all user passwords in clear text in "PASSWORD" field of your USERHEAD table so they can be encrypted in the next step	
7	After migrating the password from Clear to Encrypted values, be sure to clear all user passwords from the "PASSWORD" field of your USERHEAD table. This can be easily done with the following SQL command: `UPDATE USERHEAD SET PASSWORD='XXXXXXXXXXX'`	
8	Start LWDataServices. Start LWLicenseServices. Start LWDesktop. Open System Manager, change CHECKSUMVERSION = 2 and save the changes.	

Step 9: Service Connection Configuration

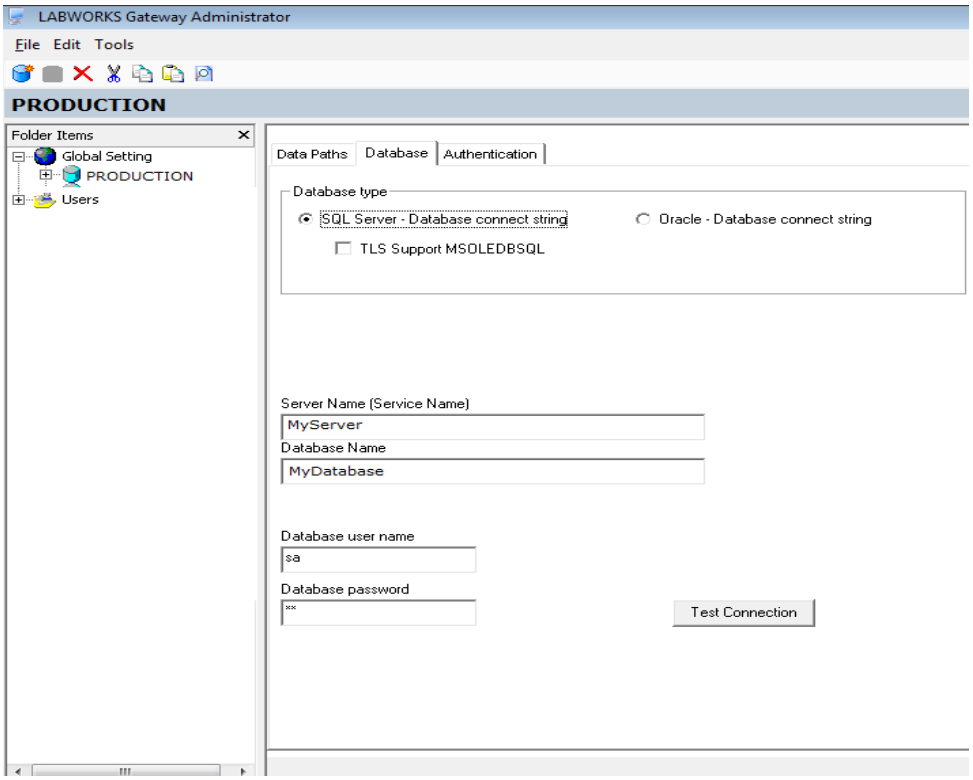
Step	User Input/Action	Expected Results
1	Configure LWServiceConfig.xml: Launch 'LWServiceControllers.exe' application located at '\LABWORKS\LWEXE\Server '.	
2	Go to menu Configuration -> Service Connection Configuration:	

Step	User Input/Action	Expected Results
		
3	On Service Connection Configuration screen, enter valid LABWORKS username, password. Select desired database for connection and enter workstation name where platform service is running. Click Generate config file button. 	
4	Select path to save config file:	

Step	User Input/Action	Expected Results
		
5	Copy 'LWServiceConfig.xml' from above selected location to \Program Files (x86)\Labworks\LWDataServices (where the LWDataService is installed)	
6	Restart LWDataServices	

Step 10: Configure the Database

Once you have set up the Data Path information, the Database tab activates. On the Database tab page, you configure the database by defining the type of database, type of connection to database, the server name, the database name, the user name, and the password.



To configure the database, enter the Data Path information, and click on the Database tab.

For Oracle databases:

- Enter the name of the server where the database is located in the Server name (Service Name) field.
- Enter the Database user name and Database password.
- Click the 'Test Connection' button.

For SQL Server databases:

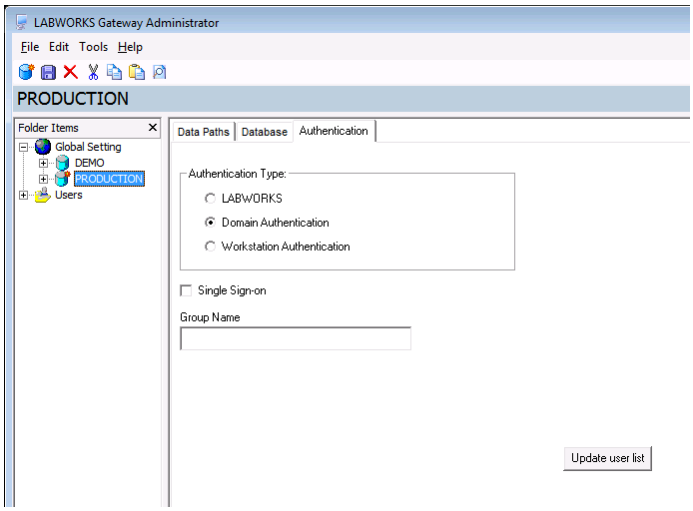
- Enter the name of the server where the database is located in the Server name (Service Name) field.
- Enter the name used to identify the LABWORKS database in the Database Name field.
- Enter the Database user name and Database password. If needed, ask your DBA for your database username and password.
- Click the 'Test Connection' button.

The Test Connection function uses the database information and the data path information (if necessary) to establish a connection to the database. If the connection is successful, a message appears stating that the connection was a success. If the connection is not successful, a message appears that provides a description of why the connection failed.

Step 11: Configure Database Authentication

You can configure LABWORKS to validate a user's ID and Password by using one of the following methods:

- Authenticate against LABWORKS using the standard LABWORKS logon
- Authenticate against a domain with re-entry of domain user name and password to enter LABWORKS
- Authenticate against a domain with no password required to enter LABWORKS.



Standard LABWORKS Authentication

To authenticate against LABWORKS using the standard LABWORKS logon, skip the following sections and simply click the LABWORKS radio button on the Authentication tab of the Gateway Administrator.

When you select LABWORKS for the Authentication Type, it associates password with the selected database. When a user logs into a LABWORKS database for the first time, the Users node of the Gateway Administrator is populated with that users Domain ID. Once a User Domain ID is listed in the Users node, the administrator can select that user from the Users node and customize which databases are visible to the user as well as enable or disable the user from changing the language used by LABWORKS.

Domain Authentication

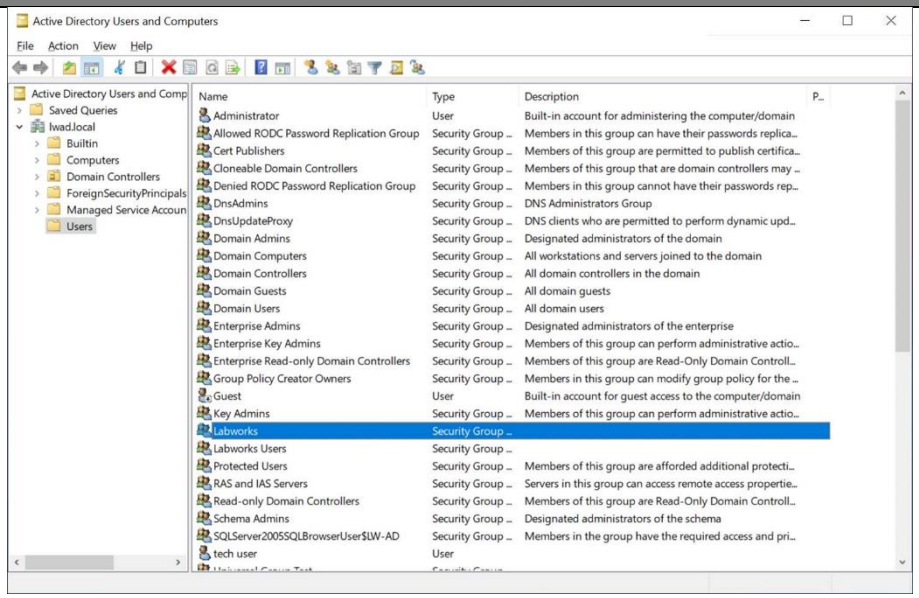
To use Domain Authentication, you must perform the following Windows Administrative steps:

- Create a LABWORKS group on the domain
- Assign users to the LABWORKS group
- Define new authentication options in the Gateway Administrator
- Import users from domain into the LABWORKS application's list of users

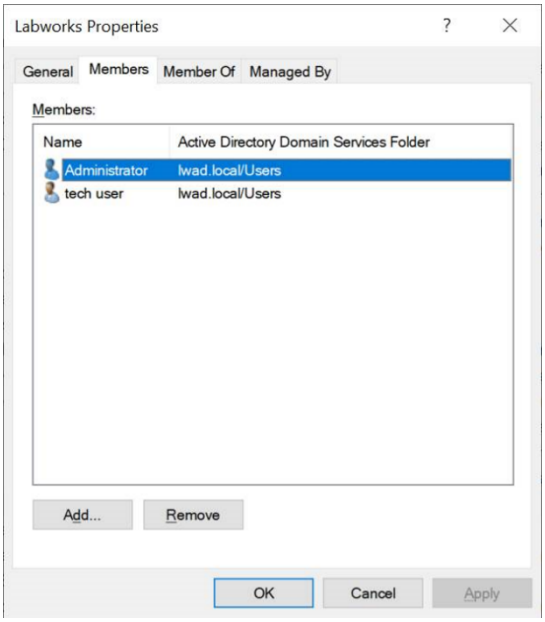
The following section shows you how to perform the steps listed above.

Step	User Input/Action	Expected Results
1	Create a group called LABWORKS on the Domain.	A group called LABWORKS is created.
2	Assign the users whom you wish to have access to the LABWORKS application to the LABWORKS group you just created. The users you assign to the LABWORKS group are the users who will be able to log into LABWORKS. For example, below is a screen shot of an Active Directory Group on the Server.	Users are assigned to the LABWORKS group.

Step	User Input/Action	Expected Results



The following users belong to the LABWORKS group:

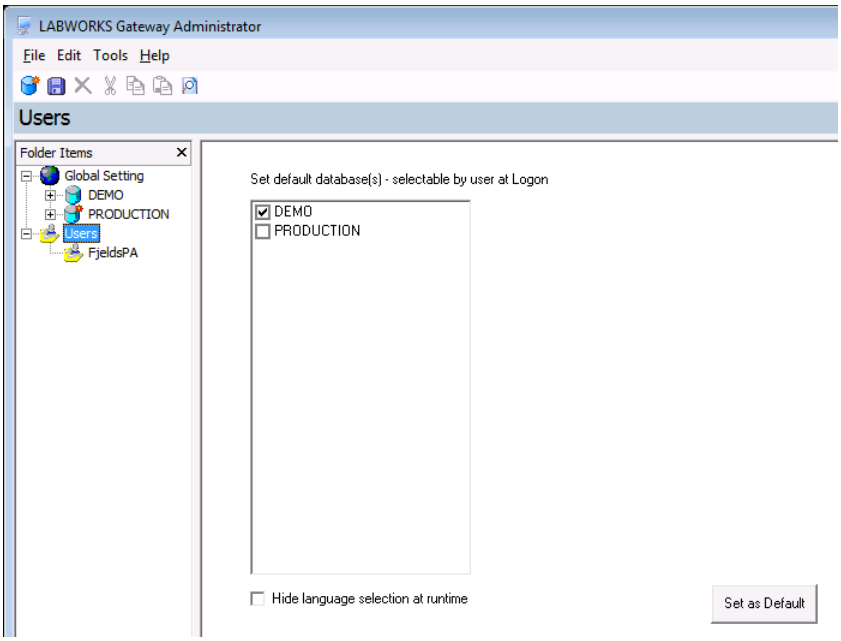


From the Authentication tab of the Gateway Administrator click on the Domain Authentication radio button to cause LABWORKS to authenticate using the LABWORKS group ID and password on the computer domain.

Step	User Input/Action	Expected Results
		Domain Authentication radio button selected.
3	Check the Single Sign-on check box to have the LABWORKS Login screen show the user id and password automatically filled in with the current Windows User ID and Password at login. The screen below shows the LABWORKS User Login screen if Single Sign-On is enabled: Even when Single Sign-On is enabled, the user must re-enter his/her password when the FORCECHECKIN or SYSTEMTIMEOUT System Manager keys prompt for user password verification. Moreover, if only one database is configured and single sign on is enabled, the user logon dialog is not displayed. **-OR-** Uncheck the Single Sign-on check box to have the user enter his/her user name and password at logon.	Single Sign-on check box enabled or disabled, depending on environment.
4	Click Update User List to synchronize the group defined in the Group Name field with the LABWORKS user list. The new users' Domain IDs are added to the User Setting node of the Gateway Administrator for the database you just configured. In addition, these users inherit the global default databases available for viewing. The global default databases available for viewing can be set by clicking on the Users node of the Gateway Administrator and then by checking the databases you wish to have visible to all users and then clicking on the Set as Global Default button. If there are previously defined LABWORKS users that are not assigned to the group defined in Gateway Administrator, then the following screen appears and gives you the option to add the user to the group defined in the Gateway Administrator or to delete the user from the list. • Even if domain authentication is used, the LABWORKS user list is still required for privilege management. • If users wish to change their passwords, they must do so through their Operating System's password utility.	The new users' Domain IDs are added to the User Setting node of the Gateway Administrator for the database you just configured.

Step 12: Configure Global Database Availability

When the Users node is selected, the right-hand pane of the Gateway Administrator displays the global default databases that can be seen by all users as well as a check box that enables or disables language selection at runtime for all users of LABWORKS.



Clicking on the Users node will allow you to select the databases that can be seen for all users. By selecting one or more of these databases, you are configuring the Gateway Administrator to add everyone to the selected databases' User Setting node for all selected databases. In addition, all users would see only those checked databases on the LABWORKS login window. The Hide language selection at runtime check box can also be selected to hide available languages option.

The Users node also lists all the Users that have logged into a LABWORKS database. All the User Domain IDs that have logged into LABWORKS are listed here so that the system manager can set properties for users that are different than the global settings. Therefore, when a specific User Domain ID is selected on the tree, the administrator can change the databases that can be seen by the selected user. By selecting one or many of the databases, the system manager is telling Gateway Administrator to list this individual on the User Setting node for just the checked databases. In addition, the user would only see those checked databases on the LABWORKS Login window.

To configure global default database availability:

To allow all users on the system databases, check the databases you wish to set as the default databases available to all users at login and click the Set as Default button. When databases are checked the Gateway, Administrator lists all the users under the User Setting node for each checked database in Gateway Administrator.

The screen shows that the database named DEMO is available for viewing by all users, while no users can see the database named PRODUCTION, because the only database selected on the Users node is DEMO, and there are no exceptions set up for individual users who are listed under the Users node.

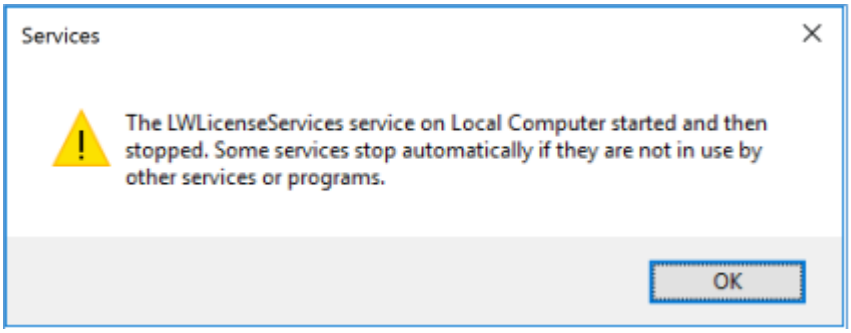
Step 13: Start the LWLicenseServices/LWDataServices

The LWLicenseServices is installed as a Windows service and it supplies the list of databases to the login prompt and authenticates the users. The LWDataServices is installed as a Windows service and it provides data to the Labworks applications.

When the server is rebooted it starts automatically. During install the service is not started because of the prerequisite configurations. With the configurations complete, the service can be started. From the services management console, start the LWLicenseServices.

LWLicenseServices start troubleshooting

If the LWLicenseServices fails to start with the following error message then to get more information about the error, open “LWErrorLog.xml” file from LWLicenseServices installed location i.e. C:\Program Files (x86)\LABWORKS\LWLicenseServices\LOGS\LWErrorLog.XML.



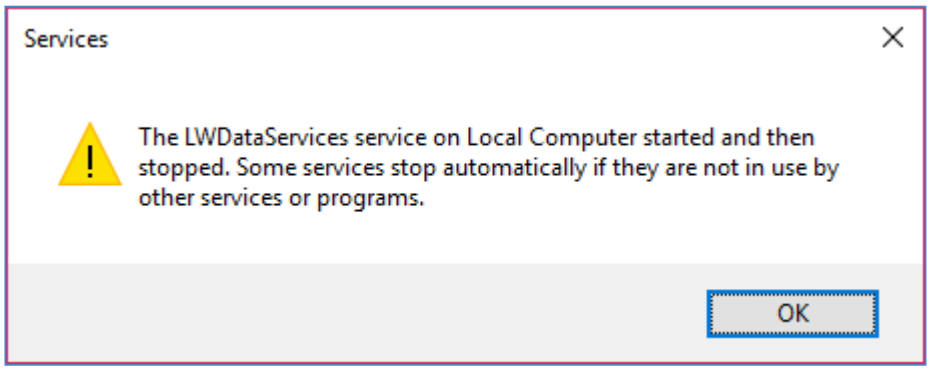
This error message comes due to one of the below reason-

1) “ApplicationSpec.xml” is not configured.
2) LABWORKS control file (.CTL) is not present at LABWORKS server folder (i.e. \\LABWORKS\LWEXE\)
3) LABWORKS license expired
4) LABWORKS control file (.CTL) is not compatible with latest LABWORKS version.

Note: *If the LW DataService is already running, it must be restarted for the changes to take effect.*

LWDataServices start troubleshooting

If the LWDataServices fails to start with the following error message then to get more information about the error, open “LWErrorLog.xml” file from LWDataServices installed location i.e. C:\Program Files (x86)\LABWORKS\LWDataServices\LOGS\LWErrorLog.XML.



This error message comes due to one of the below reasons-

1) “ApplicationSpec.xml” is not configured.
2) “ClientApp.config” is not configured.
3) Domain user password has been expired
4) LWLicenseServices is not started

Step 14: Client Installation

You are now ready to run the ClientSetup.msi program on each workstation that will use LABWORKS. After you run the Client Installation on each workstation you can access the Gateway Administrator tool again to customize individual user and workstation settings.

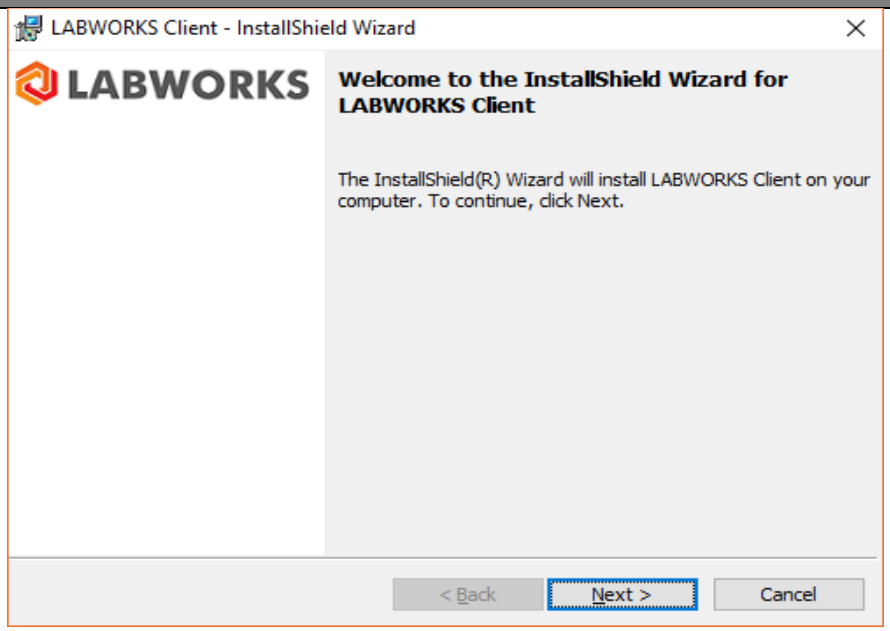
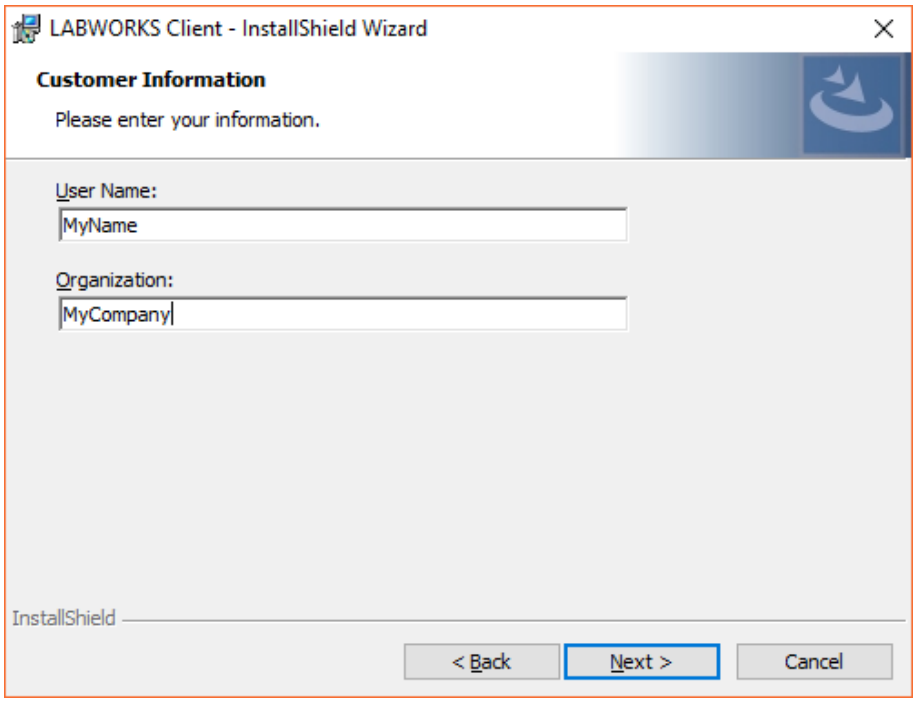
Note: *You must log in as the Administrator, or have administrative rights, to run the Client Install.*

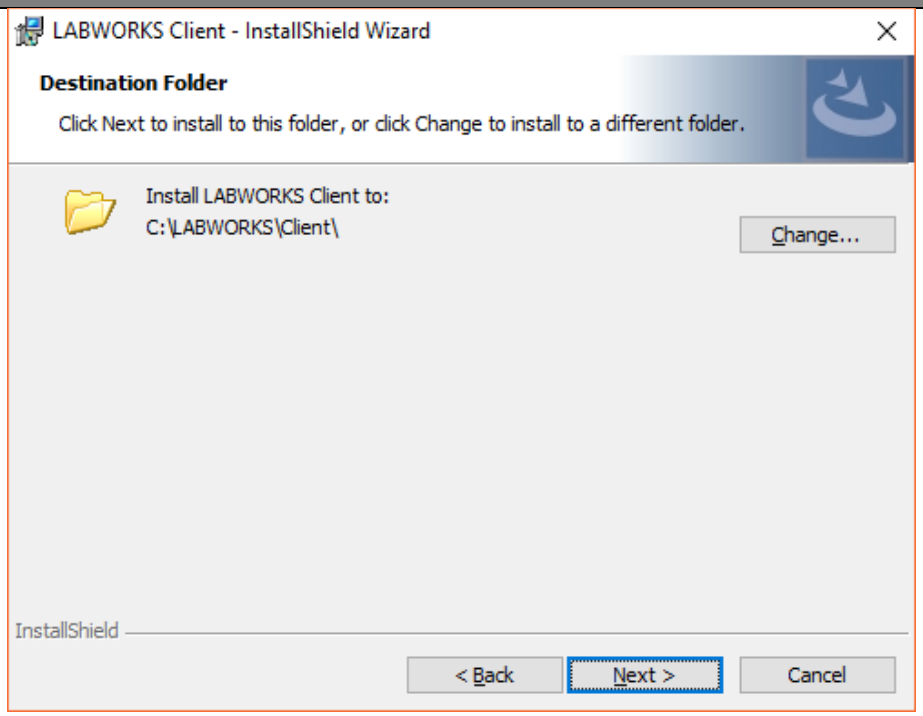
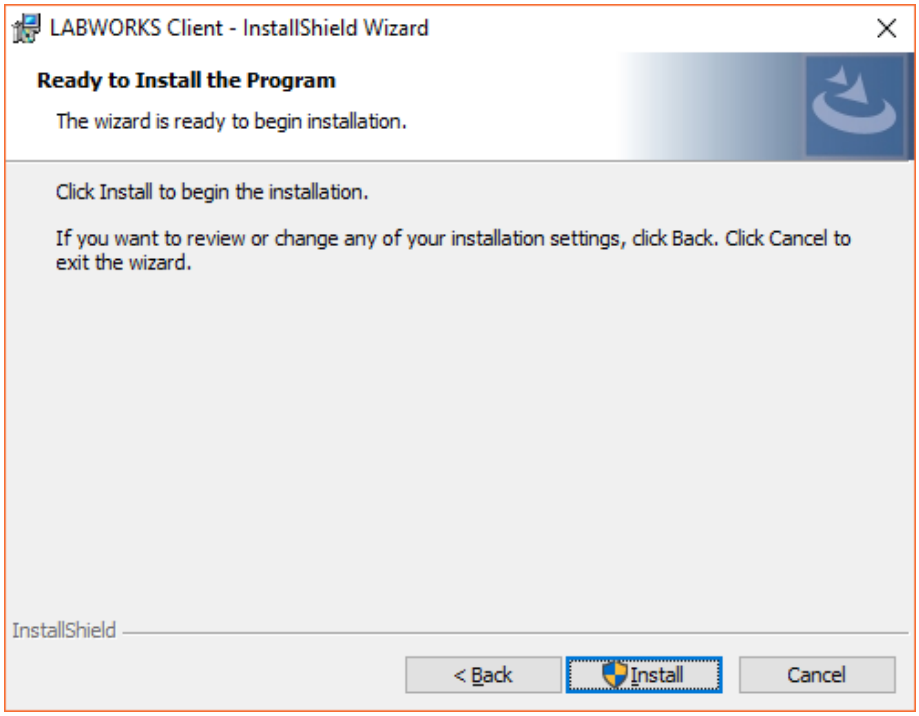
	Note: *Client Install Prerequisite: Microsoft Visual C++ 2005 redistributable (**vcredist_x86.exe**) for following versions:* This file can be found in the \LWEXE folder.

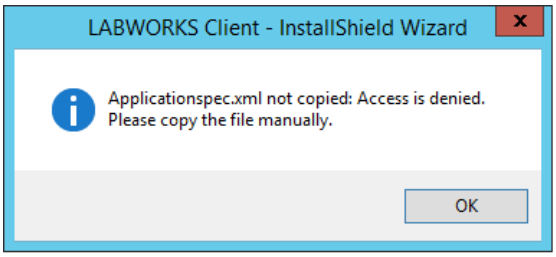
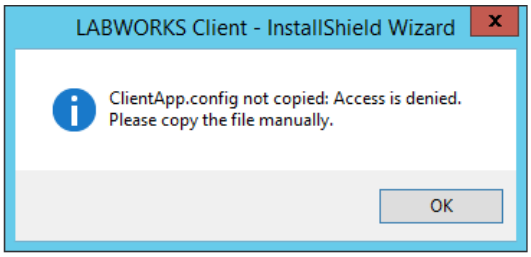
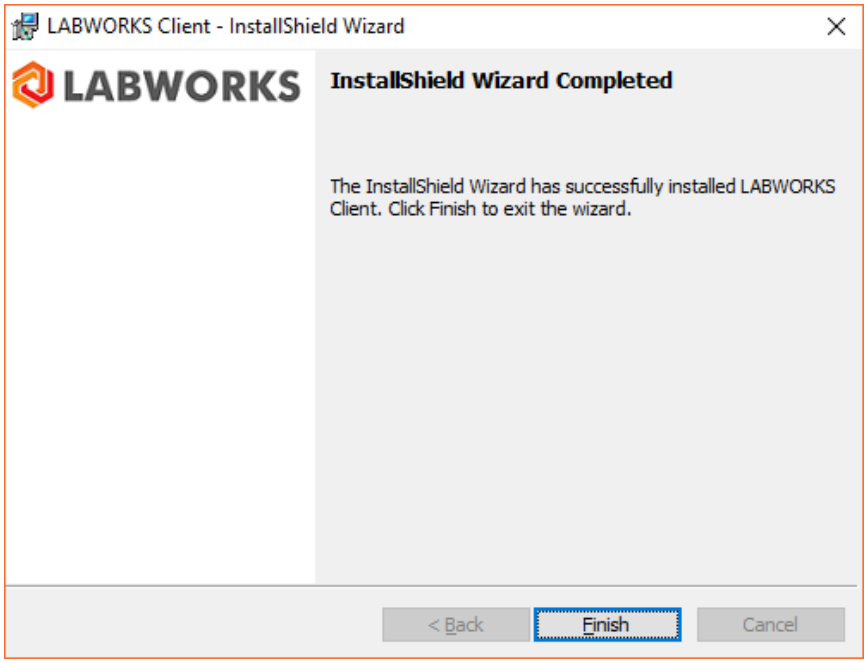
	Note: *Client Install Prerequisite: Crystal Report XI (**CrystalXIRDC.msi**) for following version:* *Crystal Report XI.* This file can be found in the \LWEXE folder.

After you have run the Server Installation and setup and configured workstation settings using the Gateway Administrator tool you must now run the Client Installation, located at <LWEXE>ClientSetup.msi on each workstation that is to use LABWORKS. Since LABWORKS is installed on a server, it is critical that every user access the ClientSetup.msi program that is located on the server in the same manner.

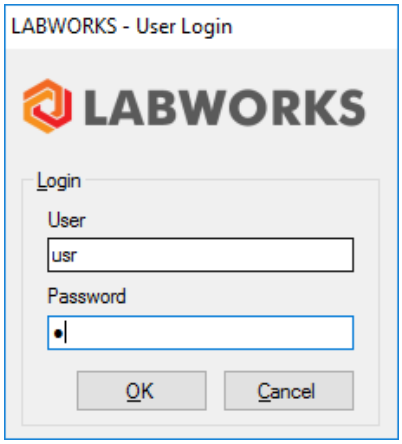
Step	User Input/Action	Expected Results
1	On each workstation that you wish to run LABWORKS access the server where you installed LABWORKS and open the LABWORKS application folder and select ClientSetup.msi.	The Welcome to the InstallShield for LABWORKS Client is displayed.

Step	User Input/Action	Expected Results
	 Click 'Next'.	
2	 Enter your Name and Company Name. Click 'Next' to continue.	Customer Information dialog is displayed. User Name and Company name is entered.
3		Destination Folder dialog is displayed.

Step	User Input/Action	Expected Results
	 Click 'Change' if the location of the client software is to anywhere other than the default location. Once specified, click 'Next' to proceed.	Destination folder is changed if required.
4	 Click 'Install' to begin the Installation.	The Ready to Install the Program dialog is displayed. The installation proceeds.

Step	User Input/Action	Expected Results
	During client installation the files ApplicationSpec.xml and ClientApp.config are copied to the Client folder. If user views the warning messages as per below screenshots, then user needs to copy Applicationspec.xml and ClientApp.config files manually from [SystemDrive]\Labworks\Server to [SystemDrive]\Labworks\Client folder.  	
5	 When the installation is complete, click 'Finish' to exit.	The InstallShield Wizard Completed dialog is displayed. The installation is complete.

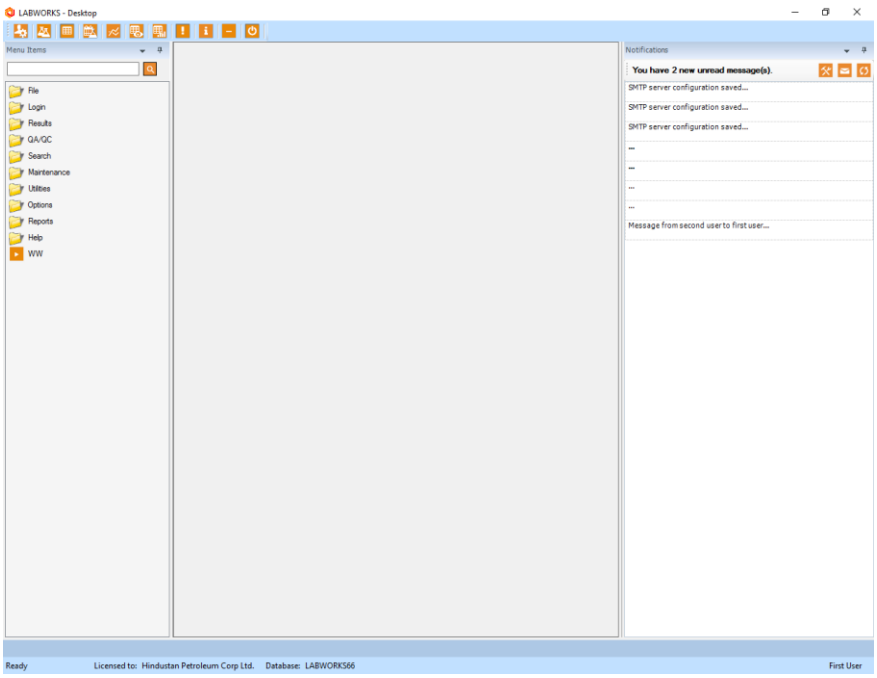
At this point your installation is complete. There is a new Program Group for LABWORKS and a LW Desktop application shortcut on your Desktop. By double clicking the new LW Desktop Icon, users are prompted to login:



The default credentials for a new database installation are as follows:

User: USR

Password: 1



LABWORKS Desktop System Upgrade

Step 1: Running Database Scripts and Update Tool

Update the Existing Database and Run the Update Tool.

LABWORKS 6.X to latest LABWORKS version

Step	User Input/Action	Expected Results
1	Use the Database tools to run either, LWScripts-SQLServer.sql or LWScripts-Oracle.sql, depending on your database system.	Scripts run.
2	Run the Update tool.exe using update files for all versions between your current and 7.2. Example, if upgrading from 6.6, then run the updatetool using LW67Release.xsp, LW68Release.xsp, LW69Release.xsp , LW610Release.xsp, LW70Release.xsp, LW71Release.xsp and LW72Release.xsp.	Updatetool.exe is run.
3	Run the utility, LWMigrationUtility.exe to update database tables new to latest LABWORKS version	Database tables are updated to latest LABWORKS version

Note: *When upgrading an existing database it is recommended to run Lwwsystem6.exe from the C:\Labworks\Client folder because there are new applications-based privileges associated with the new Desktop.*

The **LWMigrationUtility** was introduced in LABWORKS 6.2. It is used to copy data from an old format to a new format. In LABWORKS 6.2, the data storage for, AUDITTRAIL, CalcDefs, DMR, Specifications, and Special Info Forms has been updated. LWMigrationUtility should only be run if needed. See Appendix B for when and which options should be used for LWMigrationUtility. Running LWMigrationUtility on previoulsy migratated values like RLTSPECS can overwrite changes you made after the privous migration. LWMigrationUtility should only be run once or each object type.

AuditTrail. AuditTrail's data storage format changed in LABWORKS 6.0 from AUDTRAIL to AUDITTRAIL table. LWMigrationUtility converts records from AUDTRAIL (5.8) to AUDITTRAIL format.

CalcDefs. Internal LABWORKS Calculation Definitions were limited to 10 inputs. LABWORKS 6.2 adds a new table, CALCPARAMS which removes this 10 input limitation. LWMigrationUtility converts records from CALCDEFS to CALCPARAMS. Added in 6.2

DMR. (Optional Program, see DMR Documentation for specific detail.) LWMigration utility moves data into the primary LABWORKS database from the external DMR data storage previously used. Added in 6.2

RLTSPECS. RLTSPECS data storage has been changed to RESULTSPECS. This new format provides a better platform for extending what specifications can be defined. Additional specification capabilities will become available in future versions of LABWORKS Added in 6.2

SIFORM. Special Info Forms prior to LABWORKS 6.2 used multiple tables for storing defaults for Location Codes, Analyses and storing data for samples and analyses. All this data is now stored in the LABOBJSPECINFO table. Additionally, a field is added to the SIFORMDEF table to create a unique identifier for each field. This unique

identifier allows for modifying a Special Info Form without losing the association between the fields and their values. Added in 6.2

MAILLIST. Migration of data from MLADDRESSES/SAMPMAILLIST to LABOBJMAILLIST Added in 6.4

COMMENTS. Migration of data from COMMENTS/DLCOMMENTS to LABOBJCOMMENTS Added in 6.4

LABOBJECTS. Migration of data from ANLOBJECT to LABOBJOBJECTS. Added in 6.4

RESULT. Addition of CHECKSUM data. Checksum is used to verify no one has modified the data outside of the LABWORKS application. Added in 6.4

USERHEAD. Addition of encrypted password. Added in 6.4

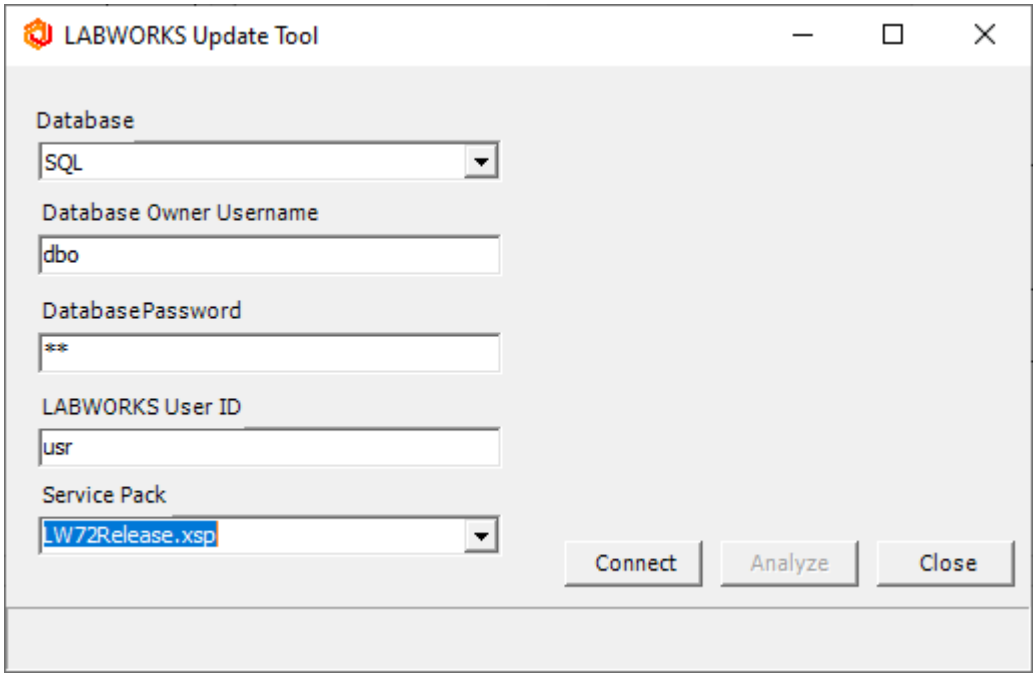
Migrate USERHEAD to FIPS Compliance. Migration of USERHEAD data to FIPS compliant using FIPS compliant encryption algorithm. Added in 6.10

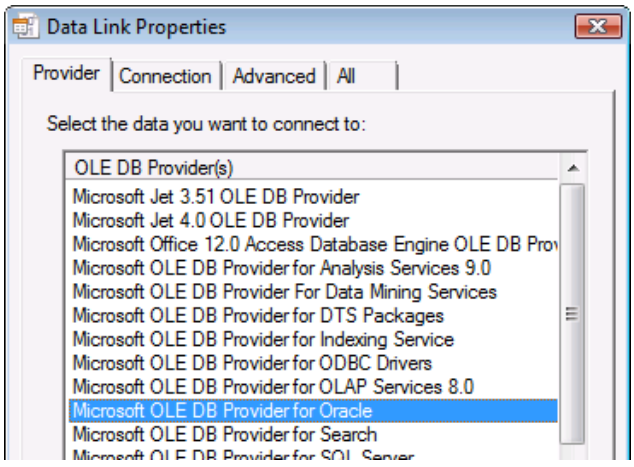
Migrate RESULT to FIPS Compliance. Migration of RESULT data to FIPS compliant using FIPS compliant encryption algorithm. Added in 6.10

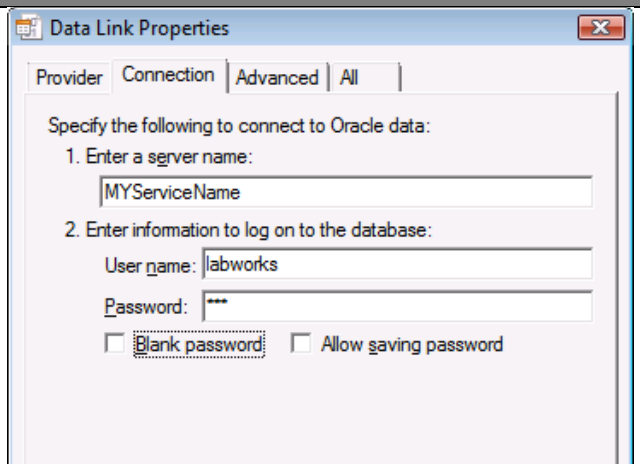
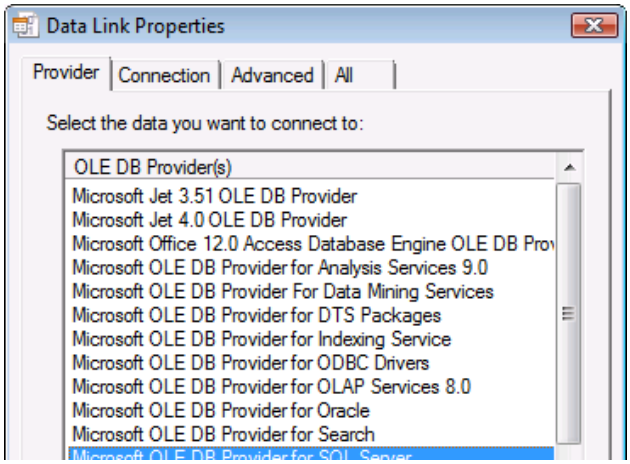
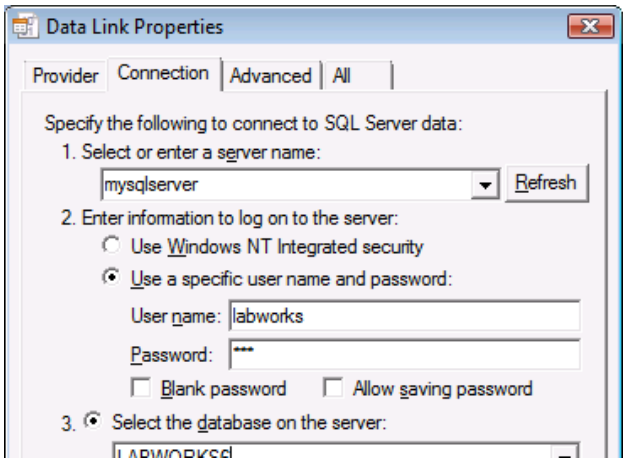
Migrate AuditTrail to FIPS Compliance. Migration of AuditTrail data to FIPS compliant using FIPS compliant encryption algorithm. Added in 6.10

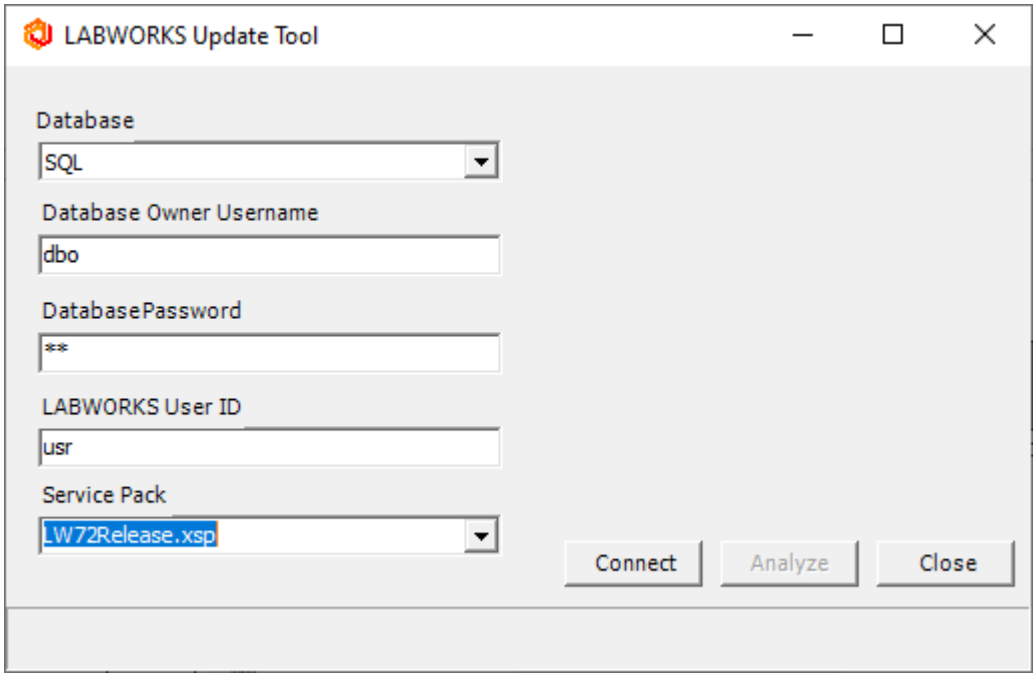
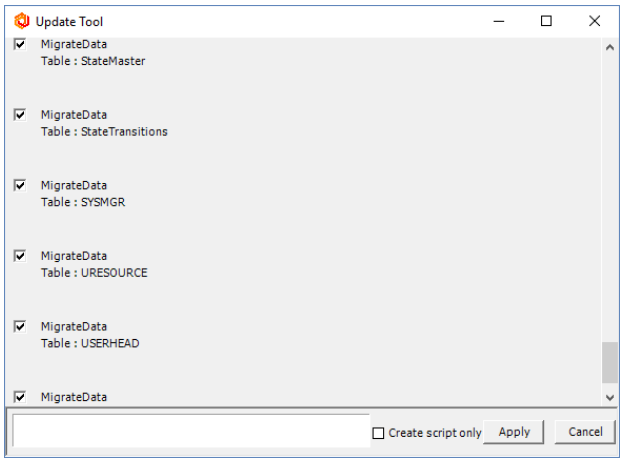
LABWORKS 6.4 has new security features for Encrypted passwords and Checksums on result data. If upgrading from 6.2 or 6.3 the migration utility needs to be run and the options for RESULT and USERHEAD need to be run.

Running the Update Tool

Step	User Input/Action	Expected Results
1	Select your database type, SQL or Oracle. 	Database is selected.

Step	User Input/Action	Expected Results
2	Enter the database owner, likely dbo for SQL, and the schema owner for Oracle. New tables will be created under this owner.	Database owner entered.
3	Enter the database connection Password.	Database connection password entered.
4	Enter the database connection User ID.	Database connection User ID entered.
5	Select the Service pack. The file LW72Release.xsp updates the database from 7.1 to 7.2 Desktop format. Run the Update tool.exe using update files for all versions between your current and 7.2. Example, if upgrading from 6.6, then run the updatetool using LW67Release.xsp, LW68Release.xsp, LW69Release.xsp, LW610Release.xsp, LW70Release.xsp, LW71Release.xsp and LW72Release.xsp. The service pack I18NTables.xsp is used to add additional language strings to the LABWORKS database and is used only if needed for multi-language sites. The service pack LW62DMRRelease.xsp is required for sites that are using the LABWORKS Discharge Monitoring Reports.	Service pack selected and run.
6	Press the Connect button to create a connection to the database. • For Oracle databases, select the Microsoft OLEDB Provider for Oracle provider and click 'Next'. Enter your Oracle service name as the server name, database connection username and password. Press Test Connection to confirm the connection.  Enter your Oracle service name as the server name, database connection username and password. Click Test Connection to confirm the connections.	Connection to the database is established.

Step	User Input/Action	Expected Results
	 • For SQL Server databases, select the Microsoft OLEDB Provider for SQL Server provider and click 'Next'.  Enter your SQL Server name, database connection username and password, and the database name. Press 'Test Connection' to confirm the connection. 	

Step	User Input/Action	Expected Results
7	After the database connection is tested, press 'Analyze' to have the program identify the database modifications required.  The program gives a preview of the changes to be made. To apply the changes press 'Apply'.  If an error is encountered, the step that was unsuccessful appears in red. Clicking on the error message displays details about the error.	Database modifications are identified. Changes are applied.

Step 2: Configure database authentication for Oracle 19.c

When using Oracle 19.c version, follow these steps:

- Run the command ALTER SYSTEM SET SEC_CASE_SENSITIVE_LOGON = FALSE in the Oracle database.
- Change a password for existing users.
- Make sure that PASSWORD_VERSIONS are compatible with 10g.

- Run the following command in the database:
  - select USERNAME, ACCOUNT_STATUS, PASSWORD_VERSIONS from dba_users;
- The output should look like this:

USERNAME	ACCOUNT_STATUS	PASSWORD_VERSIONS
DIP	EXPIRED & LOCKED	11G 12C
SYSKM	EXPIRED & LOCKED	11G 12C
ORACLE_OCM	EXPIRED & LOCKED	11G 12C
SYSDG	EXPIRED & LOCKED	11G 12C
SPATIAL_CSW_ADMIN_USR	EXPIRED & LOCKED	11G 12C
LABWORKS	OPEN	10G 11G 12C

Step 3: Gateway Administrator Setup

After the Server Installation has completed you must run the Gateway Administrator Tool, LWSysCfg6.exe, to set up LABWORKS with all of the user and workstation information. This information includes the location of the LABWORKS executables, locations and names of LABWORKS databases, and user file locations. The program is in the <LWEXE>\SysCfgfolder.

This section shows you how to use the Gateway Administrator to perform the following tasks:

- **Set up a new database** – This section shows you how to add a database to the Gateway Administrator and set Data Path information for the database.
- **Configure the database –** This section shows you how to configure the database by defining the type of database, type of connection to database, the database name; the server name, and the database user name and password.
- **Select database authentication options** – This section shows you how to configure LABWORKS to validate a user's ID and Password by using LABWORKS authentication or domain authentication.
- **Select global default database availability** – This section shows you how to select which databases will be visible, by default, to all users of LABWORKS.

The Gateway Administrator requires the LABWORKS client be installed on the workstation where Gateway Administrator is run. The Gateway administrator can be run from a network client or from the server console as long as the LABWORKS client install has been completed and the user has proper network access.

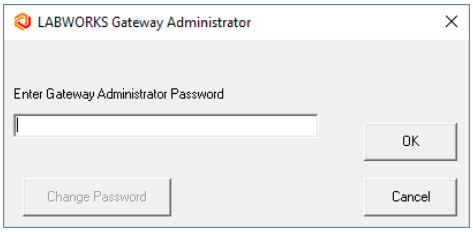
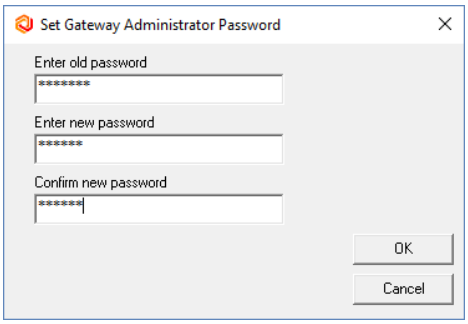
Access to the Gateway Administrator tool is controlled by network privileges and the program is also password protected. The first time you access the Gateway Administrator, if you are installing LABWORKS 6.8.5 Desktop or higher, the default password is **gateway**.

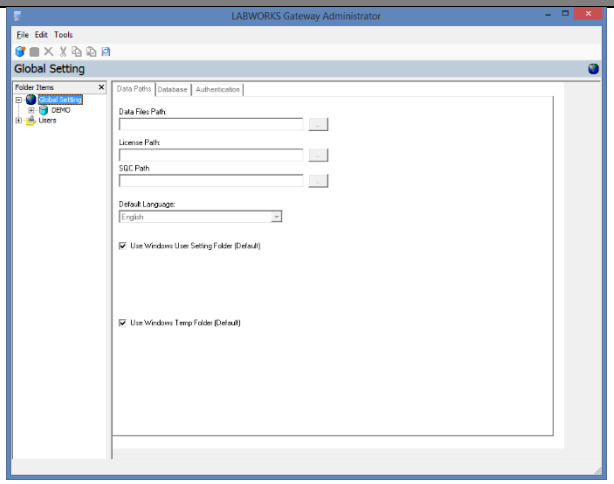
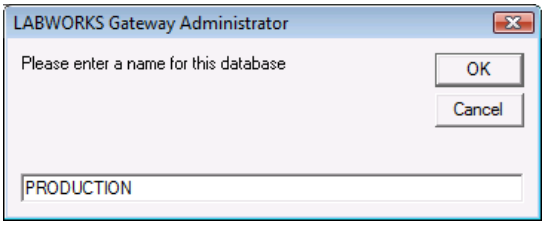
Set up a new Database

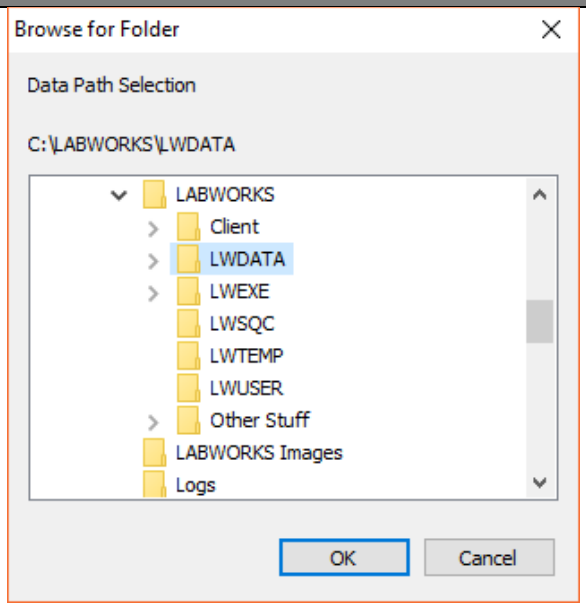
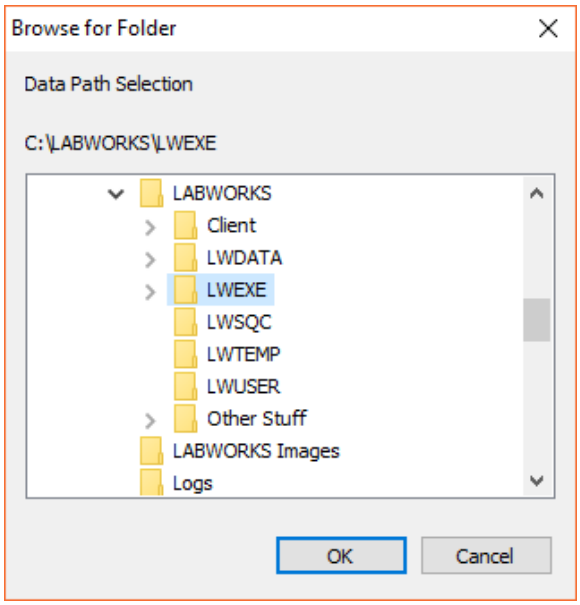
The Gateway Administrator allows you to specify which databases will be used in your LABWORKS system and how these databases will be configured. When evaluating a LABWORKS Upgrade, creating an additional database as a Test or Sandbox environment can be useful. Setting up a new database is a four-part process that involves adding a new database to the Gateway Administrator program, setting data path information, configuring the database, and selecting database authentication. The following sections show you how to add a database to the Gateway Administrator and configure the database.

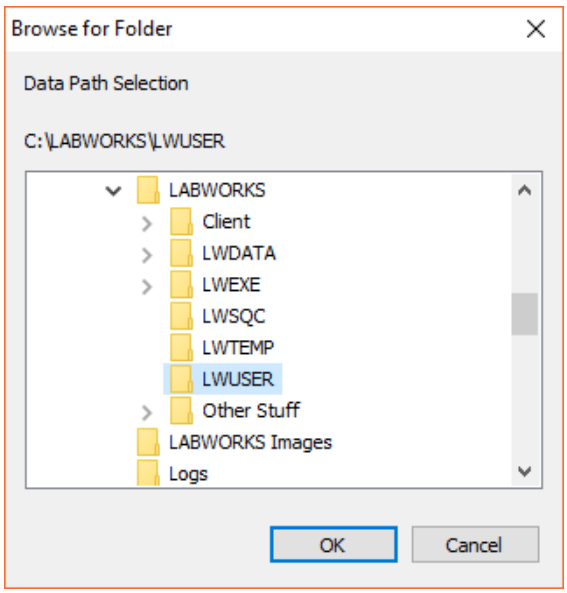
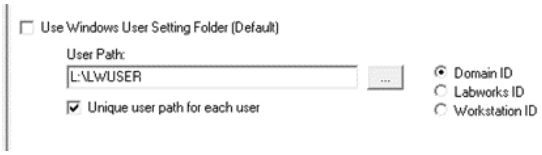
Add a New Database and Set Data Path Information:

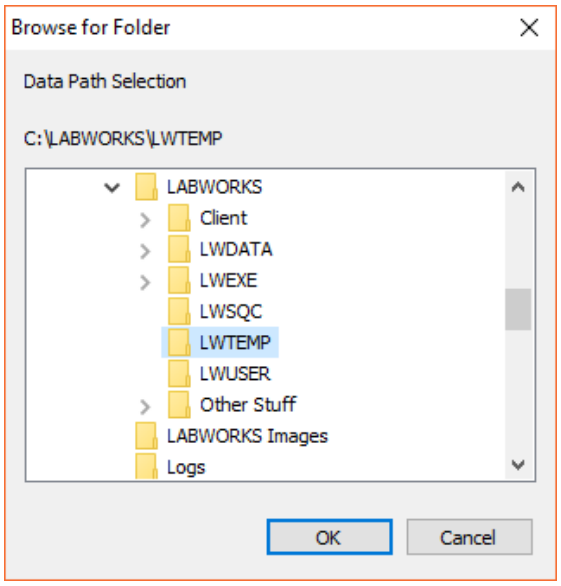
Step	User Input/Action	Expected Results
1	From the LABWORKS application folder, select <LWEXE>\SysCfg\LWSysCfg6.exe.	File selected.

Step	User Input/Action	Expected Results
2	Before the Gateway Administrator launches a message appears prompting you to enter the Gateway Administrator password.  Enter the Gateway Administrator Password. When you launch Gateway Administrator for the first time the default password is **gateway**. After you enter the password for the first time you will be prompted to change the password.  The new password must be case sensitive and can include special characters, except for the following: spaces, semicolons (;), commas (,), plus sign (+), and the percent sign (%). You must enter the new password in the Enter new password field and the Confirm new password field and then click 'OK'.	LABWORKS Gateway Administrator message appears prompting you to enter Gateway Administrator Password. Gateway Administrator Password is entered. Gateway Administrator Password is changed.
3	Once you have entered the correct password and clicked 'OK' the Gateway Administrator opens, and the Global Setting node is highlighted on the tree and has focus. When the Global Setting node is selected, the database setup panel on the right appears and consists of three tabs: a Data Path tab, a Database tab, and an Authentication tab. All tab pages and fields appear blank and are disabled when the Global Setting node is selected.	The Gateway Administrator opens. Database Setup panel appears in right hand pane.

Step	User Input/Action	Expected Results
	 If you already have databases set up in Gateway Administrator, then you can expand the Global Setting node and then click on a database listed under this node to activate the database setup panel. The Data Path tab is enabled first. You must set up the data path information on the Data Path tab to activate the Database tab. Once the Database tab is enabled you must select the type of database, setup the database connection information, and test the connection on this tab. The Authentication tab remains inactive until the necessary information is entered on the Data Path and the Database tabs. Only after the Gateway Administrator is able to establish a connection to the defined database does the Authentication tab become active. From the Authentication tab you can select how you wish to authenticate users when they log into LABWORKS.	
4	From the Gateway Administrator click File>New. A pop-up window appears prompting you to enter a new name for the database: 	LABWORKS Gateway Administrator message appears prompting you to enter a new name for the database.
5	Enter a new name for the database you wish to set up and click ‘OK’. The name you create for the database is the database name that users will see on the LABWORKS Login screen. The name can NOT contain spaces, semicolons (;), commas (,), plus sign (+), and the percent sign (%). The new database is added to the Global Setting node in the Gateway Administrator window and the database is selected by default. Information pertaining to the new database appears on the right-hand portion of the screen.	A new name is entered for the database.
6	Click  next to the Data Files Path field. The Data Path Selection window appears:	The Data Path

Step	User Input/Action	Expected Results
		Selection window appears. Data Files path is specified.
7	Click … next to the License Pathfield.  This is the path to the License file.	The Client Program Path Selection window appears. The path to the License file is specified.
8	If you have the Northwest Analytical Quality Analyst software package, a third-party software package used for SQC charting, then select an SQC Path.	If applicable, SQC Path is specified.
9	Select the Default Language from the corresponding drop-down menu. For example, if you select English as the default language, then this will be the language LABWORKS runs in unless you specify a different default language for a specific Workstation or User. If you do not want to see language choices at log in, you must click on the Users node and check the Hide language selection at runtime check box.	Default language is specified. OR, if applicable,

Step	User Input/Action	Expected Results
		'Hidden language selection at runtime' option is enabled.
10	Click … next to the User Path field. The Client User Path Selection window appears: 	The Client User Path Selection window appears.
11	Select the location for the User Path. The location of Server and User temporary files can affect application performance. Some parts of the application use temporary files to pass information between the middle tier and the user interface. Both programs execute on the client workstation. It is important that the temporary file read/write performance be as fast as possible. **The recommended option is to use the Windows defaults.** If required, specific files for these folders can be configured, and if you wish to append a unique path for each user or workstation, then check the Unique user path for each user box. When this option is checked you can then select the unique user path based on Domain ID, LABWORKS ID, or Workstation ID by clicking on the corresponding radio button. Based on your selection LABWORKS will create a folder sub folder based on the selection.  For example, if you select L:\LWUSER and Unique user path for each user DomainID, then the user temp path becomes L:\LWUSER\<DOMAINID>	The location for the User Path is selected.

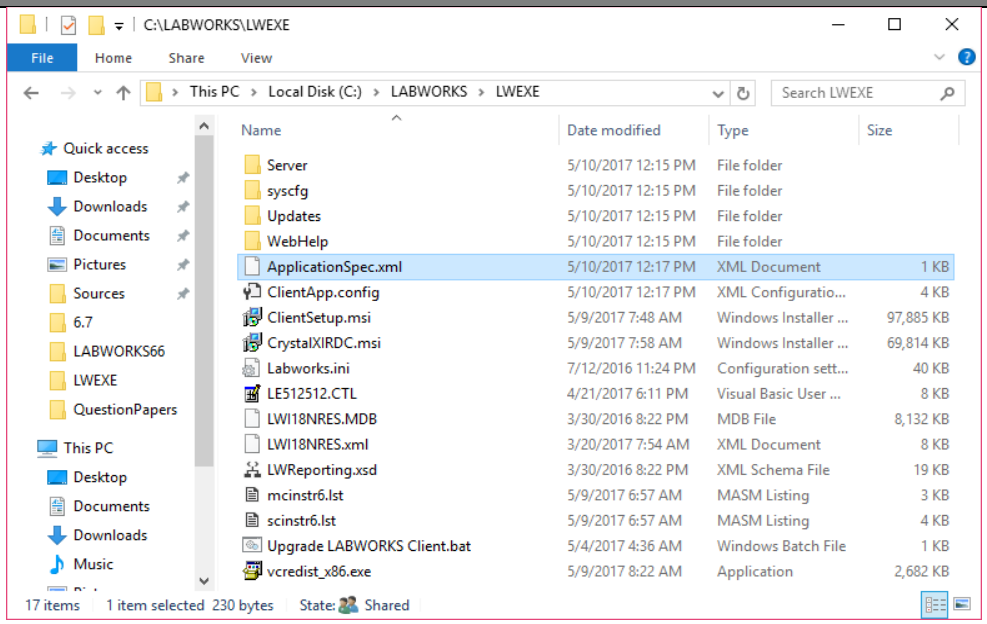
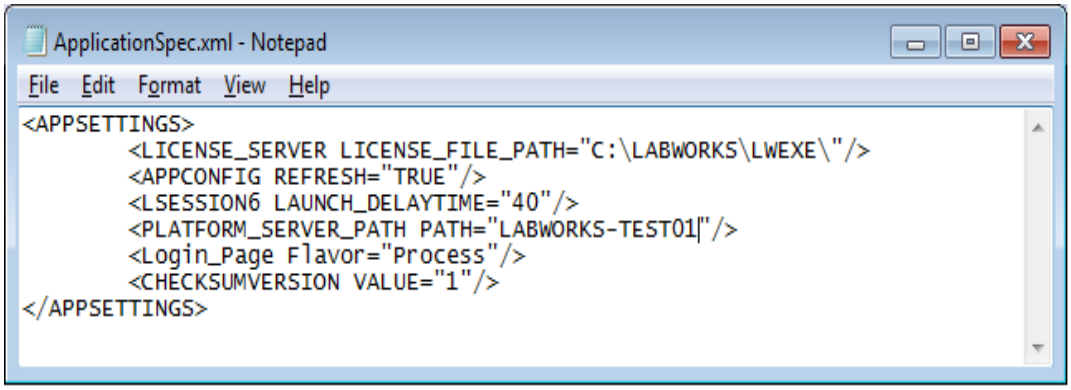
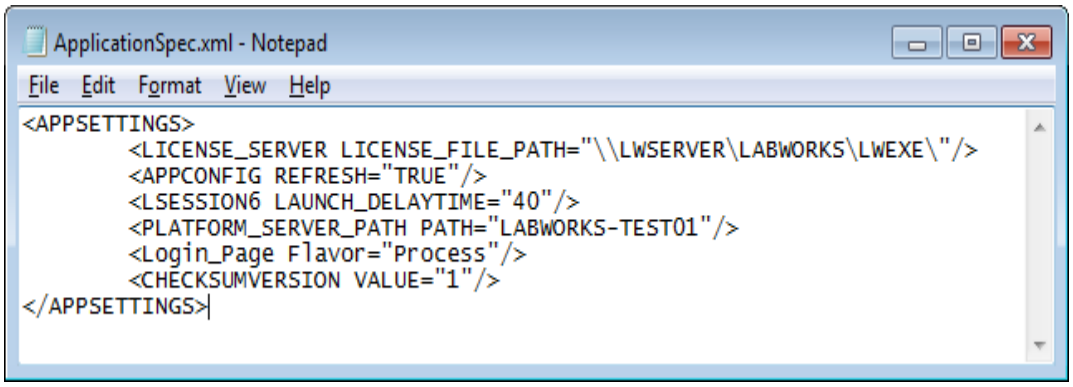
Step	User Input/Action	Expected Results
12	Click ... next to the Server Temp Path field. The Server Temp Path Selection window appears:  Select an existing path that you can write and delete temporary files to and from. This path must exist, and you must have rights to read, write, create, and delete files in this folder. (Many people simply use their LABWORKS user path). It is important that the temporary file read/write performance be as fast as possible.	The Server Temp Path Selection window appears. The Server Temp path is specified.

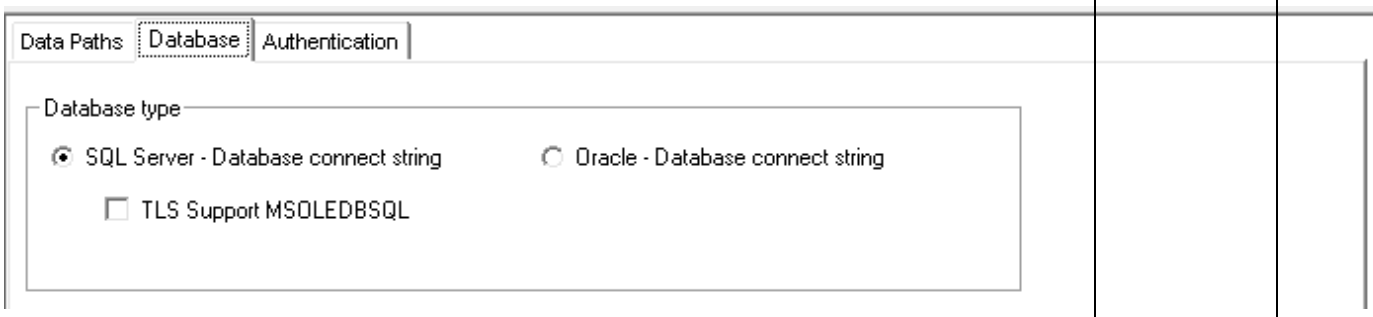
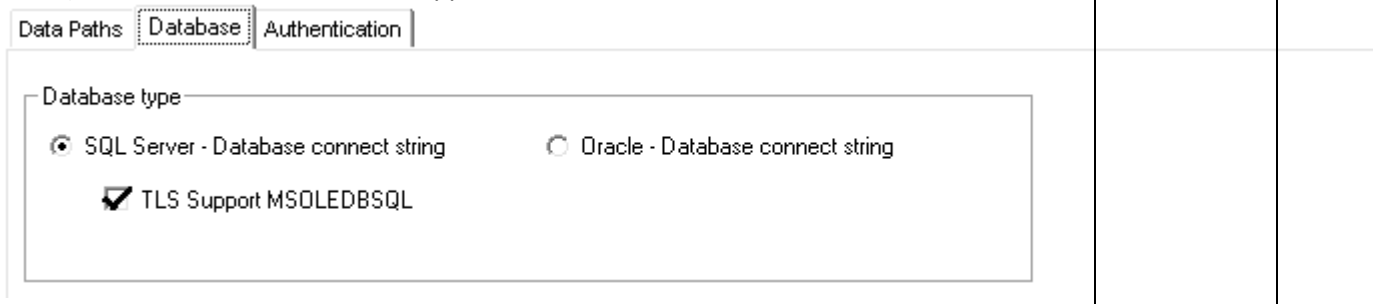
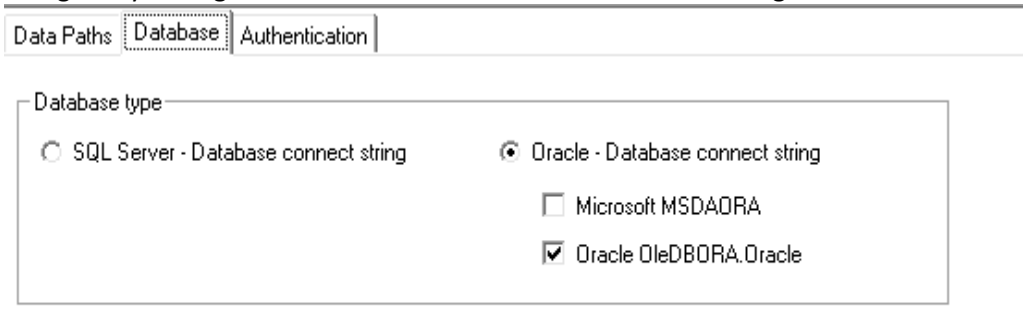
Step 4: Configure ApplicationSpec.XML, ClientApp.config, LWServiceConfig.xml

The Server installation creates the files 'ApplicationSpec.xml' and 'ClientApp.config'. The files are used to configure the path to the license file and services from the clients.

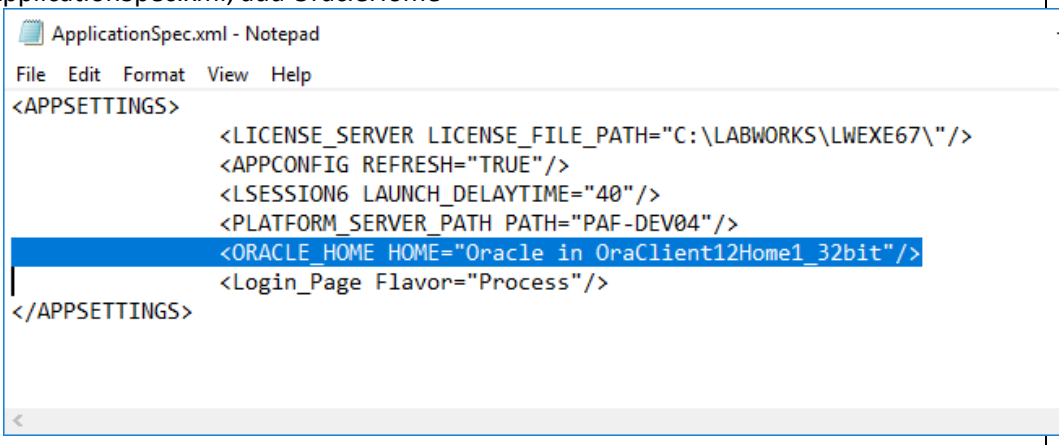
During the upcoming client installation step, this file is copied to the client workstation. By configuring it before doing the client installation, the client installation configuration is already correctly configured.

Step	User Input/Action	Expected Results
1	Open the file 'ApplicationSpec.xml' using notepad.	The ApplicationSpec.xml is opened.

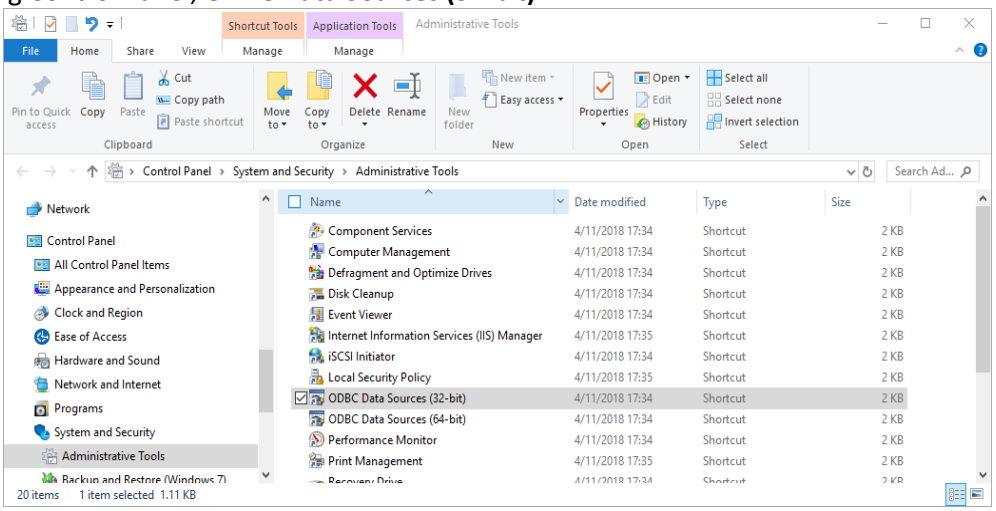
Step	User Input/Action	Expected Results
		
2	Enter the path the clients will use to access the license file and enter machine name of the server (e.g. **LABWORKS-TEST01** as shown in example below). In this example, the server shared the folder c:\labworks, and the client mapped the L: drive to that share. The path can be a mapped drive letter  OR as an UNC path. 	Path is entered.

Step	User Input/Action	Expected Results
	For using SQL Server database with LABWORKS: Microsoft SQLOLEDB is the default connect string for Database Type SQL Server  **Note : For TLS 1.2 Support :** 3) In LWSYSCFG, check "TLS Support MSOLEDBSQL"  4) Install following drivers on the workstation : iii) MSOLEDBSQL (Used by .net applications) a. https://www.microsoft.com/en-us/download/details.aspx?id=56730 iv) ODBC FOR SQL 2017 (Used by legacy applications) (Install based on OS bitness) a. https://www.microsoft.com/en-us/download/details.aspx?id=56567 **For using Oracle OLEDB Driver with LABWORKS:** Prerequisite : Oracle Client 32 Bit, Must include OLEDB Driver Configuration Using LWSysconfig select Oracle OleDBORA.Oracle Connect String 	

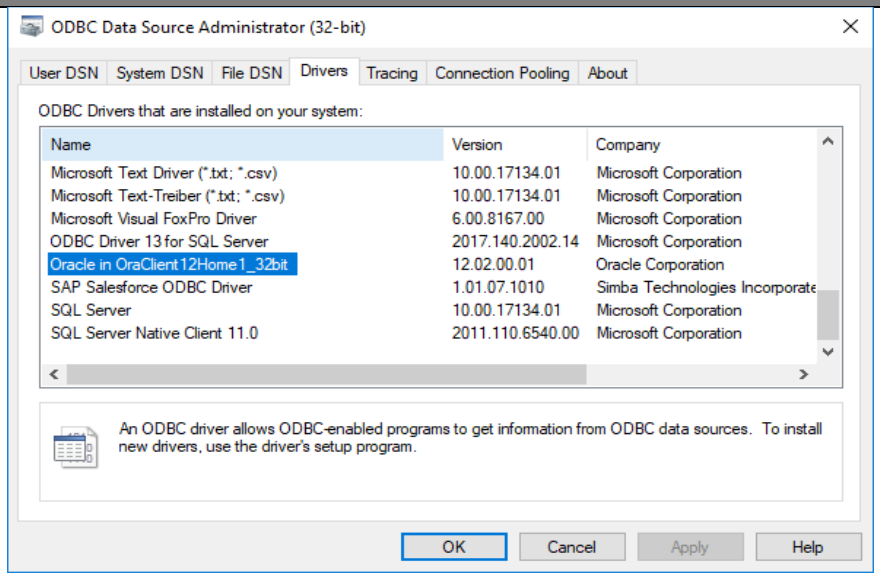
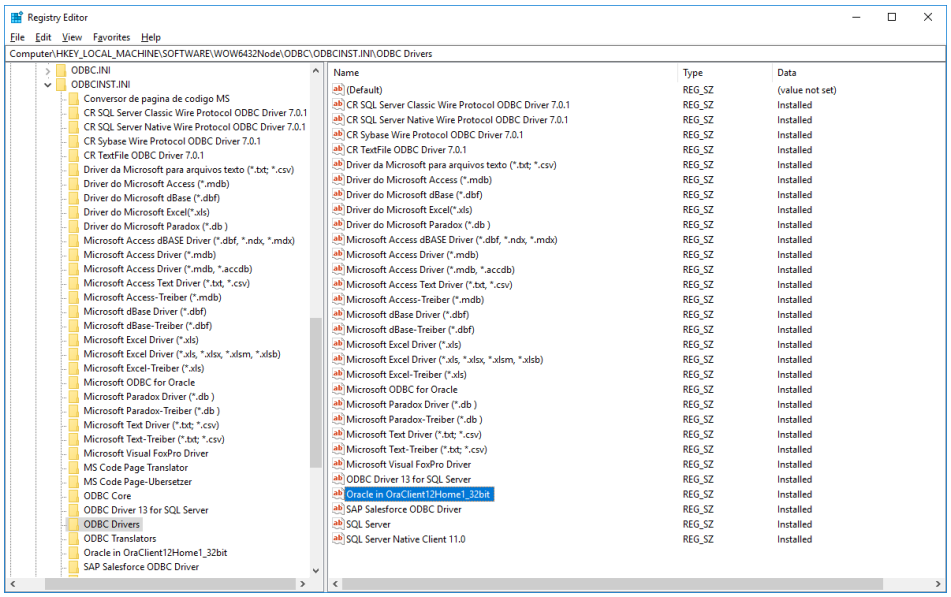
Step	User Input/Action	Expected Results
	In ApplicationSpec.xml, add OracleHome	

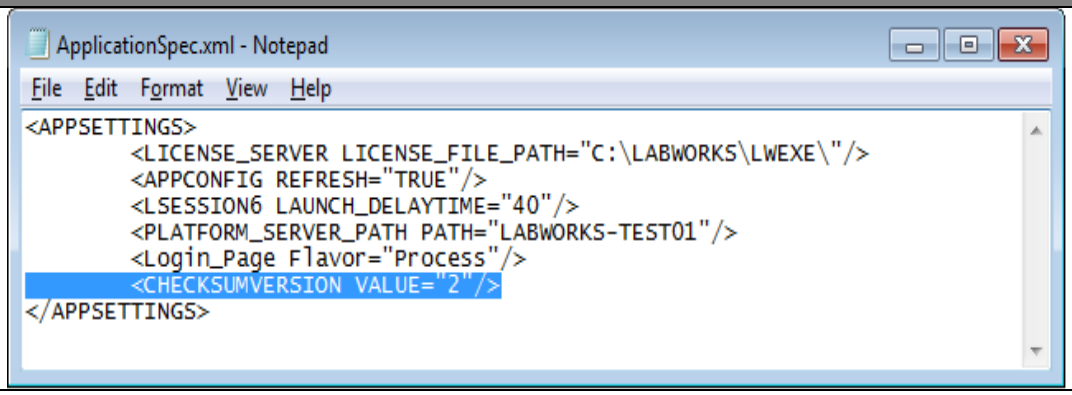
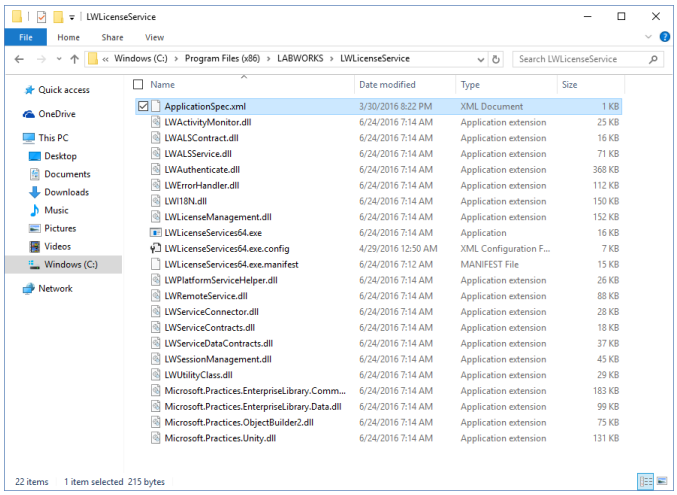


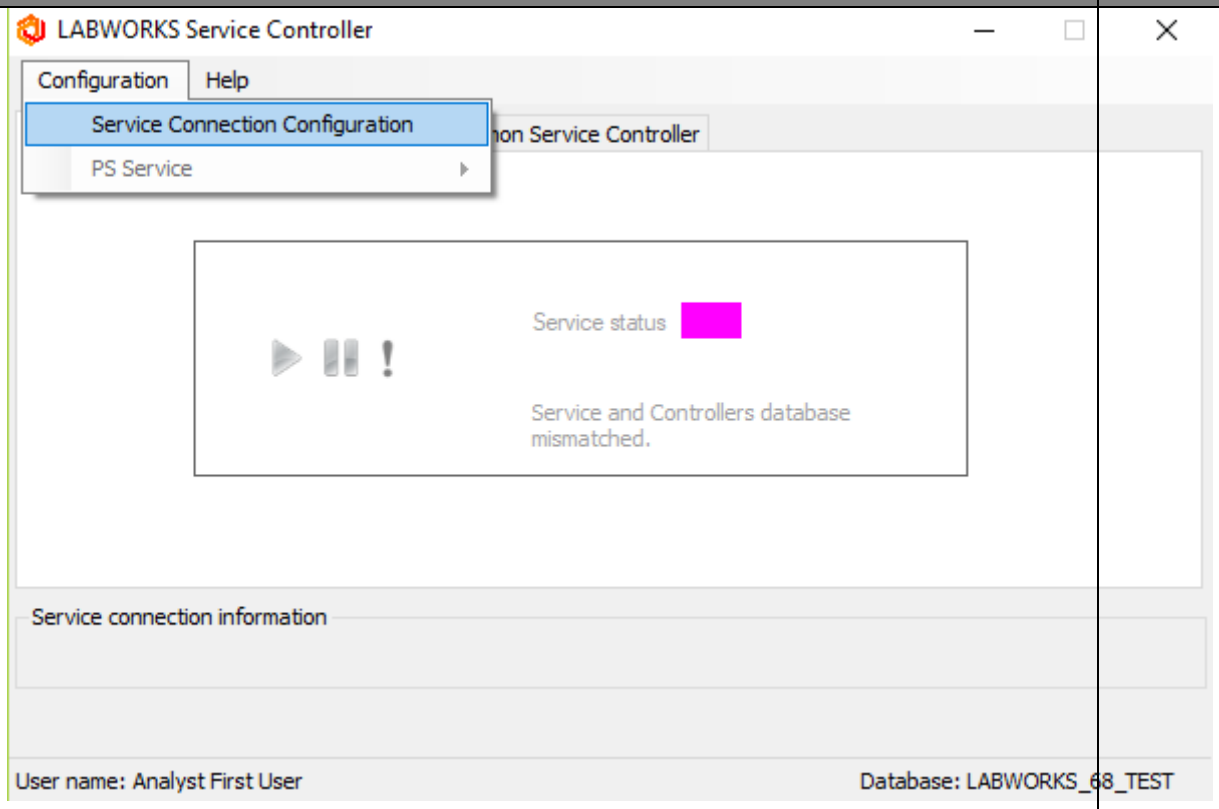
Where the Oracle Home Name is:
Using Control Panel, **ODBC Data Sources (32-bit)**



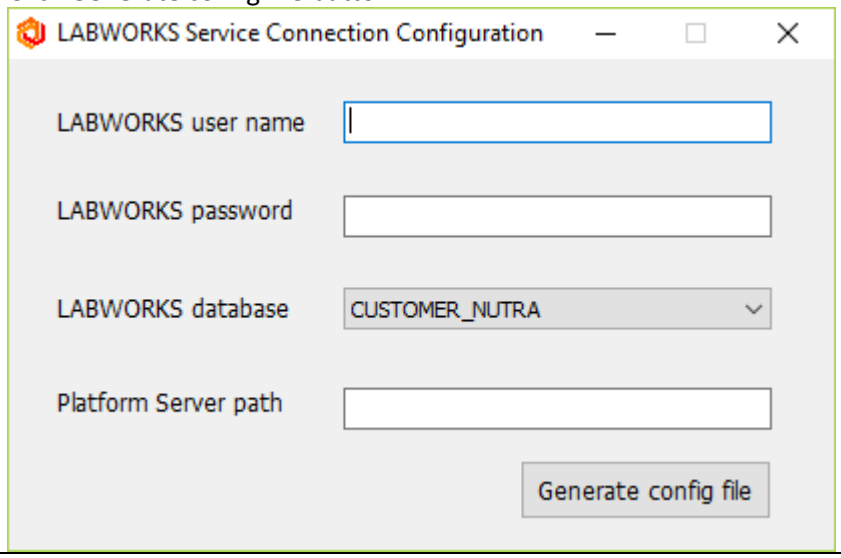
The Entry (highlighted below) is the Driver Name.

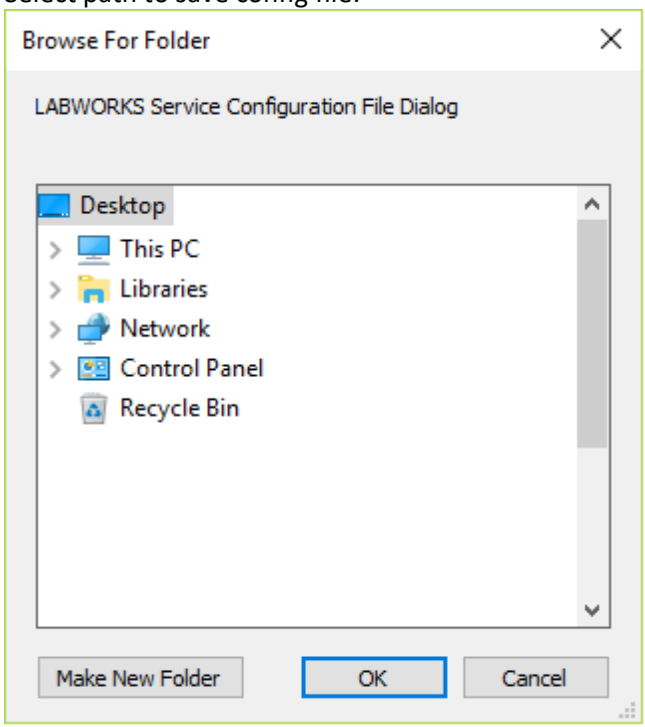
Step	User Input/Action	Expected Results
	 Registry Entry: Computer\HKEY_LOCAL_MACHINE\SOFTWARE**WOW6432Node**\ODBC\ODBCINST.INI\ODBC Drivers  **For FIPS Compliant Installation (supported in LABWORKS version 6.10 onwards):** In ApplicationSpec.xml, add CHECKSUMVERION CHECKSUMVERSION VALUE="1" for Non-FIPS compliant installation.(default value) CHECKSUMVERSION VALUE="2" for FIPS compliant installation.	

Step	User Input/Action	Expected Results
		
3	Also, open 'ApplicationSpec.xml'located at \Program Files (x86)\Labworks\LWLicenseServices (where the LWLicense Service is installed) and perform the same changes as above.	Changes applied.
4	Also, open 'ApplicationSpec.xml'located at \Program Files (x86)\Labworks\LWDataServices (where the LWDataServices is installed) and perform the same changes as above. 	Changes applied.
5	Copy 'ClientApp.config'from<LWEXE> to \Program Files (x86)\Labworks\LWDataServices (where the LWDataServices is installed) and perform the same changes as above.	File Copied
6	Configure LWServiceConfig.xml: 1. Launch 'LWServiceControllers.exe' application located at '\LABWORKS\LWEXE\Server '. 2. Go to menu Configuration -> Service Connection Configuration:	

Step	User Input/Action	Expected Results
		

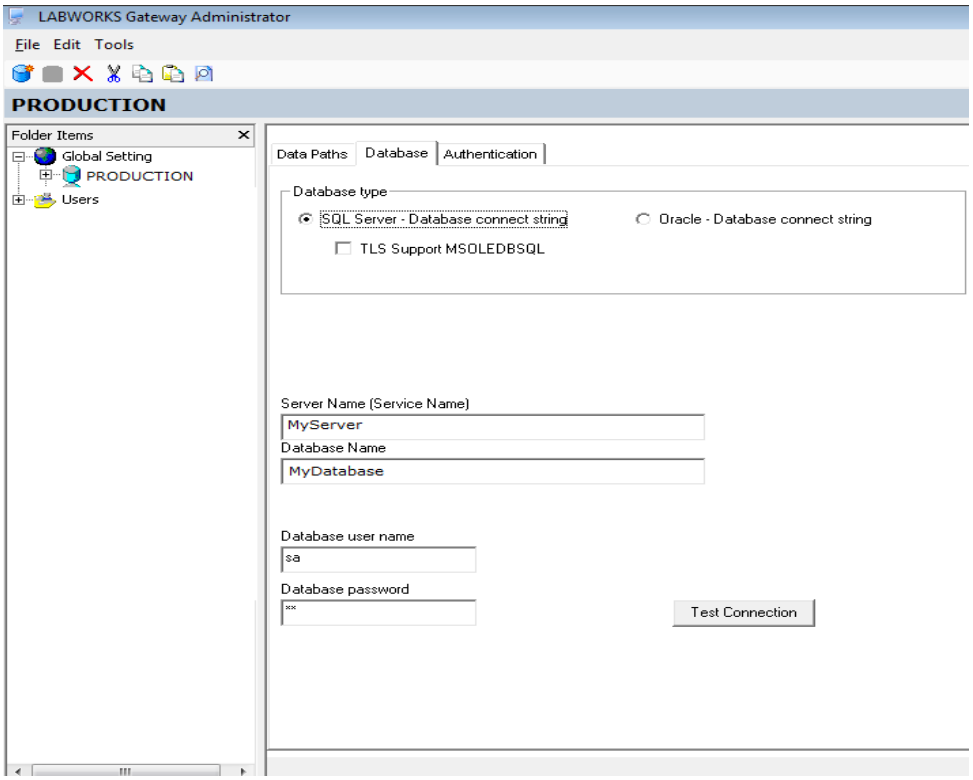
3. On Service Connection Configuration screen, enter valid LABWORKS username, password.
   Select desired database for connection and enter workstation name where platform service is running.
   Click Generate config file button.



Step	User Input/Action	Expected Results
	4. Select path to save config file:  5. Copy 'LWServiceConfig.xml' from above selected location to \Program Files (x86)\Labworks\LWDataServices (where the LWDataService is installed) 6. Restart LWDataServices	

Step 5: Configure the Database

Once you have set up the Data Path information, the Database tab activates. On the Database tab page, you configure the database by defining the type of database, type of connection to database, the server name, the database name, the user name, and the password.



To configure the database, enter the Data Path information, and click on the Database tab.

For Oracle databases:

- Enter the name of the server where the database is located in the Server name (Service Name) field.
- Enter the Database user name and Database password. If needed, ask your DBA for your database username and password.
- Click the 'Test Connection' button.

For SQL Server databases:

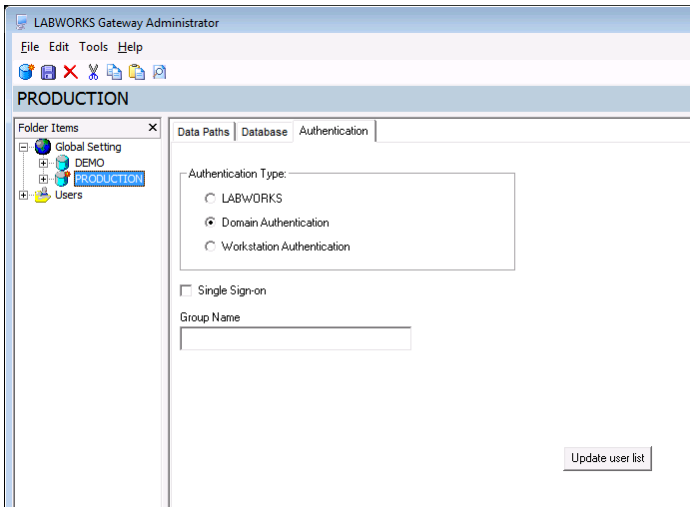
- Enter the name of the server where the database is located in the Server name (Service Name) field.
- Enter the name used to identify the LABWORKS database in the Database Name field.
- Enter the Database user name and Database password.
- Click the 'Test Connection' button.

The Test Connection function uses the database information and the data path information (if necessary) to establish a connection to the database. If the connection is successful, a message appears stating that the connection was a success. If the connection is not successful, a message appears that provides a description of why the connection failed.

Step 6: Configure Database Authentication

You can configure LABWORKS to validate a user's ID and Password by using one of the following methods:

- Authenticate against LABWORKS using the standard LABWORKS logon
- Authenticate against a domain with re-entry of domain user name and password to enter LABWORKS
- Authenticate against a domain with no password required to enter LABWORKS.



Standard LABWORKS Authentication

To authenticate against LABWORKS using the standard LABWORKS logon, skip the following sections and simply click the LABWORKS radio button on the Authentication tab of the Gateway Administrator.

When you select LABWORKS for the Authentication Type, it associates password with the selected database. When a user logs into a LABWORKS database for the first time, the Users node of the Gateway Administrator is populated with that users Domain ID. Once a User Domain ID is listed in the Users node, the administrator can select that user from the Users node and customize which databases are visible to the user as well as enable or disable the user from changing the language used by LABWORKS.

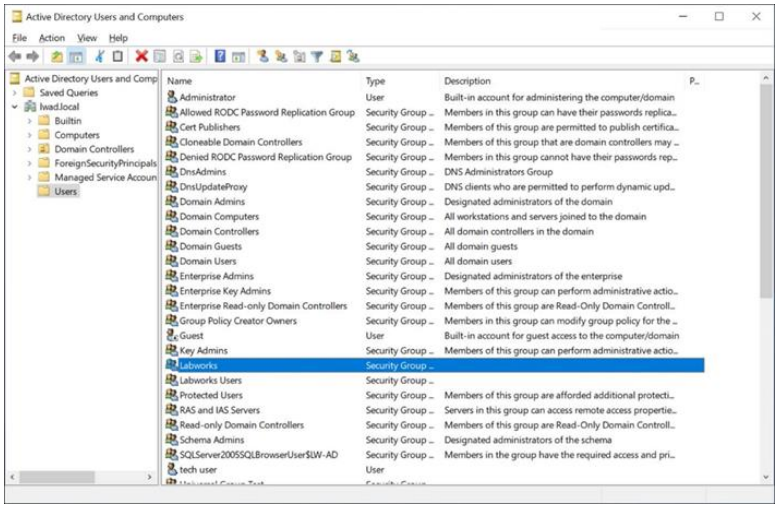
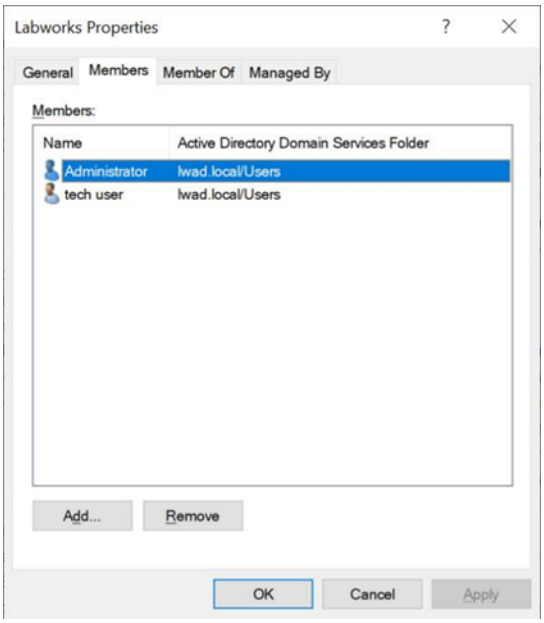
Domain Authentication

To use Domain Authentication, you must perform the following Windows Administrative steps:

- Create a LABWORKS group on the domain
- Assign users to the LABWORKS group
- Define new authentication options in the Gateway Administrator
- Import users from domain into the LABWORKS application's list of users

The following section shows you how to perform the steps listed above.

Step	User Input/Action	Expected Results
1	Create a group called LABWORKS on the Domain.	A group called LABWORKS is created.
2	Assign the users whom you wish to have access to the LABWORKS application to the LABWORKS group you just created. The users you assign to the LABWORKS group are the users who will be able to log into LABWORKS. For example, below is a screen shot of an Active Directory Group on the Server.	Users are assigned to the LABWORKS group.

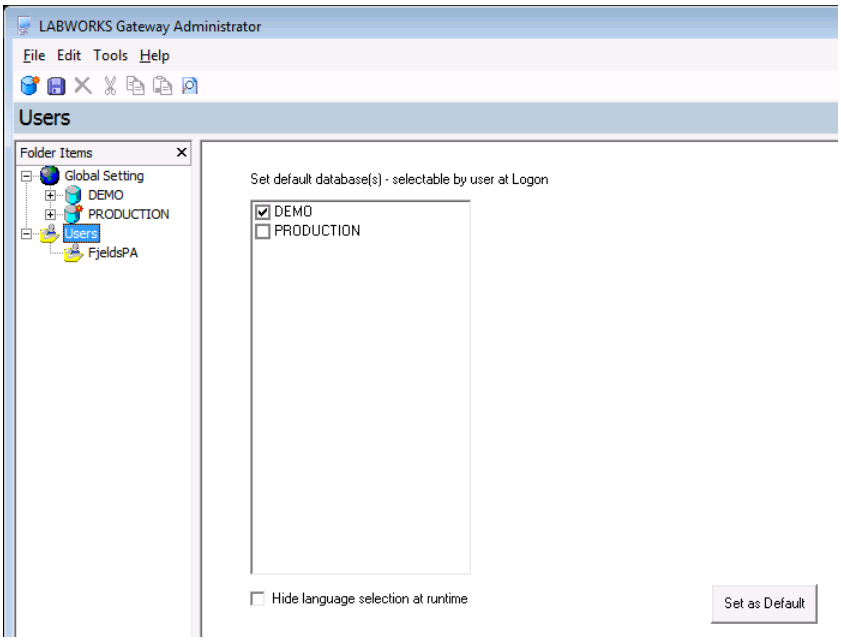
Step	User Input/Action	Expected Results
	For example, below is a screen shot of an Active Directory Group on the Server.  The following users belong to the LABWORKS group:  From the Authentication tab of the Gateway Administrator click on the Domain Authentication radio button to cause LABWORKS to authenticate using the LABWORKS group ID and password on the computer domain.	

Step	User Input/Action	Expected Results
		Domain Authentication radio button selected.
3	Check the Single Sign-on check box to have the LABWORKS Login screen show the user id and password automatically filled in with the current Windows User ID and Password at login. The screen below shows the LABWORKS User Login screen if Single Sign-On is enabled: Even when Single Sign-On is enabled, the user must re-enter his/her password when the FORCECHECKIN or SYSTEMTIMEOUT System Manager keys prompt for user password verification. Moreover, if only one database is configured and single sign on is enabled, the user logon dialog is not displayed. **-OR-** Uncheck the Single Sign-on check box to have the user enter his/her user name and password at logon.	Single Sign-on check box enabled or disabled, depending on environment.
4	Click Update User List to synchronize the group defined in the Group Name field with the LABWORKS user list. The new users' Domain IDs are added to the User Setting node of the Gateway Administrator for the database you just configured. In addition, these users inherit the global default databases available for viewing. The global default databases available for viewing can be set by clicking on the Users node of the Gateway Administrator and then by checking the databases you wish to have visible to all users and then clicking on the Set as global default button. If there are previously defined LABWORKS users that are not assigned to the group defined in Gateway Administrator, then the following screen appears and gives you the option to add the user to the group defined in the Gateway Administrator or to delete the user from the list. • Even if domain authentication is used, the LABWORKS user list is still required for privilege management. • User's passwords are now encrypted, so you cannot change passwords from the System Manager. • If users wish to change their passwords, they must do so through their Operating System's password utility.	The new users' Domain IDs are added to the User Setting node of the Gateway Administrator for the database you just configured.

Step 7: Configure Global Database Availability

	Note: *Client Install Prerequisite: Microsoft Visual C++ 2005 redistributable (vcredist_x86.exe) for following versions:* This file can be found in the \LWEXE folder

When the Users node is selected, the right-hand pane of the Gateway Administrator displays the global default databases that can be seen by all users as well as a check box that enables or disables language selection at runtime for all users of LABWORKS.



Clicking on the Users node will allow you to select the databases that can be seen for all users. By selecting one or more of these databases, you are configuring the Gateway Administrator to add everyone to the selected databases' User Setting node for all selected databases. In addition, all users would see only those checked databases on the LABWORKS login window. The Hide language selection at runtime check box can also be selected to hide available languages option.

The Users node also lists all the Users that have logged into a LABWORKS database. All the User Domain IDs that have logged into LABWORKS are listed here so that the system manager can set properties for users that are different than the global settings. Therefore, when a specific User Domain ID is selected on the tree, the administrator can change the databases that can be seen by the selected user. By selecting one or many of the databases, the system manager is telling Gateway Administrator to list this individual on the User Setting node for just the checked databases. In addition, the user would only see those checked databases on the LABWORKS Login window.

To configure global default database availability:

To allow all users on the system databases, check the databases you wish to set as the default databases available to all users at login and click the Set as Default button. When databases are checked the Gateway, Administrator lists all the users under the User Setting node for each checked database in Gateway Administrator.

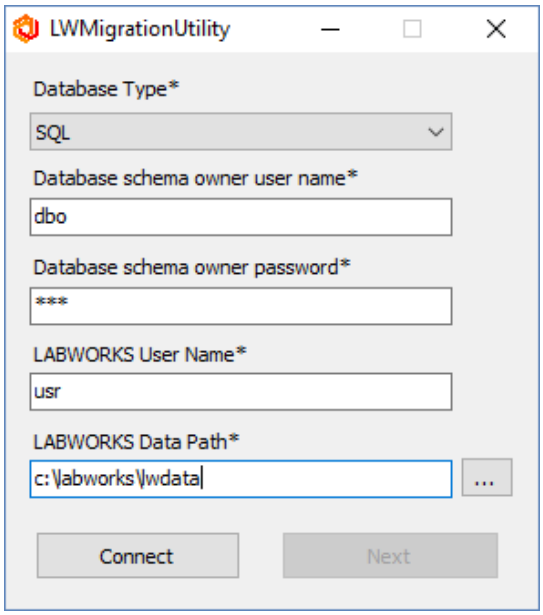
The screen shows that the database named DEMO is available for viewing by all users, while no users can see the database named PRODUCTION, because the only database selected on the Users node is DEMO, and there are no exceptions set up for individual users who are listed under the Users node.

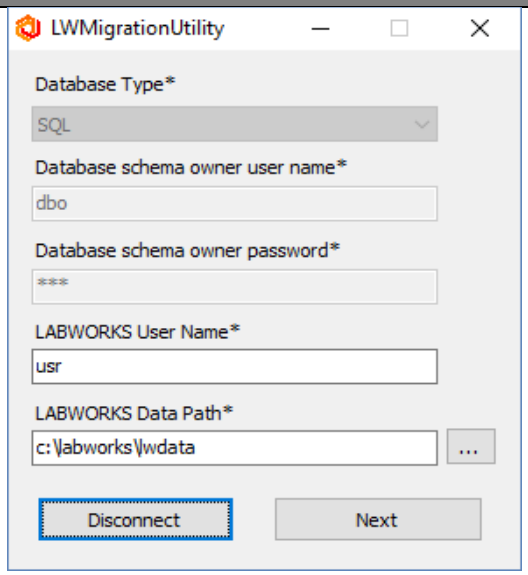
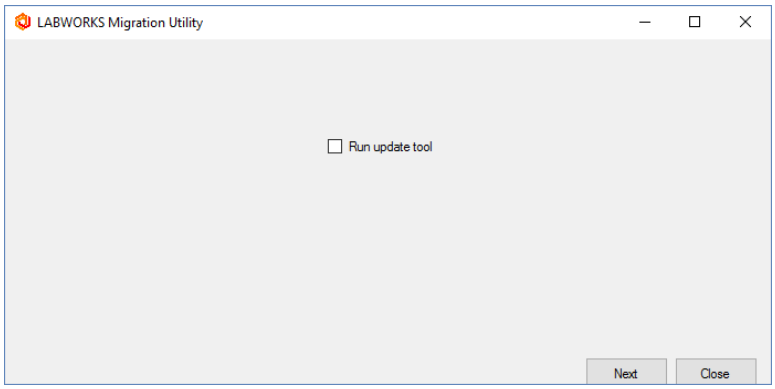
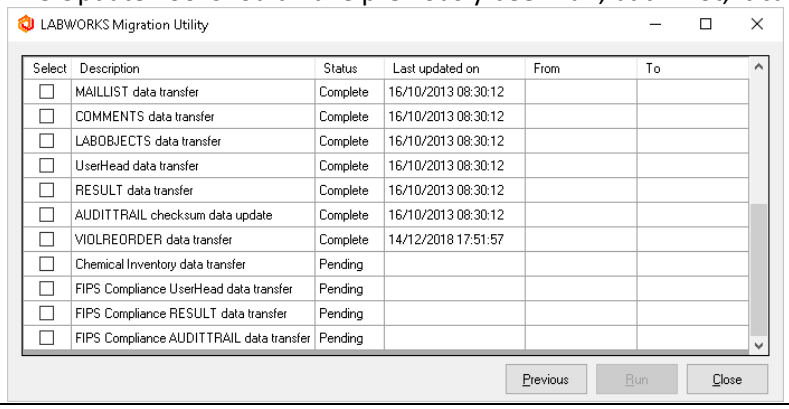
You are now ready to run the ClientSetup.msi program on each workstation that will use LABWORKS. After you run the Client Installation on each workstation you can access the Gateway Administrator tool again to customize individual user and workstation settings.

Step 8: Running the LWMigrationUtility

> ***Note***: *If upgrading from 6.4 or 6.5 the LWMigrationUtility is only requried for ViolationReorder or FIPS Encryption Migration. Re-migrating data that has been migrated can overwrite data that has been updated after a migration.*

The LWMigrationUtility requires a valid LABWORKS login to the database, thus requiring Gateway Administrator be configured and the LWLicenseServices be running.

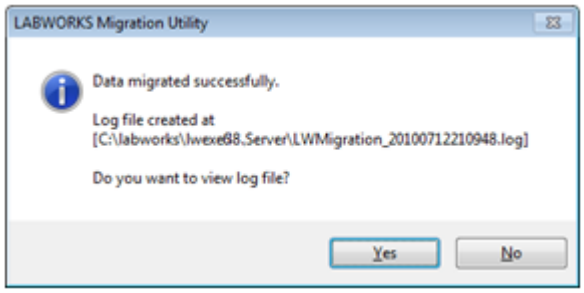
Step	User Input/Action	Expected Results
1	When LWMigrationUtility.exe starts it prompts for information about the database and users.  Database schema owner user name: When new tables are created using the update tool, tables will be added to this schema Database schema owner password: The database user password.	LWMigration Utility prompt is displayed.
2	Then, connect using the same information/parameters as when running the UpdateTool in earlier steps. After connection, the 'Next' button will be available.	Connection to the database is established.

Step	User Input/Action	Expected Results
		
3	Then the program gives the option of running the Update Tool.  The Update Tool should have previously been run, but if not, it can be run at this time. 	The option to run the Update Tool is presented. If applicable, the Update Tool is run.

The LABWORKS Migration Utility provides a method for migrating each type of data independently. And for data conversions that are sample related and may take long periods of time to process, the sample range can be defined. (Sample Specs, Sample Special Info, RESULT data transfer, FIPS Compliance RESULT data transfer). Date range can be defined for AUDITTRAIL checksum data transfer, FIPS Compliance AUDITTRAIL data transfer.

For each process in the migration the program stores the date the conversion was last executed. When doing an upgrade to LABWORKS 7.2, the programs will store their data in the new formats described earlier. Working with LABWORKS product specialist and support specialist, best practices for the migration process can be worked out for your configuration and change management processes.

When the Migration Utility is finished it provides a log file with a count of the number of records that were migrated.



The log file can be helpful if there are errors in migrating data to the new format.

Step 9: Running NGMigrationTool

NGMigrationTool is a common tool for various migrations. It needs to be executed when updating a version. Follow the instruction below for more details about each migration task.

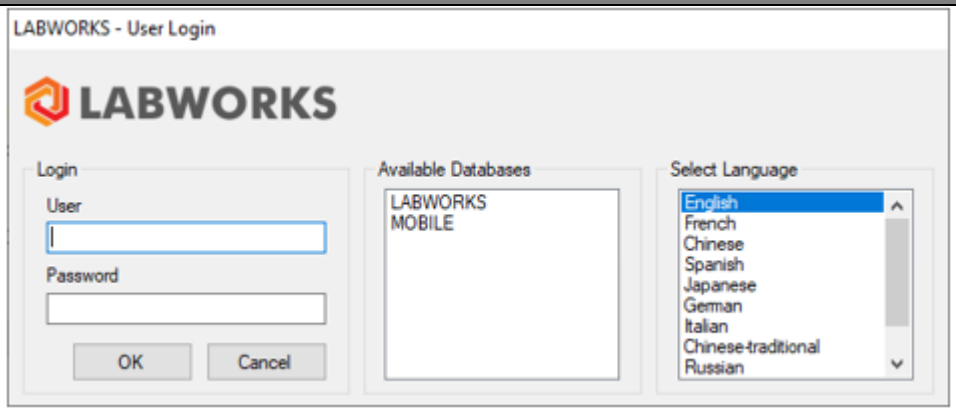
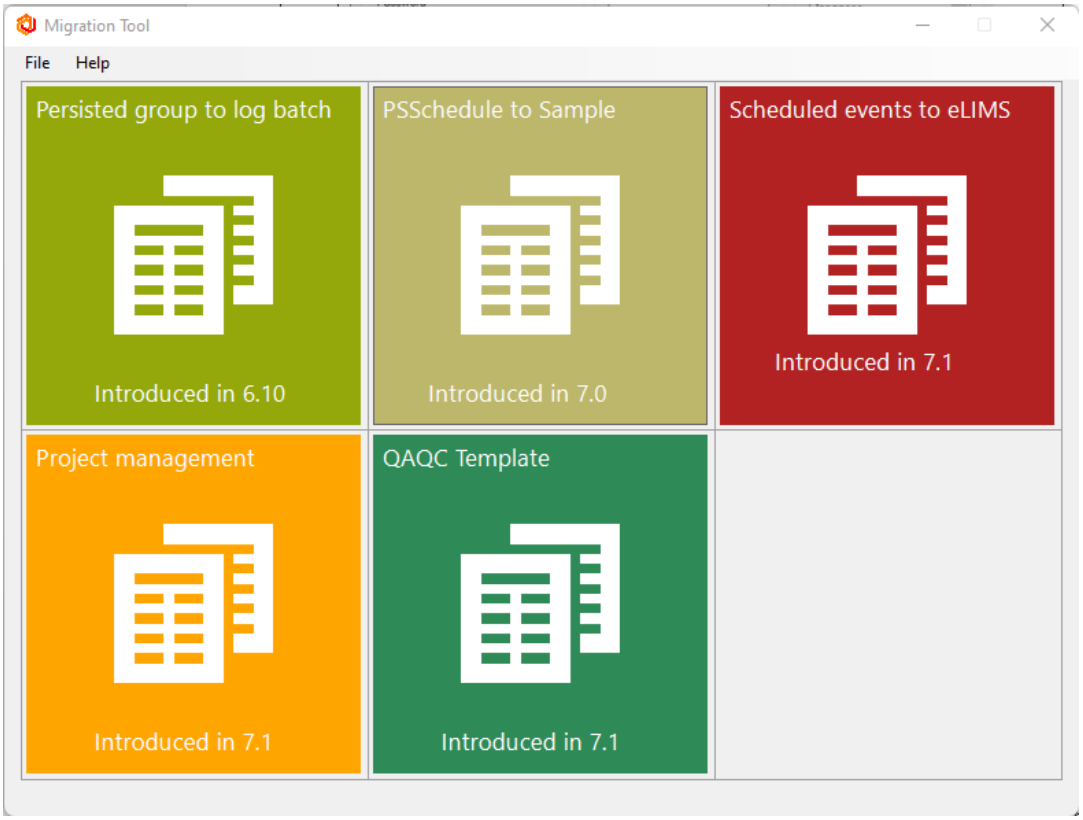
Migration: Persisted group to Log Batch

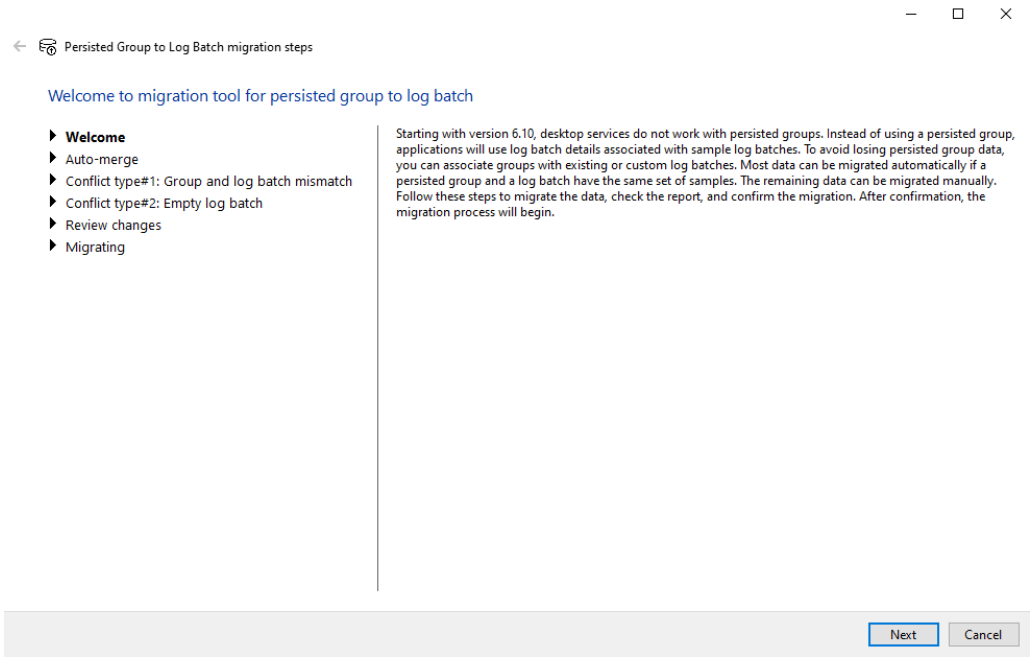
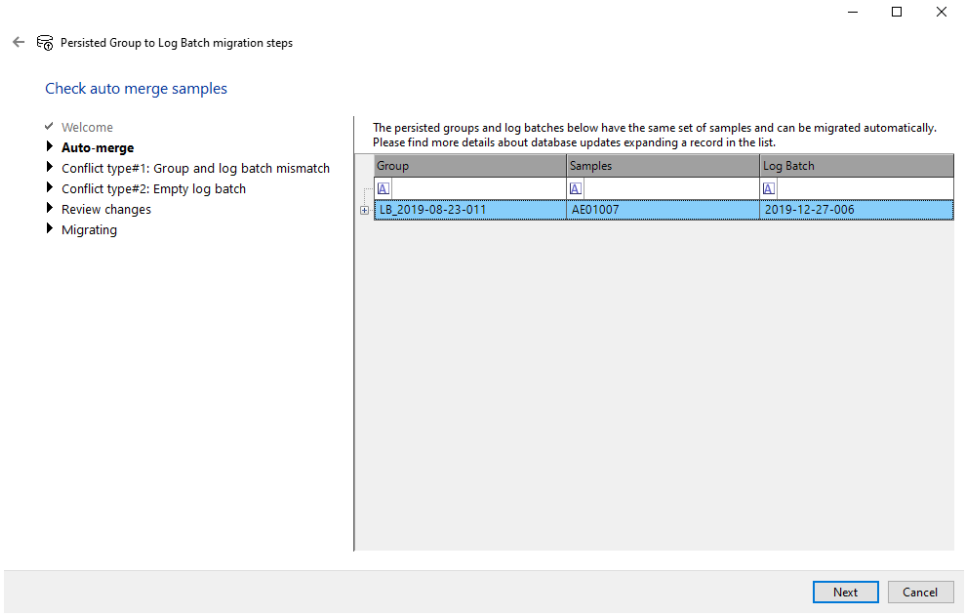
This kind of migration is required to update from 6.9 or earlier to 6.10 or later.

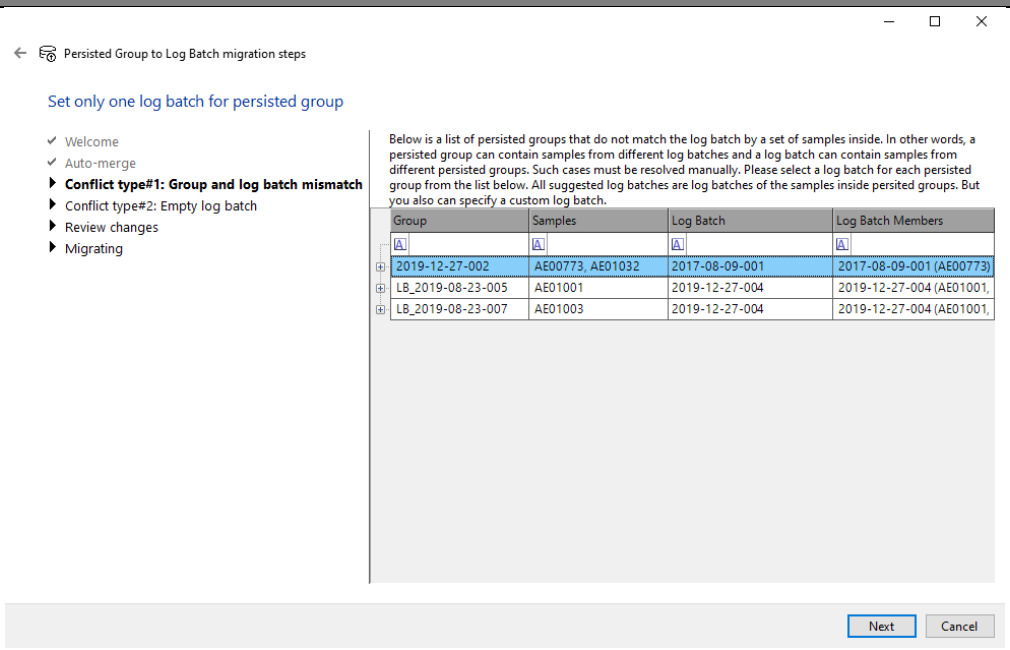
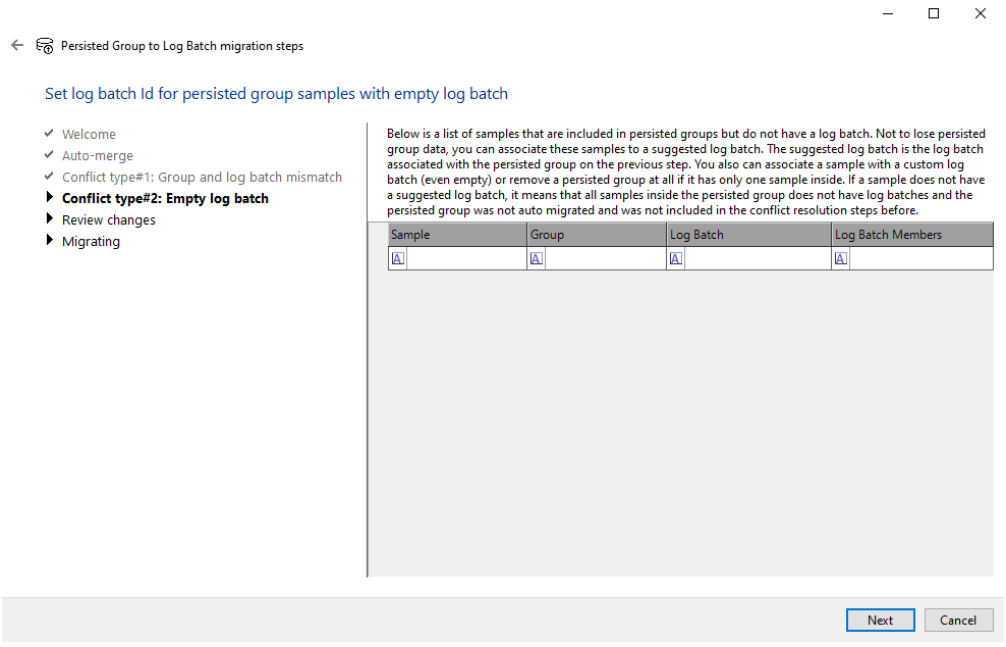
Starting with 6.10, Desktop services do not work with persisted groups. Instead of using persisted groups, applications use log batch details associated with sample log batches. To avoid losing persisted group data, it can be associated with existing or new log batches using NGMigrationTool.

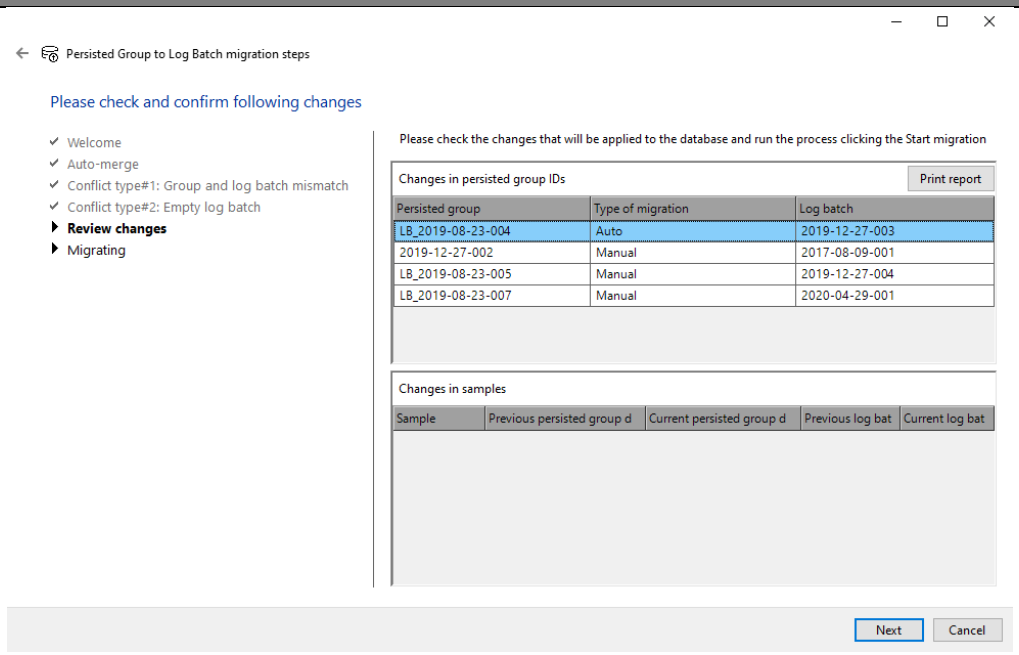
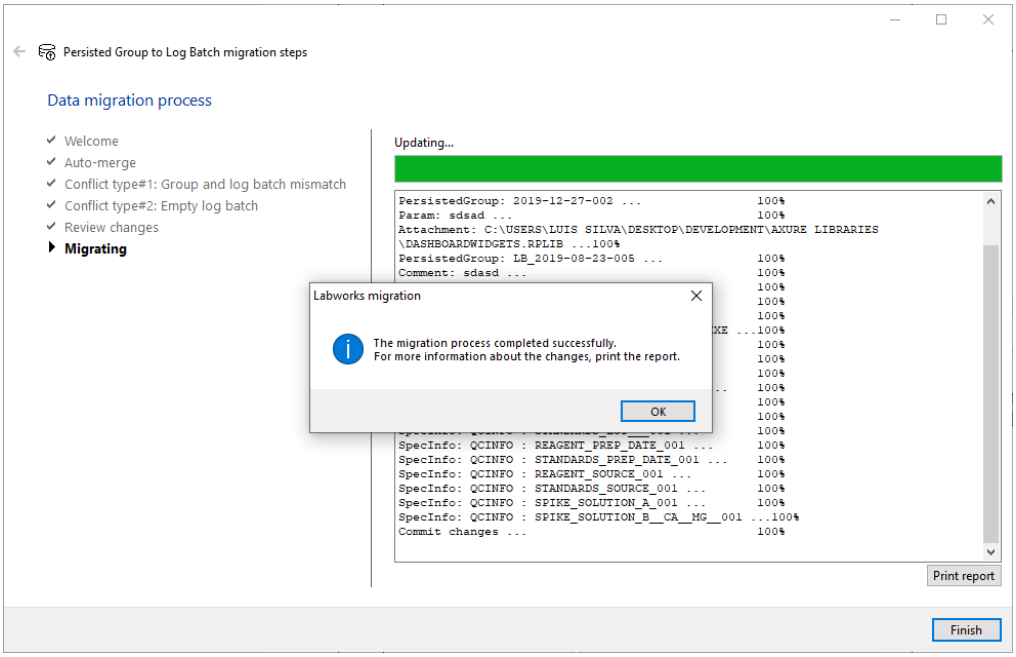
Note: *NGMigrationTool can be run repeatedly to change the migration. It is available because the old relationships between persisted groups and samples are not removed from the database after the migration.*

Step	User Input/Action	Expected Results
1	Run NGMigrationTool from LABWORKS\LWEXE\Server\NGMigrationTool.exe	Authentication window is open.
2	Select a database. Provide your login and password to access the database.	NGMigration Tool window is open.

Step	User Input/Action	Expected Results
		
3	Select “Persisted group to log batch” tile. 	The migration wizard runs.
4	Read Welcome screen information. Click Next.	Auto-merge screen is open.

Step	User Input/Action	Expected Results
		
5	Check Auto-merge information and click Next to continue. 	Manual merge screen is open.
6	Resolve conflicts following the instructions in the tool. Click Next to continue.	Report screen is open.

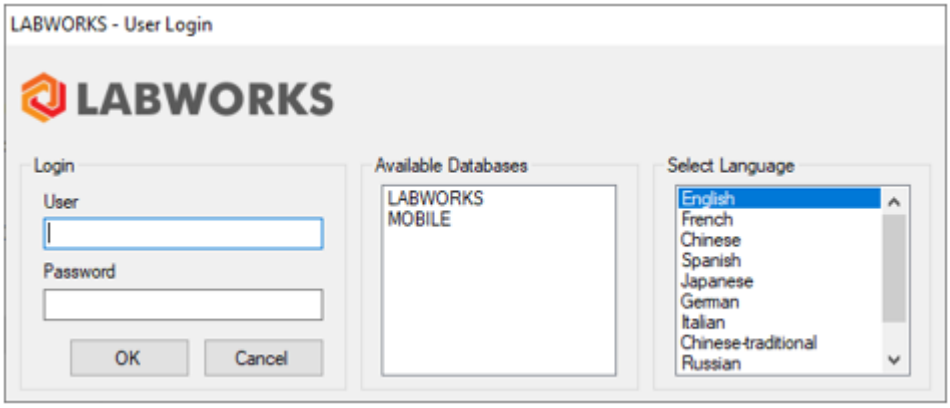
Step	User Input/Action	Expected Results
	 	
7	After configuring the migration, NGMigrationTool provides a report to check changes before the migration. Print report if it is needed. Check changes and click Next to start the migration.	Progress screen is open.

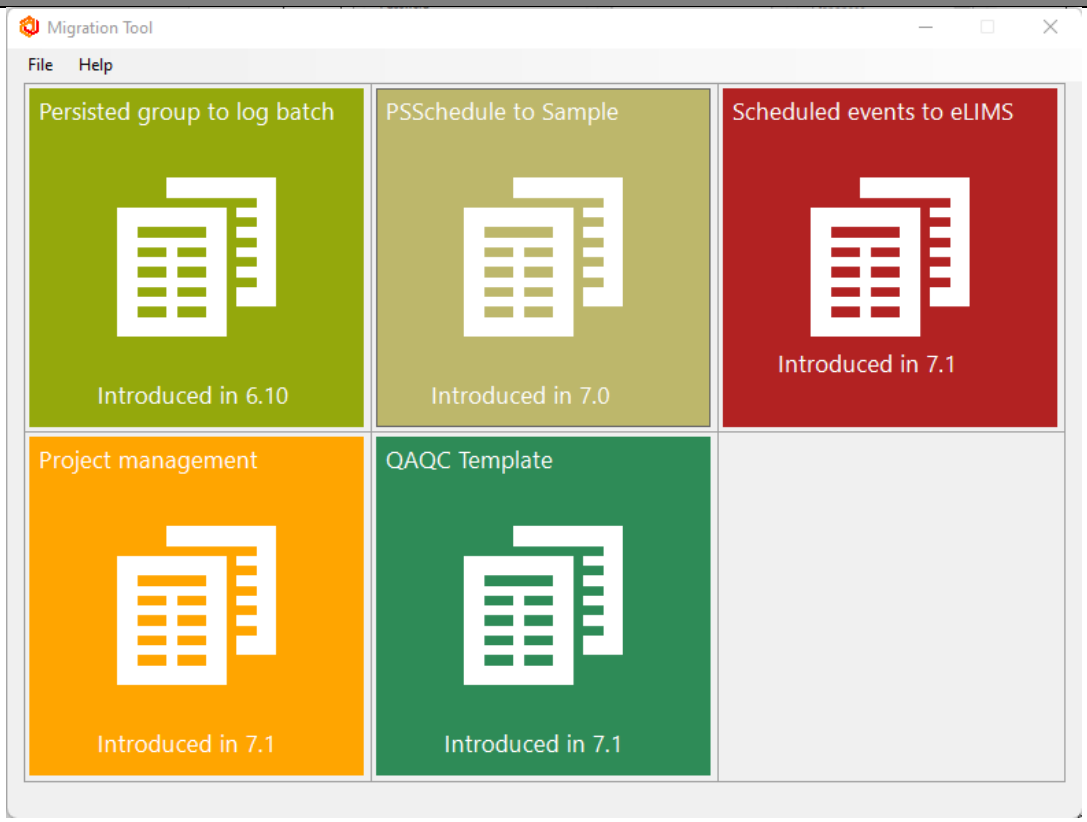
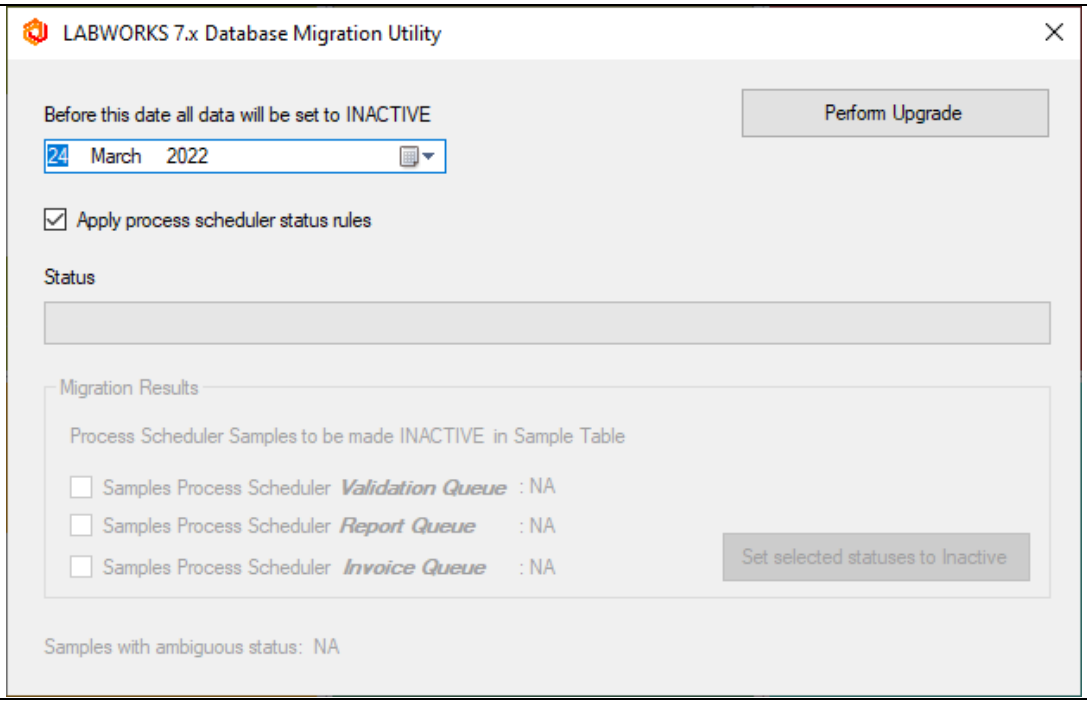
Step	User Input/Action	Expected Results
		
8	After the migration completes, the information dialog will be shown. Print report if it is needed. Click Finish to finish the migration. 	The wizard will be closed.

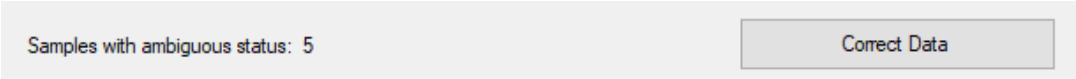
Migration: PsSchedule to Sample

This kind of migration is required to update from 6.10 or earlier to 7.0 or later.

Starting with 7.0, scheduled samples DB structure has been changed. Desktop services do not work with PSSchedule table. Instead of using PSSchedule table, applications will use Sample table. To avoid losing scheduled samples data, it is necessary to migrate it in Sample table using NGMigrationTool.

Step	User Input/Action	Expected Results
1	Run NGMigrationTool from LABWORKS\LWEXE\Server\NGMigrationTool.exe	Authentication window is open.
2	Select a database. Provide your login and password to access the database. 	NGMigration Tool window is open.
3	Select “PSSchedule to Sample” tile.	The migration wizard runs.

Step	User Input/Action	Expected Results
		
4		
5	7.x Database Migration Utility is launched. On selecting an date and clicking on button “Perform Upgrade”, will update all the samples prior to selected date to INACTIVE. In Migration Results section, count of Process Scheduler samples which have statuses like Validation, Report and Invoice queue will be displayed.	

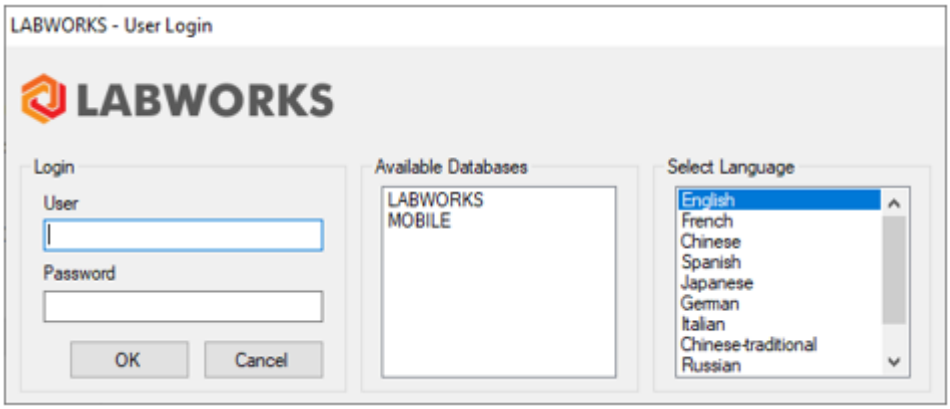
Step	User Input/Action	Expected Results
	Select the required checkboxes corresponding to Validation, Report and Invoice queue status and click the button “Set selected statuses to Inactive”, to set the status to INACTIVE for the corresponding samples. Count of samples with current state as NULL would be displayed as “Samples with ambiguous status”. If count of samples with ambiguous status is greater than 0 then an button with text “Correct Data” will be visible at extreme right bottom of the 7.x Database Migration Utility window.  Clicking the button “Correct Data” will fix the sample status discrepancy.	

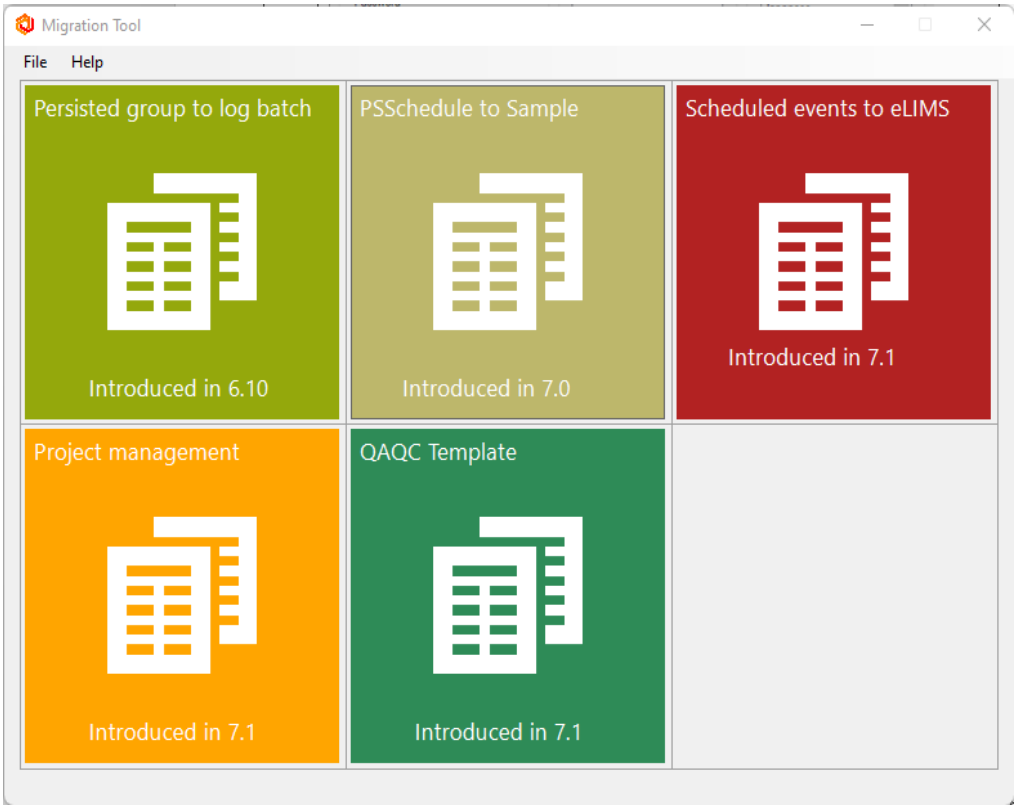
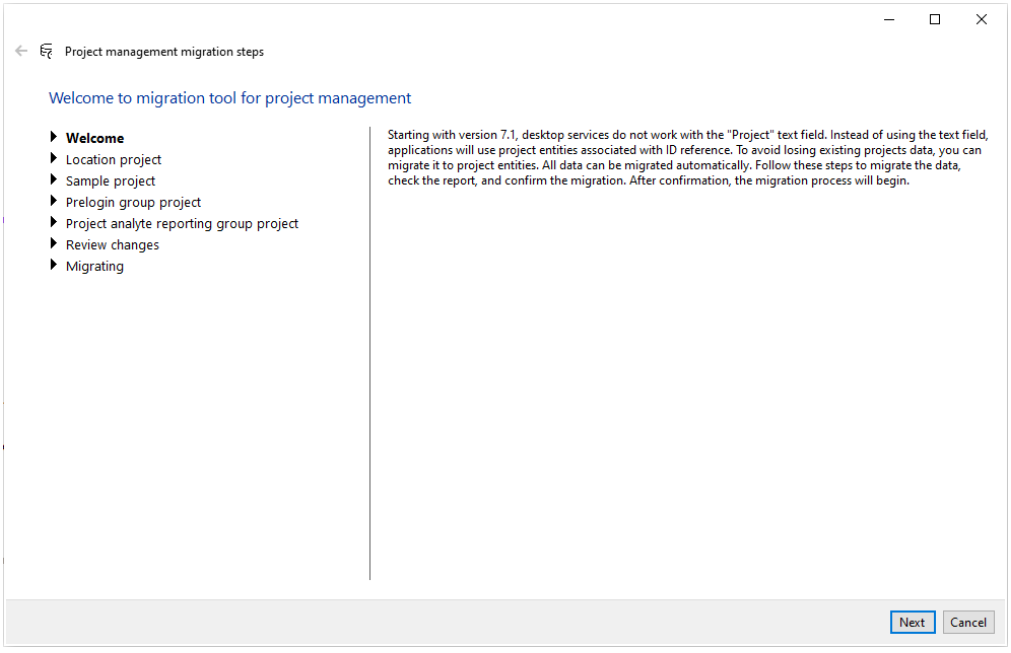
Migration: Project management

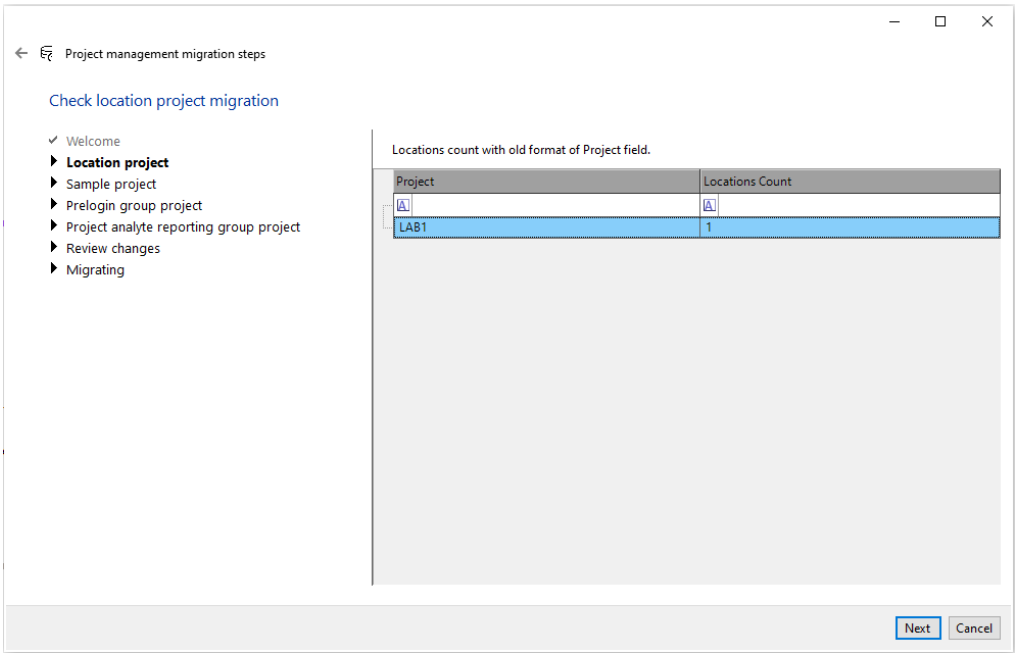
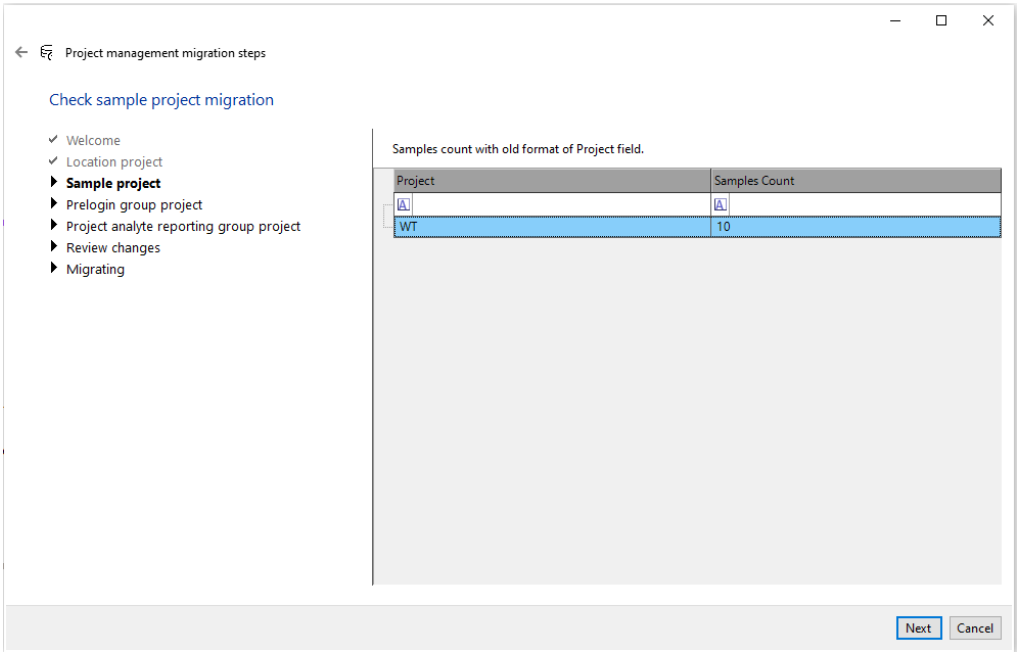
This kind of migration is required to update from 7.1 or earlier to 7.2 or later.

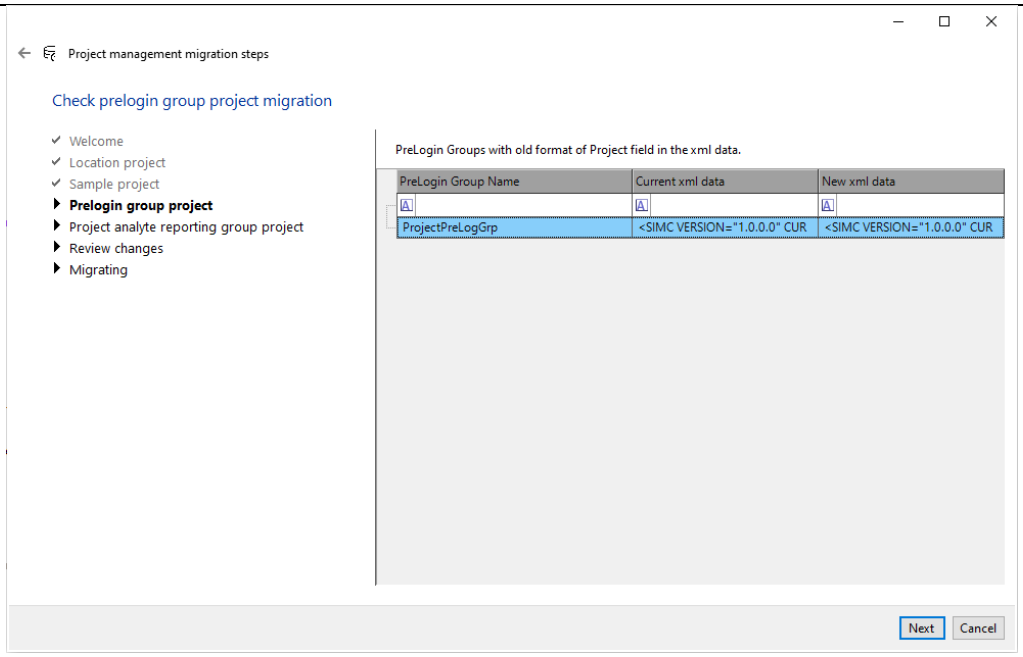
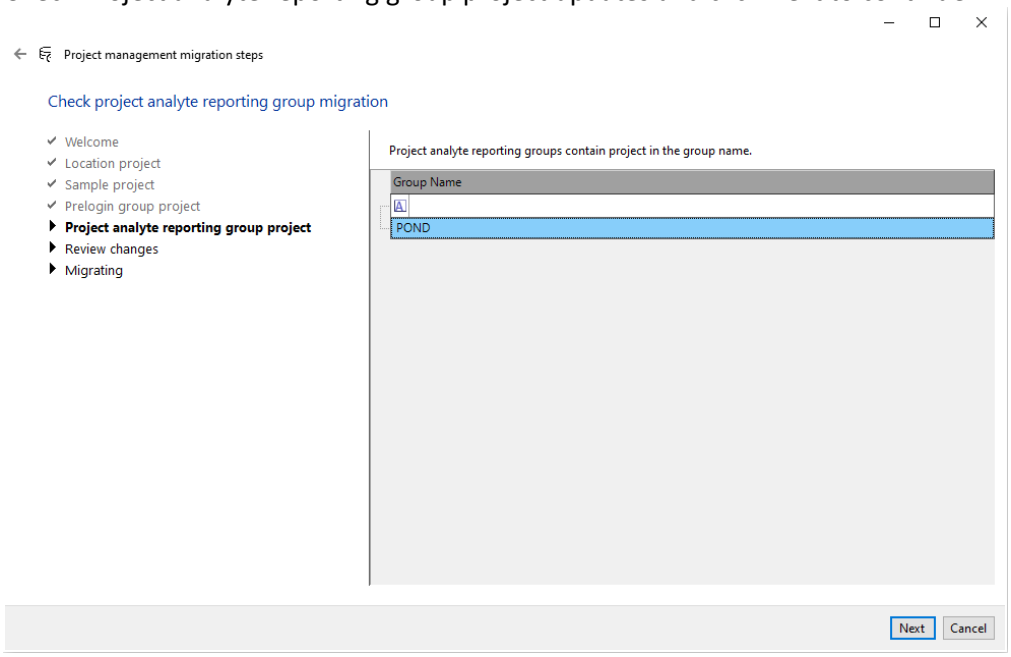
Starting with 7.2, Desktop services work with a new system entity – project. Instead of using SAMPLE.PROJECT text field as a reference, applications will use a new CIM_Project.ID field. To avoid losing existing sample project data, a new project should be created for each sample project value using NGMigrationTool.

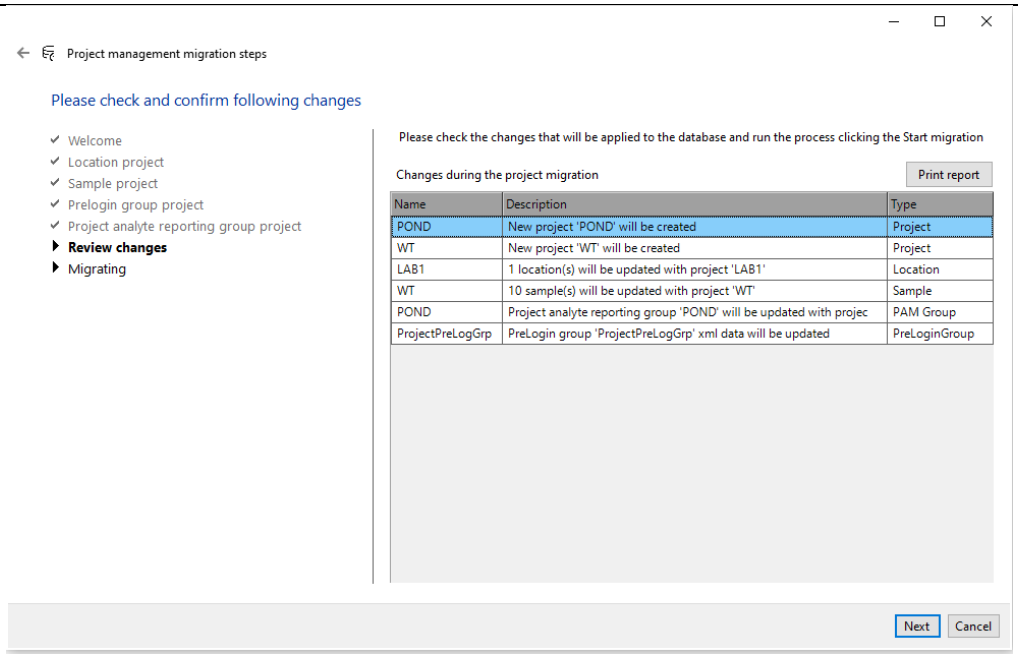
To keep history, the value of the original project (SAMPLE.PROJECT) is stored in a separate CIM_Project.LEGACY_PROJECT field. Initial project status (CIM_Project.CURRENT_STATE) is determined by the workflow configuration when migrating projects.

Step	User Input/Action	Expected Results
1	Run NGMigrationTool from LABWORKS\LWEXE\Server\NGMigrationTool.exe	Authentication window is open.
2	Select a database. Provide your login and password to access the database. 	NGMigrationTool window is open.

3	Select “Project management” tile. 	The migration wizard runs.
4	Read Welcome screen information. Click Next. 	Location project screen is open.
5	Check Location project updates and click Next to continue.	Sample project screen is open.

		
6	Check Sample project updates and click Next to continue. 	Prelogin group project screen is open.
7	Check Prelogin group project updates and click Next to continue.	Project analyte reporting group project screen is open.

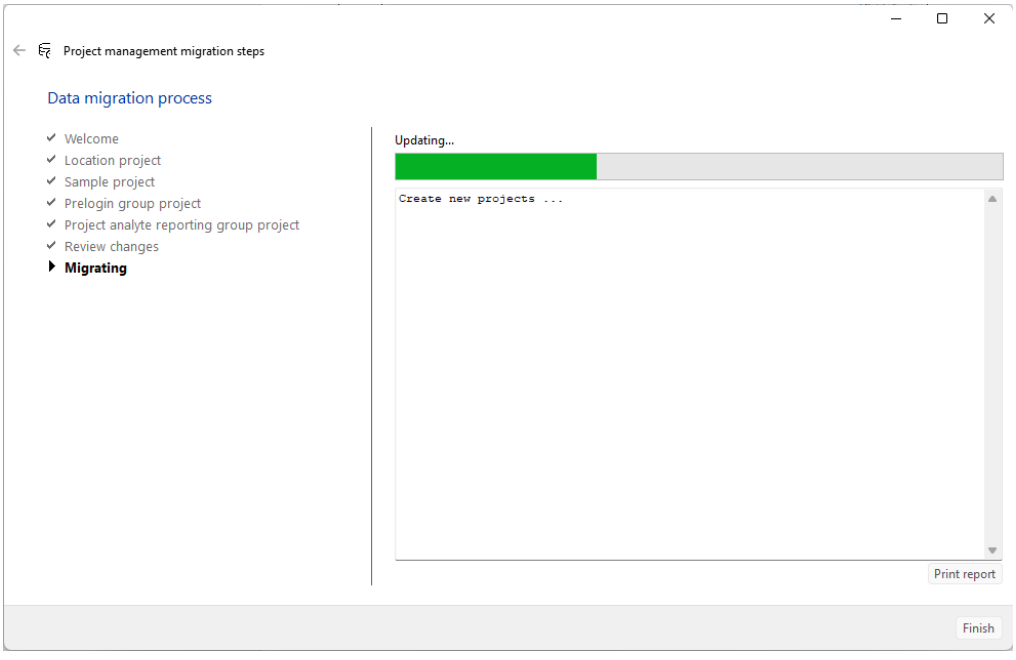
		
8	Check Project analyte reporting group project updates and click Next to continue. 	Report screen is open.
9	After configuring the migration, NGMigrationTool provides a report to check changes before the migration. Print report if it is needed. Check changes and click Next to start the migration.	Progress screen is open.



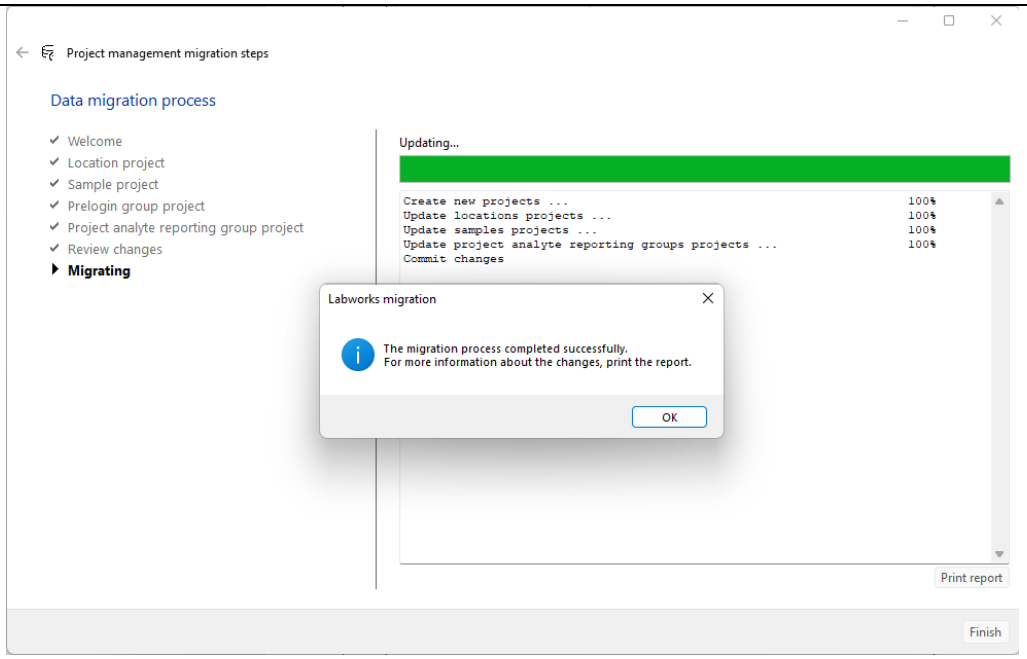
10

After the migration completes, the information dialog will be shown. Print report if it is needed.

Click Finish to finish the migration.



The wizard will be closed.



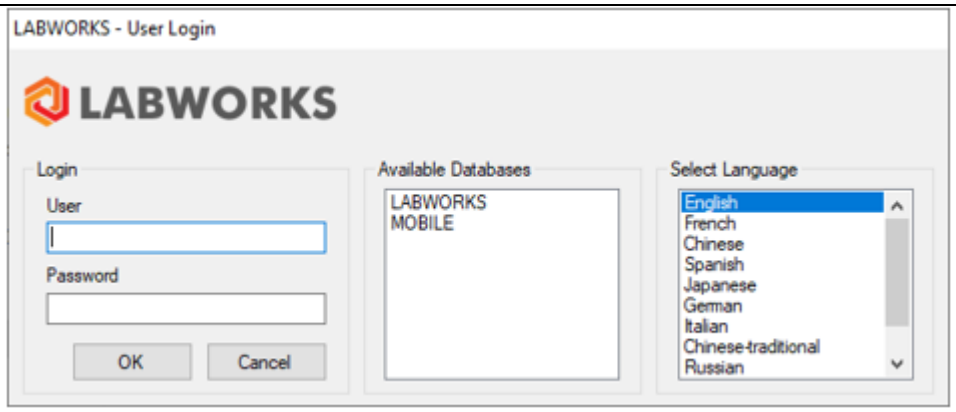
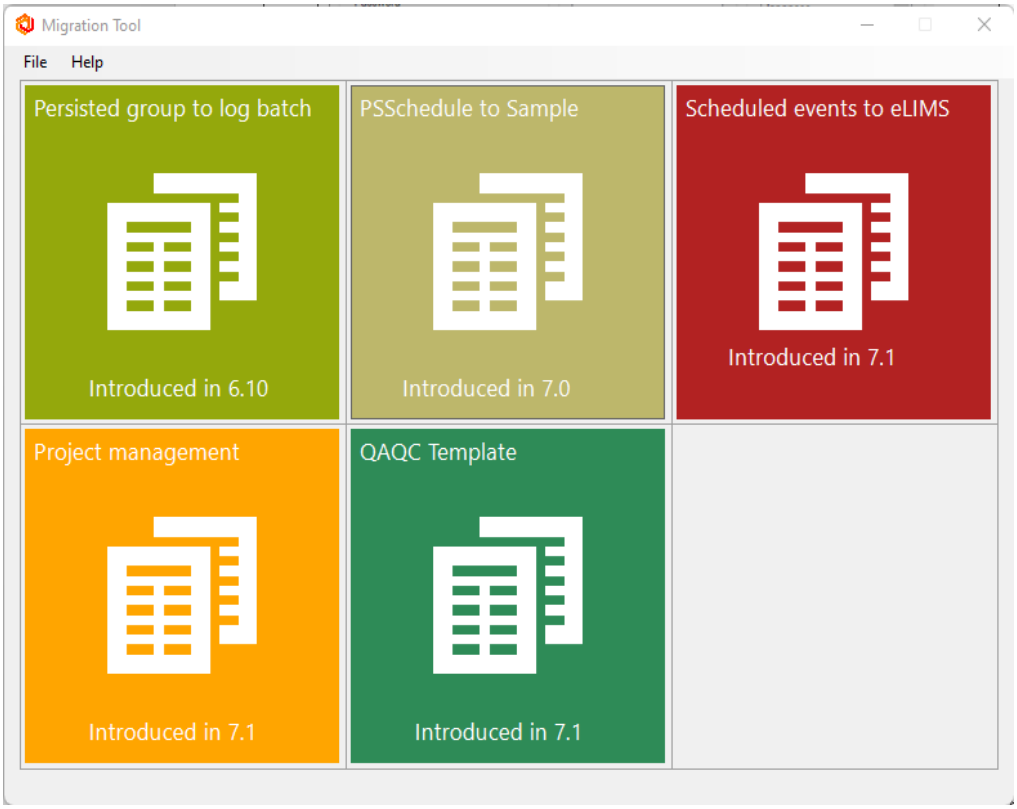
Migration: QAQC Template

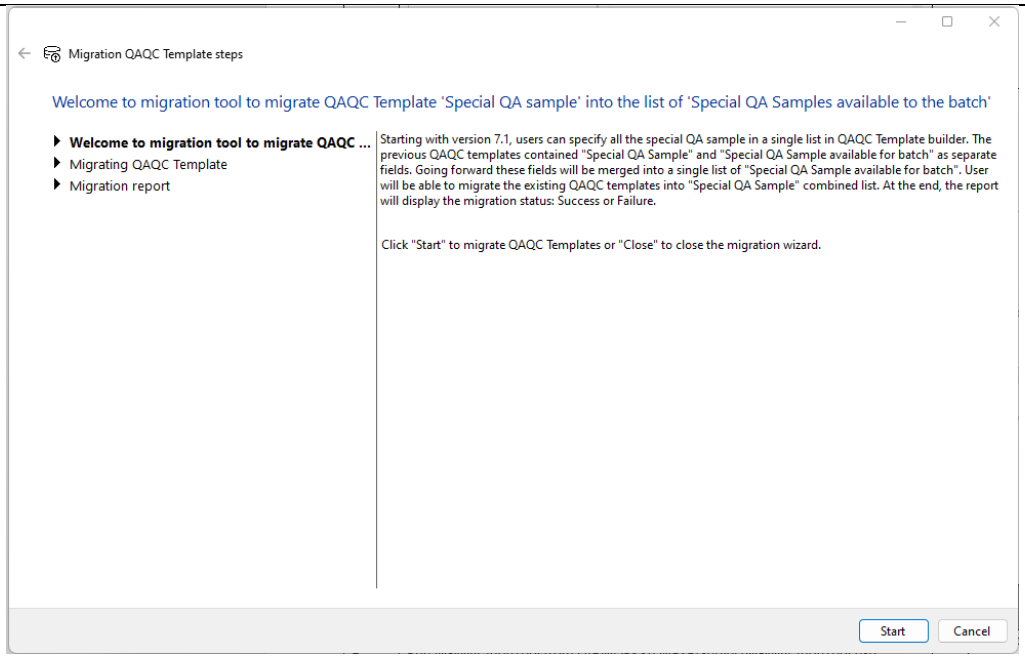
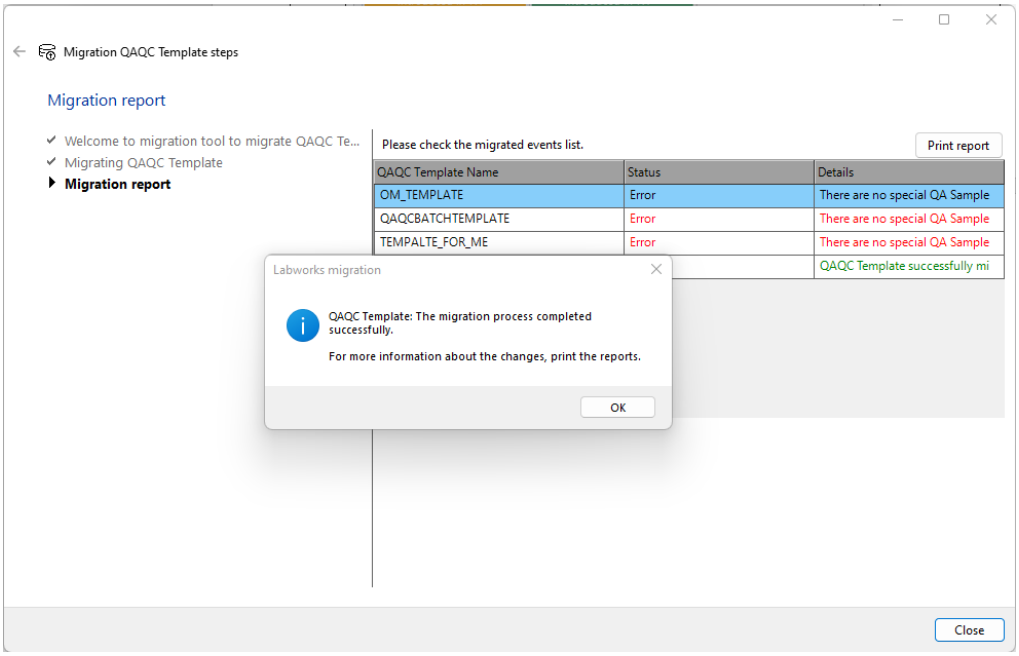
This kind of migration is required to update from 7.1 or earlier to 7.2 or later.

Starting with 7.2, users can specify all the special QA sample in a single list in QAQC Template builder. The previous QAQC templates contained “Special QA Sample” and “Special QA Sample available for batch” as separate fields. Going forward these fields will be merged into a single list of “Special QA Sample available for batch”.

To avoid losing existing “Special QA Sample” data, migrate the existing QAQC templates using NGMigrationTool.

Step	User Input/Action	Expected Results
1	Run NGMigrationTool from LABWORKS\LWEXE\Server\NGMigrationTool.exe	Authentication window is open.
2	Select a database. Provide your login and password to access the database.	NGMigrationTool window is open.

		
3	Select “QAQC Template” tile. 	The migration wizard runs.
4	Read Welcome screen information. Click Next to start the migration.	Progress screen is open.

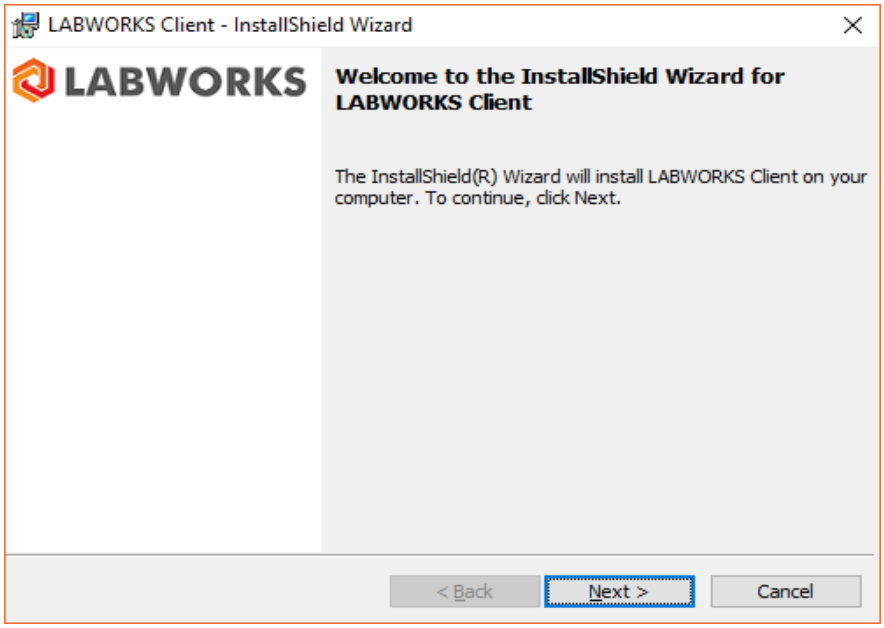
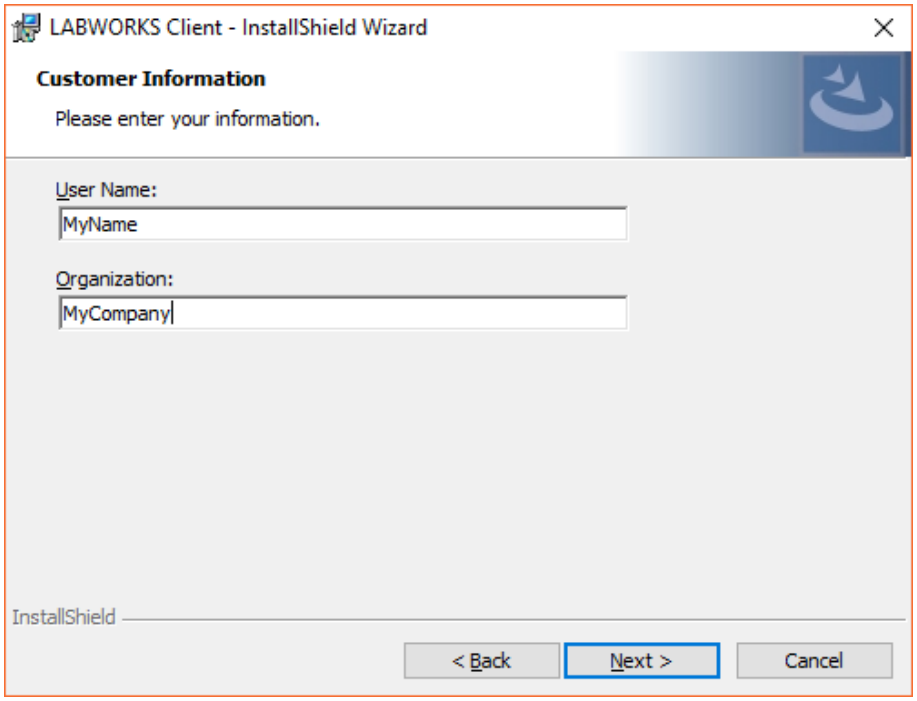
		
5	After the migration completes, the information dialog will be shown. Print report if it is needed. Click Close. 	The wizard will be closed.

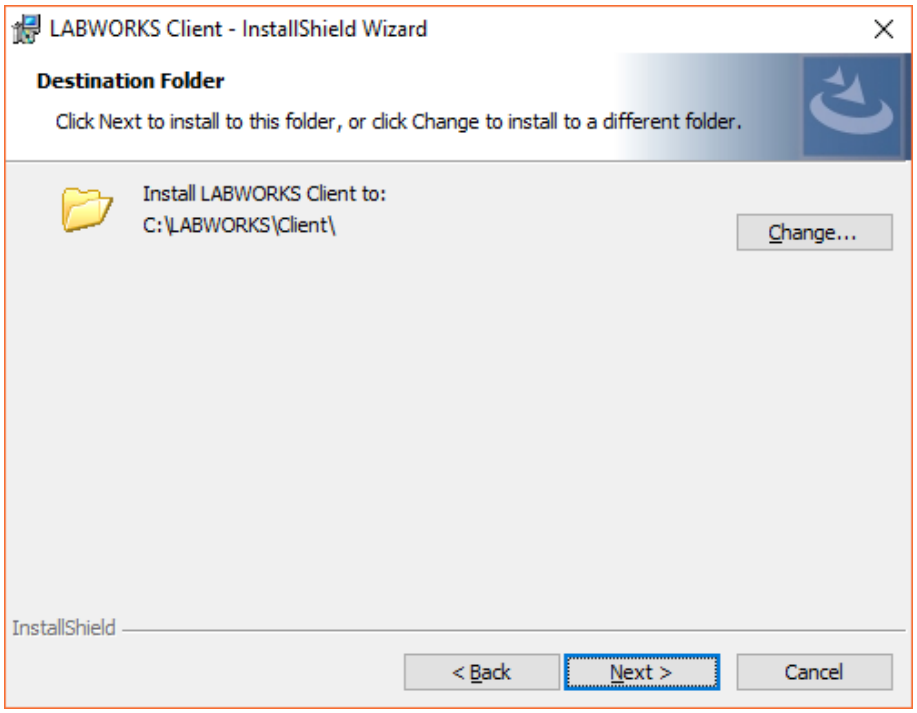
Step 10: Client Installation

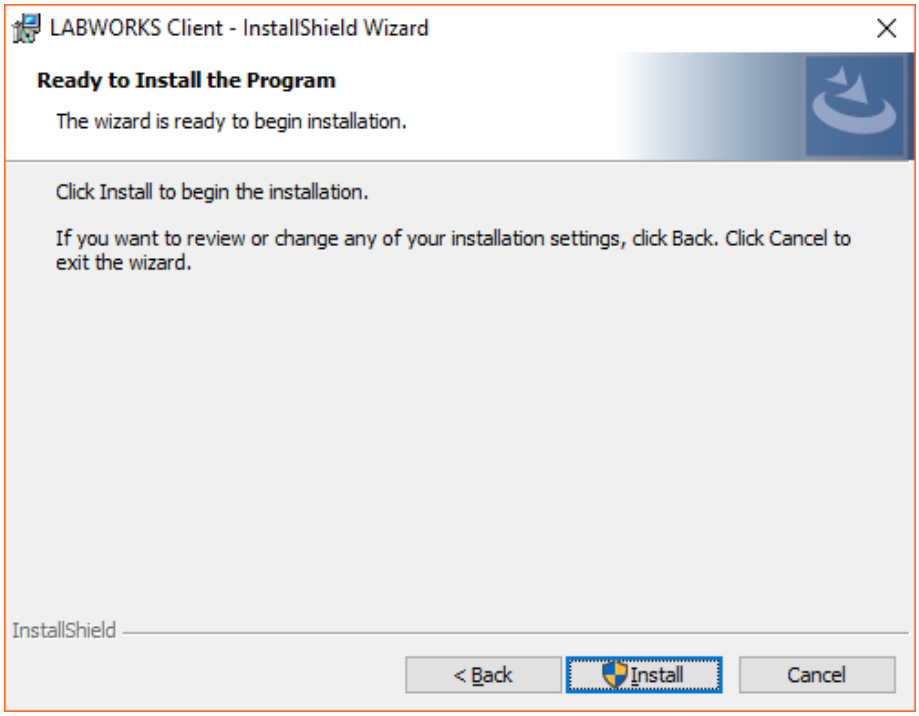
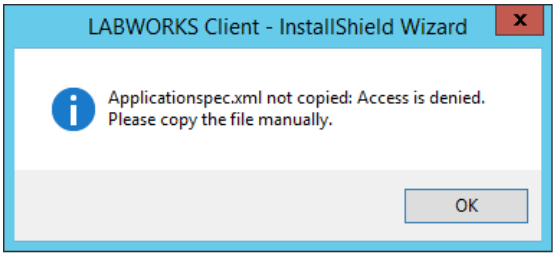
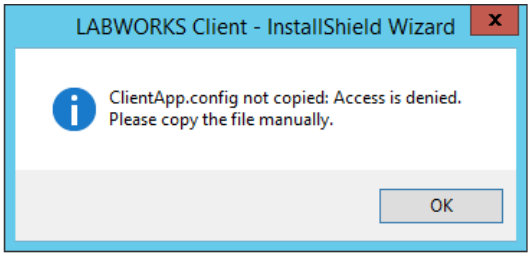
Note: *You must log in as the Administrator, or have administrative rights, to run the Client Install.*

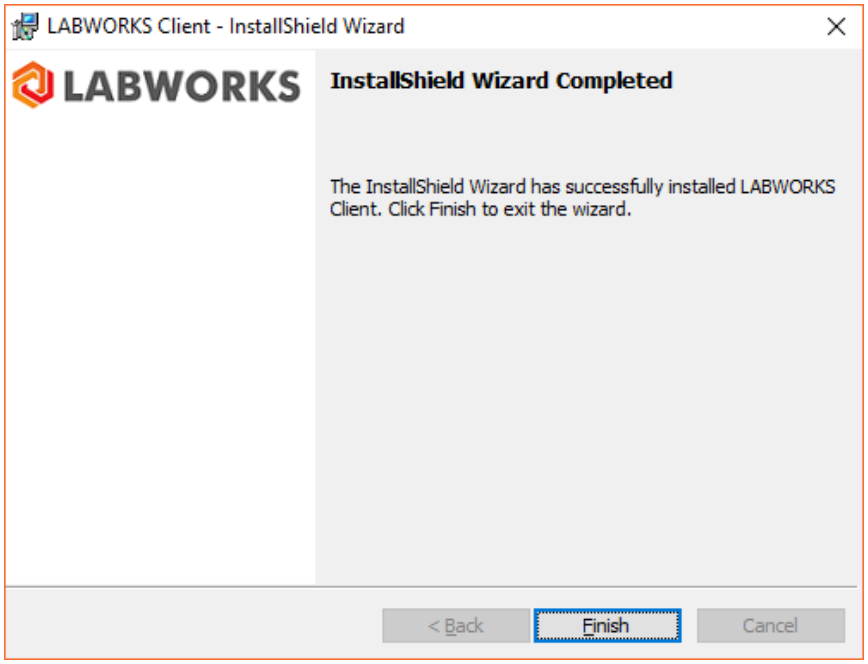
After you have run the Server Installation and setup and configured workstation settings using the Gateway Administrator tool you must now run the Client Installation, located at <LWEXE>ClientSetup.msi on each

workstation that is to use LABWORKS. Since LABWORKS is installed on a server, it is critical that every user access the ClientSetup.msi program that is located on the server in the same manner.

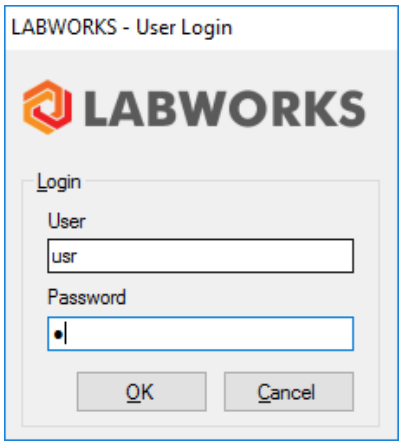
Step	User Input/Action	Expected Results
1	On each workstation that you wish to run LABWORKS access the server where you installed LABWORKS and open the LABWORKS application folder and select ClientSetup.msi.  Click 'Next'.	The Welcome to the InstallShield for LABWORKS Client is displayed.
2	 Enter your Name and Company Name.	Customer Information dialog is displayed. User Name and Company name is entered.

Step	User Input/Action	Expected Results
	Click 'Next' to continue.	
3	 Click 'Change' if the location of the client software is to other than the default location. Once specified, click 'Next' to proceed.	Destination Folder dialog is displayed. Destination folder is changed if required.

Step	User Input/Action	Expected Results
4	 Click 'Install' to begin the Installation.	The Ready to Install the Program dialog is displayed. The installation proceeds.
	Depending on the Operating system and the configuration of UAC (User Account Control) you may get the error messages as below.   If you receive these messages, you need to manually copy files, ApplicationSpec.xml and ClientApp.config to the LABWORKS path [System Drive]*Labworks**Client*	

Step	User Input/Action	Expected Results
5	 When the installation is complete, click 'Finish' to exit.	The InstallShield Wizard Completed dialog is displayed. The installation is complete.

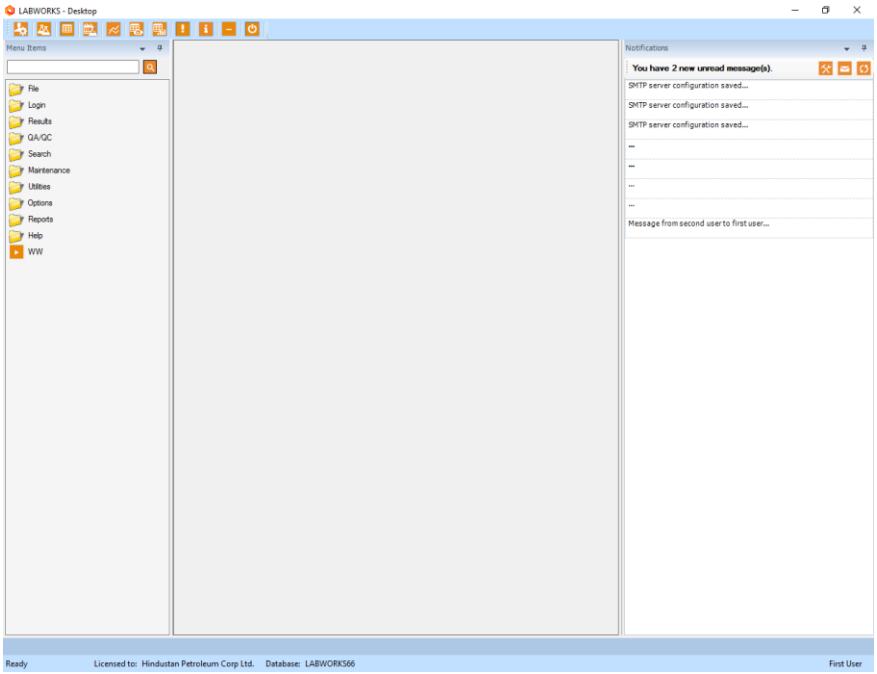
At this point your installation is complete. There is a new Program Group for LABWORKS and a LW Desktop application shortcut on your Desktop. By double clicking the new LW Desktop Icon, users are prompted to login:



The default credentials for a new database installation are as follows:

User: USR

Password: 1



Note: *When upgrading an existing database (version 5.8) it may be necessary to run Lwwsystem6.exe from the C:\Labworks\Client folder because there are new applications-based privileges associated with the new Desktop.*

LABWORKS Webtop Installation

Before You Start

LABWORKS Webtop is the latest in a succession of versions of LABWORKS LIMS. It provides new WEB functionally and is built using the latest in software development tools. As a WEB application its installation is different from any previous version of LABWORKS.

Even if you are a long time LABWORKS user, it is recommended you read the complete installation guide before starting your LABWORKS Webtop installation.

Installing LABWORKS Webtop is a multi-step process that involves performing a server installation, running the update database tool, modifying configuration files, running the gateway administrator tool configures LABWORKS databases.

LABWORKS installation involves the following steps:

- Step 1: Run LWWebtop.exe.
- Step 2: Modify ApplicationSpec.XML
- Step 3: Configure folder security
- Step 4: Run the Microsoft/Oracle scripts, Update Tool, and Migration Utility.
- Step 5: Configure Web Applications
- Step 6: Run the Gateway Administrator Tool.
    - Configure the Database.
- Step 7: Update web.config (lwwebtop and lwsampleloginservice)
- Step 8: Start LWLicenseServices/LWDataServices if not running
- Step 9: Login

Before you start your LABWORKS Webtop installation you will need the following:

- LABWORKS Webtop Installation Disk
- LABWORKS License/Control File (*.CTL)
- Internet Server, IIS 7.0 or above

As this is an update to your existing LABWORKS LIMS program, back up your LABWORKS data files and database before beginning installation. LABWORKS is not responsible for any data loss or downtime caused by not creating backup files. Installation from the new LABWORKS CD should only begin after creation of a full backup of all existing files in your LABWORKS program path and data path and the actual database itself to tape, CD ROM, or other method.

It is recommended that you install any LABWORKS update on a test computer using a backup data path and database to test the program prior to installation on networks, servers, or multiple workstations. Even though LABWORKS thoroughly tests the LABWORKS LIMS program in-house, there may be variables associated with your network, servers, workstations, environment, etc., that may present unforeseeable problems.

Web Server Installation Footprint

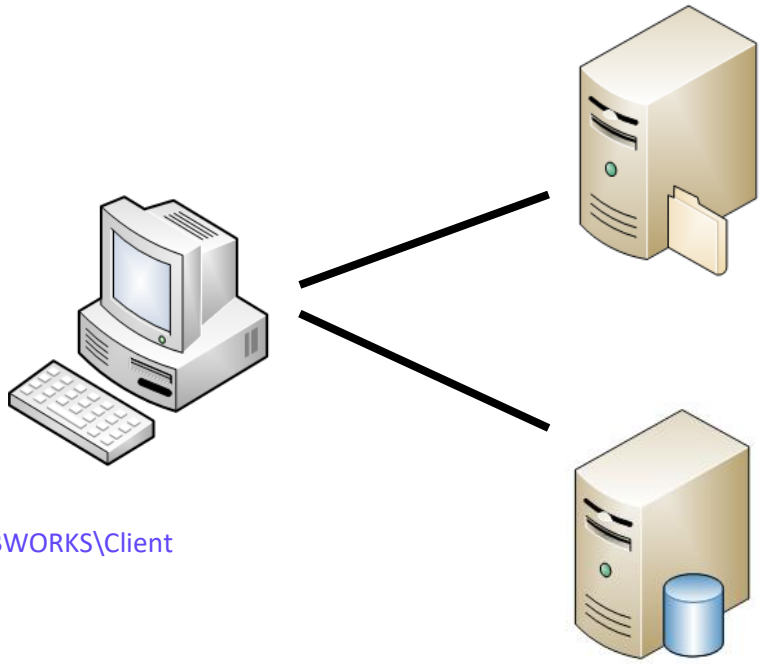
LABWORKS Webtop installs on the WEB Application Server

\Inetpub\wwwroot\LWWebtop: This folder contains the LABWORKS Webtop software

\inetpub\wwwroot\LWSampleLoginService: This folder contains the web service for reading and writing LABWORKS Sample related data.

\Program Files (x86)\Labworks\LWLicenseServices:	This folder contains the LABWORKS License Service application. This service is used to authenticate users and provide database configuration information. With latest LABWORKS version both Webtop and Desktop will use this service. This service can be loaded both on the Desktop server, for use by Desktop, and on the Webtop server.
\Program Files (x86)\Labworks\LWDataServices:	This folder contains the LABWORKS DataService application. This service provides data to the application. With latest LABWORKS version both Webtop and Desktop will use this service. This service can be loaded both on the Desktop server, for use by Desktop, and on the Webtop server.
C:\Labworks\\LWEXE:	This folder contains utilities for updating the LABWORKS Database Schema to Webtop Format, Conversion utilities for Specifications and Calculations.
C:\Labworks\\LWEXE\SYSCFG:	This folder contains the client configuration utility LWSyscfg6.exe and the file syscfg.dat where LABWORKS client configuration preferences are stored.
C:\Labworks\\LWDATA:	The LWDATA is a blank for LWSYSCFG6.EXE to point to on the WEB Server.
License File:	The license file is supplied by LABWORKS on a separate CD. It enables the LABWORKS features your organization has purchased.
Database Server:	The database server, SQL or Oracle requires a database instance be created. The instructions for creating the LABWORKS database are available in a separate document.

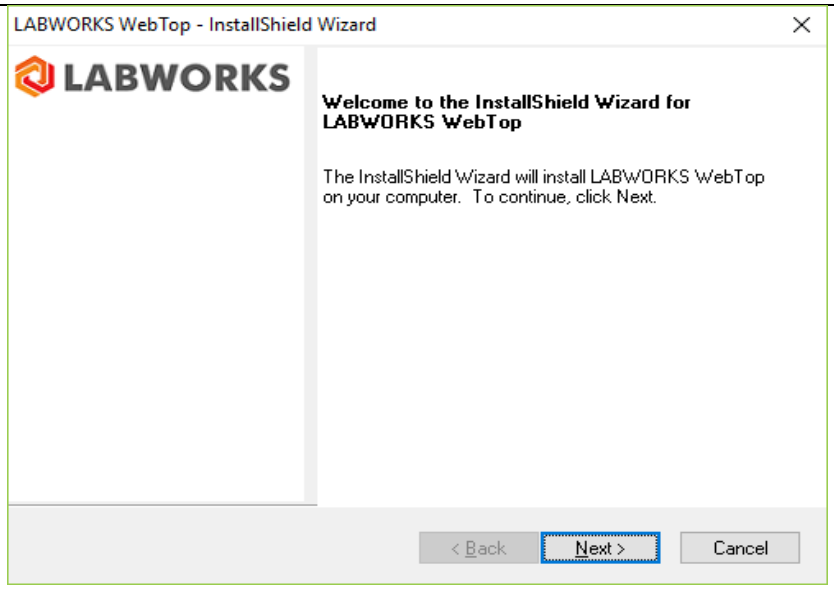
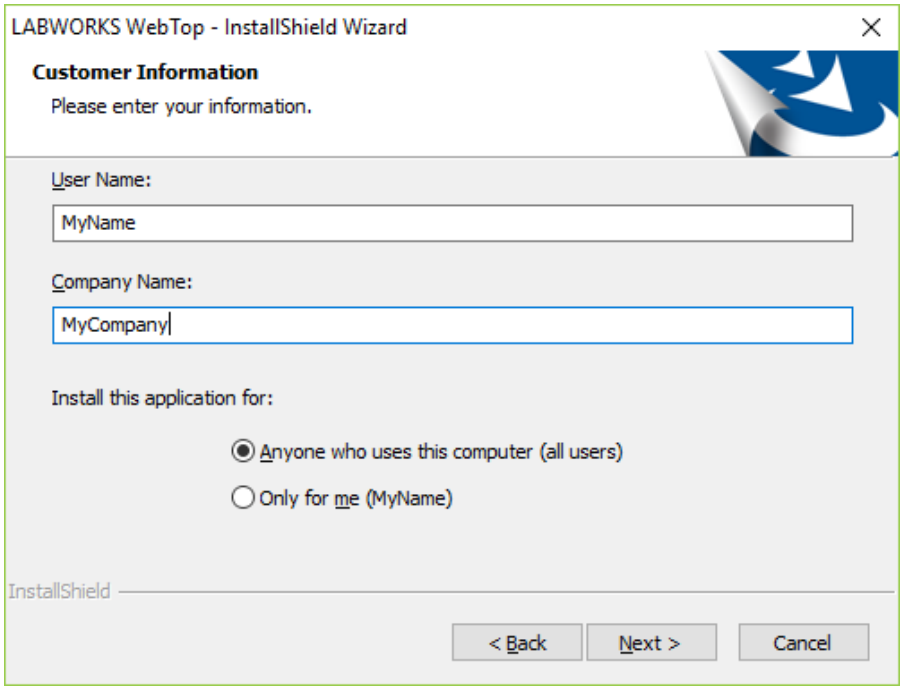
Step 1: LWWebtop Installation

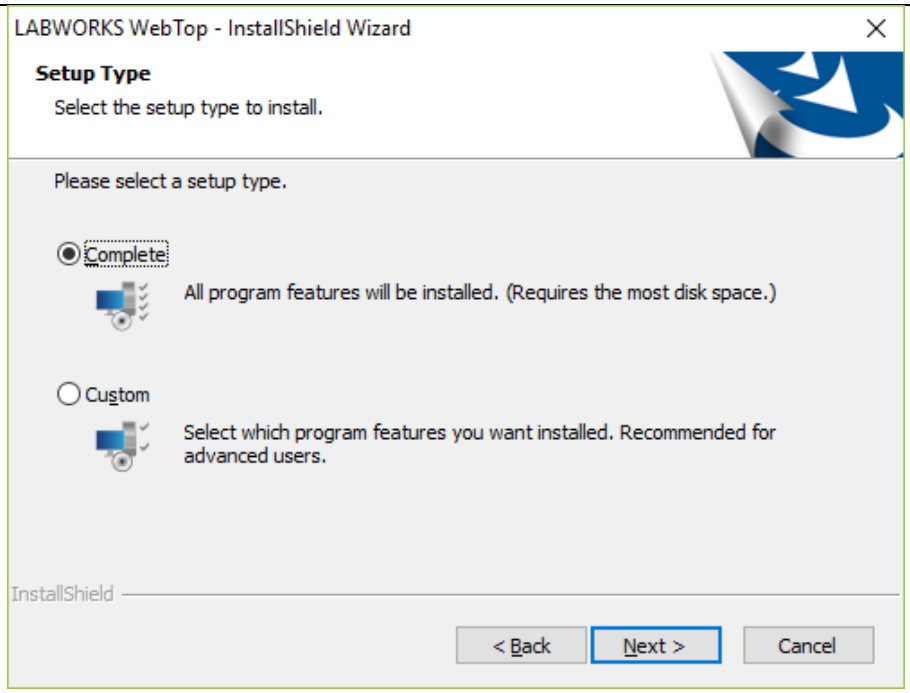


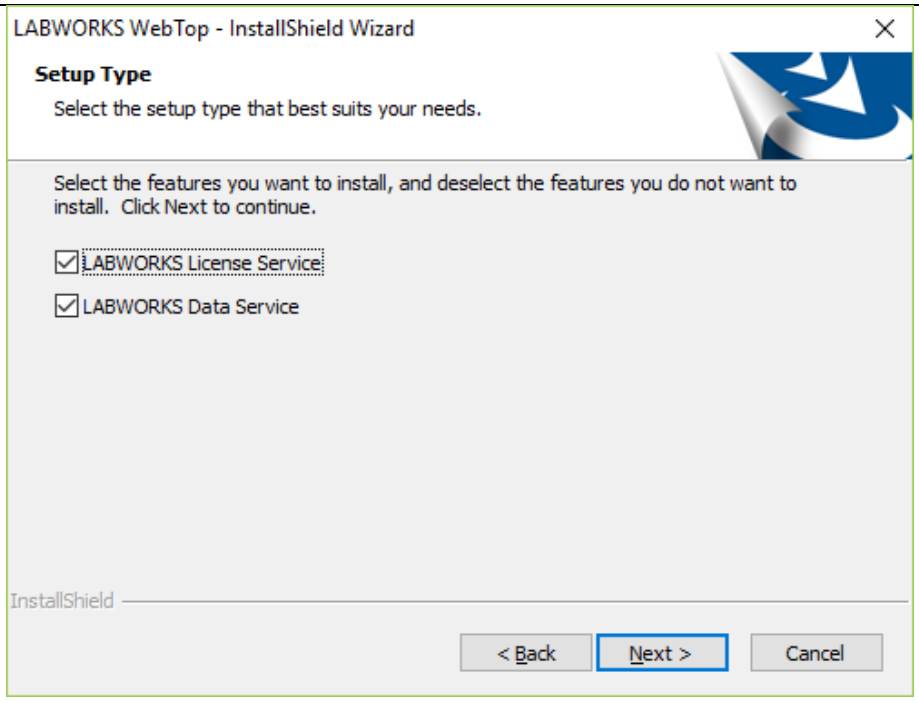
The Server Installation procedure is used to copy the LABWORKS files to the web server. The Webtop server must have the IIS 7.0 or greater loaded and running. The LABWORKS setup program is launched when the installation CD is inserted in your CD ROM drive.

Note: *If the program does not launch automatically when you insert the installation CD into your CD ROM drive, use windows explorer to view the contents of the CD and double click on LWWebtop.exe, which is located on the root node of the CD.*

Step	User Input/Action	Expected Results
1	Insert the LABWORKS installation CD in your CD ROM drive. The setup program automatically launches, and the welcome screen appears with brief instructions.	Windows installer initiates the installation from the Setup program.

	 Click 'Next'	
2	 Enter User Name and Company Name. Click 'Next'.	Customer Information dialog is displayed. User Name and Company name is entered.

3	 Select the Setup Type: • Complete: Web Install, System Admin Tools • Custom: Each piece can be selected separately. Click 'Next'.	Setup Type dialog is displayed. Setup Type is specified.
4	LABWORKS recommends copying the license file from the CD to a folder on your network for easy access. Click 'Next' to proceed.	License file copied from CD to folder on network.
5		Installation of LABWORKS Services dialog is displayed. LABWORKS services to install specified.



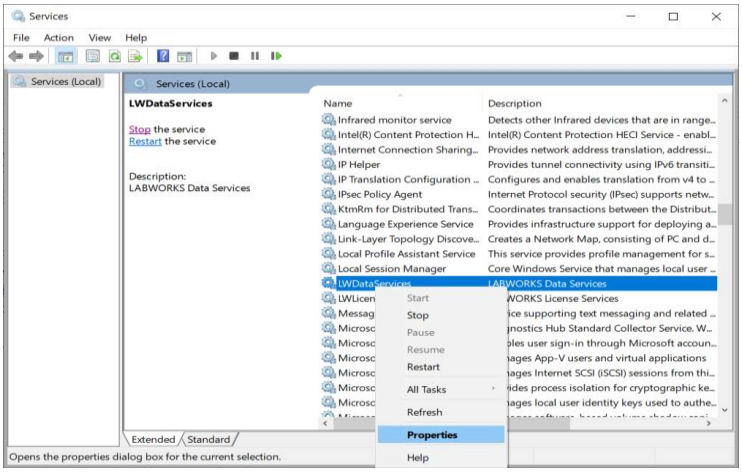
For installation of LWLicense Service on same machine check the option 'LWLicense Service'. If you want to install the LWLicenseServices on different machine uncheck the option. In most configurations, the LWLicenseServices install done during the Desktop Server install will satisfy the requirement for one instance of the LWLicenseServices running on the network.

For installation of LW Data Service on same machine check the option 'LW Data Service'. If you want to install the LWDataServices on different machine uncheck the option. In most configurations, the LWDataServices install done during the Desktop Server install will satisfy the requirement for one instance of the LWDataServices running on the network.

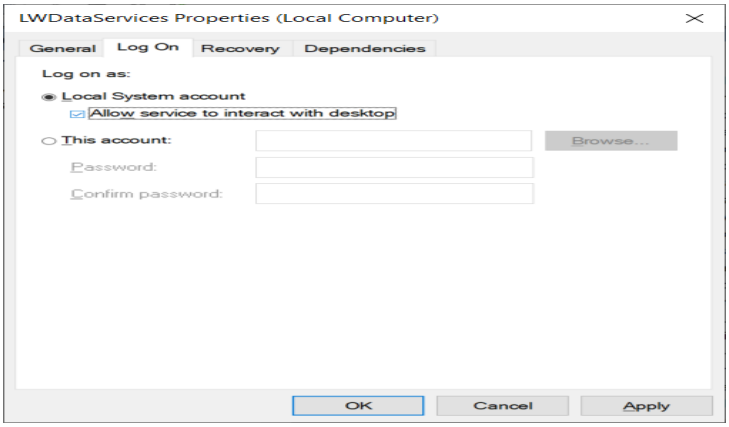
Click 'Next'to continue.

Note: *LWDataService Configuration settings that needs to be configured while performing Excel calculations using Scan Daemon*

1. *Stop the LWDataService*
2. *Navigate to this path:*
   (for an x64 based Operating System)
   %WINDIR%\SysWow64\Config\SystemProfile
   (for x86 based Operating System)
   %WINDIR%\System32\Config\SystemProfile
3. *Create new folder named "Desktop" in SystemProfile folder*
4. *Launch services.msc. Select LWDataServices. Right click and click "Properties" menu*

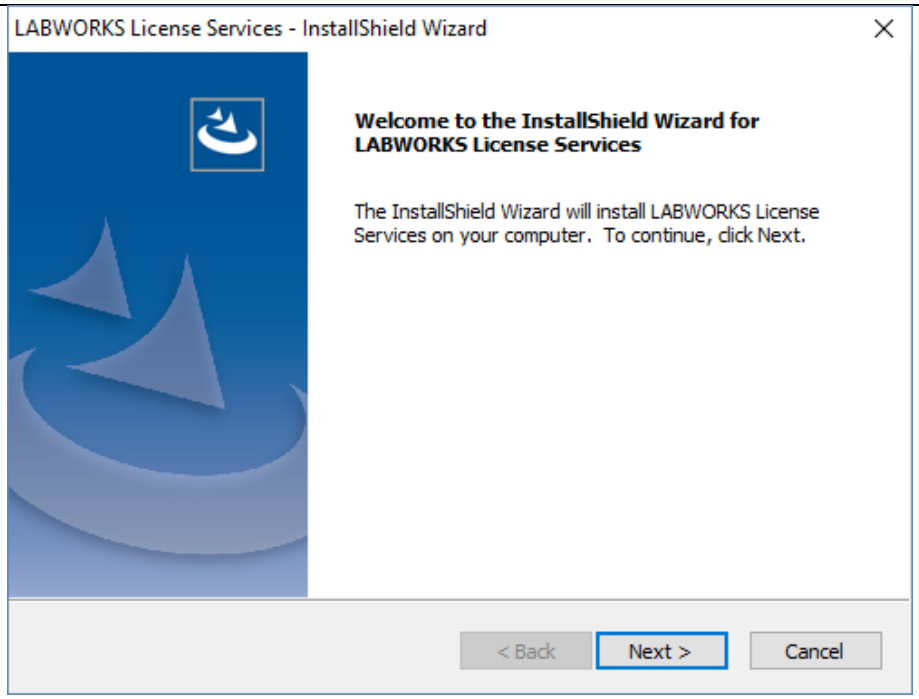
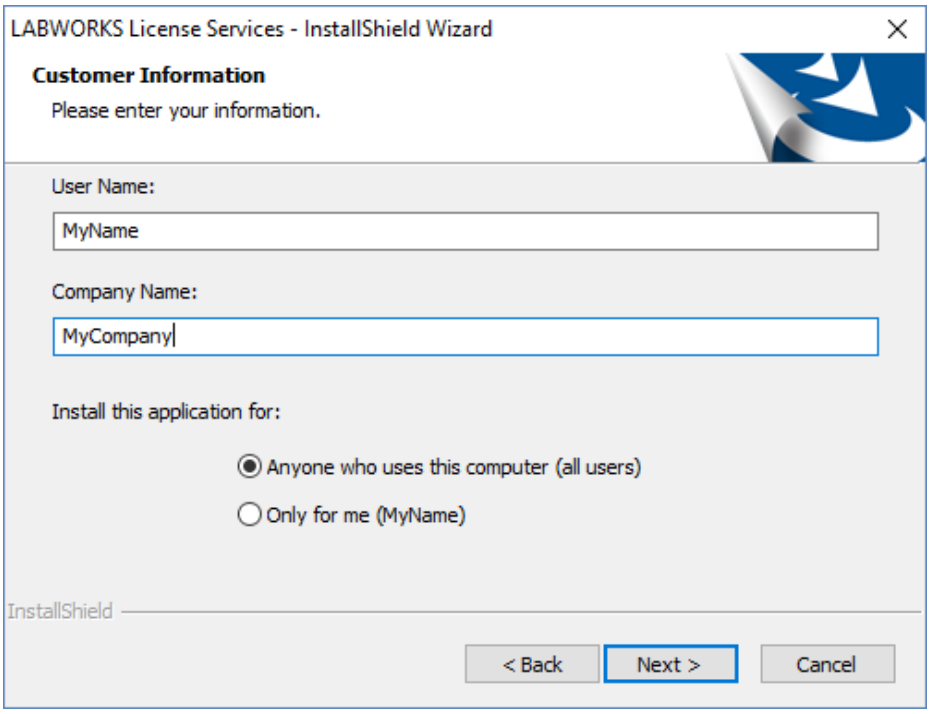


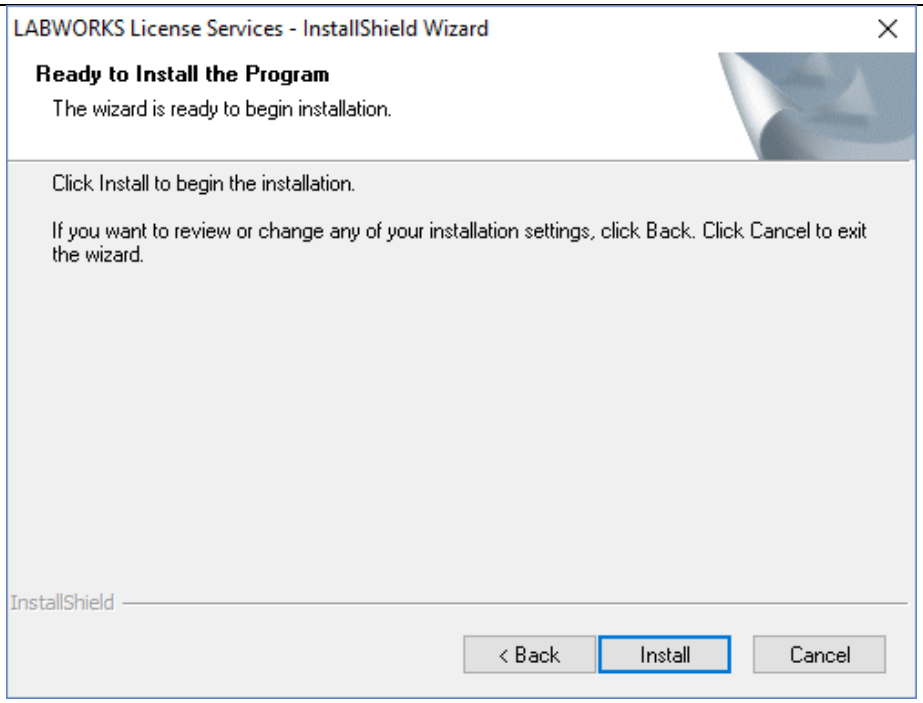
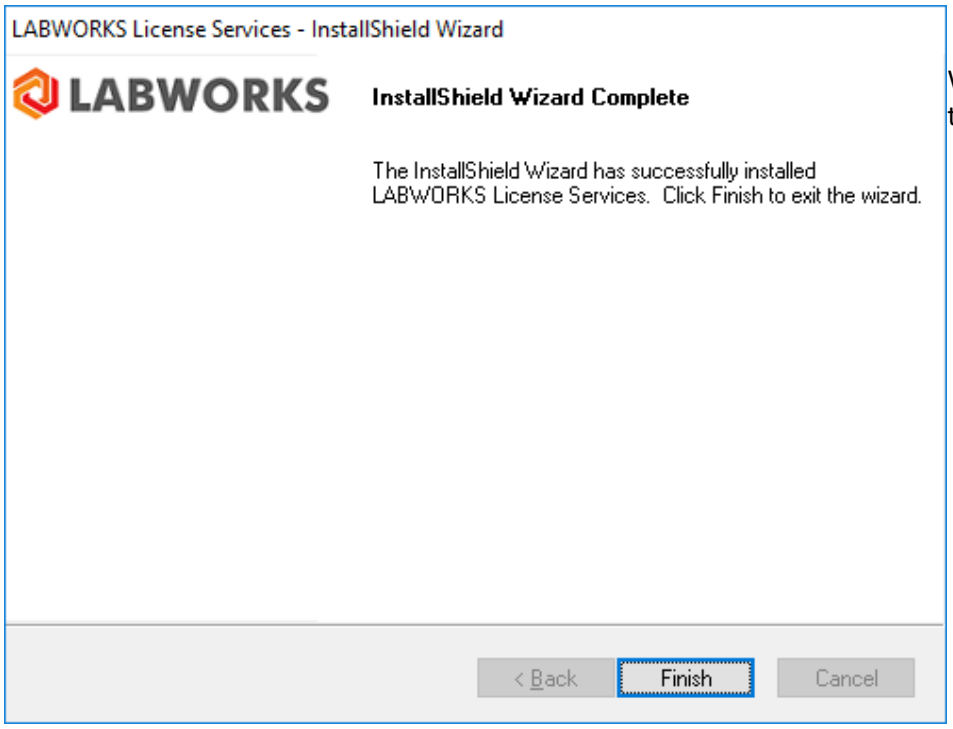
5. *Open the Logon Tab within Properties*

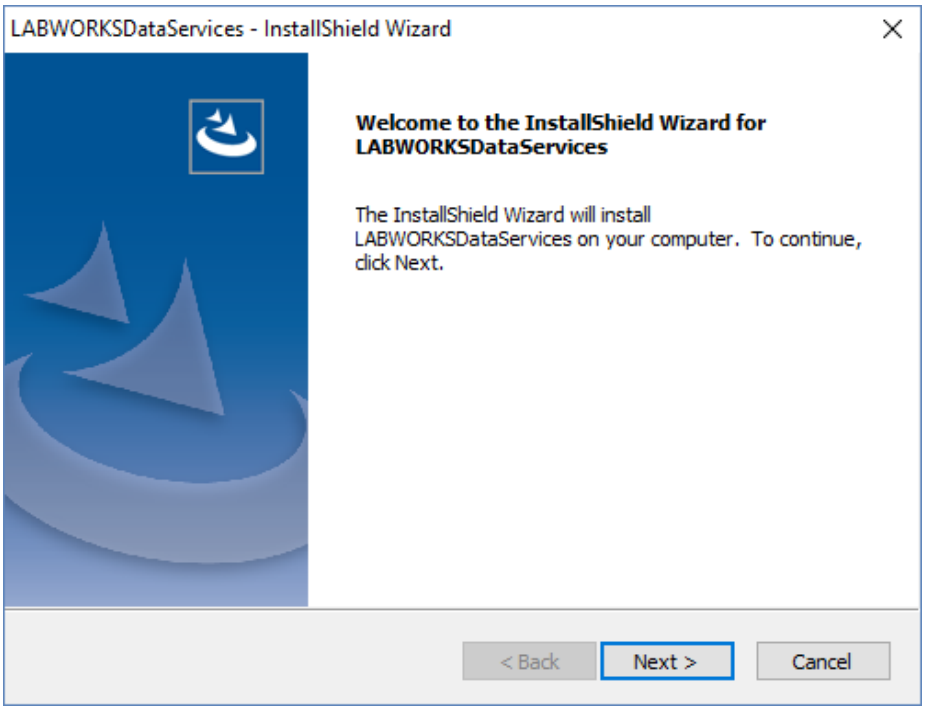
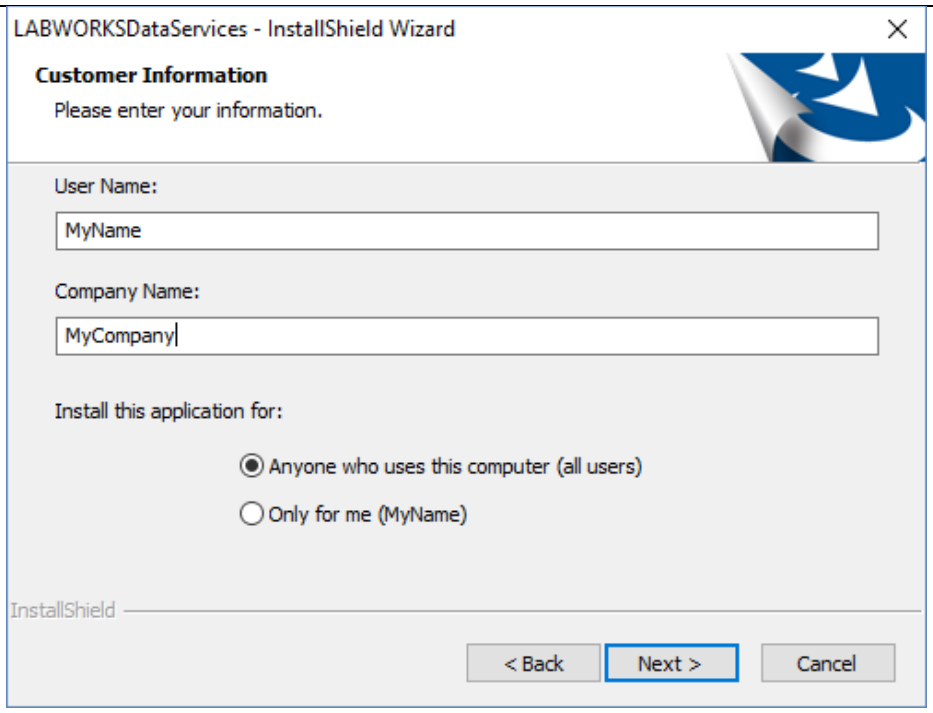


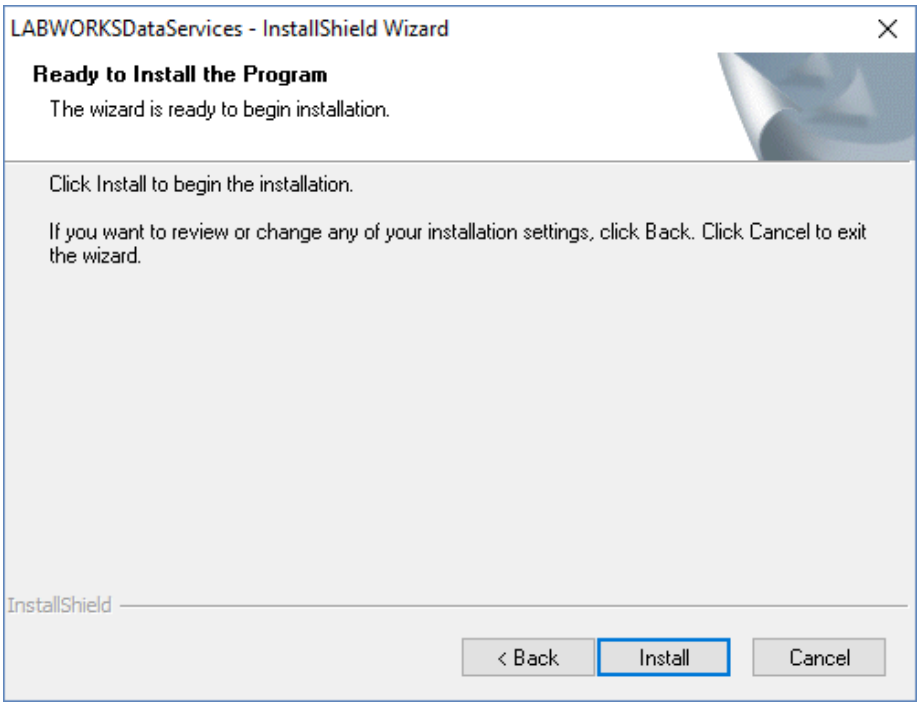
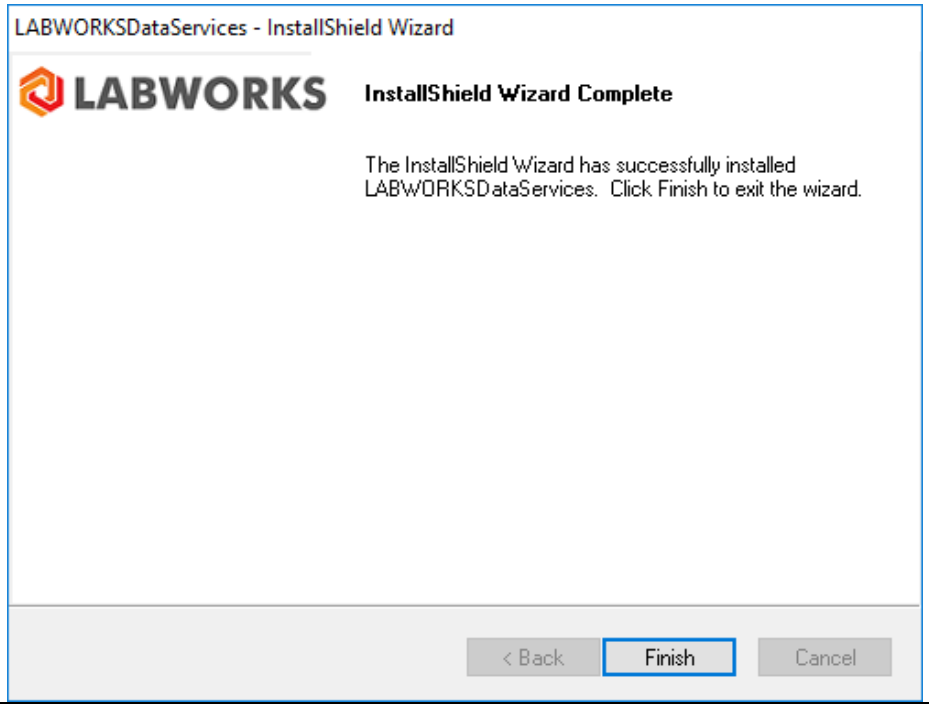
6. *Check 'Allow service to interact with desktop' checkbox*
7. *Click Apply and Restart the service.*

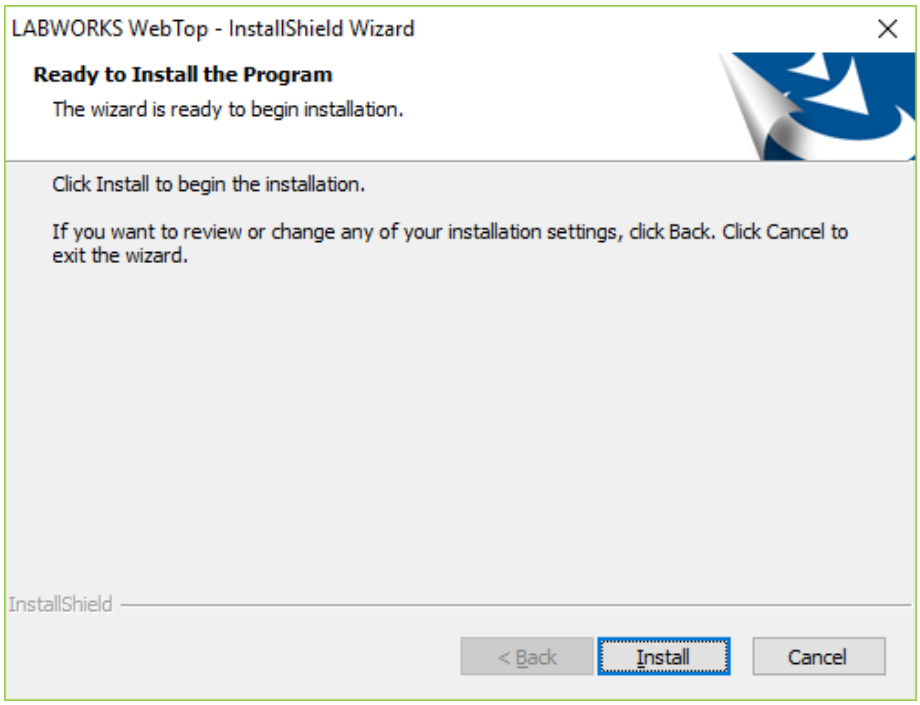
Installation of LW License Service		
6	The Server setup launches separate LWLicenseServices setup program, and the welcome screen appears with brief instructions.	The Welcome to the InstallShield Wizard for LABWORKS License Service dialog opens.

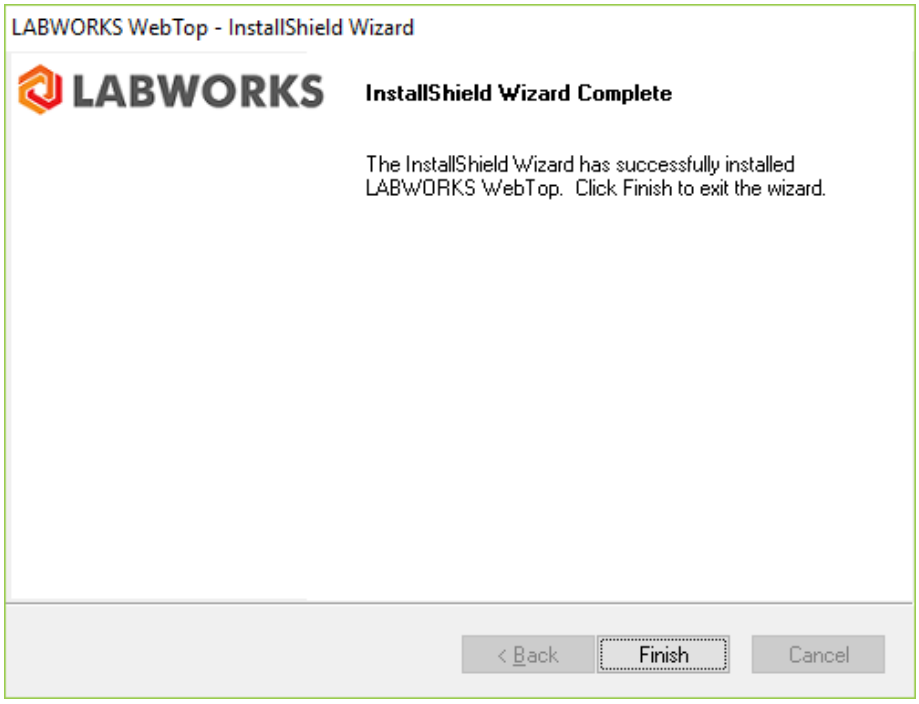
	 Click 'Next' to continue	
7	 Enter your User Name and Company Name. Click 'Next' to continue.	The Customer Information dialog is displayed. User Name and Company Name is specified.

8	 Click 'Install' to begin the installation.	The Ready to Install the Program dialog is displayed. The installation proceeds.
9	 When the installation is complete, click 'Finish' to exit.	The InstallShield Wizard Complete dialog is displayed. The installation is complete.
10	For installation of the LWLicenseServices on different machine run LWLicenseServices.exe from the CD on desired machine.	If applicable, the LWLicenseServices.exe is run on

		a different machine.
Installation of LW Data Service		
11	The Server setup launches separate LWDataServices setup program, and the welcome screen appears with brief instructions.  Click 'Next' to continue.	The Welcome to the InstallShield Wizard for LABWORKS Data Service dialog opens.
12		The Customer Information dialog is displayed. User Name and Company Name is specified.

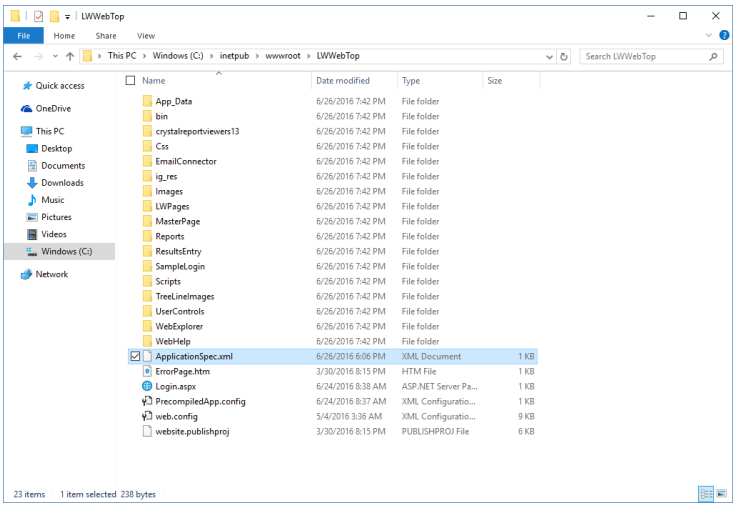
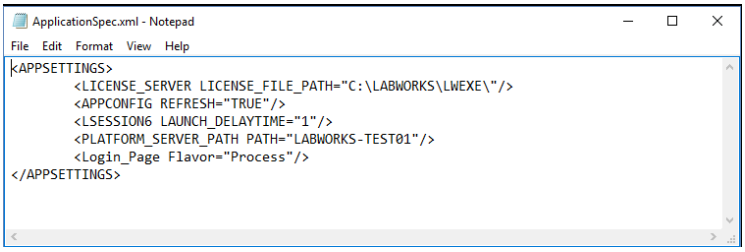
	Enter your User Name and Company Name. Click 'Next'to continue	
13	 Click 'Install' to begin the installation.	The Ready to Install the Program dialog is displayed. The installation proceeds.
14		The InstallShield Wizard Complete dialog is displayed. The installation is complete.

	When the installation is complete, click 'Finish' to exit.	
15	For installation of the LWDataServices on different machine run LWDataServices.exe from the CD on desired machine.	If applicable, the LWDataServices.exe is run on a different machine.
16	LABWORKS Webtop program resumes and is ready to install.  Click 'Install' to begin the installation.	The Ready to Install the Program dialog is displayed. The installation proceeds.

17	 When the installation is completed, click 'Finish' to exit.	The InstallShield Wizard Complete dialog is displayed. The installation is complete.

Step 2: Modify ApplicationSpec.XML

The Webtop installation created the file 'ApplicationSpec.xml'. This file is used to configure the path to the license file.

Step	User Input/Action	Expected Results
1	Open the file 'ApplicationSpec.xml' using notepad. 	The ApplicationSpec.xml is opened.
2	Then enter the path the Webtop will use to access the license file and enter machine name of the server e.g. **LABWORKS-TEST01** as shown in screen shot below. In this example, the Webtop Server folder is c:\LABWORKS\LWEXE\  	Path is entered.
3	Also, open 'ApplicationSpec.xml' located at \Program Files (x86)\Labworks\LWLicenseServices (where the LWLicense Service is installed) and do the same changes as above.	Changes are completed.
4	Also, open 'ApplicationSpec.xml' located at \Program Files (x86)\Labworks\LWDataServices (where the LWData Service is installed) and do the same changes as above.	Changes are completed.
5	Copy 'ClientApp.config'from<LWEXE> to \Program Files (x86)\Labworks\LWDataServices (where the LWDataServices is installed) and perform the same changes as above.	File Copied

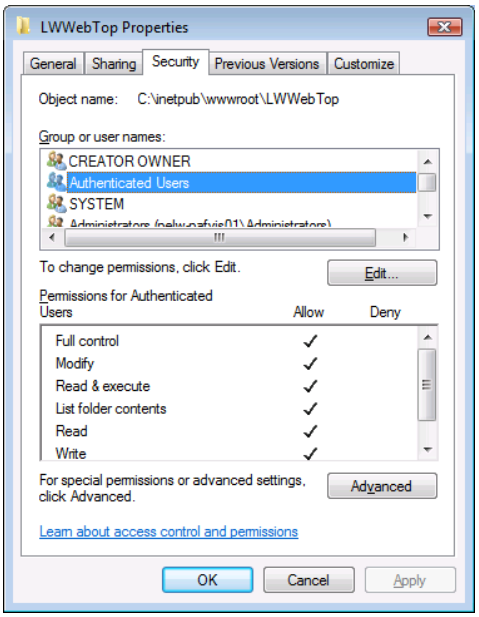
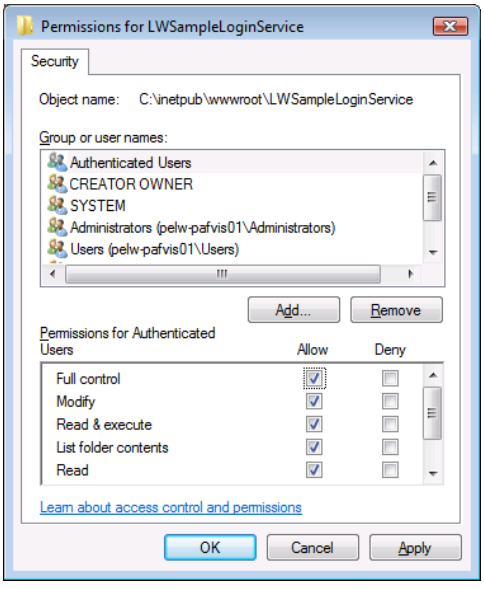
Step 3: Database Scripts and Updatetool.exe

Preparing the Existing Database

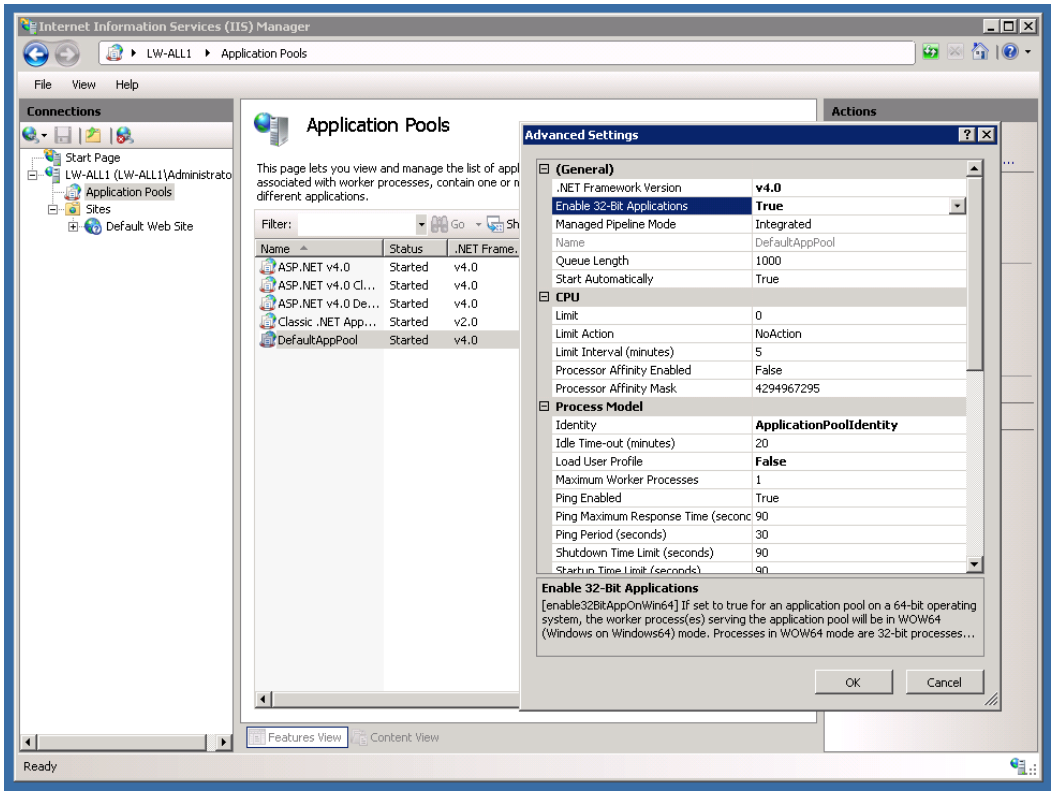
The LABWORKS Webtop and Desktop use the same database schema. The upgrades done in Step 4 of the Desktop are the same ones required to run the Webtop. No additional database changes are required.

Step 4: Configuring Folder Security

After LABWORKS Webtop is installed on the server, there is configuration information that needs to be updated. There is a utility to do this. This utility requires folder permissions be configured so the necessary files can be updated.

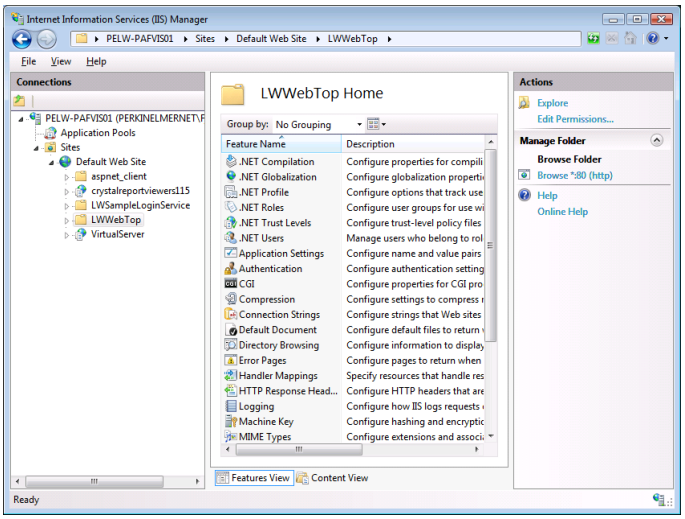
Step	User Input/Action	Expected Results
1	For the folders, \inetpub\wwwroot\LWWebtop and \inetpub\wwwroot\LWSampleLoginService add the group “Authenticated Users” 	The group ‘Authenticated Users’ is added.
2	Under Permissions for Authenticated Users, allow “Modify” 	‘Modify’ is granted as Permissions for Authenticated Users.

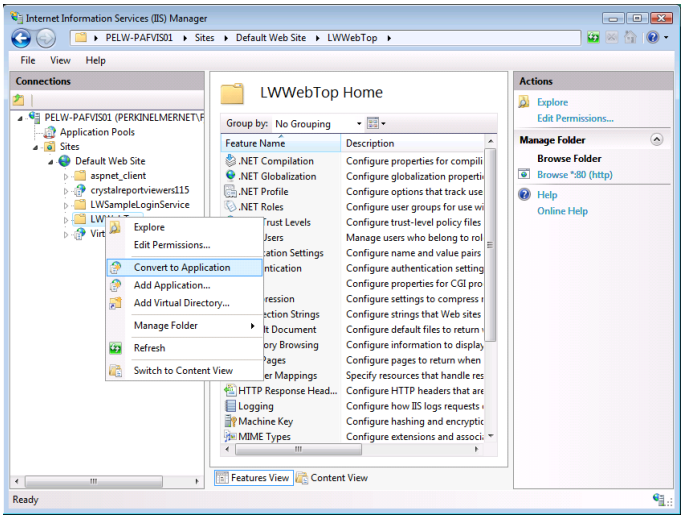
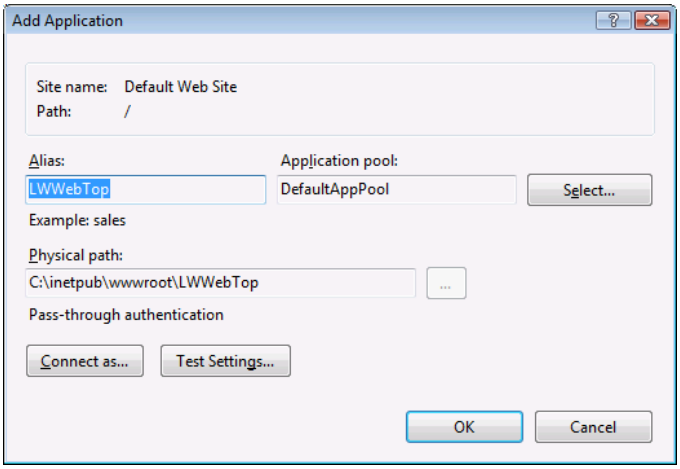
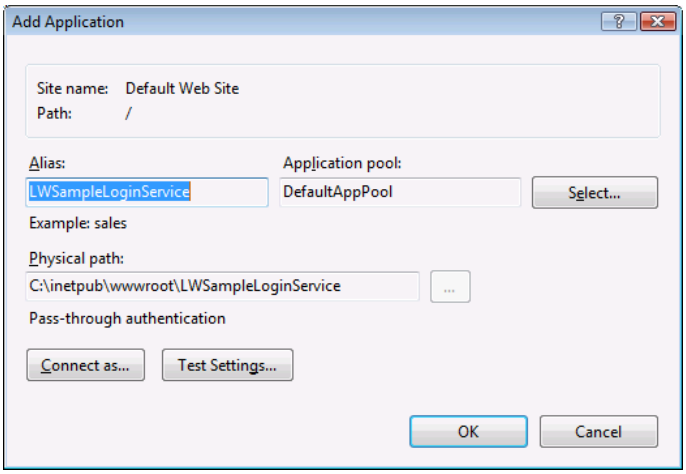
1. Enable 32-bit Application in IIS.



Step 5: Configure Web Applications

The folders installed into the \inetpub\wwwroot\LWWebtop and \inetpub\wwwroot\LWSampleLoginServiceneeds to be converted to web applications.

Step	User Input/Action	Expected Results
1	Use administrative tool, “Internet Information Services Manager” to configure the web applications. 	Internet Information Services Manager is opened.

Step	User Input/Action	Expected Results
2	Select LWWebtop and then right click to Convert the folder to an application. 	LWWebtop is selected. Convert to Application is selected.
3		The Add Application dialog is displayed. The LWWebtop folder is converted to an application.
4	Repeat the same procedure for LWSampleLoginService 	The Add Application dialog is displayed. The LWSampleLoginService folder is converted to an application.

Step 6: Gateway Administrator Setup

For steps 6 – 8 of the Webtop Instillation please refer to steps 5 – 14 of the Desktop Instillation.

Step 7: Configure the Database

Step 8: Start the LWLicenseServices/LWDataServices

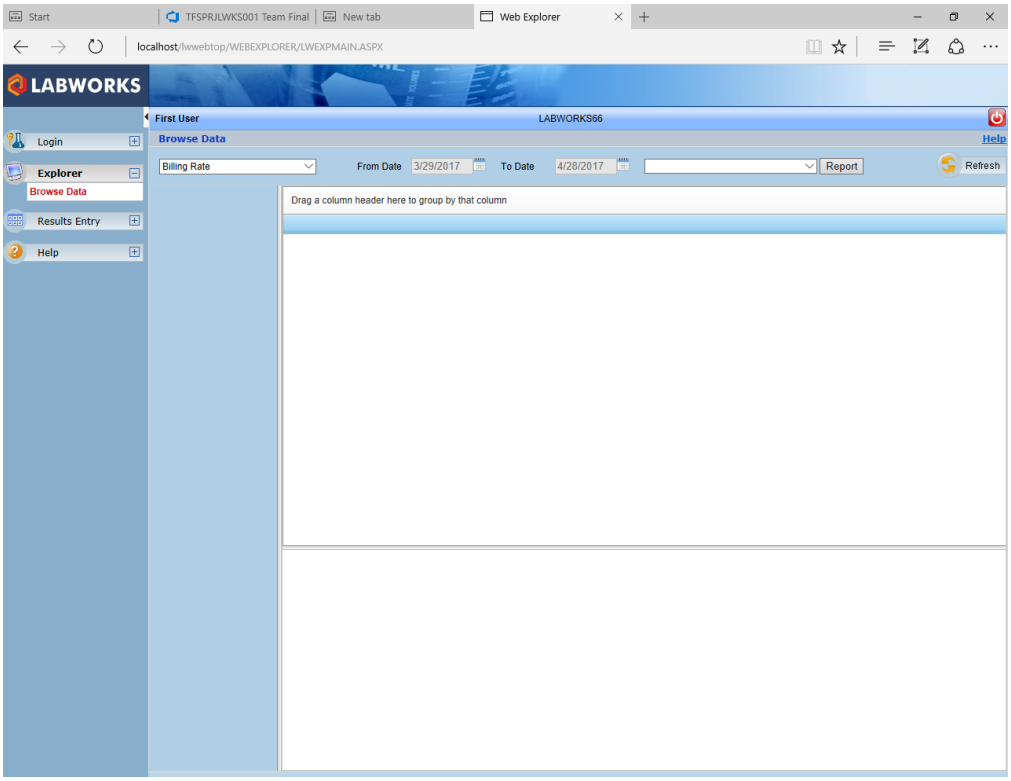
Step 9: Logon

Http://localhost/lwwebtop/login.aspx

Customer Logo:

The logo in the top-left of the application can be replaced.

Replace the file: \inetpub\wwwroot\LWWebtop\images\customerlogo.jpg with an image of your choice. The image size is 200X54, but the program will also stretch/shrink to fit in the allowed space.



Third Party Software

If your LABWORKS Application includes Third Party Applications such as BarTender or Northwest Analytical Quality Analyst (NWA), then instructions for instillations for those products are provided with their respective products.

Appendices

Appendix A – Planning and Definition Worksheet

Desktop Server

Computer Name		Domain Name		Ping By Name	Ping ByIPAddress
IP Address	. . .		Ping from Client	Yes / No	Yes / No
Server Reverse Lookup			Use Ping –a <ipaddr>		
IP Client	. . .				
Client Reverse Lookup			Use Ping –a <ipaddr>		
LABWORKS Server Location (Loc1)					
Server Files UNC					
Server Files Local Path					
Base Files				User Folder Selection	
User Files					
SQC Files				☐ Domain ID ☐ LABWORKS ID ☐ Workstation ID ☐ None	
Temporary Files					
LABWORKS LWPlatformService Folder (Loc2)					

Desktop Client

Computer Name		Domain Name		Ping By Name	Ping ByIPAddress
IP Address	. . .		Ping from Server	Yes / No	Yes / No
Client Reverse Lookup			Use Ping –a <ipaddr>		
IP Server	. . .				
Server Reverse Lookup			Use Ping –a <ipaddr>		
LABWORKS Client Location (Loc3)					

Webtop Server

Computer Name		Domain Name		Ping By Name	Ping ByIPAddress
IP Address	. . .	Ping from Client		Yes / No	Yes / No
Reverse Lookup		Use Ping –a <ipaddr>			

Share and Permission

Permission function	**Permission Name**
Manager	
Advanced User	
User	
Special Requirements:	

Appendix B – Server and Client Installation Check List

- ☐ Running LWServer.exe as the administrator to install required folder, server software, and client installation.
- ☐ Installation of LWLicenseServices
    - Install as part of the LWServer installation the LWLicenseServices.
- ☐ Installation of LWDataServices
    - Install as part of the LWServer installation the LWDataServices.
- ☐ CopyApplicationSpec.xmlfrom the server folder into the LWLicenseServices/LWDataServices folder License Path should be local drive to LWEXE folder.
- ☐ CopyClientApp.config the server folder into the LWDataServices folder.
- ☐ Edit the LABWORKS Server ApplicationSpec.xml to use UNC name for LICENSE_SERVER LICENSE_FILE_PATH.
- ☐ Create Share and set share permission on the server folder.
- ☐ Set folder permission as required.
- ☐ Perform migration of the database to the current version as outlined in appendix D.
    - 6.1/6.2/6.3/6.4/6.5/6.6/6.7/6.8/6.8.5/6.9/6.10/7.0/7.1/7.2
        - Run the Microsoft/Oracle Script
        - Run the Update Tool
        - Run the Microsoft/Oracle Inventory Script – If Required.
        - Run LWMigrationTool for Inventory – If Required.
        - Run NGMigrationTool – If Required.

If Your Current Version is: Then Run These Migrations	AuditTrail	CalcDefs	DMR * Optional	RltSpecs	Location Specs	Analysis Specs	Sample Specs	SIForm	Location Special Info	Analysis Special Info	Sample Special Info	MailList	Comments	LabObjects	Userhead	Result	AuditTrail Checksum	Violation Reorder	Chemical Inventory	LWCtrlChartMDLStudy
6.0	X	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			
6.1			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x			
6.2												x	x	x	x	x	x			
6.3												x	x	x	x	x	x			
6.4, 6.5,6.6,6.7, 6.8, 6.8.5, 6.9, 6.10,7.0,7.1, 7.2																		x	x	x

- Run the Gateway Administrator Tool.
- Configure folders required for LABWORKS.
- Configure the Database.

- Configure Database Authentication.
- Configure Global Database Availability.

☐ Start LWLicenseServices

☐ Start LWDataServices

☐ Run the ClientSetup.msi on each workstation that is to use LABWORKS

Appendix C – Webtop Check List

☐ Run LWWebtop.exe.

☐ If database updates performed by Desktop Installation the database is current, else run the Update Tool.

☐ Configure folder security

☐ Configure Web Applications

☐ Configure Webtop Applicationspec.xml using the local drive notation.

☐ Run the Gateway Administrator Tool.

- Set the folders for the Webtop
- Set the database connection

☐ Start LWLicenseServices

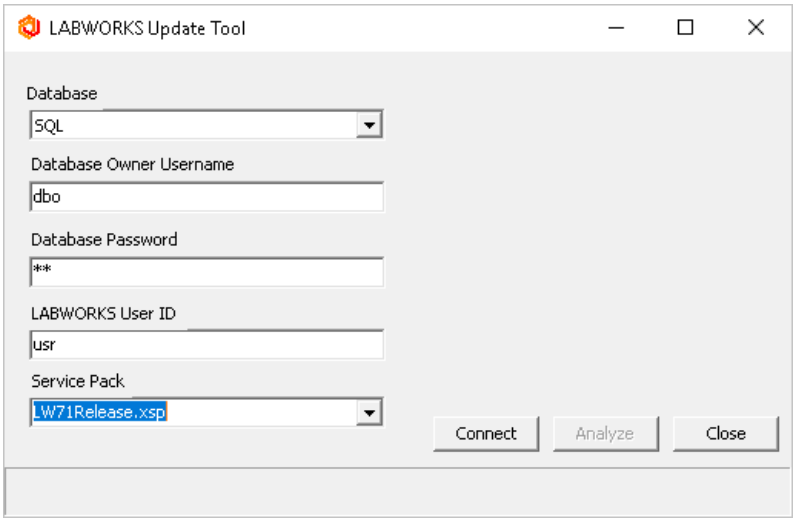
☐ Start LWDataServices

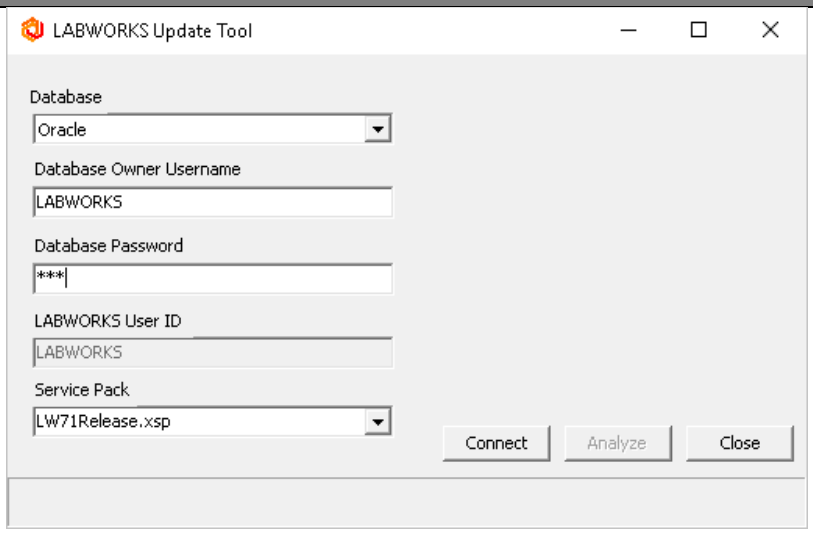
Appendix D – LABWORKS database migration 6.0/6.1/6.2/6.3/6.4/6.5/6.6/6.7/6.8/6.8.5/6.9/6.10/7.0/7.1/7.2

1. Use the Database tools to run SQL script either, LWScripts-SQLServer.sql or LWScripts-Oracle.sql, depending on your database system.
2. Run all versions of the LWXXRelease.xsp that have not previously been run.
3. If upgrading from 6.0 to 6.6 then run the Updatetool.exe for Service Pack - LW67Release.xsp. (Refer Appendix E)
4. If upgrading from 6.0 to 6.7 then run the Updatetool.exe for Service Pack - LW68Release.xsp. (Refer Appendix E)
5. If upgrading from 6.0 to 6.8 then run the Updatetool.exe for Service Pack - LW69Release.xsp. (Refer Appendix E)
6. If upgrading from 6.0 to 6.9 then run the Updatetool.exe for Service Pack - LW610Release.xsp. (Refer Appendix E)
7. If upgrading from 6.0 to 6.10 then run the Updatetool.exe for Service Pack – LW70Release.xsp. (Refer Appendix E)
8. If upgrading from 6.0 to 7.1 then run the Updatetool.exe for Service Pack – LW71Release.xsp. (Refer Appendix E)
9. If upgrading from 6.0 to 7.2 then run the Updatetool.exe for Service Pack – LW72Release.xsp. (Refer Appendix E)
10. LWMigrationTool.exe may need to be run.
11. NGMigrationTool.exe may need to be run.

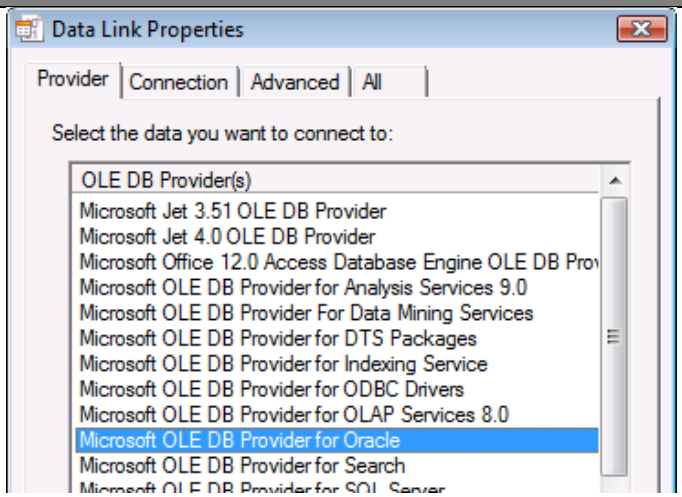
Appendix E – LABWORKS Update Tool

Running the Update Tool

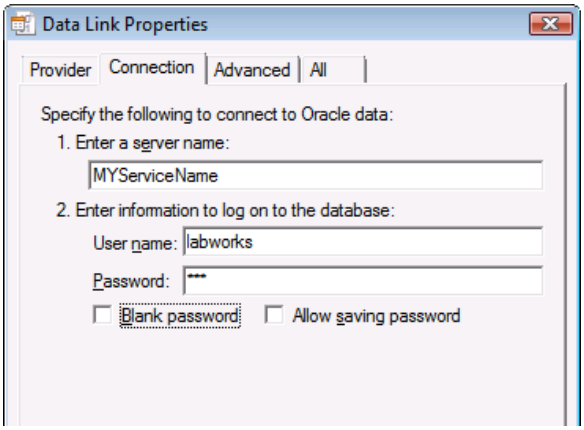
Step	User Input/Action	Expected Results
1	Select your database type, SQL or Oracle. 	Database is selected.

Step	User Input/Action	Expected Results
		
2	Enter the database owner, likely dbo for SQL, and the schema owner for Oracle. New tables will be created under this owner.	Database owner entered.
3	Enter the database connection Password.	Database connection password entered.
4	Enter the database connection User ID.	Database connection User ID entered.
5	Select the Service pack. All LWXXRelease.xsp files not previously applied are required. They should be run in release order, 6.7, 6.8, 6.9, 6.10,7.0,7.1,7.2. LW62DMRRelease.xsp, I18NTables.xsp, LWOPC.xsp are service packs for optional software. Update the database to latest LABWORKS Desktop format. The service pack I18NTables .xsp is used to add addition languages strings to the LABWORKS database and is used only if needed for multi-language sites.	Service pack selected and run.
6	Press the Connect button to create a connection to the database. • For Oracle databases, select the Microsoft OLEDB Provider for Oracle provider and click 'Next'. Enter your Oracle service name as the server name, database connection username and password. Press 'Test Connection' to confirm the connection.	Connection to the database is established.

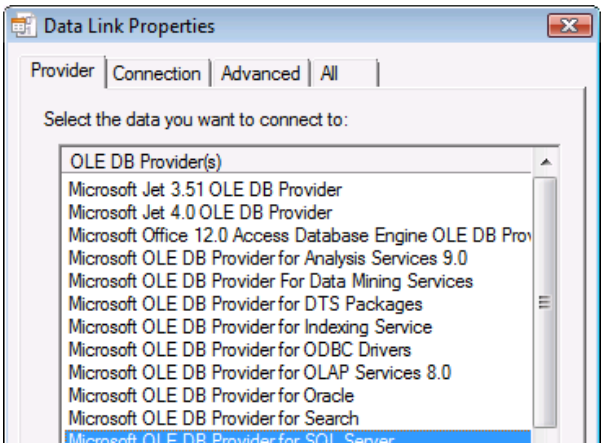
Step	User Input/Action	Expected Results

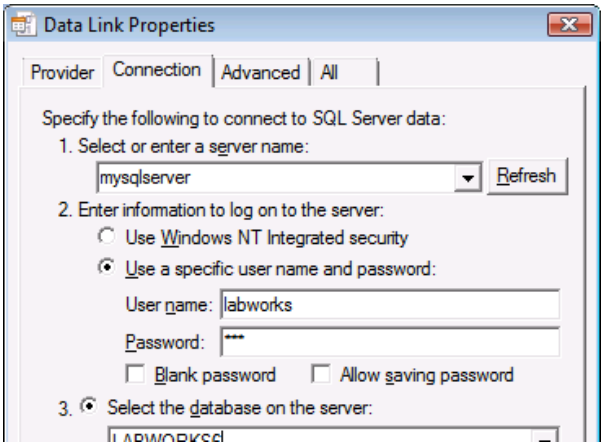
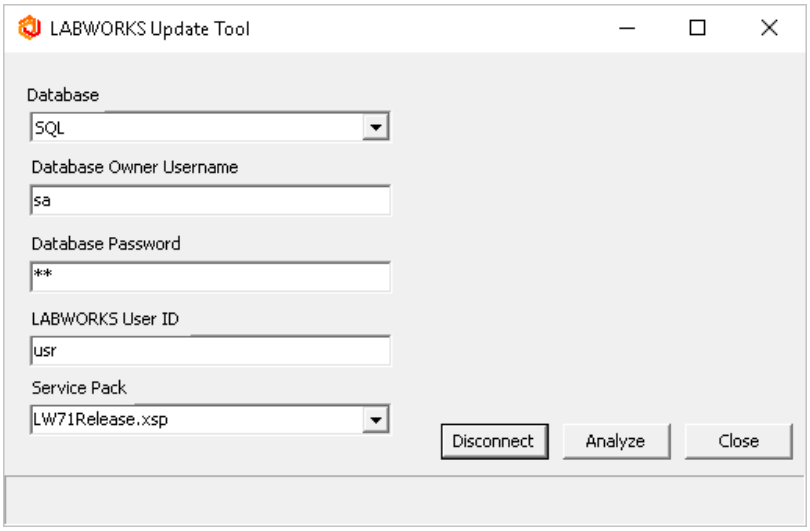


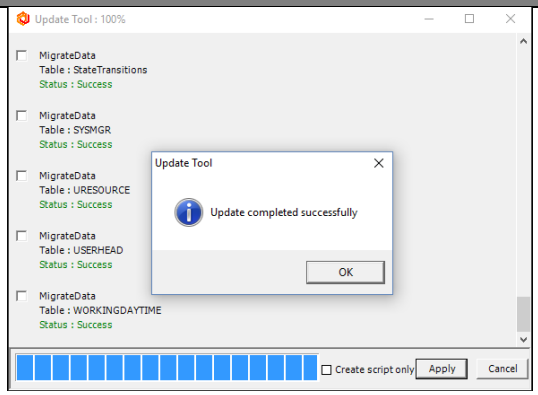
Enter your Oracle service name as the server name, database connection username and password. Click Test Connection to confirm the connections.



- For SQL Server databases, select the Microsoft OLEDB Provider for SQL Server provider and click 'Next'.



Step	User Input/Action	Expected Results
	Enter your SQL Server name, database connection username and password, and the database name. Press 'Test Connection' to confirm the connection. 	
7	After the database connection is tested, press 'Analyze' to have the program identify the database modifications required.  The program gives a preview of the changes to be made. To apply the changes press 'Apply'.	Database modifications are identified. Changes are applied.

Step	User Input/Action	Expected Results
	 If an error is encountered, the step that was unsuccessful appears in red. Clicking on the error message displays details about the error. The errors must be corrected prior to continuing.	