Pre-installation Guide

LabX

LabX 2014

METTLER TOLEDO

Table of Contents

1 Introduction

Welcome to METTLER TOLEDO LabX

LabX is a high quality software designed and built by METTLER TOLEDO assuring the highest integration, compatibility and reliability with **Balances**, **Density Meters**, **Melting Point Instruments**, **Quantos dosing systems**, **Refractometers**, and **Titrators**.

Congratulations on your choice of LabX as a system to be closely evaluated and welcome to our fast growing community of LabX users. LabX is a single software for multiple instruments bringing instrument control and data control to your Lab..

LabX is by design a client server application so that users can work entirely from either the touchscreen of the instrument or from any of the connected PCs. Starting with connecting one instrument on a local system to up to 30 instruments per server, your LabX system can grow with your needs even into a multiple server and distributed system.

LabX as part of METTLER TOLEDO product portfolio benefits from a world wide service of competence provided locally by your METTLER TOLEDO partner of trust. That assures the excellent services you as a METTLER TOLEDO customer are used to.

2 Purpose of the software

LabX is a single laboratory software for multiple instruments that brings instrument control and data control to the following benchtop instruments:

- Analytical and Precision Balances
- Density Meters
- Melting Point Instruments
- Quantos Dosing Systems
- Refractometers
- Titrators

Regulations like 21 CFR part 11, EU Annex 11, and the aspects of GMP are fully supported and validation services qualify the system at point of installation.

The unique design of LabX allows users to work from the computer or the instrument, or from both. The instrument becomes like any other client within the network, connected to the same server database.

The LabX system is at the instrument level controlling the instruments and securing the data. This complete solution can in turn be connected to other Lab systems like ELN, LIMS, ERP, SAP or other data management systems. The loop of data security, traceability and paperless Lab is made possible because the instruments that start the process of data acquisition like a Balance or a Titrator are then connected in true bi-directional data flow all the way through to the final data repository.

Methods are brought directly onto the instrument. The complete step-by-step user guidance ensures that the users follow the SOP of the lab. The user works entirely on the touchscreen of the instrument or from the computer and the data is automatically transferred to the database, to reports, and on to other systems without the need of manual transcription.

LabX powers the bench in that it handles multiple instruments with one common user interface and database and removes the need for manual transcription of data.

3 Purpose of this document

This document is intended to provide a structured overview of METTLER TOLEDO LabX software. It serves as a walkthrough guide to plan an upcoming installation as well as to identify and provide the optimal network infrastructure to run LabX smoothly.

IT technicians, managers as well as key users and employees involved in the project will find information about:

- preparation and planning of the installation
- the general layout of the software
- the implemented components
- dimensioning and scalability of the system
- typical and recommended installation

Installation team and skills

For installation and maintenance an experienced computer user is required. If LabX is operated in the distributed installation mode, an IT specialist for installation and maintenance who has knowledge of Microsoft networks configuration and Microsoft SQL Server is required.

Operators at instruments do not need additional knowledge of LabX. An operator who is trained in operating a stand-alone instrument is able to operate the same instrument that is connected to LabX.

Operators designing methods and reports need the following skills: Good knowledge of company internal processes and standard operating procedures as well as good general computer knowledge. Training by METTLER TOLEDO is highly recommended.

4 How to use the document

This document focuses on common criteria and questions when preparing an installation of LabX. However, it is essential that the intended installation has been chosen in advance. Within the following three overall sections you will be guided through:

Sections 1 to 7 provide information about the software in general. The required components as well as the built-in frameworks are mentioned here. Influences on the design and layout of your installation are addressed in section 7.

Section 8 The main installation types are listed within this section. Information about hardware with good performance, communication blueprint, ports and firewall settings, as well as infrastructure information can be found in this section. Please choose your installation type and go directly to the appropriate paragraph:

- Single PC (page 16)
- Distributed System (page 19)
- Virtualized environement (page 23)

Sections 9 to 11 General information and follow ups are provided in this section. Further documentation, access to METTLER TOLEDO Services and Support and the glossary can be found here.

All devices supported by LabX and the software versions are mentioned in the table Compatibility matrix (page 25).

General instructions

The current document will be updated regularly. It can be found for download on the METTLER TOLEDO extranet in the corresponding product community. Please contact your METTLER TOLEDO representative for an updated version.

Where to find further information:

- The **Installation Instructions** manual enclosed enables you to quickly become familiar with the easy installation on a single computer or the more complex procedure on a distributed system. You will find an overview of the main working principles and the basic steps for setting up a system. In detailed topics you will learn how to use the software efficiently.
- The context-sensitive **On-line Help** integrated in the software provides a complete description of all components and modules and a detailed description of all parameters.

  It can be accessed via the question mark in the upper right-hand corner of the appropriate title bar, or by using the F1 key on the computer keyboard. A help button is also provided sometimes in dialog boxes.

5 System specifications

5.1 Available systems

LabX is a client/server system. Every attached computer and instrument is treated as a client to the server. The system can be distributed over multiple servers (both virtual and physical) or strictly on one local computer.

For the local system (Express edition) up to 3 instruments can be connected to one local computer. For the larger systems (Server edition), that can be either distributed or localized, up to 30 instruments can be connected to each server.

5.2 Licensing structure

LabX™ software comes conveniently in one DVD, with all configurations and options handled via license keys. Choose your system based on a Starter Pack. In addition, LabX is licensed per connected instrument, therefore you only need a license per instrument and not for every computer. Further Option Licenses are added based on your needs.

1) The license for the User Management is included in the Starter Pack LiquiPhysics Express and Thermal Values Express.

2) Starter Pack Titration includes both, one instrument license for a titrator and one for a balance.

LabX descriptions and order numbers

LabX™ Starter Packs

Express Edition		
Full version of LabX for installation on a single computer. Up to 3 instruments can be connected to this edition.		
Name	**Description**	**Part. No.**
Balance	1 Balance instrument license.	11153120
LiquiPhysics	1 LiquiPhysics instrument license. User Management Option.	11153130
Thermal Values	1 Thermal Values instrument license. User Management Option.	30005779
Quantos	1 Quantos instrument license.	30062403
Titration	1 Titration instrument license. 1 Balance instrument license.	30097754

Server Edition		
Full version of LabX for installation on multiple computers and available in distributed network. Up to 30 instruments can be connected to this edition.		
Name	**Description**	**Part. No.**
Balance	1 Balance instrument license. User Management Option. Auto Import/Export Option.	11153121
LiquiPhysics	1 LiquiPhysics instrument license. User Management Option. Auto Import/Export Option.	11153131
Thermal Values	1 Thermal Values instrument license. User Management Option. Auto Import/Export Option.	30005810
Quantos	1 Quantos instrument license. User Management Option. Auto Import/Export Option.	30062404
Titration	1 Thermal Values instrument license. 1 Balance instrument license. User Management Option. Auto Import/Export Option.	30097755

Instrument licenses

For each additional instrument to be connected to the LabX installation, an Instrument License is needed.

Name	Description	Part. No.
1 Excellence Balance	License for 1 Excellence balance	11153220
5 Excellence Balances	License for 5 Excellence balances	11153221
1 LiquiPhysics	License for 1 LiquiPhysics instrument	11153250
1 Thermal Values	License for 1 Thermal Values instrument	30005811
1 Quantos	License for 1 Quantos instrument	30062405
1 Titrator	License for 1 Titration instrument	30097756
3 Titrators	License for 3 Titration instruments	30097757

Option licenses

The LabX installation is fully extendable. See the options & functionalities below that can be added to the installation. Some options require a LabX Server edition.

Name	Description	Part. No.
User Management	Centrally maintain and control users and roles within LabX.	11153102
Product Database	Manage product data within LabX centrally – run methods based on product data.	11153103
Auto Import/Export	LabX allows you to import and export data into and from CSV and XML formats.	11153105
Regulation [1)]	LabX fully supports regulatory requirements, including 21 CFR Part 11.	11153104
Report Designer [1)]	Freely customize your reports with all details and possibilities including charts, graphics, and tables.	11153106
System Integration [1)]	Integrate LabX installation with other software packages including LIMS and ERPs using API webservice.	11153107

[1)] Option can be combined with LabX Server editions only

LabX Express to Server Sidegrade / LabX™ Update DVD

LabX systems can be updated to a newer version or upgraded from previous system.

Name	Description	Part. No.
LabX Express - Server	Sidegrade a LabX Express edition installation into a LabX Server edition.	11153117
LabX Update DVD Pack	Most recent software DVD and Quick Guide for updating an existing LabX system.	30005812
LabX Titration Upgrade Light to Express	Upgrade existing LabX Light version 3.1 to LabX Express edition.	30094214
LabX Titration Upgrade Pro to Server	Upgrade existing LabX Pro version 3.1 to LabX Server edition.	30094215

5.3 Languages

The following languages are available for LabX on the computer and the instrument.

Excellence instruments supported

Language	LabX	Balance	Quantos	Titration	LiquiPhysics	Thermal Values
English	•	•	•	•	•	•
German	•	•	•	•	•	•
French	•	•	•	•	•	•
Italian	•	•	•	•	•	•
Spanish	•	•	•	•	•	•
Portuguese	•	•[1)]	•[1)]	•	•	•
Russian [2)]	•	•	•	•	•	•
Polish	•	•	•	•	•	•
Chinese	•	•	•	•	•	•
Japanese	•	•	•	-	-	•

1) If the language of the LabX installation is not available on the instrument, individual texts will be displayed on the instrument in English.

2) With a Russian installation of LabX, Russian keyboards are displayed on the balances for inputting text. Since not all characters can be input using these keyboards, this must be taken into consideration when specifying user names and passwords on the PC.

6 Software specifications

LabX is a client server system.

Clients are implemented as Windows executables. They are **not** web-based and **do not** require a web browser.

Server components are hosted in Windows services and are controlled by the Windows Service Controller.

General specifications

After installation, LabX does not require write access to the installation directory. Write access is required for the LabX service user to the following folders:

LabX2014\	Dir	Read / Execute
Log\	Dir	+ Write
Licensing\	Dir	+ Write
Ltfm.dat	File	+ Write

Machine key store permissions

Keystore "SequoiaPasswordContainer" (2d38db507644999e24add5e4b60f96c1_xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx)	Read

Http namespace permissions

http://+:<port>/LabX/DoorBellService	GenericAll
http://+:<port>/LabX/SystemIntegrationService	GenericAll
http://+:<port>/RemoteLabxClient.asmx/	GenericAll

Database permissions

Access to the DBMS that runs the LabX 2014 database

Insert, Update, Delete permissions on all Tables (and Views) of the LabX2014 Database ('data reader' and 'data writer' roles)

6.1 Client components

PC Client

The client contains a graphical user interface to operate the system from a PC.

DBMaintenance (Utility)

LabXDBMaintenance is required to manage (backup/restore/initialize) the LabX database.

InstallationChecker (Utility)

The InstallationChecker Application allows doublechecking the system where LabX is installed on, its configuration and installed components.

6.2 Server components

Business Server (part of Host Service)

A Business Server is the entry point for clients and is therefore the point of authentication to any client that wants to interact with the LabX system. The business service provides the core functionality of the system.

Instrument Server (part of Host Service)

An Instrument Service is responsible to connect instruments to the LabX system. Instruments are connected using the LabX driver Framework.

6.3 Third party components

Database

The database stores all data of the LabX sytem in a reliable way and provides fast access to it. The SQL Server Express Edition can be installed by the LabX installer. There also the option the access any SQL Server database that is installed and maintained.

The database collation for LabX has to be Latin1_General_CI_AS. The isolation level "snapshot" has to be enabled.

The following third party software is required by **LabX 2014** to run. The LabX installation will install the necessary components.

Software installed

Name	Version	Installed by LabX
PDF Reader [1)]	6.0	required but not installed
Flash Player [2)]	10	required but not installed
.Net Framework [3)]	4.5	•
Windows Installer [4)]	4.5	•

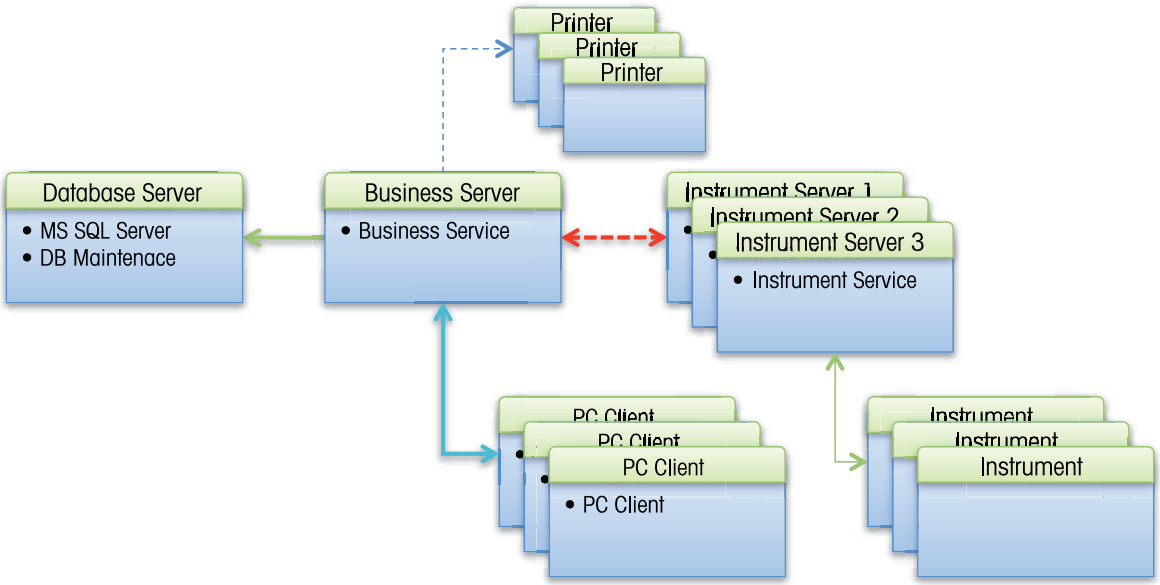
[1)] http://www.adobe.com/de/products/reader.html
[2)] http://www.adobe.com/en/products/flashplayer/
[3)] http://www.microsoft.com/downloads/details.aspx?familyid=AB99342F-5D1A-413D-8319-81DA479AB0D7
[4)] http://support.microsoft.com/kb/942288/de

7 System dimension and scalabilities

Dimensioning the system

LabX is by design a highly reliable and scalable system. It can be run on a single PC hardware or in distributed environments with multiple servers. This chapter should support you by identifying and choosing the installation of LabX which fits best to your needs.

Comparing to the general requirements in the previous chapter, installing the LabX system in a distributed mode requires some additional effort. The following diagram shows how the system should be set up in the distributed mode.



Running **LabX 2014** in the distributed mode requires two high end servers, one for the database and one for the business services. Additional standard servers for connecting instruments can be used as instrument servers. As PC clients, standard computers can be used.

It is essential to choose the right environment to run LabX. Please answer the check question in the table below and find straight away the recommended solution:

LabX setup

No.	Check Question	Answer	Single PC	Distributed system
1	Number of instruments per LabX system		2...3	>=3 (system scales by number of instrument servers)
2	Maximum number of instruments per instrument server		2...3	System scales dependent on HW resources
3	Connected devices via RS232		Multiple	Multiple
4	Connected devices via USB		Per Machine: 1 LiquiPhysics, Multiple Titrators	Per Machine: 1 LiquiPhysics, Multiple Titrators
5	Connected devices via Ethernet		multiple IP v4	multiple IP v4
6	Number of T90 Titrators running two tasks in parallel per LabX system		1...2	>=2 (system scales by number of instrument servers)

All values are recommendations based upon best practices and experience.

Database choice and dimensioning

No.	Check Question	Answer	SQL Express	SQL Standard/ Enterprise
1	Distributed System		No	Yes

No.	Check Question	Answer	SQL Express	SQL Standard/ Enterprise
2	Number of instruments to be connected		2…3	>=3
3	Archiving		LabX DBMaintenance	LabX DBMaintenance
4	Archiving interval		1 to 12 month depending on workload	1 to 12 month depending on workload
5	DB Backup/Restore		LabX DBMaintenance	Professional Backup tool or LabX DBMaintenance[1)]
6	Thermal Values instrument videos[2)]		<= 150	> 150

[1)]It is essential to use the DBMaintenance for restores if you want to restore a backup into a newer version of LabX than from which you created the backup since the restore mechanism includes the DB-Update mechanism

[2)]The max. number of stored videos can be limited over a Thermal Values specific setting in LabX

All values are recommendations based upon best practices and experience.

8 Typical installation / Preparing the installation

8.1 Single PC

8.1.1 Introduction

On a single PC deployment, all LabX components are installed on a single workstation. This scenario is applicable for small installations with low data volume.

8.1.2 System requirements

The following table gives the minimal and the optimal hardware requirements for running a **LabX 2014** system.

If the CPU supports Hyper-Threading, you can double the available cores when calculating the hardware requirements. A Dual Core CPU would therefore be counted as a Quad Core.

Stand alone PC (For 2-3 instruments)

	Minimum (1 instrument only)	Optimum
CPU	2 GHz Dual Core	3 GHz Quad Core
RAM	2 GB	4 GB
Ethernet	100 Mbps	100 Mbps
Display Resolution	1280 × 800	1280 × 1024
Hard Disk	30 GB free space, 5400 rpm	60 GB free space, 7200 rpm / SSD
DVD-ROM drive	For installation	For installation

8.1.3 Operating systems

The following list shows the supported operating systems of **LabX 2014**. To run LabX we recommend using Windows 7 as client operating system and Windows Server 2008 R2 as server operating system.

Operating systems

Name	Service pack	Editions	32 bit	64 bit
Windows Vista	SP 2	Ultimate, Business, Enterprise	•	•
Windows 7	SP 1	Ultimate, Professional, Enterprise	•	•
Windows 8		Standard, Pro, Enterprise	•	•
Windows Server 2008	SP 2	Standard, Enterprise	•	•
Windows Server 2008 R2	SP1	Standard, Enterprise	•	•
Windows 2012 Server		Foundation, Essentials, Standard, Datacenter	•	•

8.1.4 Database server

The following list shows an overview over the supported Microsoft SQL Server Editions. During the installation of **LabX 2014**, the setup offers to install a Microsoft SQL Server 2012 Express Edition. For larger systems we recommend using Microsoft SQL Server 2012 Full Edition, due to the size limitations and other performance restrictions of the Express Edition.

SQL Server

Name	Service Pack	Editions
SQL Server 2008	SP 3	Express and Full Edition
SQL Server 2008 R2	SP 2	Express and Full Edition
SQL Server 2012	SP1	Express and Full Edition

8.1.5 Additional software

Fingerprint reader

Fingerprint readers can be used for authentication as an alternative to password entry. In contrast to a conventional login with a user name and password, the user simply places a finger on the fingerprint reader. If the fingerprint is recognized, the relevant user is authenticated in the same way as if they had entered a user name and password.
When a fingerprint reader is active, this is indicated with the following actions by a fingerprint icon.

- Logging on to LabX
- Releasing a screen lock
- Signing various objects

USB drivers

Additional device specific USB drivers must be installed on the PC to which an instrument from the LiquiPhysics Excellence and/or Titration Excellence range is connected. Execute the respective installation program (can be found on the DVD) using an administrator account level to install the USB drivers for Liquiphysics and/or Titrator instruments.

8.1.6 Connected instruments

LabX 2014 supports the following instruments with the corresponding configuration. The instruments have to fulfill the requirements to operate with LabX.

Balance

Model	Terminal	Bridge	USB	Serial	Network
XP/XS Precision	5.00 / 5.10 / 5.20 / 5.30	4.25 / 4.30 / 4.40		•	•
XP/XS Analytical	5.00 / 5.10 / 5.20 / 5.30	4.24 / 4.30 /4.40		•	•
XP/XS Micro	5.00 / 5.10 / 5.20 / 5.30	1.00 / 1.10 / 1.20		•	•
XPE/XSE Analytical	1.03	1.00		•	•

Quantos

Model	Terminal	Bridge	QuantosServer	USB	Serial	Network
XP205	5.00 / 5.10 / 5.20 / 5.30	4.24 / 4.30 / 4.40	1.0.2			•
XP504	5.00 / 5.10 / 5.20 / 5.30	4.24 / 4.30 / 4.40	1.0.2			•
QD56	5.00 / 5.10 / 5.20 / 5.30	1.00 / 4.30 / 4.40	1.0.2			•
QD204DR	5.00 / 5.10 / 5.20 / 5.30	1.00 / 4.30 / 4.40	1.0.2			•
QD205DR	5.00 / 5.10 / 5.20 / 5.30	1.00 / 4.30 / 4.40	1.0.2			•
QD206DR	5.00 / 5.10 / 5.20 / 5.30	1.00 / 4.30 / 4.40	1.0.2			•
XPE205	1.03	1.00	1.0.2			•

Titration

Model	Firmware	USB	Serial	Network
G20	2.0.0	•		•
V20/V30	3.0.0	•		•
C20/C30	3.0.0	•		•
T50/T70/T90	4.0.0	•		•

LiquiPhysics

Model	Firmware	USB	Serial	Network
DM / RM / DX / RX	2.0.0 / 2.0.1	•		•

Thermal Values

Model	Firmware	USB	Serial	Network
MP70 / MP90	1.30 / 1.32			•

8.1.7 Network and firewalls

Firewall settings are set and unset in the current Firewall Profile.

	Port (Defaults)	Purpose
SQL Server		
Sqlbrowser.exe		Process which belongs to the Microsoft SQL Server and provides browsing services
Sqlserv.exe		Main executable relating to Microsoft's SQL Server Suite. This server application provides SQL server services
Programs: (optional)		

	Port (Defaults)	Purpose
LabXHost.exe		Incorporates the LabXHostService which hosts an instrument server and a business server component
LabXClient.exe		The LabX UI application
DBMaintenance.exe		DB Backup/Restore Utility
Default Ports		
Instrument Server	51154	Responsible for instrument communication and workflow execution
Callback Port Range (For LiquiPhysics and Thermal Values instruments only)	53001-53030	Required for Liquiphysics and Thermal Values instruments to call the LabX system (Port = 0 means automatic port selection) Port = 0 means automatic port selection
Integration Service	51155	Part of the application programming interface (API)
Integration Meta Service	51156	Part of the application programming interface (API)
Business Server	51153	The LabX business logic
Doorbell Service	51152	Handles the component communication within the LabX system

8.1.8 Security and backup

The installer of the LabX system requires administrator privileges on all LabX computers and on the database system. For creating a backup or maintaining the LabX database, administrator privileges are required as well. Standard PC-Client users or users on the instrument do not require any additional rights.

A backup system should be available, which supports a periodical backup of the SQL database. If no such tool is available, the built in DBMaintenance tool of LabX can be used to perform a backup, but using a professional backup tool is highly recommended.

Note
It is essential to use the DBMaintenance for restores if you want to restore a backup into a newer version of LabX than from which you created the backup since the restore mechanism includes the DB-Update mechanism

8.1.9 Checklist single PC

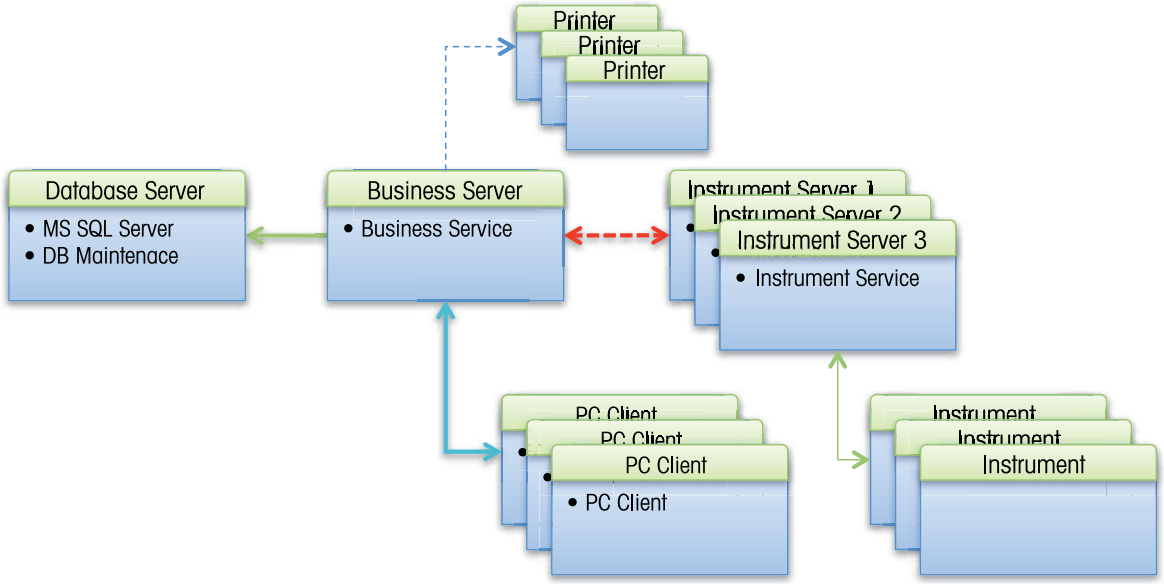
PC

No.	Description	Criterion	Pass	N/A
System requirements				
1	CPU	2 GHz Dual Core	☐	☐
2	RAM	2 GB	☐	☐
3	Ethernet	100 Mbps	☐	☐
4	Display Resolution	1280 × 800	☐	☐
5	Hard Disk	30 GB free space	☐	☐
6	DVD-ROM drive	For installation	☐	☐
Operating systems				
7	Windows Vista	SP 2	☐	☐
8	Windows 7	SP 1	☐	☐
9	Windows Server 2008	SP 2	☐	☐
10	Windows Server 2008 R2	SP1	☐	☐
11	Windows Server 2012		☐	☐
Database server				
12	SQL Server 2008	SP 3	☐	☐
13	SQL Server 2008 R2	SP 2	☐	☐
14	SQL Server 2012		☐	☐
DB backup				
15	LabX DBMaintenance		☐	☐

8.2 Distributed System

8.2.1 Introduction

With the increasing size of the system, it is advisable for performance reasons to install certain components on separate computers. For example, the application server and the database server can be installed on a dedicated computer.



8.2.2 Additional software

Fingerprint reader

Fingerprint readers can be used for authentication as an alternative to password entry. In contrast to a conventional login with a user name and password, the user simply places a finger on the fingerprint reader. If the fingerprint is recognized, the relevant user is authenticated in the same way as if they had entered a user name and password.
When a fingerprint reader is active, this is indicated with the following actions by a fingerprint icon.

- Logging on to LabX
- Releasing a screen lock
- Signing various objects

USB drivers

Additional device specific USB drivers must be installed on the PC to which an instrument from the LiquiPhysics Excellence and/or Titration Excellence range is connected. Execute the respective installation program (can be found on the DVD) using an administrator account level to install the USB drivers for Liquiphysics and/or Titrator instruments.

8.2.3 Connected instruments

LabX 2014 supports the following instruments with the corresponding configuration. The instruments have to fulfill the requirements to operate with LabX.

Balance

Model	Terminal	Bridge	USB	Serial	Network
XP/XS Precision	5.00 / 5.10 / 5.20 / 5.30	4.25 / 4.30 / 4.40		•	•
XP/XS Analytical	5.00 / 5.10 / 5.20 / 5.30	4.24 / 4.30 /4.40		•	•
XP/XS Micro	5.00 / 5.10 / 5.20 / 5.30	1.00 / 1.10 / 1.20		•	•
XPE/XSE Analytical	1.03	1.00		•	•

Quantos

Model	Terminal	Bridge	QuantosServer	USB	Serial	Network
XP205	5.00 / 5.10 / 5.20 / 5.30	4.24 / 4.30 / 4.40	1.0.2			•
XP504	5.00 / 5.10 / 5.20 / 5.30	4.24 / 4.30 / 4.40	1.0.2			•
QD56	5.00 / 5.10 / 5.20 / 5.30	1.00 / 4.30 / 4.40	1.0.2			•
QD204DR	5.00 / 5.10 / 5.20 / 5.30	1.00 / 4.30 / 4.40	1.0.2			•
QD205DR	5.00 / 5.10 / 5.20 / 5.30	1.00 / 4.30 / 4.40	1.0.2			•
QD206DR	5.00 / 5.10 / 5.20 / 5.30	1.00 / 4.30 / 4.40	1.0.2			•
XPE205	1.03	1.00	1.0.2			•

Titration

Model	Firmware	USB	Serial	Network
G20	2.0.0	•		•
V20/V30	3.0.0	•		•
C20/C30	3.0.0	•		•
T50/T70/T90	4.0.0	•		•

LiquiPhysics

Model	Firmware	USB	Serial	Network
DM / RM / DX / RX	2.0.0 / 2.0.1	•		•

Thermal Values

Model	Firmware	USB	Serial	Network
MP70 / MP90	1.30 / 1.32			•

8.2.4 Network and firewalls

Firewall settings are set and unset in the current Firewall Profile.

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The installer of the LabX system requires administrator privileges on all LabX computers and on the database system. For creating a backup or maintaining the LabX database, administrator privileges are required as well. Standard PC-Client users or users on the instrument do not require any additional rights.

A backup system should be available, which supports a periodical backup of the SQL database. If no such tool is available, the built in DBMaintenance tool of LabX can be used to perform a backup, but using a professional backup tool is highly recommended.

Note
It is essential to use the DBMaintenance for restores if you want to restore a backup into a newer version of LabX than from which you created the backup since the restore mechanism includes the DB-Update mechanism

8.2.6 Client

8.2.6.1 System requirements

The following table gives the minimal and the optimal hardware requirements for running a **LabX 2014** system.

If the CPU supports Hyper-Threading, you can double the available cores when calculating the hardware requirements. A Dual Core CPU would therefore be counted as a Quad Core.

PC Client

	Minimum	Optimum
CPU	2 GHz Single Core	3 GHz Quad Core
RAM	2 GB	3 GB
Display Resolution	1280 × 800	1280 × 1024
Hard Disk	10 GB free space	10 GB free space
Installed LabX Components	PC Client	PC Client

8.2.6.2 Operating systems

The following list shows the supported operating systems of **LabX 2014**. To run LabX we recommend using Windows 7 as client operating system and Windows Server 2008 R2 as server operating system.

Operating systems

Name	Service pack	Editions	32 bit	64 bit
Windows Vista	SP 2	Ultimate, Business, Enterprise	•	•
Windows 7	SP 1	Ultimate, Professional, Enterprise	•	•
Windows 8		Standard, Pro, Enterprise	•	•
Windows Server 2008	SP 2	Standard, Enterprise	•	•
Windows Server 2008 R2	SP1	Standard, Enterprise	•	•
Windows 2012 Server		Foundation, Essentials, Standard, Datacenter	•	•

8.2.6.3 Checklist

Client PC

No.	Description	Criterion	Pass	N/A
System requirements				
1	CPU	2 GHz Single Core	☐	☐
2	RAM	2 GB	☐	☐
3	Ethernet	100 Mbps	☐	☐
4	Display Resolution	1280 × 800	☐	☐
5	Hard Disk	10 GB free space	☐	☐
6	DVD-ROM drive	For installation	☐	☐
Operating systems				
7	Windows Vista	SP 2	☐	☐
8	Windows 7	SP 1	☐	☐
9	Windows Server 2008	SP 2	☐	☐
10	Windows Server 2008 R2	SP1	☐	☐
11	Windows Server 2012		☐	☐

8.2.7 Server

8.2.7.1 System requirements

If the CPU supports Hyper-Threading, you can double the available cores when calculating the hardware requirements. A Dual Core CPU would therefore be counted as a Quad Core.

Business Server

	Minimum	Optimum
CPU	2 GHz - 10 instruments or active users / core	3 GHz - 5 instruments or active users / core
RAM	2 GB	4GB
Display Resolution	1280 × 800	1280 × 1024
Hard Disk	10 GB free space	10 GB free space
Software	Windows 7 SP 1	Windows Server 2008 R2 SP 1
Installed LabX Components	Business Service (runs under LabX Service Account).	Business Service (runs under LabX Service Account).

Instrument Server

	Minimum	Optimum
CPU	2 GHz - 4 running tasks / core	3 GHz - 2 running tasks / core
RAM	1 GB	2 GB
Display Resolution	1280 × 800	1280 × 1024
Hard Disk	10 GB free space	10 GB free space
Software	Windows 7 SP 1	Windows Server 2008 R2 SP 1
Installed LabX Components	Instrument Service (runs under LabX Service Account)	Instrument Service (runs under LabX Service Account)

8.2.7.2 Operating systems

The following list shows the supported operating systems of **LabX 2014**. To run LabX we recommend using Windows 7 as client operating system and Windows Server 2008 R2 as server operating system.

Operating systems

Name	Service pack	Editions	32 bit	64 bit
Windows Vista	SP 2	Ultimate, Business, Enterprise	•	•
Windows 7	SP 1	Ultimate, Professional, Enterprise	•	•
Windows 8		Standard, Pro, Enterprise	•	•
Windows Server 2008	SP 2	Standard, Enterprise	•	•
Windows Server 2008 R2	SP1	Standard, Enterprise	•	•
Windows 2012 Server		Foundation, Essentials, Standard, Datacenter	•	•

8.2.7.3 Database server

The following list shows an overview over the supported Microsoft SQL Server Editions. During the installation of **LabX 2014**, the setup offers to install a Microsoft SQL Server 2012 Express Edition. For larger systems we recommend using Microsoft SQL Server 2012 Full Edition, due to the size limitations and other performance restrictions of the Express Edition.

SQL Server

Name	Service Pack	Editions
SQL Server 2008	SP 3	Express and Full Edition
SQL Server 2008 R2	SP 2	Express and Full Edition
SQL Server 2012	SP1	Express and Full Edition

Database Server

	Minimum	Optimum
CPU	2 GHz Dual Core	3 GHz Quad Core
RAM	2 GB	8 GB
Display Resolution	1280 × 800	1280 × 1024
Hard Disk	30 GB free space	100 GB free space
Software	Windows 7 SP 1 MS SQL Server 2008 SP 3	Windows 2008 R2 Server SP1 MS SQL Server 2008 R2 SP2

8.2.7.4 Checklist

Server PC

No.	Description	Criterion	Pass	N/A
System requirements				
1	CPU	2 GHz Dual Core	☐	☐
2	RAM	2 GB	☐	☐
3	Ethernet	100 Mbps	☐	☐
4	Display Resolution	1280 × 800	☐	☐
5	Hard Disk	30 GB free space	☐	☐
6	DVD-ROM drive	For installation	☐	☐
Operating systems				
7	Windows Vista	SP 2	☐	☐
8	Windows 7	SP 1	☐	☐
9	Windows Server 2008	SP 2	☐	☐
10	Windows Server 2008 R2	SP1	☐	☐
11	Windows Server 2012		☐	☐
Database server				
12	SQL Server 2008	SP 3	☐	☐
13	SQL Server 2008 R2	SP 2	☐	☐
14	SQL Server 2012		☐	☐
DB backup				
15	LabX DBMaintenance		☐	☐

8.3 Virtualized environement

In general, LabX runs in a virtualized environment if the host system has been dimensioned reasonably. This depends on the system load and is situated between a single place system and a high end system. However, a reserve capacity has to be taken into account, since the host system itself needs its resources.

As a rule of thumb double the required resources of the hardware direct installation (without virtualization).

Although the possibility is given to run LabX in a virtualized environment, METTLER TOLEDO does not support this operation mode. The customer is responsible for possible failure and security risk himself and METTLER TOLEDO rejects every liability which results from the virtualization.

9 METTLER TOLEDO support

METTLER TOLEDO Service knows exactly on what the fulfilment of your specific company's demands depend. Profit from the market leader's experience and guarantee by us the best possible availability, achievement and conformance of your instruments and equipment. In connection with the necessary professionalism you make thus the maximum from your investment – for a long lifetime.

METTLER TOLEDO Service recommends that you consider the following key elements before finalizing a services program:

- You need your equipment to be up and running all the time.
- You want to maintain the accuracy and functionality of your equipment, regardless of circumstances and usage, for many years of dependable operations.
- You want optimal instrument configuration for your environment and applications that save you time and money.
- You are concerned with staying compliant to your quality requirements, applicable laws and regulations and you need to pass any audit flawlessly.
- Your operators and technical staff need to be safe and productive. They need to know how to operate and maintain your instruments.

Please find your country and the corresponding Service & Support here:

METTLER TOLEDO, Your Global Provider of Precision Instruments and Weighing Equipment

10 Appendix

10.1 Compatibility matrix

Instruments

Model	V2	V3	V4	V5	V6
Balance					
XP/XS	V5.00	V5.00/V5.10	V5.00/V5.10/ V5.20	V5.00/V5.10/ V5.20	V5.00/V5.10/ V5.20/V5.30
XPE/XSE/XVE	<driver to be released>	<driver to be released>	<driver to be released>	<driver to be released>	V1.02
Quantos					
XP/XS	-	-	-	V1.0.2	V1.0.2
XPE/XSE/XVE	-	-	-	<driver to be released>	V1.0.2
Thermal values					
MP70/MP90	-	V1.20	V1.30 (V1.32 driver sep. avail.	V1.30 (V1.32 driver sep. avail.	V1.30/V1.32
LiquiPhysics					
DM / RM / DX / RX	V1.0.1	V1.0.1	V2.0.0	V2.0.0/V2.0.1	V2.0.0/V2.0.1
Titration					
G20	-	-	-	-	
V20/V30	-	-	-	-	
C20/C30	-	-	-	-	
T50/T70/T90	-	-	-	-	

Operating systems

		V5	V6
Windows XP (Professional Edition 32bit)	32&64 bit	SP3	-
Windows Vista (Ultimate, Business, Enterprise Edition)	32&64 bit	SP2	SP2
Windows 7 (Ultimate, Professional, Enterprise Edition)	32&64 bit	YES + SP1	SP1
Windows 8 (Win 8, Win 8 Pro, Win 8 Enterprise)	32&64 bit	-	YES
Windows 2003 Server	32&64 bit	SP2	-
Windows 2003 Server R2	32&64 bit	SP2	-
Windows 2008 Server	32&64 bit	SP2	SP2
Windows 2008 Server R2	32&64 bit	SP1	SP1
Windows 2012 Server (Foundation, Essentials, Standard)	32&64 bit	-	YES

DB

	V1/V2	V3	V4	V5	V6
MS SQL Server 2005	SP2, SP3	SP2, SP3	SP4	-	-
MS SQL Server 2008	SP1	SP1, SP2	SP2	SP3	SP3
MS SQL Server 2008 R2	-	YES	YES	SP2	SP2
MS SQL Server 2012	-	-	-	YES	SP1

10.2 Accessories

Additionally to the instruments that can be connected to LabX, the following accessories are supported by LabX.

10.2.1 Fingerprint Reader

The fingerprint reader can be used to authenticate a user by using a fingerprint.

Model
Microsoft fingerprint reader (Driver GrFinger Fingerprint SDK 4.2 LIGHT)

10.2.2 Barcode Reader

The barcode reader can be used to start methods, sample series and products.

Model
Any windows XP compatible barcode reader Support linear barcodes: 25, 39, 93, 128 A/B/C, EAN 5/8/13, GS-128 [1)]

[1)] http://www.activebarcode.de/codes/

10.2.3 Label Printer

The following label prints are supported by **LabX 2014**.

Model
Zebra TPL-2844

10.3 Security and rights

The installer of the LabX system requires administrator privileges on all LabX computers and on the database system. For creating a backup or maintaining the LabX database, administrator privileges are required as well.

Standard PC-Client users or users on the instrument do not require any additional rights.

LabXServiceAccount

The services of LabX run per default under the internal "Network Service" user which has extended rights on the computer. When LabX is printing on network printers (only required if using Windows Vista or higher) or the LabX system is in installed in distributed mode, a user "LabXServiceAccount" should be created to run the LabX services. The "LabXServiceAccount" requires the following permissions.

File system Permissions

The "LabXServiceAccount'" requires to read all files in the installation directory of LabX. Also it must be able to write on several files as shown in the following list:

Location	Scope	Permission	Applies to server
LabX2014\ - Log\ - Licensing\ - Ltfm.dat	Dir Dir Dir File	Read / Execute / Write + Write + Write + Write	Business server/Instrument server Business server/Instrument server Business server Business server
Export Directories	Dir	+ Write	Business server
Import Directories	Dir	+ Write	Business server

Windows Permission

Additional to the file permission the "LabXServiceAccount" has to be a member of the windows domain. The user has to be able to access the printers that will be used in LabX and needs the "Logon as Service" priviledge.

Machine Key Store Permissions

As the LabX system encrypts data, the "LabXServiceAccount" requires access to the given Machine Key Store. You will find more information on that topic under http://msdn.microsoft.com/en-us/library/ff649308.aspx.

Location	Permission	Applies to server
Keystore "SequoiaPasswordContainer" (2d38db507644999e24add5e4b60f96c1 _xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx)	Read	Business server

http Namespace Permissions

The "LabXServiceAccount" does also require permission on the following http namespaces to create the needed services. Default ports 51112 and 51155 on the LabX system can be changed during installation.

Location	Permission	Applies to server
http://servername:51112/LabX/DoorBellService	Generic All	Business server
http://servername:51155/LabX/SystemIntegrationService	Generic All	Business server
http://servername:51156/LabX/SystemIntegrationService/mex	Generic All	Business server
http://servername:53000/ . . . http://servername:53030/	Generic All	Instrument server

Database Permissions

During installation, the installer offers to either install an SQL Server Express Edition or to use an existing database server. In the latter case, the database administrator is responsible to prepare the database server for LabX by creating the database and granting permissions.
The administrator installing LabX on a dedicated SQL database server, is ideally owner of the LabX database. The "LabXServiceAccount" should have reading and writing permissions within the LabX database. This is configured by the LabX installer.

10.4 Service dependencies

The LabXHost service depends on the following services.

Windows Vista / Windows 7 and 8

- DHCP
- RPCSS
- Sens
- Winmgmt
- SQL Server (only if locally installed)

Although **LabXHostService 2014** service has no direct dependency on the Firewall Service, it must be enabled during the installation to be capable to change the FW settings.

Note

A correct WinHTTP Proxy (proxycfg.exe) configuration is necessary, otherwise the LabXService cannot start. Alternative: Disable Root Certificat Update in Add/Remove Windows Features.

To protect your product's future:
METTLER TOLEDO Service assures the quality, measuring accuracy and preservation of value of this product for years to come.

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