Labworldsoft Server Setup and User Guide

Version 1.0

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This document is valid for Labworldsoft Server 2.0.1.1 and later

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1. Installing Microsoft SQL Server database

In this document we use a hypothetical user, John Doe.

Suppose a user John Doe is logged in to the PC and he has administrative rights.

Labworldsoft Server uses database for storing various data such as User information, User Logs, Configurations and Measurements. At present, Labworldsoft Server supports **Microsoft SQL Server** database only. Future versions will support more databases such as **Oracle**, **Db2** and **MySQL**.

Major SQL Server editions are **Enterprise**, **Developer** and **Express** editions. Customers may choose any SQL Server edition as per their requirement. Enterprise edition provides premium offerings with fast performance, but it is not free of cost. On the other hand, Express edition is the entry-level, free database, suitable for small data management uses and free of cost.

This section describes how to download and install **Microsoft SQL Server 2019 Express Edition** in a Windows 10 64-bit PC as an example.

1.1. Download SQL Server Express Edition

This section describes how to download SQL Server Express Edition.

- a. Go to SQL Server download page
- b. Select *Express* edition and click *Download now*.

Or, download a free specialised edition

Developer	Express
SQL Server 2019 Developer is a full-featured free edition, licensed for use as a development and test database in a non-production environment.	SQL Server 2019 Express is a free edition of SQL Server, ideal for development and production for desktop, web, and small server applications.
Dewnload new 🛓	Download now 🛓

Figure 1.1

c. Web installer will be downloaded.

STATES IN SOLI FIGHTERE	01/01/2020 10:00	Marannon	2,040 100
den_sql_server_2019_express_x64_e2d9f596.exe	01/07/2020 14:58	Application	261,808 KB

Figure 1.2

d. Run web installer. A window will be opened to **Select an installation type**. Select **Download Media** option.



SQL Server transmits information about your installation experience, as well as other usage and performance data, to Microsoft to help improve the product. To learn more about data processing and privacy controls, and to turn off the collection of this information after installation, see the documentation

5.2002.4709.1



e. A window will be opened to **Specify SQL Server installer download**. Select **Express Core** option. In the **SELECT DOWNLOAD LOCATION** text box, provide a location to download the web installer.



Figure 1.4

f. SQL Server installer will be downloaded.



Figure 1.5

g. When download is completed, installation file can be accessed from the specified location in step e:



Figure 1.6

1.2. Install SQL Server 2019 Express Edition

This section describes how to install SQL Server 2019.

During the installation, **SQL Server 2019** instance name chosen will be **LABWORLDSOFTDS** and authentication mode selected will be **Windows Authentication**.

a. Start web installer by double clicking the previously downloaded installer file.

Name	Date modified	Туре	Size	
🚜 SQLEXPR_x64_ENU.exe	03/07/2020 12:00	Application	261,808 KB	
	Figure 1.7			

b. A window **Choose Directory For Extracted Files** will be popped-up. Provide a directory path for extracting files and click **Ok** button.

Choose Director	y For Extracted	Files X
Choose Directory I	For Extracted Files	LEXPR_x64_ENU\
Ok	Cancel	Browse

Figure 1.8

c. In SQL Server Installation Center window, select the option New SQL Server stand-alone installation or add features to an existing installation.



Figure 1.9

d. Accept the necessary license agreements and click **Next >** button.

To install SQL Server 20	19, you must accept the Microsoft Software License Terms.
To install SQL Server 201 License Terms Global Rules Microsoft Update Product Updates Install Setup Files Install Rules Feature Selection Feature Rules Feature Configuration Rules Installation Progress	MICROSOFT SOFTWARE LICENSE TERMS MICROSOFT SQL SERVER 2019 EXPRESS These license terms are an agreement between you and Microsoft Corporation (or one of its affiliates). They apply to the software named above and any Microsoft services or software updates (except to the extent such services or updates are accompanied by new or additional terms, in which case those different terms apply prospectively and do not alter your or Microsoft's rights relating to pre-updated software or services). IF YOU COMPLY WITH THESE LICENSE TERMS, YOU HAVE THE RIGHTS BELOW. BY USING THE SOFTWARE, YOU ACCEPT THESE TERMS.
Complete	Copy Pr

Figure 1.10

e. Click **Next >** button.

髋 SQL Server 2019 Setup	-		×
Microsoft Update			
Use Microsoft Update to ch	eck for important updates		
License Terms Global Rules Microsoft Update Product Updates Install Setup Files Install Rules Feature Selection Feature Rules Feature Configuration Rules Installation Progress Complete	Microsoft Update offers security and other important updates for Windows an Microsoft software, including SQL Server 2019. Updates are delivered using Au Updates, or you can visit the Microsoft Update website. Use Microsoft Update to check for updates (recommended) Microsoft Update FAQ Microsoft Update Privacy Statement	d other itomatic	
	< <u>B</u> ack <u>N</u> ext >	Cano	cel

Figure 1.11

f. Click **Next >** button.

髋 SQL Server 2019 Setup			_		×
Install Setup Files					
If an update for SQL Server	Setup is found and specified to be inclu	ded, the update will be installed.			
License Terms					
Global Rules					
Microsoft Update	Task	Status			
Product Updates	Scan for product updates	Completed			
Install Setup Files	Download Setup files	Skipped			
Install Rules	Extract Setup files	Skipped			_
Feature Selection	Install Setup files	In Progress			_
Feature Rules					
Feature Configuration Rules					
Installation Progress					
Complete					
		< <u>B</u> ack <u>N</u>	ext >	Cano	el

Figure 1.12

g. Check for any errors and then click **Next >** button. Please contact the IT Administrator if warning reported on Windows Firewall. Windows Firewall should not block SQL Server.

Install Rules Install Rules Peature Selection Feature Rules Install Rules Peature Selection Feature Rules Install Rules Peature Configuration Database Engine Configurat Feature Configuration Rules Install Rule Consistency validation for SQL Server registry keys @ Consistency validation for SQL Server registry keys @ Computer domain controller Passed @ SQL 2019 minimum CTP for Upgrade and Side by Side S Passed @ SQL 2019 minimum CTP for Upgrade and Side by Side S	🃸 SQL Server 2019 Setup			_		×
Setup rules identify potential problems that might occur while running Setup. Failures must be corrected before setup can continue. Install Rules Feature Selection Feature Rules Install Rules Operation completed. Passed: 3. Failed 0. Warning 1. Skipped 0. Server Configuration Database Engine Configurat Feature Configuration Rules Installation Progress Complete Complete Windows Firewall Windows Firewall Windows Firewall Windows Firewall SQL 2019 minimum CTP for Upgrade and Side by Side S Passed SQL 2019 minimum CTP for Upgrade and Side by Side S Pask	Install Rules					
Install Rules Operation completed. Passed: 3. Failed 0. Warning 1. Skipped 0. Feature Selection Feature Rules Instance Configuration Hide details <	Setup rules identify potentia Setup can continue.	l problems	that might occur while running Setup. Failures must be correc	cted before		
Feature Selection Feature Rules Instance Configuration Server Configuration Database Engine Configurat Feature Configuration Rules Installation Progress Complete Image: Configuration Image: Configuration Rules Installation Progress Complete Image: Configuration Rules Image: Configuration Rules Image: Complete	Install Rules	Operatio	n completed. Passed: 3. Failed 0. Warning 1. Skipped 0.			
Feature Rules Instance Configuration Server Configuration Database Engine Configuration Result Rule Feature Configuration Rules Installation Progress Complete Image: Complete <td>Feature Selection</td> <td></td> <td></td> <td></td> <td></td> <td></td>	Feature Selection					
Instance Configuration Hide details_< Re-run Server Configuration View detailed report View detailed report Database Engine Configuration Rules Status Installation Progress Installation Progress Consistency validation for SQL Server registry keys Passed Instance Complete Consistency validation for SQL Server registry keys Passed Instance Windows Firewall Warning Instance Instance SQL 2019 minimum CTP for Upgrade and Side by Side S Passed Instance SQL 2019 minimum CTP for Upgrade and Side by Side S Passed Instance	Feature Rules					
Server Configuration View detailed report Database Engine Configurat Result Rule Status Feature Configuration Rules Installation Progress Consistency validation for SQL Server registry keys Passed Complete Computer domain controller Passed Image: Computer domain controller Passed Mindows Firewall Warning Image: Computer domain controller Passed Image: Computer domain controller SQL 2019 minimum CTP for Upgrade and Side by Side S Passed Image: Computer domain controller Passed SQL 2019 minimum CTP for Upgrade and Side by Side S Passed Image: Computer domain controller Passed SQL 2019 minimum CTP for Upgrade and Side by Side S Passed Image: Computer domain controller Passed SQL 2019 minimum CTP for Upgrade and Side by Side S Passed Image: Computer domain controller Image: Computer domain control domain c	Instance Configuration	Hide de	tail <u>s</u> <<		<u>R</u> e-	run
Database Engine Configurat Result Rule Status Feature Configuration Rules Installation Progress Consistency validation for SQL Server registry keys Passed Complete Computer domain controller Passed Passed Mindows Firewall Warning SQL 2019 minimum CTP for Upgrade and Side by Side S Passed SQL 2019 minimum CTP for Upgrade and Side by Side S Passed	Server Configuration	View det	ailed report			
Peature Configuration Rules Result Rule Status Installation Progress Consistency validation for SQL Server registry keys Passed Complete Computer domain controller Passed Windows Firewall Warning SQL 2019 minimum CTP for Upgrade and Side by Side S Passed SQL 2019 minimum CTP for Upgrade and Side by Side S Passed	Database Engine Configurat					
Complete Computer domain controller Complete Computer domain controller Computer do	Feature Configuration Rules	Result	Rule	Status		-
Complete Complete Complete Passed ▲ Windows Firewall Warning ② SQL 2019 minimum CTP for Upgrade and Side by Side S Passed SQL 2019 minimum CTP for Upgrade and Side by Side S Passed	Installation Progress		Consistency validation for SQL Server registry keys	Passed		
SQL 2019 minimum CTP for Upgrade and Side by Side S Passed <	Complete		Windows Firewall	Warning		
< Back Next > Cancel			SOL 2019 minimum CTP for Ungrade and Side by Side S	Passed		-
< <u>Back</u> <u>N</u> ext > Cancel			see 2015 minimum err for opgrade and side by side sim	<u>1 45504</u>		
< <u>B</u> ack <u>N</u> ext > Cancel						
< <u>Back</u> <u>N</u> ext > Cancel						
< Back Next > Cancel						
< <u>B</u> ack <u>N</u> ext > Cancel						
< <u>B</u> ack <u>N</u> ext > Cancel						
< <u>B</u> ack. <u>N</u> ext > Cancel						
			< <u>B</u> ack	<u>N</u> ext >	Cance	21

Figure 1.13

h. Select instance features as shown below. Click **Next >** button.

🐮 SQL Server 2019 Setup			_		×	
Feature Selection Select the Express features t	o install.					
Install Rules Feature Selection	Looking for Reporting Services	? Download i	it from the web			
Feature Rules	<u>F</u> eatures:	Feature description:				
Instance Configuration Server Configuration	Instance Features		The configuration and operation o	of each	Ŷ	
Database Engine Configurat	SQL Server Replication	<u>Prerequisites</u> for selected features:				
Feature Configuration Rules Installation Progress	Shared Features SQL Client Connectivity SDK Redistributable Features		∆lreadv installed ≪	>	ů	
Complete			Disk Space Requirements			
		Drive C: 1003 MB required, 165498 MB				
	Select <u>A</u> ll <u>U</u> nselect All					
	Instance <u>r</u> oot directory:	Program Files\N	∕licrosoft SQL Server∖			
	Shared feature directory: C:\Program Files\N		es\Microsoft SQL Server\			
	Shared feature directory (<u>x</u> 86): C:\	Program Files ()	x86)\Microsoft SQL Server\			
			< <u>B</u> ack <u>N</u> ext >	Cancel		

Figure 1.14

i. In Instance Configuration window, select **Named Instance:** option and provide the instance name as **LABWORLDSOFTDS**. **LABWORLDSOFTDS** is the acronym for **Labworldsoft Data Source**. Click **Next** > button.

🃸 SQL Server 2019 Setup					_		×
Instance Configuration	I						
Specify the name and instance	ID for the instance of SC	QL Server, Instance ID b	ecomes part of the in	stallation path.			
Global Rules Microsoft Update Product Updates	 <u>D</u>efault instance N<u>a</u>med instance: 	LABWORLDSOFTDS					
Install Setup Files Install Rules Installation Type	Instance <u>I</u> D:	LABWORLDSOFTDS					
Product Key License Terms Feature Selection Feature Bules	SQL Server directory: Insta <u>l</u> led instances:	C:\Program Files\Micr	rosoft SQL Server\MSS	QL15.LABWORLDSC)FTDS		
Instance Configuration	Instance Name	Instance ID	Features	Edition	Ver	sion	
Server Configuration	MSSQLSERVER	MSSQL15.MSSQLS	SQLEngine,SQLEn	Developer	15.0	.2000.5	
Database Engine Configuration	LABWORLDSOFT	MSSQL15.LABWOR	SQLEngine,SQLEn	Express	15.0	.2000.5	
Feature Configuration Rules	<shared compone<="" td=""><td></td><td>Conn, BC, SDK, DQ</td><td></td><td>15.0</td><td>.2000.5</td><td>_</td></shared>		Conn, BC, SDK, DQ		15.0	.2000.5	_
Ready to Install Installation Progress Complete							
			< <u>B</u> a	ck <u>N</u> ext >		Cance	

Figure 1.15

j. Click **Next >** button.

뚢 SQL Server 2019 Setup				-		×
Server Configuration	and collation configuration.					
Install Rules Feature Selection	Service Accounts Collation	uuse a separate account fo	r each SQL Ser	ver service	2.	
Instance Configuration	Service	Account Name	Password	Startu	р Туре	
Server Configuration	SQL Server Database Engine	NT Service\MSSQL\$L		Autom	atic	~
Database Engine Configurat	SQL Server Browser	NT AUTHORITY\LOCA		Disabled		~
Feature Configuration Rules Installation Progress Complete	Grant Perform Volume Maint Engine Service This privilege enables instant may lead to information disc <u>Click here for details</u>	enance Task privilege to SQ file initialization by avoidin losure by allowing deleted	L Server Datab g zeroing of da content to be a	ase ata pages. .ccessed.	This	
		< <u>B</u> ac	k <u>N</u> ext	>	Cance	el

Figure 1.16

k. Select the Windows authentication mode. Make sure that the current user is added in SQL Server administrator list. If the current user is not added in SQL Server administrator list, the user can be added by clicking on Add Current User button. Click Next > button.

📸 SQL Server 2019 Setup		_		×
Database Engine Confi Specify Database Engine authe parallelism, Memory limits, and	guration ntication security mode, administrators, data directories, TempDB, Max degree of Filestream settings.			
License Terms Global Rules Product Updates Install Setup Files Install Rules Feature Selection Feature Rules Instance Configuration Server Configuration Database Engine Configuration Feature Configuration Rules Installation Progress Complete	Server Configuration Data Directories TempDB Memory User Instances FILEST Specify the authentication mode and administrators for the Database Engine. Authentication Mode Image: Configuration Image: Configu	istrators l	have Database	2
	< <u>B</u> ack <u>N</u> ext >	•	Cance	I .

Figure 1.17

I. Click **Next >** button.

SQL Server 2019 Setup		LogOutUser(string session, out UserAccount user) Use the dropdown to view and navigate to other item
Install Rules Feature Selection Feature Rules Instance Configuration Server Configuration Database Engine Configurat Feature Configuration Rules Installation Progress Complete	Validating feature settings.	
		Next > Cancel

Figure 1.18

m. Click **Next >** button.

髋 SQL Server 2019 Setup		-		×
Installation Progress				
Install Rules Feature Selection Feature Rules Instance Configuration Server Configuration Database Engine Configurat Feature Configuration Rules Installation Progress Complete	Install_sql_common_core_Cpu64_Action : InstallFiles. Copying new files			
		<u>N</u> ext >	Cano	el

Figure 1.19

n. Click **Next >** button.

髋 SQL Server 2019 Setup			-		×
Complete					
Your SQL Server 2019 instal	ation completed successfully with product	updates.			
Install Rules	Information about the Setup operation of	or possible next steps:			
Feature Selection	Feature	Status			
Feature Rules	Oatabase Engine Services	Succeeded			
Instance Configuration	SQL Server Replication	Succeeded			
Server Configuration	SQL Browser	Succeeded			
Database Engine Configurat	SQL Writer	Succeeded			
Feature Configuration Rules	SQL Client Connectivity SDK	Succeeded			
Installation Progress	SQL Client Connectivity	Succeeded			
Complete					
	<u>D</u> etails:				
	Install successful.				
	Summary log file has been sayed to the	following location:			
	summary log me has been saved to the	ionowing location.			
	C:\Program Files\Microsoft SQL Server\ <u>17-03 20200701 150650.txt</u>	50\Setup Bootstrap\Log\202007	<u>'01 150650\S</u>	ummary	<u>BL-</u>
				Clos	se

Figure 1.20

o. Check for any errors. Installation is completed. Click **Close** button.

1.3. Verify SQL Server installation with SQL Server Configuration Manager

After the installation, make sure that the SQL Server instance **LABWORLDSOFTDS** is up and running, and all the communication protocols are enabled. The following steps describe the verification process.

=		Labworldsoft 6	~	Explore					
		Labworldsoft Server	~						
	м							e	
	<u>Q</u>	Maps		Store			Micr	rosoft Edg	ge
		MariaDB 10.4 (x64)	~						
	e	Microsoft Edge		9					
		Microsoft Machine Learning S	. ~	Maps					
		Microsoft Office	~						
		Microsoft Office 2016 Tools	~						
		Microsoft SQL Server 2019	^						
		SQL Server 2019 Configuratio	•n						
	æ	SQL Server 2019 Data Quality	Cli						
		SQL Server 2019 Data Quality	Se						
		SQL Server 2019 Error and Us	ag						
8		SQL Server 2019 Import and I	Exp						
ŝ		SQL Server 2019 Import and I	Exp						
4	1	SQL Server 2019 Installation (Cen						
0		SQL Server 2019 Master Data	Se						
	́Рту	pe here to search		Q	[]]	е .		~ }	47

a. Start SQL Server Configuration Manager from Windows Start menu.

Figure 1.21

 b. Select the node SQL Server Services and select the service SQL Server (LABWORLDSOFTDS). Make sure that SQL Server (LABWORLDSOFTDS) service is running.

🚟 Sql Server Configuration Manager				-	
<u>File Action View H</u> elp					
🗢 🏟 🙍 📓 📓 📓 🕑 🔍 📀					
 SQL Server Configuration Manager (Local) SQL Server Services SQL Server Network Configuration (32bit) SQL Native Client 11.0 Configuration (32lbit) SQL Server Network Configuration Protocols for MSSQLSERVER Protocols for LABWORLDSOFTDS SQL Native Client 11.0 Configuration Client Protocols Aliases 	Name SQL Server Integration Services 15.0 SQL Full-text Filter Daemon Launcher (MSSQLSERVER) SQL Server Launchpad (MSSQLSERVER) SQL Server (MSSQLSERVER) SQL Server MolyBase Data Movement (MSSQLSERVER) SQL Server PolyBase Engine (MSSQLSERVER) SQL Server PolyBase Engine (MSSQLSERVER) SQL Server Agent (MSSQLSERVER) SQL Server Agent (LABWORLDSOFTDS) SQL Server Agent (LABWORLDSOFTDS)	State Running Running Running Running Running Running Running Running Stopped	Start Mode Automatic Manual Automatic Automatic Automatic Automatic Automatic Automatic Automatic Start Stop Pause Resume Resume Restart	Log On As NT Service\MsDtsS NT Service\MSSQL NT Service\MSSQL NT Service\MSSQL NT Service\MSSQL NT AUTHORITY\NE NT AUTHORITY\NE NT Service\SQLSER NT Service\SQLSER NT AUTHORITY\NE	Process ID 5820 7292 7444 5852 5944 5436 7320 7324 7412 14356 0
			Properties		
			Help]	

Figure 1.22

c. Select the node Protocols for LABWORLDSOFTDS.



d. Enable the protocols Shared Memory, Named Pipes and TCP/IP if not.

File Action View Help			
 SQL Server Configuration Manager (Local) SQL Server Services SQL Server Network Configuration (32bit) SQL Native Client 11.0 Configuration (32bit) SQL Server Network Configuration 	Protocol Name Shared Memory Named Pipes	Status Enabled Disabled	
	TCP/IP	Disabled	Enable
Protocols for MSSQLSERVER			Disable
SQL Native Client 11.0 Configuration			Properties
			Help

Figure 1.24

e. Select the node SQL Native Client 11.0 Configuration → Client Protocols and enable the protocols Shared Memory, Named Pipes and TCP/IP as in step d.

🚰 Sql Server Configuration Manager			
<u>File</u> <u>Action</u> <u>View</u> <u>H</u> elp			
🗢 🔿 🗐 🧟 🔂			
 SQL Server Configuration Manager (Local) SQL Server Services SQL Server Network Configuration (32bit) SQL Native Client 11.0 Configuration (32l) SQL Server Network Configuration Protocols for MSSQLSERVER Protocols for LABWORLDSOFTDS SQL Native Client 11.0 Configuration Client Protocols Aliases 	Name Shared Memory TCP/IP	Order 1 2 3	Enabled Enabled Enabled Enabled
	Figure 1.25		

f. After enabling the protocols, restart the service SQL Server (LABWORLDSOFTDS) once again as mentioned in step b to make these changes in effect.

1.4. Install SQL Server Management Studio (SSMS)

SQL Server Management Studio (SSMS) is an integrated environment for managing any SQL infrastructure. SSMS provides tools to configure, monitor, and administer instances of SQL Server and databases.

Verifying whether the **needed server** roles are selected for the **SQL Server** user with **SQL Server Management Studio** is optional. However, it is highly recommended to check whether the needed **Server Roles** are selected for the **SQL Server** user. **SQL Server Management Studio** will be useful in future as well for managing database and adding additional **SQL Server** users.

1.4.1. Download and Install SSMS

You may download **SSMS** from <u>https://aka.ms/ssmsfullsetup</u> and install the software. This download link might change in future, so please visit Microsoft website for the correct URL.

1.4.2. Selecting Server Roles

a. Start **SSMS**. **Connect to Server** dialog will be popped-up. Provide the server name as **.\LABWORLDSOFTDS** and click **Connect** button.

🖵 🖡 Connect to Server		×
	SQL Server	
Server type:	Database Engine	\sim
Server name:	.LABWORLDSOFTDS	\sim
Authentication:	Windows Authentication	\sim
<u>U</u> ser name:	IWB\tony.thomas	\sim
<u>P</u> assword:		
	Remember password	
	Connect Cancel Help Options >	>

Figure 1.26

b. After connecting successfully, Object Explorer for LABWORLDSOFTDS server instance will be displayed. If Object Explorer is not visible, open it by clicking the menu View → Object Explorer.



Figure 1.27

c. Suppose the added user to the SQL Server Administrator list during the SQL Server installation <u>section 1.2.k</u> is BL-23-01\john.doe. Right click the node BL-23-01\john.doe from .\LABWORLDSOFTDS / Security / Logins and select Properties.



Figure 1.28

d. When clicking **Properties** menu, **Login Properties** window will be popped-up. Select **Server Roles**. Select all the **Server Roles** and click **OK** button.

Login Properties - BL-23-01\jo	phn.doe	-		×
Select a page	🗊 Script 🔻 😮 Help			
General Server Roles User Mapping Securables Status	Server role is used to grant server-wide security privileges to a user. Server roles: bulkadmin dbcreator diskadmin public securityadmin securityadmin setupadmin sysadmin			
Connection				
Server: BL-23-01\LABWORLDSOFTDS Connection:				
View connection properties				
Progress				
Ready				
		OK	Cano	cel

Figure 1.29

2. Installing Labworldsoft Server

2.1. Introduction

Labworldsoft Server is a server software working together with Labworldsoft 6 for the support of FDA 21 CFR Part 11, where Labworldsoft 6 works as a client software.

🔄 Labworldsoft Server (2.	0.1.1)					-		×
Login								
Settings	Port 8080 (j							
My Account	Database							
Server Admins	Database Connection String	Data Source=.\LABW	VORLDSOFTDS;I	nitial Catalog=La	bworldsoft;Integrated	Security=true		
Users	Database Engine	Microsoft SQL Serve	r				-	
Configurations						Test Database Conne	ection	
Configurations								
Measurements								
User Logs								
	Service Status Refr	esh						
	Server Hos	ting Service 🥚		Stop	Start All Services			
	Measurement Excel File Upl	oad Service 😑		Stop	Ston All Senvices			
	Measurement PDF/A File Upl	oad Service		Stop	Stop All Services			

Figure 2.1

Labworldsoft Server supports User management, Configuration management, Measurement file uploading/downloading, Logging of user activities etc. Labworldsoft 6 implements FDA 21 CFR Part 11 with the support of Labworldsoft Server. Labworldsoft Server and Labworldsoft 6 can be deployed in 2 different ways.

Deployment Type	Details
	Both Labworldsoft Server and Labworldsoft 6 are installed in the same PC.
Local	In this configuration, Labworldsoft 6 can use any
	of Local or Intranet protocols for connecting to
	Labworldsoft Server. More details are present in
	section 5.1
Intranet or Inside Firewall	Labworldsoft Server and Labworldsoft 6 are installed in 2 different PCs, but both PCs are installed in the same Intranet and inside the same firewall.
	In this configuration, Labworldsoft 6 have to use Intranet protocol for connecting to Labworldsoft Server, More details are present in section 5.1
	Server. More details are present in <u>section 5.1</u> .

Table 2.1



Local Deployement

Figure 2.2





The term **Server PC** is used for denoting the PC where Labworldsoft Server is installed and the term **Client PC** is used for denoting the PC where Labworldsoft 6 is installed, throughout the document.

Server PC	PC where Labworldsoft Server is installed and run
Client PC	PC where Labworldsoft 6 is installed and run.

Table 2.2

2.2. Install Labworldsoft Server

- a. System Requirements (Minimum/Suggested):
 - Processor: Intel Core i5 Processor (Suggested Intel Core i7 Processor) frequency not less than 2.6 GHz, not less than 2 Cores
 - Operating System: Windows 10 May 2019 Update (version 1903) / Windows 11
 - Net Framework: .Net Framework 4.8
 - > RAM: Not less than 8 GB // Suggested 16 GB
 - > Storage: At least 10 GB free hard disk
 - > Graphic Card: No special requirements
 - > Optical Drive: CD/DVD-drive not necessary
 - ➢ USB: Not necessary
 - LAN: Yes (1 port is enough)
- b. Download Labworldsoft Server from <u>Downloads Labworldsoft® 6 Pro</u> (ika.com)
- c. Run setup.exe.



Figure 2.4

d. Click Next >. Warning dialog for uninstalling old Labworldsoft Server 1.0.1 manually. After uninstalling Labworldsoft Server 1.0.1 manually if it exits, select the check-box Labworldsoft Server 1.0.1 uninstalled successfully or it does not exist anymore.

🛃 Labworldsoft Server - InstallShield Wi	zard			×
Uninstall Labworldsoft Server 1.0.1 Uninstall Labworldsoft Server 1.0.1 if it exis	ts.		Ċ	5
Before uninstalling Labworldsoft S * Labworldsoft Server Excel To PD * Labworldsoft Server Measureme * Labworldsoft Server Measureme For uninstalling Labworldsoft Server	Server, stop F/A File Con ent Excel File ent PDF/A Fil ver 1.0.1, go t	these 3 Windo verter Service Upload Service le Upload Service to Control Pan	ows Services: ce ice el and select	^
Programs and Features. From the Server	listed progra	ams, select Lab	more.	*
	< <u>B</u> ack	<u>N</u> ext >	Cancel	

Figure 2.5

e. Click *Next* >. Accept license agreement.

😽 Labworldsoft Server - InstallShield Wiz	ard		×
License Agreement Please read the following license agreeme	ent carefully.		と
End User License Agreement			^
IKA Werke GmbH			
Janke & Kunkel Straße 10 79219 Staufen			
Section § 1 Definition of terms			~
I accept the terms in the license agreement I do not accept the terms in the license age	greement		Print
nstallShield	< <u>B</u> ack	<u>N</u> ext >	Cancel

Figure 2.6

f. Click **Next** >. Specify the installation folder. It is recommended to use the default installation folder.



Figure 2.7

g. Click **Next >** and then click **Install**.

	InstallShield Wizard Completed The InstallShield Wizard has successfully completed. Please provide Administrative acess to the following Windows Services using Services application. 1. Labworldsoft Server.Measurement Excel File Upload Service 2. Labworldsoft Server.Measurement PDF/A File Upload Service 3. Labworldsoft Server.Server Hosting Service In the search box on the Taskbar, type Services and select it Double-click the service, which pops-up the Properties window. Select the Log On tab and provide the Admin user account. This Admin user should have Administrative access to the SQL Server Database. Click Finish to exit the wizard.			
	< <u>B</u> ack <u>F</u> inish Cancel			

Figure 2.8

- h. After the installation completes, a dialog box will be displayed explaining how to provide Administrative access to the Windows Service components.
- Provide Administrative access to the following services. You may start Services and Controller app by typing the text Services in the search box on the Taskbar.



Figure 2.9

> Labworldsoft Server.Measurement Excel File Upload Service

> Labworldsoft Server.Measurement PDF/A File Upload Service

> Labworldsoft Server.Server Hosting Service

Labworldsoft Server.Measurement Excel File Upload Service		Labworldsof	Automatic	Local System	
🖏 Labworldsoft Server.Measurement PDF/A File Upload Service	Labworldsof	Automatic	Local System		
Labworldsoft Server.Server Hosting Service		Labworldsof	Automatic	Local System	
-					
	Figure 2.10				
U shuarldsoft Sanar Massurement Event File Unload Sanara		Laburorldcof	Automatic	Local System	
Labworldsoft Server Measurement PDF/A File Upload Service	Start	Labworldsof	Automatic	Local System	
Labworldsoft Server.Server Hosting Service	Stop	Labworldsof	Automatic	Local System	
	Pause				
	Resume				
	Restart				
	All Tasks				
	Refresh				
	Properties				
	Help				
Figure 2.11 Labworldsoft Server.Measurement Excel File Upload Service Proper ×					
General Log On Recove	ry Dependencies				
Log on as:					
○ Local System account □ Allow service to interact with desktop					
⊛ <u>T</u> his account:	ohn.doe	Browse			
Password:	•••••				
Confirm password:	•••••				

Figure 2.12

OK

Cancel

Apply

j. Specify Start Type as Automatic for all the Services mentioned in section 2.2.i

Labworldsoft Server.Measurement Excel File Upload Service Proper $$				
General	Log On	Recovery	Dependencies	
Service	name:	er.Window	sService.MeasurementExcelFileUploadS	ervice
Display	name:	Labworldso	oft Server.Measurement Excel File Uploa	d Sen
Descript	tion:	Labworldsoft Server measurement excel file upload service		\sim
Path to "C:\Prog	executabl gram Files	e: Labworldsof	ft\Labworldsoft Server\MeasurementExce	lFileU
Startup	typ <u>e</u> :	Automatic	:	~
		Automatic Automatic Manual	c (Delayed Start)	
Service	status:	Disabled Running		
5	Start	Stop	Pause <u>R</u> esum	е
You can specify the start parameters that apply when you start the service from here.				
Start pa	ira <u>m</u> eters:			
			OK Cancel	pply

Figure 2.13

 k. Do not start the services at present. We will start these 3 services in <u>section</u>
 <u>2.4.7</u> after configuring Labworldsoft Server by providing the correct Database Connection String.

2.3. Deployed Package Details

If the default installation location is selected, **Labworldsoft Server** will be installed in **C:\Program Files\Labworldsoft\Labworldsoft Server**.

Labworldsoft Server application comprises mainly of 4 components. They are,

- > Labworldsoft Server Desktop application
- Labworldsoft Server.Measurement Excel File Upload Service windows service
- Labworldsoft Server.Measurement PDF/A File Upload Service windows service
- > Labworldsoft Server.Server Hosting Service windows service

Labworldsoft Server			
Program Component	Labworldsoft Server application		
Application Type Desktop Application			
Installation Path	C:\Program Files\Labworldsoft\Labworldsoft Server\LabworldsoftServer\LabworldsoftServer.exe		
Program Component	Labworldsoft Server.Measurement Excel File Upload Service		
Application Type	Windows Service		
Installation Path	C:\Program Files\Labworldsoft\Labworldsoft Server\MeasurementExcelFileUploadService\Measure mentExcelFileUploadService.exe		
Program Component	Labworldsoft Server.Measurement PDF/A File Upload Service		
Application Type	Windows Service		
Installation Path	C:\Program Files\Labworldsoft\Labworldsoft Server\MeasurementPdfAFileUploadService\Measurem entPdfAFileUploadService.exe		
Program Component	Labworldsoft Server.Server Hosting Service		
Application Type	Windows Service		
Installation Path	C:\Program Files\Labworldsoft\Labworldsoft Server\ServerHostingService\ServerHostingService.exe		

Table 2.3
📙 🛛 🛃 😴 = 🛛 Labworldsoft Server				_	
File Home Share View					~ ()
Image: Arrow of the second	Hove Copy tcut Copy	New item • The basy access • Folder	Properties	Select all	ne ection
Clipboard	Organize	New	Open	Select	
\leftarrow \rightarrow \checkmark \uparrow \square \Rightarrow This PC \Rightarrow Loca	al Disk (C:) > Program Files > Labworlds	oft > Labworldsoft Serve	er >	∨ Č	Search La 🔎
	Name	Date	modified Ty	pe	Size
★ Quick access Image: This PC	LabworldsoftServer MeasurementExcelFileUploadService MeasurementPdfAFileUploadService ServerHostingService	23-06 23-06 23-06	-2022 02:01 PM Fil -2022 02:01 PM Fil -2022 02:01 PM Fil -2022 02:01 PM Fil	e folder e folder e folder e folder	
< 4 items					

Figure 2.14

2.4. Configure Labworldsoft Server

This section explains how to login to Labworldsoft Server, how to specify Database Connection String and how to start the 3 Windows Services mentioned in <u>section</u> <u>2.2.i</u>.

2.4.1. Login

Start **Labworldsoft Server** with Administrative privilege. The Login screen will be displayed. Users can use the default User ID **serveradmin** and Password **password@1** for logging.

0.1.1)	—		×
User ID serveradmin			
Password *********			
Login			
	0.1.1) User ID serveradmin Password terretain Login	0.1.1) – User ID serveradmin Password terretain Login	0.1.1) – User ID serveradmin Password terretain Login

Figure 2.15

Default User ID: **serveradmin** Default Password: **Password@1**

Please refer section 3.3 for creating additional Server Administrators.

2.4.2. Server Settings

Provide the default User ID and Password and click the Login button. After successful login, the Settings tab is selected by default. Select the Settings tab if not selected.

실 Labworldsoft Server (2.0	.1.1) — 🗆	×
Login		
Settings	Port 2030 ()	
My Account	Database	
Server Admins	Database Connection String Data Source=. LABWORLDSOFTDS; Initial Catalog=Labworldsoft; Integrated Security=true	
Users	Database Engine Microsoft SQL Server	~
Configurations	Test Database Connection	
Measurements		
User Logs		
	Service Status Refresh	
	Server Hosting Service Start Stop	
	Measurement Excel File Upload Service Start Stop	
	Measurement PDF/A File Upload Service Start Stop	

Figure 2.16

2.4.3. Port

Labworldsoft Server is listening to more than one TCP Ports ranging from **8080** to **8093** for incoming requests from Labworldsoft 6.

At present, Labworldsoft Server port numbers are not configurable. Therefore, if any software is already listening on TCP ports from 8080 to 8093, you have to stop that software.

By using netstat command, we can find port numbers used by all the applications.

Select Administrator: Comman	d Prompt - netstat -a -b -o			-	×
					^
C:\Windows\system32>nets	tat -a -b -o				
Active Connections					
Proto Local Address	Foreign Address	State	PID		
TCP 0.0.0.0:80	BL-19-01:0	LISTENING	4		
Can not obtain ownershi	p information				
TCP 0.0.0.0:135	BL-19-01:0	LISTENING	1500		
RpcSs					
[svchost.exe]					
TCP 0.0.0.0:445	BL-19-01:0	LISTENING	4		
Can not obtain ownershi	p information				
TCP 0.0.0.0:1433	BL-19-01:0	LISTENING	8980		
[sqlservr.exe]					
TCP 0.0.0.0:3389	BL-19-01:0	LISTENING	1948		
TermService					
[svchost.exe]					
TCP 0.0.0.0:5357	BL-19-01:0	LISTENING	4		
Can not obtain ownershi	p information				
TCP 0.0.0.0:8080	BL-19-01:0	LISTENING	10492		
[LabworldsoftServer.exe]				
TCP 0.0.0.0:8081	BL-19-01:0	LISTENING	4		
Can not obtain ownershi	p information				
TCP 0.0.0.0:8082	BL-19-01:0	LISTENING	10492		
[LabworldsoftServer.exe]				
TCP 0.0.0.0:8083	BL-19-01:0	LISTENING	4		
Can not obtain ownershi	p information				
TCP 0.0.0.0:8084	BL-19-01:0	LISTENING	10492		
[Labwor]dsoftServer.exe	1				\sim

Figure 2.17

Modules	TCP Ports used
Connection module	8080, 8081
User Management module	8082, 8083
Configuration Management module	8084, 8085
Configuration File Transfer module	8086, 8087
User Log module	8088, 8089
Measurement module	8090, 8091
Measurement File Transfer module	8092, 8093

Table 2.4

2.4.4. Database Engine

At present, **Labworldsoft Server** supports only **Microsoft SQL Server** database, which is selected by default. In future, it can support multiple databases such as **Oracle** and **MySQL**.

2.4.5. Database Connection String

Labworldsoft Server uses Entity Framework 6 (EF6) Object-Relational Mapping (ORM) framework for accessing database.

User has to provide the EF6 Connection String in the Database Connection String textbox to connect to the database.



Figure 2.18

A simple **SQL Server** database **Connection String** using **Entity Framework 6** has 3 parts; **Data Source**, **Database Name** and **Authentication Mode**. Each part is delimited with semi-colon (;).



Data Source is the **SQL Server Instance Name** chosen while installing SQL Server database in <u>section 1.2.i</u>.

Initial Catalog specifies the database name. Suppose the Data Source name is **LABWORLDSOFTDS** and database name is **Labworldsoft**. When clicking **Test Database Connection** button, **Labworldsoft Server** checks whether a database with name **Labworldsoft** exists in the Data Source **LABWORLDSOFTDS**. If it does not exist, **Labworldsoft Server** will send **SQL scripts** using **EF6** for creating a database named **Labworldsoft** with all the required tables automatically.

A Database Connection String should be a valid Entity Framework 6 (EF6) Connection String for SQL Server Database. Therefore, any valid EF6 Connection String can be provided in the Database Connection String text box. If the Database Administrator used a different name for Data Source while installing SQL Server, he has to specify that new name in Data Source section of the Connection **String**. If the Administrator thinks to choose a different name for database, he has to specify that new name in the **Initial Catalog** part of the **Connection String**. If the Database Administrator chose **Mixed mode authentication** instead of **Windows authentication** while installing SQL Server, do appropriate changes in the **Authentication Mode** section of the **Connection String**.

A Database Administrator may refer **Microsoft** website or **Google search** for finding more advanced Database Connection Strings to satisfy their requirements.

If the Administrator chose the default Data Source name **LABWORLDSOFTDS**, choosing the default database name **Labworldsoft** and chose the default authentication mode **Windows Authentication**, he can use the default **Database Connection String** shown below:

Data Source=.\LABWORLDSOFTDS;Initial Catalog=Labworldsoft;Integrated Security=true

2.4.6. Test Database Connection

After providing a valid **Database Connection String** and selected the **Database Engine**, Administrator can check the database communication status by clicking **Test Database Connection** button. When clicking **Test Database Connection** button, **Labworldsoft Server** will try to connect to the Data Source specified, using the authentication mode specified, and checks whether the database name specified exists. If the database does not exist in the data source, it will be created automatically with all the required tables. After that, the database will be opened and closed immediately as a test to find the status. The following message will be displayed if the communication is successful.



Figure 2.20

If communication fails, an appropriate error message will be displayed.

2.4.7. Starting Server Services

- a. When starting Labworldsoft Server at first time, the Service Status indicators are in grey colour as shown in <u>figure 2.16</u>. You can start the Labworldsoft Server services in 2 ways.
- b. In the first approach, click the **Start All Services** button. All the 3 services will be started one by one and the status indicator colour will be changed to green.
- c. In the second approach, Start the **Services and Controller** app as mentioned in the <u>section 2.2.i</u>. Start all the 3 services mentioned in <u>section 2.2.i</u>.

🔯 Labworldsoft Server.Measurement Excel File Upload Service 👘		Labworldsof	Automatic	IWB\admin
Abworldsoft Server.Measurement PDF/A File Upload Service	Start	Labworldsof	Automatic	IWB\admin
Abworldsoft Server.Server Hosting Service	Stop	Labworldsof	Automatic	IWB\admin
	Pause			
	Resume			
	Restart			
	All Tasks	».		
	Refresh			
	Properties			
	Help			

Figure 2.21

d. Make sure that all the 3 Services mentioned in section 2.2.i are running.

🙀 Labworldsoft Server.Measurement Excel File Upload Service	Labworldsof	Running	Automatic	IWB\admin
Labworldsoft Server.Measurement PDF/A File Upload Service	Labworldsof	Running	Automatic	IWB\admin
🖏 Labworldsoft Server.Server Hosting Service	Labworldsof	Running	Automatic	IWB\admin



🗐 Labworldsoft Server (2.	.1.1)				-		×
Login							
	Port 8080 ()						
My Account	Database						
Server Admins	Database Connection String Dat	a Source=.\LABWORLDSOFTE	S,Initial Catalog=Lal	bworldsoft, integrated S	Security=true		
Users	Database Engine Mi	rosoft SQL Server	_	_	Tert Databara Co	•	
Configurations					lest Database Co	nnecuon	
Measurements							
User Logs							
	Service Status Refresh						
	Server Hosting S	iervice 🥥 Start	Stop	Start All Services			
	Measurement Excel File Upload S	iervice Start	Stop	Stop All Services			
	Measurement PUT/A File Upioad 3	start	зкор				

Figure 2.23

e. Similarly, you can stop the services by clicking the **Stop All Services** button or from the **Services and Controller** app. You can also **start/stop** the services individually by clicking the **Start/Stop** individual buttons as well.

2.4.8. Read/Write Privilege to C:\ProgramData\Labworldsoft folder

When Windows user with Administrative privilege starts Labworldsoft Server, C:\ProgramData\Labworldsoft settings folder is created. All the Windows users who want to access Labworldsoft Server should have **read/write** permission to C:\ProgramData\Labworldsoft folder and sub folders.

2.5. Server Admin Users and Labworldsoft 6 Users

Labworldsoft Server manages 2 types of users, Server Admin Users and Labworldsoft 6 Users. Server Admin Users are simply called Server Admins and Labworldsoft 6 Users are simply called Users. Server Admins screen manages Server Admin users and Users screen manages Labworldsoft 6 users.

2.5.1. Server Admin Users

Server Admins are managed in **Server Admins screen**. You can open the Server Admins screen by selecting the **Server Admins tab**. **Server Admins** are used for logging into **Labworldsoft Server** desktop application directly.

The default Server Admin User ID and Password are **serveradmin** and **Password@1**

User ID: serveradmin

Password: Password@1

🔄 Labworldsoft Server (2.	.0.1.1)										-	×
Login												
Settings		User ID Server∆dmin	First Name	Last Name	Email	im	Departmer	nt	Team	S A	tate	
My Account					,, <u>,,</u> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,							
Server Admins												
Users												
Configurations												
Measurements												
User Logs												
						Add						
		Users fetched succ	cessfully									

Figure 2.24

Server Admins are stored in a separate local Microsoft SQL Server Compact database. When Labworldsoft Server is accessed first time, a local Microsoft SQL Server Compact database LabworldsoftServerAdminUsers_1_0_0_0.sdf is created and stored in

C:\ProgramData\Labworldsoft\LabworldsoftServer\LocalDatabaseFiles folder in the Server PC. In addition, the default user credential **serveradmin** and **Password@1** are inserted into this database automatically. All Server Admins are stored in this database.

I → LocalDatabaseFiles File Home Share View					-	□ × √ (?)
\leftarrow \rightarrow \checkmark \uparrow \blacksquare \rightarrow This PC \rightarrow Windo	ows (C:) > ProgramData > Labworldsoft > Labwo	orldsoftServer > LocalData	abaseFiles 🗸 🗸	ن Searc	h LocalDatabaseFiles	Q
🖈 Quick access	Name	Date modified 15-03-2024 05:01 PM	Type SQL Server Compa	Size	KB	
This PC Vetwork						
1 item						

Figure 2.25

If you forgot your **Server Admin credential**, close **Labworldsoft Server** application and delete **LabworldsoftServerAdminUsers_1_0_0_0.sdf** database file. Start **Labworldsoft Server** again and the database will be created again automatically with the default credential. Now you may use the default credential **serveradmin** and **Password@1** for log-in.

2.5.2. Labworldsoft 6 Users

Labworldsoft 6 Users are used for logging into Labworldsoft Server from Labworldsoft 6 application. Labworldsoft 6 Users are stored in Microsoft SQL Server database that you have created in <u>section 1</u>. You can locate the database from the Database Connection String explained in the <u>section 2.4.5</u>.

Users screen is used for managing **Labworldsoft 6 Users**. You can open the **Users** screen by selecting the **Users tab**.



a. Select the Users tab and click the Add button.

Figure 2.26

b. Enter the details in the Add User dialog.

Add User	×
User ID	johndoe
First Name	John
Last Name	Doe
Email	john.doe@ika.com
Department	R&D
Team	Lab
Role	Administrator 🔹
User ID shou Minimun Maximu First cha Allowed	ld have: n 4 characters m 40 characters iracter a letter special characters . @ Ok

Figure 2.27

c. Click the **OK** button.

🙆 Labworldsoft Server (2.0.	1.1)									-	\times
Login											
	User ID	First Name La	ist Name	Email		Department		Team	Role	State	
Settings	johndoe	John Do	be	john.doe@ika.com	۱	R&D		Lab	Administrator	Created	
My Account											
Server Admins											
Users											
Configurations											
Measurements											
User Logs											
		Fetch User		<< Previous	Next		Add				
		sfully.									
	Default Password	Password@1									

Figure 2.28

d. You can use this credential **johndoe** and **Password@1** to log-in to **Labworldsoft Server** from **Labworldsoft 6**.

2.6. Labworldsoft Server Database Internals

We assume the Data Source name is **LABWORLDSOFTDS** and Database name is **Labworldsoft**.

Data Source: LABWORLDSOFTDS

Database name: Labworldsoft

Each time when clicking **Test Database Connection** button or **Start All Services** button in the **Settings** screen, **Labworldsoft Server** checks whether **Labworldsoft** database exists in **LABWORLDSOFTDS** data source. If **Labworldsoft** database does not exist, **Labworldsoft Server** will create a new database with name **Labworldsoft** in **LABWORLDSOFTDS** data source.

A user can view the database and tables created using **SQL Server Management Studio** (**SSMS**). For viewing the created database tables, access **SSMS** as follows:

SQL Server	
Database Engine	~
.\LABWORLDSOFTDS	~
Windows Authentication	~
BL-23-01\john.doe	~
Remember password	
Canada Hala	Ontions >>
	Database Engine .\LABWORLDSOFTDS Windows Authentication BL-23-01\john.doe Remember password Cancel Help

a. Start SSMS. Connect to Server window is popped-up.

Figure 2.29

- b. Click the **Connect** button.
- c. In the **Object Explorer** window, you can see all the tables created in the **Labworldsoft** database.

-₹	Microso	oft SQL	Server Ma	anageme	ent Stu	udio	(Admin	istrat	tor)				
<u>F</u> ile	<u>E</u> dit	<u>V</u> iew	<u>T</u> ools	<u>W</u> indo	w	<u>H</u> elp)						
80	- 0	<u>*</u> ? -	*1 - 2		J	New	Ouerv	A					X
× -	1			_	-	Þ 1	Execute		- -				
Ohio	et Evplor	or					_	-	_		-		
Objec	LI EXPIOI	ei xei		× .4.									
Conr	nect 🕶 🛉	T T	= Y C	, -4/4									1
	.\LABW	ORLDS	SOFTDS (S	QL Serve	r 16.0	.1110) - BL-2	3-01	\joh	n.do	e)	^	
	Data	abases											
		ystem i	Databases	+-									
		WConf	e snapsno	ots									
		WDiad	nguration										
		WOue	nostics										
		abworl	dsoft										
		Datal	base Diag	ams									
		Table	s										
	+	🛯 🔳 Sy	stem Table	es									
	+	i 🔳 Fil	eTables										
	+	Ext	ternal Tab	les									
	+	🛙 📕 Gr	aph Table	s									
	+	🖩 Lw	/sMigrat	ionHisto	ry								
	+	🖩 Lw	s.Configu	ation									
	+	E Lw	s.Configu	ationDat	ta								
	+	E Lw	s.Configu	ationVer	sion								
	+	∃ ⊞ Lw	s.INTERNA	AL_AA37	360CE	26B2	4755BE	695F	864	3405	EBA		
	+		s.Labworl	dsoftServ	/erPro	perty	y						
		i⊞ LW	s.ivieasure	ment	olEilo								
	Ē		s.ivieasure	mentExc	olFilo	Info							
			is Measure	mentFile	Unloa	adInf	ⁱ o						
	E E	i 🎟 Lw	s.Measure	mentPdf	AFile								
	+	i 🎟 Lw	s.Measure	mentPdf	AFilel	nfo							
	+	E Lw	s.Measure	mentSig	nature	е							
	+	🖩 Lw	s.METADA	ATA_Con	figura	tion							
	+	🖩 🖽 Lw	s.METADA	TA_Con	figura	tion	Data						
	+	🖩 🖽 Lw	s.METADA	ATA_Con	figura	tion\	/ersion						
	+	🖩 🖽 Lw	s.METADA	TA_Lab	world	softS	erverPro	opert	ty				
	+	🖩 Lw	s.METADA	ATA_Mea	suren	nent							
	+	E Lw	s.METADA	ATA_Mea	suren	nentE	excelFile	9					
	+	∃ ⊞ Lw	s.METADA	ATA_Mea	suren	nentE	ExcelFile	elnfo					
	+	∃ ⊞ Lw	S.METADA	ATA_Mea	suren	nenth	leUplo	adIn	to				
	L±		S.METADA	ATA_Mea	suren	nentF		Info					
		:⊞ LW		ATA_IMea	suren	nente	Cignatur	inio					
	Ē		s.WETADA	ATA_IVICa	a suren	Tenta	nynatui	C					
			s METADA	ATA User	Acco	unt							
	E E	1 🎟 I w	s.METADA	ATA User	loa	unit							
	(F	i 🎟 Lw	s.UserAcc	ount	LOG								
	(±	1 🎟 Lw	s.UserLoa										
	+	🖽 Lw	s.UserLog	CodeDef	initio	n							
	+	Views	5										
	+	Exter	nal Resour	ces									
1	-												

Figure 2.30

All the tables are appended with the namespace Lws. For example, Lws.UserAccount table stores information on Labworldsoft Users.



Figure 2.31



Figure 2.32

Some table names contain text **METADATA**. For example, table **Lws.METADATA_UserAccount** stores information about **Lws.UserAccount** table.



Figure 2.33



QL	Query6.sql - (lo01\jol	hn.doe (158)) 🕆 🗙							
	ESELECT TOP (100	<pre>0) [ColumnName]</pre>							
,[Description]									
FROM [Labworldsoft].[Lws].[METADATA_UserAccount]									
00	% •								
III (Results 🗊 Messages								
	ColumnName	Description							
1	CreatedTime	Time in UTC when the user account is created.							
2	Department	Department of the user.							
3	Email	Email of the user.							
4	FirstName	First name of the user.							
5	LastName	Last name of the user.							
6	LastPassword	Hashed string of the Last Password used by the user.							
7	LastUpdatedTime	Time in UTC when any of the user account property							
8	LoginAttempts	Number of attempts made to Log-In to the Labworld							
9	Password	Hashed string of the Password.							
10	PasswordChangedTime	Time in UTC when the password is changed last ti							
11	RowNumber	Primary Key. Auto generated Identity column.							
12	Team	Team of the user.							
13	UserAccountState	State of the User Account. At present the state can b							
14	Userld	User ID of the user.							
15	UserRole	Role of the user. At present the different User Roles							

Figure 2.34

3. Using Labworldsoft Server

After the successful log-in to Labwoldsoft Server, Settings, My Account, Server Admins, Users, Configurations, Measurements and User Logs tabs are visible. By selecting each tab, we can open the corresponding screens.

3.1. Settings Screen

Settings screen can be opened by selecting the **Settings tab**. Configuration parameters such as Database Connection String can be specified in Settings screen. This screen is used to start the Labworldsoft Server Services. For more details refer the <u>section 2.4.2</u>.

3.2. My Account Screen

The logged-in Server Admin User's details are shown in My Account screen. A user can log-out and change password from this screen.

🔄 Labworldsoft Server (2.	0.1.1)		-	×
Login				
Settings	User ID	ServerAdmin		
	First Name			
My Account	Last Name			
Server Admins	Email	yyy@yyy.com		
Users	Role	Administrator		
03013	Status	Active		
Configurations	User created on (UTC)	2-20-2024 4:52 AM		
Measurements	Password last changed on (UTC)	2-20-2024 4:52 AM		
Lisor Logs	User last updated on (UTC)	2-20-2024 4:52 AM		
User Logs	Logout	Change Password		

Figure 3.1

3.3. Server Admins Screen

Server Admin Users are managed from this screen.

- a. A user can fetch all the Server Admin Users by clicking the **Fetch Server Admins** button.
- b. A new Server Admin user can be added by clicking the **Add** button. The criteria for User ID is shown in the **Add User** dialog.



Figure 3.2

- c. User details can be edited by clicking the Edit button.
- d. A Server Admin user can be deleted by clicking the **Delete** button.
- e. A Server Admin user password can be reset to the default password **Password@1** by clicking the **Reset Password** button.

🔄 Labworldsoft Server (2.0.	1.1)							_	×
Login									
Sottings	User ID	First Name	Last Name	Email		Department	 Team	State	
settings	ServerAdmin iohn.doe	 John	 Doe	yyy@yyy.com iohn.doe@ika	.com	R&D	Lab	Active Created	
My Account	,			,					
Server Admins									
Users									
Configurations									
Measurements									
User Logs									
		Fetch S	Server Admir	IS I	Add				
	User added succes	sfully.							

Figure 3.3

- f. When a user is added, it is in **Created** state. It should be in **Active** state before it can be used for login.
- g. Try to login with the new user which is in **Created** sate. A **Change Password** dialog is popped-up.



Figure 3.4

After changing the password, the state will be changed to **Active**.

h. You can change the **State** using **Edit User** dialog as well. Click the **Edit** button to pop-up **Edit User** dialog. You may change the **State** by selecting the **Status** list appropriately.

×
John
Doe
john.doe@ika.com
R&D
Lab
Administrator 🗸
Inactive 🔻
Ok

Figure 3.5

i. You can delete a user only if the user is in **Inactive** state. You can change an **Active** user to **Inactive** state using the **Edit User** dialog.

3.4. Users Screen

Users screen is used for managing **Labworldsoft 6 Users**. You can **fetch** all the users. You can **add**, **edit** or **delete** a user. When a user is added, it is in **Created** State. A user should be in **Active** state before it can be used for login. You may refer the <u>section 2.5.2</u> for more details.

A user's password can be reset to the default **Password@1** by clicking the **Reset Password** button.

🙆 Labworldsoft Server (2.0.1.	1)								- 0	×
Login										
Settings	User ID	First Name	Last Name	Email	Departm	ent	Team	Role	State	
Settings	Jonnaoe	Jonn	Doe	Jonn.doe@ika.com	K&D		Lad	Administrator	Created	
My Account										
Server Admins										
Users										
Configurations										
Measurements										
User Logs										
		Fetch U	sers	<< Previous	Next >>	Add				
		cessfully								
	Default Password	Password@	<u>0</u> 1		ι,					

Figure 3.6

3.4.1. User Roles

There are 3 different types of **Roles** for **Labworldsoft 6 Users** based on their access rights and privileges.

User	Read-only permissions and Least privileges. <i>We will call this user Normal User occasionally to avoid confusion</i> .
Super User	Read and limited write permissions. They have all User role privileges and some of the Administrator privileges.
Administrator	Full access rights. They have the highest level of privileges

Table 3.1

3.5. Configurations Screen

Configurations screen is used for managing Labworldsoft 6 Configuration files.

실 Labworldsoft Server (2.	.0.1.1)						:	×
Login								
Settings	Item	Configuration Name PID Controller Test	Description Testing PID Controller	Created User	Last Version C	reated Time (UTC) Last Upd 19/2024 8-29-33 AM3/19/2024	ated Time (UTC) State	
My Account			icauly no conduitor	L J		192024 0.23.33 HIND 19202-	U.2.3.35 AM DIVIL	
Server Admins								
Users								
Configurations								
Measurements								
User Logs								
	Fetch	Configurations << Prev	ious Next >>					
		Remove Upload New	Configuration Upload New Configuration					

Figure 3.7

You may refer section 5.5 for more details.

3.6. Measurements Screen

Measurements screen is used for managing **Labworldsoft 6 measurements**. You may refer <u>section 5.6</u> for more details.

3.7. User Logs

User Logs screen is used for managing **Audit Trail**. All the user activities are logged in **Labworldsoft Server** and they are visible in **User Logs** screen. For more details refer <u>section 5.8</u>.

4. Configuring Labworldsoft 6

4.1. Labworldsoft Server Client Measurement File Upload Service

Labworldsoft 6 achieves FDA 21 CFR Part 11 with the support of Labworldsoft Server.

- a. Download and install latest Labworldsoft 6 from <u>Downloads Labworldsoft® 6</u> <u>Pro (ika.com)</u>. For System Requirements please refer the *Activation Guide* in the above URL.
- b. Open Windows Services and Controller app with Administrative rights.
- c. Provide Administrative User ID and Password for the following Service.

Labworldsoft Server Client Measurement File Upload Service

🗛 Labworldsoft Server Client Measurement File Upload Service	Labworldsof	Manual	Local System
.44.			

Figure 4.1

d.

🔍 Labworldsoft Server Client Measurement File Upload Service		Labworldsof		Manual	Local System
Abworldsoft Server.Measurement Excel File Upload Service	Start	Labworldsof	Running	Automatic	IWB\admin
A Labworldsoft Server.Measurement PDF/A File Upload Service	Stop	Labworldsof	Running	Automatic	IWB\admin
Labworldsoft Server.Server Hosting Service	Pause	Labworldsof	Running	Automatic	IWB\admin
	Resume				
	Restart				
	All Tasks				
	Refresh				
	Properties				
	Help				

Figure 4.2

Labworldsoft Serv	er Client M	leasurement File	e Upload Se	ervice Prope	×
General Log On	Recovery	Dependencies			
Log on as:					
○ Local System a □ Allow service	ccount e to interact	with desktop			
● <u>T</u> his account:	joh	n.doe		Browse	
Password:	•••	•••••			
<u>C</u> onfirm passw	vord:	•••••			
		OK	Cancel	Apply	

Figure 4.3

f. Specify Startup Type as **Automatic** if you need to connect to Labworldsoft Server frequently.

e.

Labworld	lsoft Serv	er Client Me	easurement File Upload Service Prope $ imes$
General	Log On	Recovery	Dependencies
Service	name:	abworldsoft	tServer.Client.MeasurementFileUploadService
Display	name:	Labworldso	ft Server Client Measurement File Upload Ser
Descrip	tion:	Labworldso upload serv	ft Server client side measurement file
Path to "C:\Pro	executabl gram Files	e: (x86)\Labwo	rldsoft\LabworldsoftServer.Client.Measuremer
Startup	typ <u>e</u> :	Manual	~
		Automatic Automatic Manual	(Delayed Start)
Service	status:	Disabled Stopped	
5	Start	Stop	Pause Resume
You car from he	n specify t ere.	he start paran	neters that apply when you start the service
Start pa	ara <u>m</u> eters:		
		[OK Cancel Apply

Figure 4.4

g. Start the service.

🔯 Labworldsoft Server Client Measurement File Upload Service 👝		-	Labworldsof		Manual	Local System
🗛 Labworldsoft Server.Measurement Excel File Upload Service	Start		Labworldsof	Running	Automatic	IWB\admin
🗛 Labworldsoft Server.Measurement PDF/A File Upload Service	Stop		Labworldsof	Running	Automatic	IWB\admin
Abworldsoft Server.Server Hosting Service	Pause		Labworldsof	Running	Automatic	IWB\admin
	Resume					
	Restart					
	All Tasks	`				
	Refresh					
	Properties					
	Help					
	Figure 4.5					

h. Make sure that the Service is **running**.

Labworldsoft Server Client Measurement File Upload Service Labworldsof. Running Manual Local System



i. The service Labworldsoft Server Client Measurement File Upload Service is used for pushing Labworldsoft 6 measurement files to Labworldsoft Server in the background. Even if Labworldsoft 6 is closed, pushing of the measurement files to Labworldsoft server continues as long as this service is running.

4.2. Read/Write permission to C:\ProgramData\Labworldsoft folder

When Windows user with Administrative privilege starts Labworldsoft 6, C:\ProgramData\Labworldsoft settings folder is created. All the Windows users who want to access Labworldsoft 6 should have **read/write** permission to C:\ProgramData\Labworldsoft folder and sub folders.



Figure 4.7

5. Accessing Labworldsoft Server from Labworldsoft 6

- a. Start Labworldsoft 6
- b. Select menu View → Server



Figure 5.1

c. The Server tab is visible and opened.

🛆 Labworldsoft 6	5 - Untitled						_		×
<u>F</u> ile <u>E</u> dit <u>V</u> iew <u>I</u> nternal	/ <u>M</u> easuren	nent Company	Product grou	ıp <u>M</u> od	lules <u>S</u> ettings	<u>T</u> ools <u>S</u> erv	er <u>L</u> anguage <u>I</u> nfo <i>Inter</i>	mal 6.4.9	.1
\triangleright			6		Q	Ċ	00:00:	00 🏹	\$
Setting		Server Loca IP Address Port	tion Local M 127 . Tes	achine 0 . 808	Q . 1 0 nunication				
Workspace	Server	Log					100	% 🔻	Q

Figure 5.2

d. Alternatively, by clicking on the menu **Server** → **Settings**, we can open the Server tab.

🛆 Labworldso	oft 6 - U	ntitled								— () ×	
File Edit V Internal	iew M	easurement	Company	Product grou	p Modules	Settings	Tools	Server Language Settings	Info	Internal	6.4.9.1	
\triangleright	[63		C	Ċ	Login):(00:00	۵	
Setti	ings gin		Server Locat	ion Local Ma	achine	•						
			Port	Tes	8080 t Communica	ation						
Workspace	e S	erver Lo	og							100 %	• @	

Figure 5.3

5.1. Settings screen

Settings screen can be opened by selecting the Settings tab.

5.1.1. Server Location

Select the Labworldsoft Server location.

Server Location	Description
Local Machine	If Labworldsoft Server is running on the same PC as Labworldsoft 6, you have to select Local Machine option
Intranet (Inside firewall)	If Labworldsoft 6 and Labworldsoft Server are running on 2 different PCs, you have to select this option.

Table 5.1

5.1.2. IP Address

If **Intranet (Inside firewall)** option is selected for **Server Location**, **IP Address** block is enabled and you have to provide the **IP Address** of the PC where Labworldsoft Server is running.

5.1.3. Port

Provide the same **Port** number used in the **Settings** screen of **Labworldsoft Server**. At present, the Port number used in Labworldsoft Server is **8080** and which is not configurable. Therefore, provide the same Port number **8080** in Labworldsoft 6 as well. We will make Port number configurable in future. Refer <u>section 2.4.3</u> for more details.



Figure 5.4

5.1.4. Test Communication

Click Test Communication button to test whether Labworldsoft 6 can connect to Labworldsoft Server successfully.



Figure 5.5



5.2. Login screen

- a. Open Login screen by selecting the Login tab.
- b. Alternatively, you may click the menu **Server** \rightarrow **Login** to open the Login screen.



Figure 5.7

c. Provide the **User ID** and **Password** of the **Labworldsoft 6 User** that we created in Labworldsoft Server.



Figure 5.8

d. When a new user is logging-in first time, Change Password dialog box will be shown as below:



Figure 5.9

e. When clicking OK, a dialog box is popped-up to set the new password.



Figure 5.10

f. Set the new password. Last 2 passwords should not match. Click Ok. If password has changed successfully, a dialog box is displayed as below:



Figure 5.11

- g. Password will expire after 90 days.
- h. When login to Labworldsoft Server from Labworldsoft 6 first time during each starting of Labworldsoft 6, a window is popped-up as below:



Figure 5.12

Labworldsoft 6 setup installs a Windows Service Labworldsoft Server Client Measurement File Upload Service. For more details refer the <u>section 4</u>. Labworldsoft 6 setup will not start this service by default. If you need to upload the measurement files to Labworldsoft Server, you have to start this service to change the status to **Running**.

5.3. Advanced Server settings

After successfully login to Labworldsoft Server, select Settings screen again. Advanced Server Settings options are visible.

🛆 Labworldsoft 6 - Untitled					
File Edit View Measurer	nent Company Pro	oduct group	Modules	Settings	Tools
		\triangleright		Ē	3
Settings					
Login	Server Location				
Login	IP Address	127 .	0.0	. 1	
My Account	Port				
Configurations					
Measurements		Test (Communicat	tion	
Users	Advanced Serve	r Settings			
User Logs	Use FDA 2	21 CFR Part	11 settings		
	Use a	er Login is M automatic Lo o logout 5	gout min	or Ali User	S

Figure 5.13

5.3.1. Use FDA 21 CFR Part 11 settings

Use this option to make compliance with **FDA 21 CFR Part 11**. If we enable this option, all the sub options will be selected automatically. If this option is selected it is not possible to work with **Labworldsoft 6** any more without logging to **Labworldsoft Server**.

5.3.2. Server Login is Mandatory for all users

Select this option to force login to Labworldsoft Server to work with Labworldsoft 6. If this option is selected, when starting Labworldsoft 6 next time, a login window will be displayed and user has to login to Labworldsoft Server successfully to get access to Labworldsoft 6.

5.3.3. Use automatic Logout

Select this option to set timeout for automatic logout from Labworldsoft Server if PC is inactive for the specified time in **Time to logout**.

5.3.4. Time to logout

Timeout value for automatic logout from Labworldsoft Server.

5.4. My Account screen

After successful login, **My Account tab** is visible and selected by default. This screen displays all the information about the logged-in user.

🛆 Labwo	orldsoft (5 - Untitled								- C]	×
<u>F</u> ile <u>E</u> d <u>I</u> nternal	lit <u>V</u> iew	<u>M</u> easurem	ent Company	Product group	<u>M</u> odule	es <u>S</u> ettings	<u>T</u> ools <u>S</u> er	ver <u>L</u> anguage	e <u>I</u> nfo	Internal	6.4.9.	1
\triangleright	>			6		C	Ċ		00:0	0:00	Ĉ	
	Setting	s										
	Login		User ID			johndoe	e					
	0		First Name			John						
M	ly Acco	unt	Last Name			Doe						
Co	nfigurat	tions	Email			john.do	e@ika.com					
Me	asurem	ents	Role			Admini	strator					
	acaron		State			Active						
	Users		User created	d on (UTC)		3/20/20	024 9:14 AM					
L	Jser Lo	gs	Password la	st changed on (l	UTC)	3/20/20	024 9:26 AM					
			User last up	dated on (UTC)		3/20/20	024 9:26 AM					
				Logout			Change Pa	ssword				
Works	pace	Server	Log							100 %	- (Q

Figure 5.14

User can Logout by clicking the **Logout** button. User can change password by clicking the **Change Password** button.

5.5. Configurations screen

Configurations screen is used to manage Labworldsoft 6 **configuration files** (**.LWS6**).

5.5.1. Fetch Configurations

🗳 Labworldsoft 6 - Untitled								- 0	×
<u>F</u> ile <u>E</u> dit <u>V</u> iew <u>M</u> easurer	nent Company Produ	ct group <u>M</u> odules <u>S</u> etti	ngs <u>T</u> ools <u>S</u> erver <u>L</u> ar	nguage <u>I</u> nfo <u>I</u> n	ternal			Internal 6.4	4.9.1
	\triangleright		B	C	Ç		0	0:00:00 (3
Settings									
Login	Item Contig 1 PID Co	guration Name De ontroller Test Test	scription Create ing PID Controller[]	d User Last	Version Crea 3/19/	ated Time (UTC) Last Updated /2024 8:29:33 AM 3/19/2024 8:29	1ime (UTC) State 0:33 AM Draft I	Configuration Key b8a47556ba954425!	
My Account									
Configurations									
Measurements		Fetch Configurations	<< Previous	Next >>					
Users				Upload New Co	nfiguration				
User Logs		ed successfully							
Workspace Server	Log							100 % 🔻	Q

Figure 5.15

User can fetch configurations by clicking **Fetch Configurations** button. When the configurations list is huge, they are displayed in multiple pages. User can navigate to forward and backward by clicking the **Next>>** and **<<Previous** buttons.

In the Figure 5.15, **Created User** is mentioned as [---]. This is because this file is uploaded from Labworldsoft Server side.

5.5.2. Upload New Configuration

New configuration file can be uploaded by clicking the Upload New Configuration button.

- a. Click Upload New Configuration button.
- b. Enter the details

Upload New Configur	ation		×
Configuration Name	Method Advanced Module Te	st	
Description	Method Advanced Module Tes	st	
Path	C:\Method Advanced Module	Test.LWS6	
		Ok	



c. The new configuration file is uploaded.

🛆 Labworldsoft 6	- Untitled													- 0	×
<u>F</u> ile <u>E</u> dit <u>V</u> iew	Measurem	nent Cor	mpany Prod	uct group <u>M</u> oo	dules <u>S</u> etting	ıs <u>T</u> ools <u>S</u> erve	er <u>L</u> angu	age <u>I</u> nfo <u>I</u>	nternal					Internal	6.4.9.1
			\triangleright			6		C	Ċ				0	0:00:00	۵
Setting	6														
Login		Item 0	Cont Meth	iguration Name od Advanced N ontroller Test	e D Nodule Test Me	escription ethod Advanced sting PID Control	Module Te	Created L stjohndoe	Jser La 1	st Version	Created Time (U 3/20/2024 11:02:4 3/19/2024 8:29:3	TC) Last l 13 AM 3/20/2 3 AM 3/19/2	Jpdated Time (U 024 11:02:43 AN 024 8:29:33 AM	JTC) State Conf M Draft d4f5f Draft b8a4	8
Му Ассог	int														
Configurati	ions														
Measurem	ents			Fetch Conf	igurations	<< Previous		Next >>		etch Config	guration Versions	Ac	tivate	Inactivate	
Users				Dele	ete	Remove	Uţ	bload New C	onfiguration	Upload	New Configuration	n Version	Upload Imaç	је	
User Loç	js				ssfully										
Workspace	Server	Log												100 % 🔻	Q

Figure 5.17

d. Click Fetch Configurations. The State of the configuration is Draft.

Item	Co	nfiguration Name	Description	Created User	Last Version	Created Time (UTC)	Last Updated Tim	e (UTC) State	e Confiç
2	Met	thod Advanced Module Test	Method Advanced Module	Testjohndoe	1	3/20/2024 11:02:43 AN	13/20/2024 11:02:43	3 AM Draft	d4f5f8
1	PID	Controller Test	Testing PID Controller	[]	1	3/19/2024 8:29:33 AM	3/19/2024 8:29:33	AM Draft	b8a47
		Fetch Configurations	<< Previous	Next >>	Fetch Config				
		Delete		Upload New Configurat	tion Upload	New Configuration Vers	sion Upload I	mage	
Configu	urations fet	ched successfully							

Figure 5.18

5.5.3. Upload New Configuration Version

When a user makes corrections or modifications in the newly uploaded configuration file, the modified file can be uploaded as a new version by selecting the configuration file and then clicking the **Upload New Configuration Version** button. You can upload any number of versions.

Item (Configuration Name	Description	Created User	Last Version	Created Time (UTC	Last Updated T	īme (UTC) S	State Co	nfiguration Key
2 IV	lethod Advanced Module Tes	tMethod Advanced Module Te	stjohndoe	1	3/20/2024 11:02:43	AM <mark>3/20/2024 11:02</mark>	2:43 AM D	raft d4f	5f85aaa58493a8be6588
1 P	ID Controller Test	Testing PID Controller	[]	1	3/19/2024 8:29:33 A	M 3/19/2024 8:29:3	33 AM Di	raft b8a	47556ba9544259b7fa2
	Fetch Configurations		Nevt >>	Fetch Configurat	ion Versions	Activate	Inactiv	vate	Delete
	r cicii coningurations	s s i revious	NOAL 22	r cich conigura		Activate	macuv	alc	Delete
	Remove U	bload New Configuration Upl	load New Configu	uration Version	Upload Image				

Figure 5.19



Figure 5.20

To fetch all the configuration versions, select the configuration and click the **Fetch Configuration Versions** button.

Configuration Versio	ins			×
Version Number	Description	Created User	Created Time (UTC) Last Up	dated Time (UTC) State
3	Method Advanced Module Test Ver	r 3 johndoe	3/21/2024 3:30:32 AM 3/21/202	4 3:30:32 AM Draft
2	Method Advanced Module Test Ver	r 2 johndoe	3/20/2024 12:01:15 PM 3/20/202	4 12:01:15 PM Draft
1	Method Advanced Module Test	johndoe	3/20/2024 12:00:15 PM 3/20/202	4 12:00:15 PM Draft
Configuration vers	ion informations fetched successfully			
Refresh	<< Previous	Next >>	Download Configuration	Upload Image
Activate	Inactivate	Delete	Ok	
, tourouto	indottato		0	

Figure 5.21

5.5.4. Upload Image to Configurations

Configurations can upload image by selecting the configuration and clicking the **Upload Image** button. Image should be in PNG format and in 40 x 40 pixel size.

Item	Configuration N	lame	Description	Created User	Last Version	Created Time (UTC)	Last Updated Time (UTC)	State	Configuration Key	
2	Method Advanc	ed Module Tes	tMethod Advanced Module Test			3/21/2024 3:57:52 AM	3/21/2024 4:02:23 AM	Draft	1800840bfac146168	01abf409ea32fec
1	PID Controller T	est	PID Controller Test	[]		3/21/2024 3:57:30 AM	3/21/2024 3:57:30 AM	Draft	8ad4b36555ac4137b	9d29888791780ba
	Fetch Configurations	<< Previ	ious Next >>	Fetch Configu						
	Upload New Configurati	on Upload N								

Figure 5.22

5.5.5. Upload Image to Configuration Version

Select the configuration and click the Fetch Configuration Versions button. Each configuration versions can upload image. Click **Upload Image** button in **Configuration Versions** dialog box.

Configuration Version	Configuration Versions									
Version Number		Description		Created User	Cre	eated Time (UTC)	Last Update	ed Time (UTC)	State	
3	3	Method Advanced Module Test Ver 3	}	[]	3/2	1/2024 3:58:22 AM	3/21/2024 4:	23:53 AM	Draft	
2	2	Method Advanced Module Test Ver 2		[]	3/2	1/2024 3:58:09 AM	3/21/2024 4:	23:11 AM	Draft	
1		Method Advanced Module Test		[]	3/2	1/2024 3:57:52 AM	3/21/2024 4:	23:05 AM	Draft	
Configuration image uploaded successfully										
Refresh		<< Previous		Next >>		Download Config	juration	Upload	Image	
Activate		Inactivate		Delete		Ok				

Figure 5.23

5.5.6. Download Configuration Version

Select the configuration and click the **Fetch Configuration Version** button. On the **Configuration Versions** dialog box select the configuration version and click the **Download Configuration** button. Choose the location and file name on the **Save As** dialog box to download the version.
5.5.7. States of Configuration and Configuration Versions

There are 4 states for a configuration and its configuration versions.

State	Description				
Draft	When a Configuration or Configuration Version is uploaded, this newly uploaded Configuration or Configuration Version is in Draft state. Configurations or Configuration Versions in Draft state is not visible to a Normal User .				
Inactive	We can place a Configuration or Configuration Version in Inactive state by clicking the Inactivate button. Configurations or Configuration Versions in Inactive state is not visible to a Normal User.				
Active	We can place a Configuration or Configuration Version in Active state by clicking the Activate button.				
Delete	We can place a Configuration or Configuration Version in Deleted state by clicking the Delete button. Configurations or Configuration Versions in Deleted state are not visible to Super User and Normal User .				

Table 5.3

A Configuration or Configuration Version state can be changed to Inactive, Active or Deleted state from any state by clicking the corresponding Inactivate, Activate or Delete buttons.

A Configuration or Configuration Version can be permanently removed from the database by clicking the **Remove** button.

5.6. Measurements screen

Labworldsoft 6 Measurements are managed in **Measurements** screen. For uploading measurements, the Windows Service **Labworldsoft Server Client Measurement File Upload Service** should be in Running State. Refer the <u>section 4</u> for more details.

Measurement files are locally saved in C:\ProgramData\Labworldsoft\LabworldsoftServer.Client.MeasurementFileUplo adService\MeasurementFiles folder.



The Windows Service Labworldsoft Server Client Measurement File Upload Service uploads the measurement files to Labworldsoft Server in the background. As long as Labworldsoft Server Client Measurement File Upload Service is running, this upload process continues even if Labworldsoft 6 is closed.

5.6.1. Uploading a Measurement

a. Create/open a configuration in Labworldsoft 6. A simple configuration is created with Method Advanced module and **Save** module as an example.



Figure 5.25



Figure 5.26

b. Double-click on Save module and open the Configuration dialog.



Figure 5.27

c. Select the option **Save to server**. By selecting this option, we can save the measurements to Labworldsoft Server.

d. When starting the measurement, the measurement information is added in Labworldsoft Server. Measurement information can be fetched by clicking the **Fetch Measurements** button.

Item 1	Measurement Name Method Advanced Me	odule Test	Start Time (UTC) 3/21/2024 7:00:22 AN	User ID I johndoe	Signing State Unsigned	Active True	Machine Name BL-23-01.in.ika.intra	Measurement Key a3e45366f87c4164a200	Dfc684cfedf8b	
I	etch Measurements	< Previo	ous Nex	t>>			Fetch PDF/A			
			te De		Abort Upload					

Figure 5.28

e. Alternatively, click the menu **Measurement** → **Record**. The dialog box **Record Measurement** pops-up.

Record Meas	urement				×
Path	C:\Users\Public\Doc	uments\Labwo	rldsoft\Labw	vorldsoft €	Open
	Create a separ	rate folder for e	ach day		
File Name	Method Advanced N	lodule Test 3			
	Create automa	itic file name			
	Change file na	me when meas	surement sta	arts	
Sample rate	1000			ms	-
	CSV	CSV format	English		•
File format	Excel				
	Save to server				
				Ok	

Figure 5.29

By selecting the **Save to server** option you can upload the measurements.

5.6.2. Download measurements as Excel and PDF/A files

a. In the above example, we have not stopped the measurement. Click the **Fetch Excel** button.

Measurement File Information	×
File Number File Size (Bytes) Recording Start Time (UTC) Recording End Time (UTC)	
Measurement File Upload State: Uploading No measurement file informations available	
Refresh << Previous Next >> Download File Ok	

Figure 5.30

b. Click the Fetch PDF/A button.



Figure 5.31

- c. The uploading operation is in **Uploading** state. This is because, the measurement file is not yet generated. The measurement files are generated when the file size becomes a certain size (≈2MB) or the measurement is stopped. The measurement files are stored locally in Microsoft Excel (xlsx) format. The Windows Service Labworldsoft Server Client Measurement File Upload Service uploads the locally saved Excel file to Labworldsoft Server. From Labworldsoft Server this Excel file is converted to PDF/A format. Both Excel and PDF/A files are uploaded to the database. It will take some time to complete the Upload operation. So you may not see the files immediately after stopping the measurement.
- d. Stop the measurement. After a while click Fetch Excel button. Measurement File Information dialog is popped-up. If the Measurement File Upload State is still Uploading, you may click the Refresh button to update the state.

Measurement F	ile Information				×	
File Number	File Size (Bytes)	Recording Start Time (UTC)	Recording End Time (UTC)			
	335798	3/21/2024 7:00:22 AM	3/21/2024 9:37:10 AM			
Measuremen	t File Upload State:	Finished				
Re	resh	<< Previous	Next >>	Download File	Ok	

Figure 5.32

- e. Select the row and click **Download File** button to download the file.
- f. Similarly, you can download the PDF/A file as well.

5.6.3. Inactivate and Activate Measurements

A measurement can be inactivated and activated by clicking the **Inactivate** and **Activate** buttons. Only Active measurements are visible to both Super Users and

Normal Users. Normal User can only view Active measurements created by that user.

5.6.4. Deleting a measurement

Only inactive measurements are allowed to delete. Select a measurement and click the **Delete** button to delete the measurement. A delete operation will permanently remove the measurement information from the database.

5.6.5. Abort Upload

Upload operation can be aborted by clicking the **Abort Upload** button. After the measurement is aborted, no more subsequent files are uploaded. Click the **Fetch Excel** or **Fetch PDF/A** button. The **Measurement File Information** dialog box shows the **Measurement File Upload State** as **Aborted**.

5.6.6. Sign a measurement

- Sign Measurement
 ×

 Signing State
 Unsigned

 Comment
 Ok
- a. Select a measurement and click the Sign button.

Figure 5.33

- b. Select the appropriate **Signing State** and enter the **Comment**. Click the **Ok** button.
- c. Different Signing State and its meaning is as follows:

Unsigned	Initial state of signing.
Reviewed	Measurement is in reviewed state.
Authorship	Measurement is in authorized state.

Approved Measurement is in approved state.				
Responsibility	Assigning the responsibility.			
Table 5.4				

d. The signature information can be fetched by clicking the **Fetch Signature** button.

Measurement File Informa	ition				×	:
Signed Time (UTC)	Signed User	Signing State	Comment			
3/21/2024 10:53:14 AM	johndoe	Reviewed	Reviewed.			
Measurement signing in	formations feto	ched successful	ly			
Refresh		<< Previous		Next >>	Ok	

Figure 5.34

5.7. Users screen

Users screen is used to manage Labworldsoft 6 Users.

a. Click the Fetch Users button to fetch all the Labworldsoft 6 Users.

User ID	First Na	me Last Name	Email	Department	Team	Role	State
johndoe	e John	Doe	john.doe@ika.com	R&D	Lab	Administrator	Active
tony	Tony	Thomas	tony@ika.com	R&D	Lab	Super User	Active
aneesh	Aneesh	George	aneesh@ika.com	R&D	Lab	User	Active
	Fetch Users	<< Previo	ous Next >>	Add	Edit	Delete	Reset Password

Figure 5.35

b. Click the **Add** button to add a new User. The criteria for User ID is shown on the **Add User** dialog box.

Add User	×
User ID	paul
First Name	Paul
Last Name	Thomas
Email	paul@ika.com
Department	R&D
Team	Lab
Role	User 🗸 🗸
User ID shou Minimur Maximu First cha Allowed	ld have: n 4 characters m 40 characters aracter a letter special characters . @
	Ok



c. Select the appropriate User Role. There are 3 different types of **Roles** for **Labworldsoft 6 Users** based on their access rights and privileges.

User	Read-only permissions and Least privileges. <i>We called this user</i> Normal User occasionally to avoid confusion, in this document.
Super User	Read and limited write permissions. They have all User role privileges and some of the Administrator privileges.
Administrator	Full access rights. They have the highest level of privileges

Table 5.5

d. Only inactive user is allowed to be deleted. A user can be inactivated by clicking the **Edit** button and selecting the **Inactive** option for **Status** in **Edit User** dialog box.



Figure 5.37

e. Password can be reset to the default **Password@1** by clicking the **Reset Password** button.

5.8. User Logs screen

User Logs screen manages Audit Trail. All the Labworldsoft Server activities are logged in User Logs.



Figure 5.38



Figure 5.39

Each User Log entry is identified with a User Log Code. The User Log Codes and their definitions are given in the below table.

USERLOG_USER_ADDED_SUCCESS	User added successfully.
USERLOG_USER_ADDED_FAILED	Adding a user failed.
USERLOG_USER_DELETED_SUCCESS	User deleted successfully.
USERLOG_USER_DELETED_FAILED	Deleting a user failed.
USERLOG_USER_MODIFIED_SUCCESS	User modified successfully.
USERLOG_USER_MODIFIED_FAILED	Modifying user failed.
USERLOG_PASSWORD_RESETTED_SUCCESS	Password reset successfully.

USERLOG_PASSWORD_RESETTED_FAILED	Resetting password failed.
USERLOG_USER_LOGGED_IN_SUCCESS	User logged in successfully.
USERLOG_USER_LOGGED_IN_FAILED	User login failed.
USERLOG_USER_LOGGED_OUT_SUCCESS	User logged out successfully.
USERLOG_USER_LOGGED_OUT_FAILED	User logout failed.
USERLOG_PASSWORD_CHANGED_SUCCESS	Password changed successfully.
USERLOG_PASSWORD_CHANGED_FAILED	Password changing failed.
USERLOG_MEASUREMENT_STARTED_SUCCESS	Measurement started successfully.
USERLOG_MEASUREMENT_STARTED_FAILED	Measurement starting failed.
USERLOG_MEASUREMENT_SIGNED_SUCCESS	Measurement signed successfully.
USERLOG_MEASUREMENT_SIGNED_FAILED	Measurement signing failed.
USERLOG_MEASUREMENT_ACTIVATED_SUCCESS	Measurement activated successfully.
USERLOG_MEASUREMENT_ACTIVATED_FAILED	Measurement activation failed.
USERLOG_MEASUREMENT_INACTIVATED_SUCCESS	Measurement inactivated successfully.
USERLOG_MEASUREMENT_INACTIVATED_FAILED	Measurement inactivation failed.
USERLOG_MEASUREMENT_DELETED_SUCESS	Measurement deleted successfully.
USERLOG_MEASUREMENT_DELETED_FAILED	Measurement deletion failed.
USERLOG_MEASUREMENT_FILE_EXCEL_DOWNLOADED_SUCCESS	Measurement file excel downloaded successfully.
USERLOG_MEASUREMENT_FILE_EXCEL_DOWNLOADED_FAILED	Measurement file excel downloading failed.
USERLOG_MEASUREMENT_FILE_PDFA_DOWNLOADED_SUCCESS	Measurement file PDF/A downloaded successfully.
USERLOG_MEASUREMENT_FILE_PDFA_DOWNLOADED_FAILED	Measurement file PDF/A downloading failed.
USERLOG_MEASUREMENT_FILE_EXCEL_UPLOADED	Measurement file excel uploaded successfully.
USERLOG_MEASUREMENT_FILE_PDFA_UPLOADED	Measurement file PDF/A uploading successfully.
USERLOG_MEASUREMENT_FILE_UPLOAD_ABORTED_SUCCESS	Measurement file upload aborted successfully.
USERLOG_MEASUREMENT_FILE_UPLOAD_ABORTED_FAILED	Measurement file upload aborting failed.
USERLOG_CONFIGURATION_MODIFIED_SUCCESS	Configuration modified successfully
USERLOG_CONFIGURATION_MODIFIED_FAILED	Modifying configuration failed.
USERLOG_CONFIGURATION_VERSION_MODIFIED_SUCCESS	Modified configuration version successfully.
USERLOG_CONFIGURATION_VERSION_MODIFIED_FAILED	Modifying configuration version failed.
USERLOG_CONFIGURATION_ACTIVATED_SUCCESS	Configuration activated successfully.
USERLOG_CONFIGURATION_ACTIVATED_FAILED	Activating configuration failed.
USERLOG_CONFIGURATION_VERSION_ACTIVATED_SUCCESS	Configuration version activated successfully.
USERLOG_CONFIGURATION_VERSION_ACTIVATED_FAILED	Activating configuration version failed.
USERLOG_CONFIGURATION_INACTIVATED_SUCCESS	Configuration inactivated successfully.
USERLOG_CONFIGURATION_INACTIVATED_FAILED	Inactivating configuration failed.
USERLOG_CONFIGURATION_VERSION_INACTIVATED_SUCCESS	Configuration version inactivated successfully.
USERLOG_CONFIGURATION_VERSION_INACTIVATED_FAILED	Inactivating configuration version failed.
USERLOG_CONFIGURATION_DELETED_SUCCESS	Configuration deleted successfully.

USERLOG_CONFIGURATION_DELETED_FAILED	Deleting configuration failed.
USERLOG_CONFIGURATION_VERSION_DELETED_SUCCESS	Configuration version deleted successfully.
USERLOG_CONFIGURATION_VERSION_DELETED_FAILED	Deleting configuration version failed.
USERLOG_CONFIGURATION_REMOVED_SUCCESS	Configuration removed successfully.
USERLOG_CONFIGURATION_REMOVED_FAILED	Removing configuration failed.
USERLOG_CONFIGURATION_UPLOADED_SUCCESS	Configuration uploaded successfully.
USERLOG_CONFIGURATION_UPLOADED_FAILED	Uploading configuration failed.
USERLOG_CONFIGURATION_DOWNLOADED_SUCCESS	Configuration downloaded successfully.
USERLOG_CONFIGURATION_DOWNLOADED_FAILED	Downloading configuration failed.
USERLOG_CONFIGURATION_IMAGE_UPLOADED_SUCCESS	Configuration image uploaded successfully.
USERLOG_CONFIGURATION_IMAGE_UPLOADED_FAILED	Configuration image uploading failed.

Table 5.6

6 Access Privileges based on User Roles

3 User Roles are defined in Labworldsoft Server. According to the User Role the access privileges change.

User	Read-only permissions and Least privileges. <i>We called this user</i> Normal User occasionally to avoid confusion, in this document.
Super User	Read and limited write permissions. They have all User role privileges and some of the Administrator privileges.
Administrator	Full access rights. They have the highest level of privileges

Table 6.1

6.1 User Management Privileges

Function	Administrator	Super User	User
View own user details present in server in My Account section	Yes	Yes	Yes
Create a new user of normal user role	Yes	Yes	No
View all normal user's user details present in server	Yes	Yes	No
Change other users details of normal user role	Yes	Yes	No
Reset other user's Password of normal user role	Yes	Yes	No
Change other user's user state (Active / Inactive) of normal user role	Yes	Yes	No
Create a new user of 'Super User' user role	Yes	No	No
Create a new user of 'User' user role	Yes	No	No
Delete a user	Yes	No	No
View all users user details present in server	Yes	No	No
Reset other user's Password of any user role	Yes	No	No
Change other user's user state (Active / Inactive) of any user role	Yes	No	No
Change other users details of any user role	Yes	No	No
Change other users role	Yes	No	No

Table 6.2

6.2 Measurement Privileges

Function	Administrator	Super User	User
Save a measurement to server	Yes	Yes	Yes
Download a measurement in excel	Yes	Yes	Yes
Download a measurement in PDF/A	Yes	Yes	Yes
Change status of a measurement from Active to Inactive	Yes	Yes	No
Change status of a measurement from Inactive to Active	Yes	No	No
Signing a measurement	Yes	Yes	No
Delete a measurement permanently	Yes	No	No

Table 6.3

6.3 Configuration Privileges

Function	Administrator	Super User	User
Open an existing Labworldsoft 6 configuration from server	Yes	Yes	Yes
Create a new Labworldsoft 6 configuration	Yes	Yes	No
Change an existing Labworldsoft 6 configuration	Yes	Yes	No
Upload a Labworldsoft 6 configuration to server	Yes	Yes	No

Table 6.4

6.4 User Logs Privileges

Function	Administrator	Super User	User
Automatically saving the User Logs to server	Yes	Yes	Yes
Viewing the User Logs	Yes	Yes	No

Table 6.5

7 Trouble shooting and FAQs

7.1 Question 1

I had only one Server Admin user. I have forgotten the password. How can I access Labworldsoft Server?

Answer 1.

Server Admin user is stored in local SQL Server Compact database C:\ProgramData\Labworldsoft\LabworldsoftServer\LocalDatabaseFiles\ LabworldsoftServerAdminUsers_1_0_0_0.sdf file. Do the following steps:

a. Close Labworldsoft Server

b. Go to the folder C:\ProgramData\Labworldsoft\LabworldsoftServer\LocalDatabaseFiles

c. Delete the database file LabworldsoftServerAdminUsers_1_0_0_0.sdf

d. Start Labworldsoft Server again.

e. Log in to **Labworldsoft Server** again using the default Server Admin user **serveradmin** and password **Password@1**.

When **Labworldsoft Server** is started each time, it will check whether the database file **LabworldsoftServerAdminUsers_1_0_0_0.sdf** exists or not. If it does not exist, it will create a new database file and add the default credential **serveradmin** and **Password@1**.

7.2 Question 2

I have installed Labworldsoft Server. I have setup Labworldsoft Server as mentioned in the document. When starting Labworldsoft Server by clicking **Start Server** button, I get **Starting Labworldsoft Server failed** error. I got the following error information from log file:



Figure 7.1

Answer 2.

There are mainly 3 reasons for this problem. At present, **Labworldsoft Server** is using 14 ports from port number **8080** to **8093**.

1. The ports 8080 - 8093 are being used by another application.

C:\>netstat -o

By executing **netstat** –**o** command, we can find the port numbers used by all the applications. If the port 8080 - 8093 is being used by another app, please stop that app and start **Labworldsoft Server** again. In future we will make this port configurable.

2. The port is blocked by Windows firewall.

We have to add **Labworldsoft Server** into **Windows Firewall**. The steps are as follows:

- a. Go to Control Panel. Click Windows Defender Firewall.
- b. Click Allow an app or feature through Windows Defender Firewall.



Figure 7.2

- c. Click Change Settings button.
- d. Check whether Labworldsoft Server is listed in Allowed apps and feature list box. If it is listed, select the row and click the Details... button and make sure that the path is the installation path. If path is correct, click Network types... button and select all the network types Domain, Private and Public.

← ↑ 🔗 · Contre	ol Panel > All Control Panel Items > W	indows Defender Firewall + Allowed apps	~ Õ	Search Co.	,p
	Allow apps to communica To add, change, or remove allow What are the risks of allowing an a	Inter through Windows Defender Firewall Id apps and ports, click Change settings. Inter communicate? Change settings Ings are managed by your system administrator.			
	Allowed apps and features:				
	Name DiabworldsoftServer LabworldsoftServer LabworldsoftServer LabworldsoftServer LabworldsoftServer LabworldsoftServer LabworldsoftServer LabworldsoftServer LabworldsoftServer LabworldsoftServer LabworldsoftServer MariaD8 10.4 (r64) MariaD8 10.4 (r64)	Domain Private Public Group Policy Édit an app X You can allow communication with this app from any computer, including those on the Internet or just from computers on your network. Name: LabworldsoftServer Path: C: 'program files' jabworldsoft' jabworldsoft jab			
		Allow anotheg app			

Figure 7.3

- e. If Labworldsoft Server is not listed, click *Allow another app...* button and add the app *C:\Program Files\Labworldsoft\Labworldsoft Server\LabworldsoftServer\LabworldsoftServer.exe* (if you installed Labworldsoft Server in the default path) to the list and select all the network types as mentioned in d.
- 3. Organization's firewall is blocking the port.

Please talk to your IT Administrator and enable access to this port in company firewall.

7.3 Question 3.

I installed and setup *Labworldsoft Server*. I used the default *Database Connection String* as mentioned in this document. When clicking *Test Database Connection* button, I got *Connecting to database failed. Please refer the log files for more details* error.

When I refer the log file, I got the following error:

LabworldsoftServer.log - Notepad	_		×
<u>F</u> ile <u>E</u> dit F <u>o</u> rmat <u>V</u> iew <u>H</u> elp			
## [2021-02-12 18.19.36.030] [ERROR]			^
File Name : ServerController.cs			
Method Name : InitializeLabworldsoftDatabaseConnection			
Error : An error occurred.			

System.Data.SqlClient.SqlException (0x80131904): CREATE DATABASE permission denied 'master'.	in da	tabase	5
at System.Data.SqlClient.SqlConnection.OnError(SqlException exception, Boolean			
<pre>breakConnection, Action`1 wrapCloseInAction)</pre>			- 14
at System.Data.SqlClient.TdsParser.ThrowExceptionAndWarning(TdsParserStateObject	: stat	eObj,	
Boolean callerHasConnectionLock, Boolean asyncClose)			
at System.Data.SqlClient.TdsParser.TryRun(RunBehavior runBehavior, SqlCommand cm	ıdHand	ler,	
SqlDataReader dataStream, BulkCopySimpleResultSet bulkCopyHandler, TdsParserStateOb	ject		
stateObj, Boolean& dataReady)			
at System.Data.SqlClient.SqlCommand.RunExecuteNonQueryTds(String methodName, Boo	lean	async,	,
Int32 timeout, Boolean asyncWrite)			
at System.Data.SqlClient.SqlCommand.InternalExecuteNonQuery(laskCompletionSource	1		
completion, String methodName, Boolean sendloPipe, Int32 timeout, Boolean& usedCach	e, Bo	olean	
asyncWrite, Boolean inRetry)			
at System.Data.SqlClient.SqlCommand.ExecuteNonQuery()			
at System.Data.Entity.Infrastructure.Interception.InternalDispatcher 1.Dispatch			
[[]arget,]InterceptionContext,]Kesult][]arget target, Func 3 operation, [Intercept	lonCo	ntext	~

Figure 7.4

Answer 3.

Suppose the logged in Windows user is *IWB\Tony.Thomas*. Since *Windows Authentication* is used in *Database Connection String*, Labworldsoft Server uses *IWB\Tony.Thomas* as the SQL Server user as well. Please check *Server Roles* of the user *IWB\Tony.Thomas* using *SQL Server Management Studio* (*SSMS*) as shown below:



Figure 7.5

Please talk to your **Database Administrator** and select all the **Server Roles**.

7.4 Question 4.

I have added a new Windows user to my PC. He logged in to Labworldsoft Server, but when clicking Test Database Connection button, database connection is failing.

Answer 4.

You have to add this new Windows user to your SQL Server Data Source using SQL Server Management Studio (SSMS) and select all the Server Roles as mentioned in the Answer 3.

🧏 Microsoft SQL Sen	ver Management Studio
File Edit View P	roject Tools Window Help
G - O 📅 - 🛅	- 🔄 🔛 💾 🛢 New Query 🟮 🐼 🐼 🏡 🐼 🕹 🗇
8 # N	- 🕨 Execute 🔳 🗸 😳 🗐 🔒 📅 🖧
Object Explorer	▼ ╄ ×
Connect 🕶 🏺 🎽 🔳	▼ ℃ →
🖃 🐻 .\LABWORLDSOF	TDS (SQL Server 14.0.1000 - IWB\Tony.Thomas)
🕀 💼 Databases	
🖃 📕 Security	
🖃 💼 Logins	
	New Login
≜	Filter
*	
🕀 📕 Sen	Start PowerShell
🕀 📕 Cre	Reports
🕀 📕 Auc	
🕀 📕 Sen	Refresh
🕀 📕 Server Object	s
🕀 💼 Replication	
🕀 💼 PolyBase	
🕀 💼 Management	
🕀 🕑 XEvent Profile	er

Figure 7.6