OpenLab CDS

Configuring OpenLab CDS with OpenLab ECM

Notices

Document Information

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Software Revision

This guide is valid for revision 2.7 of Agilent OpenLab CDS.

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In this Guide ...

Since OpenLab CDS 2.4 or higher Agilent OpenLab ECM (v3.5 Update 6, v3.6 and above) can be used as an alternative storage to OpenLab Server or OpenLab ECM XT. In this configuration, you can view, import and reprocess data stored in ECM that has been generated by CDS 2.4 or higher, by OpenLab ChemStation or EZChrom.

This manual describes the requirements, installation, and configuration of a Shared Services server for configuration of OpenLab CDS 2.7 in an environment with existing OpenLab ECM 3.x.

It is valid for OpenLab CDS 2.7 with OpenLab ECM 3.5 Update 6 or higher, or ECM 3.6. The document includes information on OpenLab CDS interoperability with other Agilent Chromatography Data Systems (ChemStation or EZChrom).

Table 1 Terms and abbreviations used in this document

Term	Description
AIC	Agilent's Analytical Instrument Controller
Control Panel	Control Panel for Agilent OpenLab software
Microsoft Control Panel	Part of the Microsoft Windows operating system
ECM	OpenLab Enterprise Content Management system
Shared Services	Set of administrative services that control, for example, the security policy and the central configuration of OpenLab CDS. Shared Services are accessed via the Control Panel.

1 Compatibility and Requirements

This chapter details on compatibility with ECM, and Server requirements.

2 Install the Shared Services Server

This chapter gives an overview of the installation with different deployment options, and provides step-by-step instructions for the installation of the Shared Services server software.

3 Configure the Shared Services Server

This chapter describes the initial configuration steps after installing the OpenLab Shared Services server software.

4 Working with OpenLab CDS and OpenLab ECM

This chapter contains basic information on working with an Agilent OpenLab CDS system that is connected to OpenLab ECM.

5 Maintenance of the Shared Services Server

This chapter contains information on specific backup and restore procedures.

Contents

1 Compatibility and Requirements

This chapter details on compatibility with ECM, and Server requirements.

Compatibility of OpenLab CDS 2.7 with OpenLab ECM

CDS 2.7 is compatible with

- OpenLab ECM 3.6[1], and
- OpenLab ECM 3.5 Update 6.

NOTE

OpenLab CDS has an enhanced search functionality that gets exposed when it is used with OpenLab ECM 3.6 *Update 02* or above. In this case search will find OpenLab CDS results by looking at all extracted meta-data keys. It will also find data generated by ChemStation or EZChrom systems based on extracted keys.

For more detail on search see "Working with Existing ChemStation or EZChrom Data" on page 51.

Operating System support

Supported Operating Systems with ECM 3.6

- Windows Server 2016, Standard or Datacenter
- Windows Server 2019, Standard or Datacenter

Supported Operating Systems with ECM 3.5 upgrade 6

- Windows 2012 Server R2 (64 bit)

[1] Compatibility update from June 2020 required to run on Windows Server 2019, SQL Server 2019, and Oracle 18c or 19c

Shared Services Server Requirements

OpenLab CDS 2.7 requires the latest version of OpenLab Shared Services Server, v3.6, as delivered on the CDS media.

Always install OpenLab Shared Services on a separate server hardware. Agilent doesn't recommend mixing OpenLab Shared Services and OpenLab ECM on the same server in a production environment. If you are using OpenLab ECM with a database server, you may deploy the Shared Services server database on the same server.

Minimum Recommended Hardware

Table 2 Minimum hardware requirements for a Shared Services Server

Item	HW requirements
Processor speed (CPU)	3 GHz Dual core
Physical memory (RAM)	12 GB (64-bit)
Hard disc	160 GB
Network	100/1000 mbps

To prevent OpenLab CDS licensing issues when using client application virtualization software, disable the (default) dynamic MAC Address. The product licensing is based on the Mac address of the server. A change of Mac Address, will break licensing and the application won't be functional.

Database Support

Database software supported with OpenLab Shared Services Server v3.6

- Microsoft SQL Server (64-bit): 2016 SP2, 2017, 2019
- PostgreSQL Server (64-bit): 14.1
- Oracle (64 bit): 19c

Citrix Client

In case your are using a Citrix Client you will need to publish the Control Panel and the Agilent.ECMAPI.ECMAPI32BitHost.exe from the path C:\Program Files (x86)\Agilent Technologies\ECM API\2.2.0.0 (ECM 3.6 backend), or C:\Program Files (x86)\Agilent Technologies\ECM API\2.1.3.0 (ECM 3.5 update 06) respectively. By default the name of the application is used. Dots are not supported in the name! Remove any "." before publishing, and publish e.g. as AgilentECMAPIECMAPI32BitHost.exe.

Click on the published application Agilent.ECMAPI.ECMAPI32BitHost.exe through Citrix receiver, then log on to the OpenLab Control Panel.

NOTE

Use a dedicated Citrix server for each OpenLab CDS system if there are multiple systems.

If the following error occurs when users switch between servers: *"ECM error message: Failed to retrieve the username and password from the configuration table...Error code: -8* ", and data fails to load: Check if you have a single Citrix server for multiple systems, and if so, change to dedicated servers.

Remote Desktop Services (RDS)

In case your are using Remote Desktop Services:

1. On the Remote Desktop Client, install the ECM API bootstrapper msi (Agilent.OpenLab.EcmApiTerminalServicesBootstrapperSetup.msi) from your installation media (Setup\Tools\TerminalServices).
2. Publish Agilent.OpenLab.EcmApiTerminalServicesBootstrapperSetup.Exe (by default: C:\Program Files (x86)\Agilent Technologies\OpenLab EcmApiTerminalServicesBootstrapper).
3. Through the thin client using the web UI, launch the published app.

   This will launch the OpenLab Control Panel.

2 Install the Shared Services Server

This chapter gives an overview of the installation with different deployment options, and provides step-by-step instructions for the installation of the Shared Services server software.

Installation Overview

There are different approaches how you can add a OpenLab CDS system to an existing OpenLab ECM solution. The starting point is your existing installation.

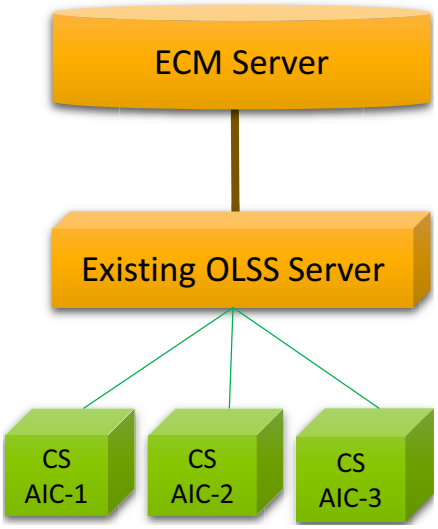


Figure 1 Existing Installation (Example)

The initial step is to make sure that your OpenLab ECM server is of a compatible version, and if not, upgrade the ECM server. OpenLab CDS 2.7 requires OpenLab ECM version 3.5 Update 6, or OpenLab ECM version 3.6 or above.

The next step is to deploy the Shared Services server. The Shared Services Server must match with the client version. Choose one of the following options:

- "Option 1: Deploy a new Shared Services Server" on page 13
- "Option 2: In-place Upgrade of an Existing Shared Services Server" on page 14

NOTE

If you already have an OpenLab Shared Services Server that is used with another application, you may be able to share the server with OpenLab CDS 2.7 (see "Option 2: In-place Upgrade of an Existing Shared Services Server" on page 14). However, this option can be used only if the other application is compatible with OpenLab Shared Services Server version 3.5. Otherwise choose Option 1 (see "Option 1: Deploy a new Shared Services Server" on page 13).

Option 1: Deploy a new Shared Services Server

This is the preferred option.

Deploy a second Shared Services server for connecting the new OpenLab CDS 2.7 AICs. This approach does require additional hardware for the new Shared Services server. There is no direct dependency between the two Shared Services servers. They can have different versions as long as they are compatible with the ECM 3.x server and with the CDS clients or AICs connected to them.

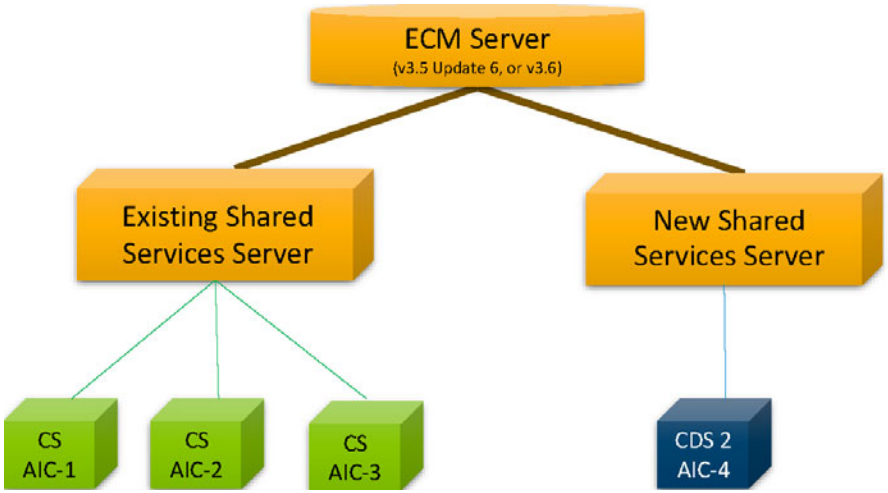


Figure 2 Deployment with second Shared Services Server

Benefits of this approach are:

- The existing system is not modified.
  - Little to no downtime for existing systems
  - Little to no revalidation costs for existing systems
- The new system can be evaluated, tested and validated while existing production remains undisturbed.
- Retiring ChemStation or EZChrom AICs and migrating instruments to OpenLab CDS can be done one at a time and over an extended period.

Two Shared Services servers will need to be managed until all AICs are migrated to the new server, and the old server can be retired.

Option 2: In-place Upgrade of an Existing Shared Services Server

With this approach, you connect the new OpenLab CDS AICs to your existing Shared Services server.

NOTE

This is possible only when all involved parties - OpenLab CDS, ChemStation, and/or EZChrom - are compatible with the "shared" Shared Service server. Check the requirement information of your CDS before you start with the in-place upgrade.

This option is the more complex one, if your existing Shared Services server is not already compatible with OpenLab CDS.

Consequences can include one or several of the following:

- Higher downtime for upgrading the Shared Services server,
- May require upgrading existing AICs and clients,
- Higher upfront revalidation costs.

The benefits of this approach are:

- No additional hardware required,
- Need to manage only one Shared Services Server.

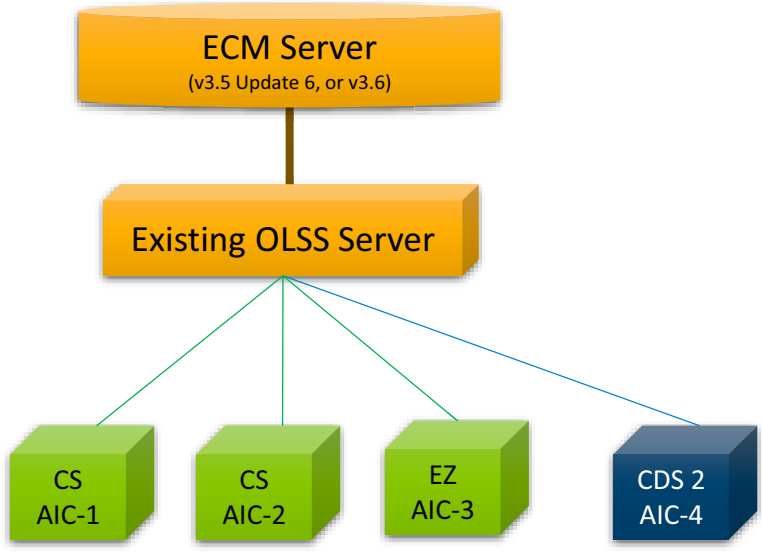


Figure 3 In-place upgrade

The upgrade process includes the following actions:

- Check the version of your existing Shared Services server.
- If the Shared Services version is lower than 3.5:
  - **a** Check your existing ChemStation or EZChrom system, and determine the required version. Note: At the time of MR of OpenLab CDS version 2.7 the latest versions of OpenLab ChemStation and OpenLab EZChrom are not compatible with the Shared Services server version 3.5.
  - **b** Upgrade the Shared Services server by following the steps as outlined in "Install or Upgrade the Shared Services server software" on page 24.
  - **c** Upgrade your existing AICs and clients to a compatible version.
  - **d** Add your new OpenLab CDS Client or AIC
  - **e** After adding OpenLab CDS AIC or Client, reset the authentication in the OpenLab Control Panel such that the storage path is provided to specify Location\Cabinet\.

    For details, see "Configure Project Paths" on page 46.
  - **f** Rebuild the *Activity Log Index* as described at "Rebuild the Activity Log Index" on page 31
- OR

  If you already use version 3.5 or higher of the Shared Services server:
  - **a** Skip the steps from the *Install or Upgrade the Shared Services server software* section. You only need to reconfigure the project paths in the Control Panel.

    For details, see "Configure Project Paths" on page 46.
  - **b** After adding OpenLab CDS AIC or Client, reset the authentication in the OpenLab Control Panel such that the storage path details are provided to specify Location\Cabinet\.

Before You Begin

Review the hardware and software requirements

To confirm that you have the correct hardware and software to support your chosen system, review the section "Compatibility and Requirements" on page 6.

Decide on the server that you would like to use

You may use an existing SQL or Oracle database setup for hosting the Shared Services Server. Agilent recommends to use your existing database engine for ECM. Alternatively you can host the Shared Services Server Schema in PostgreSQL.

If you decide to install a new database, consider the following: The OpenLab Shared Services Server can work with three database types: SQL Server, Oracle or PostgeSQL (see "Database Support" on page 9).

- **PostgreSQL Server**: The PostgreSQL server can either be local to the OpenLab Shared Services server or it may be on a remote system. This database is provided with the OpenLab software and can be installed and configured during installation. Alternatively you can configure an existing PostgreSQL server previously installed by the OpenLab software. Any PostgreSQL server that you have installed outside of OpenLab must be removed before installing the provided OpenLab PostgreSQL Server.
- **Oracle Server**: This database can be configured during installation, but it must be installed prior to installation of the OpenLab software. See "Prepare Your Oracle Server" on page 20.
- **Microsoft SQL Server**: This database can be configured during installation, but it must be installed prior to installation of the OpenLab software. See "Prepare Your Microsoft SQL Server" on page 19.

Acquire administrator privileges

1. Obtain the server name. You will need to enter this information during the installation. The software will not install to a server that uses an underscore character in its name.
2. Obtain the server administrator credentials. You will need to enter this information during the installation.
3. Acquire administrator privileges for the Shared Services server and all computers that you will use in your system.

Upgrade Preparation

If upgrading on systems with a large number of Shared Services activity log records (for example, more than 30 million records), the upgrade and migration of the database can take up two hours or more, based on the database type. Plan accordingly for these larger upgrades.

Make sure the user is specified in the section **Local Security Policy >User Rights Management >Log on as a Service**.

If upgrading the software, all uploads from the client must be stopped, and the **File Upload Queue** on the client must be empty before upgrading.

Set up your Server

NOTE

Current Microsoft updates and Windows version must be installed before installation can begin.

1. Disconnect the server from the Internet until you have installed the latest security fixes and virus protection.
2. In your Windows system:
   - Set the time zone.
   - Set the authentication mode to **Windows domain and internal authentication**.

3 Install an anti-virus program. OpenLab Shared Services was tested to run with Symantec's Norton AntiVirus, McAfee, and Trend Micro™.

4 Configure your anti-virus software:

Exclude the following folders from Antivirus scan, by adding to **Approved programs**. If you want to have these folders scanned, you should do this while the system is not acquiring or doing data Analysis as scanning may cause slowness and runs to be aborted due to concurrent access to the same file by the anti-virus program and the OpenLab application.

- [C:\]Program Files (x86)\Agilent Technologies
- [C:\]ProgramData\Agilent
- [C:\]ProgramData\Agilent Technologies
- [C:\]ProgramData\Firebird
- [C:\]ProgramData\IsolatedStorage

If you use Trend Micro™ as your anti-virus software, the following tasks are recommended to optimize system performance.

Settings for Trend Micro™ Antivirus Software

- Pre-installation task

  If your version of Trend Micro has **Web Reputation**, turn it off to maximize performance.

  The risk of turning off Web Reputation is that web traffic through browsing from the machine will not be checked. Ensure that there is another URL/web scanner on the gateway level to protect the endpoint, or ensure that the endpoints have limited access to Internet.

- Post-installation tasks

  a **Real time scan**: Add exclusions, and modify the scan direction from **Created/Modified/Retrieved** to **Created/Modified**.

  Exclusions ensure that the working directory will not be scanned. The risk is that only files that are created and changed on this machine are scanned. Files that are only accessed will be bypassed. Dormant files that were infected without being noticed at the time they were created or written to the machine will not be scanned. Increase the scheduled

scan to run daily to ensure all files on the machine are checked for infections that are dormant or not moving.

b **Behavior Monitoring**: Add the following list of programs to **Approved programs**.

C:\Program Files (x86)\Agilent Technologies\...

- OpenLab Services\UI\Agilent.OpenLab.ControlPanel.exe
- OpenLab Services\Automation\AutomationServerHost.exe
- OpenLab Services\Diagnostics\DiagnosticsToolsServiceHost.exe
- OpenLab Services\Licensing\Flexera\lmadmin.exe
- OpenLab Services\Licensing\Licensing.Service.Host.exe
- OpenLab Services\Server\SharedServicesHost.exe

The risk is that if any of the excluded files get infected, it will not be detected. Trigger a schedule on a daily basis to cover these files.

c **Realtime monitoring**: Add the following folder to the exclusion list of Realtime Monitoring settings: C:\Program Files (x86)\Agilent Technologies

d Confirm that no server role or feature is installed.

5 Join an existing domain.

Changing the server domain after the installation requires direct consultation with Agilent Support.

6 If you decided for using a PostgreSQL database continue with running the System Preparation Tool.

If you decided to install a Oracle Server or Microsoft SQL database follow the respective instructions provided below, before continuing with the System Preparation.

Prepare Your Microsoft SQL Server

If you plan to use a Microsoft SQL server as your Shared Services Server, complete these procedures before installing the OpenLab software. See your Microsoft documentation for details on your SQL server software.

1 Install the Microsoft SQL server.

2 During installation, change the server authentication to mixed mode.

3 Enable the login for user *sa*.

4 Restart the SQL Server service, and log in with SQL Server Authentication.

Prepare Your Oracle Server

If you plan to use an Oracle server database, complete these procedures before installing the OpenLab software. The Database must be installed and configured before installing the OpenLab software.

1 Before the installation:

   Ensure you have ECM 3.6 with the June 2020 compatibility release, if you want to use Oracle 18c, or 19c.

2 During the installation (Note: Do *not* select **Create as Container Database**!):

   a Configure Oracle with the *AL32UTF8* database character set.

   b Set the password for the *SYS & SYSTEM* users.

3 Change the server configuration. Unlock the CTXSYS account used for text indexing, and provide a password

Configure your Oracle Server for hot backup

Use this procedure to prepare an Oracle server database for running a hot backup. This procedure is only required once. For more detail on the individual steps see the *OpenLab Server and OpenLab ECM XT Installation Guide*.

Execute this procedure only when no database activities are running.

1 Create a folder for the fast recovery area,

2 Configure the fast recovery area,

3 Set the database to ARCHIVELOG mode,

4 Set retention policy.

System Preparation

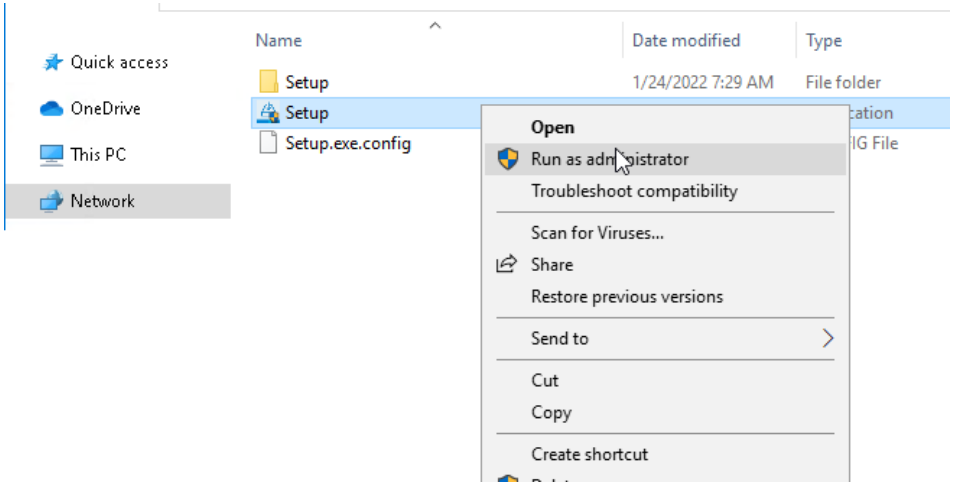
In this step you configure the operating system. The majority of the steps are automated by a System Preparation Tool (SPT). Applying these settings helps avoid issues during installation and use of the product.

The System Preparation Tool (SPT) checks and applies Windows settings on your machine. The settings are also applied automatically when you run the OpenLab installer. Running the SPT in advance helps you to shorten the installation process. An overview of mandatory and recommended settings that are checked by the SPT is provided in the *OpenLab CDS Requirement guide*.

1 Optional: Copy the entire content of the USB media to a local drive or centralized folder, then remove the USB media from the PC.

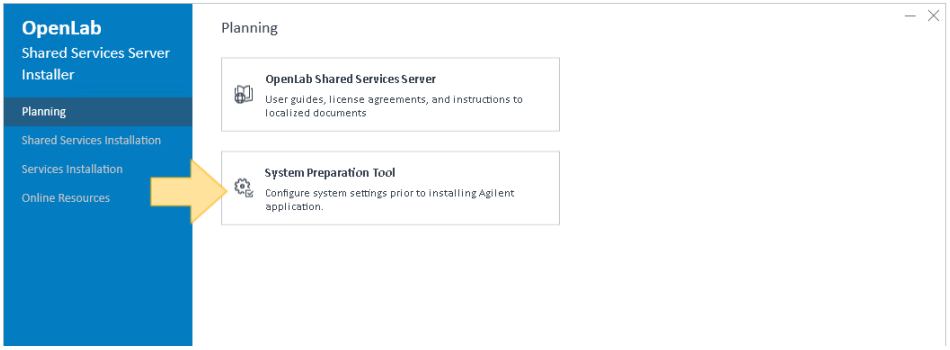
2 To open the installer, right-click the setup.exe file, and run it as administrator.

NOTE If User Account Control (UAC) is switched on, this step requires active confirmation to continue.



3 On the start screen, select **OpenLab Shared Services Server**, and click **OK** to install a server which is to be connected to an existing ECM system.

4 From the **Planning** tab, select **System Preparation Tool**.



If the .NET Framework 4 and higher is not available, it is provided by the installer.

The **System Preparation Tool** window opens.

5 Select the product configuration corresponding to your system:

- **OpenLab CDS~2.7~ServerWithECM3x~Win2016** or
- **OpenLab CDS~2.7~ServerWithECM3x~Win2019**

Click **Continue**. The installer checks all Windows settings that are mandatory and recommended to ensure proper installation.

6 Select which recommended settings to apply to the system.

There are several recommended settings that can improve the performance and stability of your system, but do not need to be completed to deploy the application. The recommended settings are listed after the mandatory settings.

You can clear the check boxes for recommended settings. Mandatory settings cannot be cleared. Recommended actions are selected by default and will be applied unless they are cleared.

7 Click **Apply Fixes** to apply the correct settings.

The System Preparation Tool attempts to fix the selected settings and displays the new status on the **Update Configuration** page. All actions are saved to a log file. A link to the log file is provided at the bottom of the page.

8 Click **Next** to proceed to the **System Preparation Report** page.

The System Preparation Report is displayed. It lists the new status for all selected settings.

The System Preparation Report is saved to disk. Its location is shown at the top of the page.

9 Click **Print Report** to print the *System Preparation Report*.

You may print to a file, for example, using the *Adobe PDF* printer, and add comments.

10 The System Preparation Report lists any mandatory or recommended settings that are not automatically updated by the System Preparation Tool. Follow the instructions provided in the **Actions Required** section of the System Preparation report to manually update operating system settings.

11 Click **Finish**.

12 Reboot your system if requested to do so.

Install or Upgrade the Shared Services server software

CAUTION

Record and store the selections that you use during this installation in a different physical location.

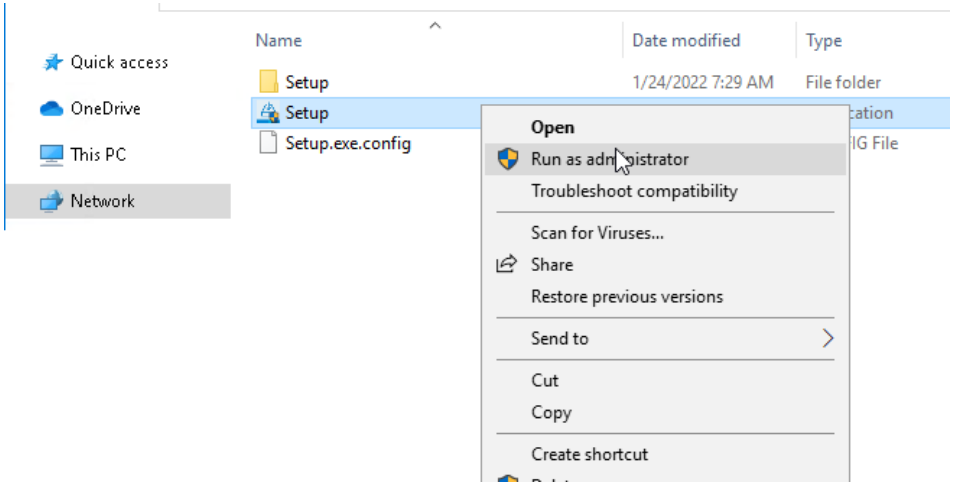
✓ **This information is needed to restore your system in the unlikely case of your system becoming inoperable due to a hardware or software failure.**

Launch OpenLab Shared Services Server installer

Prerequisites

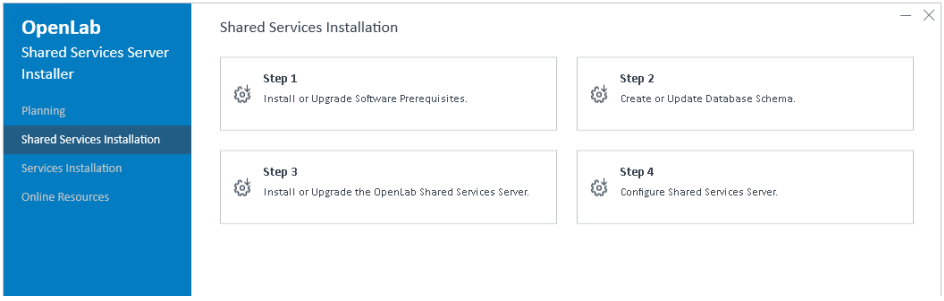
- You have set up your server.
- You did run the System Preparation tool (see "System Preparation" on page 21).

1 To open the installer, right-click the setup.exe file, and run it as administrator.



2 On the start screen, select **OpenLab Shared Services Server**, and click **OK** to install a server which is to be connected to an existing ECM system.

3 From the **OpenLab Shared Services Server Installer** main screen, select the **Shared Services Installation** page.



Step 1 - Install or Upgrade Software Prerequisites

1 Select **Step 1 - Install or Upgrade Software Prerequisites**.

2 **Database Type**: Select the server database you have decided to use. It is recommended to use the same database engine that you use for your ECM database

If you are upgrading Shared Services Server with PostgreSQL, the database will be updated to version 11.5 after a system upgrade.

If you select Oracle Database Server or Microsoft SQL Server, or if this is an upgrade, continue with step 5 **System Preparation**.

3 **PostgreSQL**: If this is a new installation, check the server name (**localhost**) and port number, and click **Next**.

4 **PostgreSQL Settings**: If this is a new installation, enter the **PostgreSQL Installation Path** and **PostgreSQL Database location**. Create and confirm a superuser password.

NOTE

The PostgreSQL installation path and the database location cannot contain folder names that start with the letters “t”, “r”, or “n”. For example, a PostgreSQL installation path "T:\Agilent" or a PostgreSQL database location "T:\test\PostgreSQL-11-OLCM" are not allowed.

Continue with **Next**.

5 **System Preparation**: The installer shows the list of recommended settings for the system. You may clear the check boxes for items that you do not want to apply on the system. Mandatory settings will be applied automatically during installation. For an overview of both mandatory and recommended settings, refer to the chapter *System Preparation Tool* in the *OpenLab CDS Workstations, Clients, and Instrument Controller Requirements and Supported Instruments* guide (CDS_v2.7_Requirements_en.pdf).

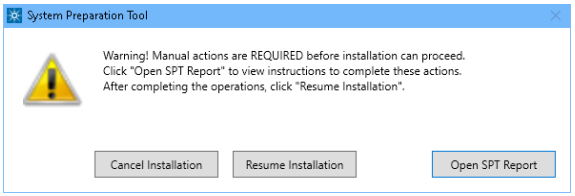
Click **Next** to proceed to the **Review** page. The settings will be applied as part of the installation.

6 **Review**: This page displays installed and new versions of the affected components. The items listed here will depend on the server you will be using. Click **Install**.

7 **Install**:

The components are installed, and the status of the components is displayed as **Installed**.

If there are still manual actions required before installation, a warning is shown.



Options to proceed

- *Recommended*: Click **Open SPT Report** to view instructions to complete these actions. After completing the operations, click **Resume Installation**.
- **Cancel Installation**: Installation is aborted. Make necessary updates and restart installation.
- **Resume Installation**: The dialog is closed, and installation continues with the installation of the CDS components even if a setting was not applied, or the Operating System does not meet requirements.

Click **Next** to proceed.

8 **Finish**: When the components are successfully installed, you will be provided a success message. Click **Finish** to complete Step 1.

You can review the System Preparation Report now.

Step 2 - Create or Update your Database Schema

1 Select **Step 2 - Create or Update Database Schema**.

2 Select **Microsoft SQL Server**. Click **Next** to proceed.

3 On the **Database Server** page: Enter the server name, select either **Connect to Default Instance** or **Connect to Named Instance**, and provide the information.

NOTE

The OpenLab software will not install to a server that uses an underscore character in its name.

Select whether you are creating a new database or are connecting to an existing database, and click **Next**.

4 On the **Database Authentication** page: Select the authentication mode. If you select **User SQL Server database administrator account (sa)**, complete the **Super User** and **Password** fields. Click **Next**.

5 On the **Schema Information** page: Provide the database information required to create the OpenLab Shared Services Server database. You can keep the default user or create a new SQL Server Database User.

6 Provide a password for the **Data Repository** accounts. Click **Next**.

The Data Repository is an internal storage infrastructure for diagnostic and topology related information.

NOTE

In case of an upgrade, this password will reset an existing DR password.

Make sure to document the password at a secure location.

7 Review the information, and click **Create Database**.

8 When the database has been successfully created, click **Finish**.

Step 3 - Install or Upgrade the OpenLab Shared Services Server

1 Click **Step 3 - Install or Upgrade the OpenLab Shared Services Server**.

2 **License Agreement**: Read and confirm Agilent terms and conditions, and click **Next**.

3 **Installation Folder**: Select the installation folder, and click **Next**.

4 **ECM Server**: Provide the ECM server name specify the connection protocol to connect to the ECM server. If you choose **HTTPS**, enter the server name as a fully qualified domain name. Click **Next.**

   If you upgrade an existing Shared Services server, the ECM server name is already filled.

5 **Review**: Review the components to be installed and click **Install**.

6 **Install**:The components are installed. When the installation is complete, click **Next**.

7 **Finish**: When the installation has been completed, a success message is shown. To verify the installation, click **Run Software Verification**.

   Click **Finish**. Your computer will be rebooted.

   After the reboot, if Step 4 does not automatically start, it can be started manually from the OpenLab Shared Services Server Installer.

Step 4 - Configure Shared Services Server

If the installation does not resume after the reboot, use the OpenLab Shared Server Configuration utility to configure or reconfigure an OpenLab Shared Services Server, or open Step 4 from Installer.

1 Click **Step 4 - Configure OpenLab Shared Services Server**.

2 Select the type of database to use, and click **Next**. By default, your selections from "Step 1 - Install or Upgrade Software Prerequisites" on page 26 will be displayed.

3 On the **Database Server** tab enter the required information and click **Next**.

4 On the **Schema Information** tab, enter the information for your Shared Services Database, then click **Verify**.

   If the user can connect to the Shared Services Database, click **Next** to proceed to the **ECM Credentials** tab.

5 On the **ECM Credentials** tab, the server name will be read-only as you have already provided in step 3. Click **Test Connection** to verify that the connection to your ECM server is working.

   If ECM connection or data upload is failing, restart the Agilent OpenLAB ECMAPI 32-bit Service from Windows Services.

   If your are using a Citrix server ensure you followed the instructions provided under "Citrix Client" on page 9 . if you are using Remote Desktop Services, ensure you followed the instructions provided under "Remote Desktop Services (RDS)" on page 10.

6 Enter the **Administrator Authentication** details and the **Shared Services Storage Path**.

NOTE

The path must not be empty! You may keep the slash that is suggested by default. The project paths should be configured manually later using the OpenLab Control Panel (see "Examples for Organizing Data in OpenLab ECM" on page 46)

   Click **Verify** to check your entries.

7 Click **Next**.

8 **Certificate Setup**: If you use a custom certificate, provide the required information. Click **Next**.

9 On the **Review** tab, check the Shared Services server configuration summary. To save the configuration file, click **Export**, or **Print** the summary report.

   Click **Apply** to proceed.

10 When the configuration is complete, click **Done**.

   Your Shared Services Server is configured now to work in the OpenLab ECM environment.

Rebuild the Activity Log Index

After database or system restore, searching the Shared Services Activity log requires a fully built index.

The Activity Log Index is automatically rebuilt in the following scenarios:

- You are using a file-based Workstation configuration using a Firebird database
- The Shared Services database has been restored with a fresh installation
- You are migrating or upgrading your data

After the upgrade completes, the rebuilding of the index for Shared Services Activity Log continues in the background.

Use the following procedure to rebuild the Activity Log Index in case the Activity Log table or data is corrupted or when the Shared Services database has been restored with an existing OpenLab installation.

How to manually rebuild the Activity Log Index

A manual rebuild of the Activity Log Index is needed when the Activity Log table or data is corrupted or when the Shared Services database has been restored with an existing OpenLab installation.

The time required to rebuild the index depends on your database type and the amount of Activity Log records. It may take up to a few hours. During this time, you cannot search the Activity Log in the application.

To rebuild the Activity Log,

1. Start the command prompt as an administrator.
2. Run the following command:
   ```
   net stop SharedServicesHost && del /s /f /q
   %ProgramData%\Agilent\OLSS\Index\ActivityLog && net
   start SharedServicesHost
   ```

Possible Errors

The following messages might occur in case of errors:

- **The Agilent OpenLab Shared Services service is not started. More help is available by typing NET HELPMSG 3521.**

  Solution:

  Use the following command instead:

  ```
  del /s /f /q %ProgramData%\Agilent\OLSS\Index\
  ActivityLog && net start SharedServicesHost
  ```

- **System error 5 has occurred. Access is denied.**

  Solution:

  Make sure Command Prompt has been started as administrator

3 Configure the Shared Services Server

This chapter describes the initial configuration steps after installing the OpenLab Shared Services server software.

Access the Control Panel

All configuration tasks for the Shared Services server, such as security settings, project management or user management, are performed in the OpenLab Control Panel.

1. On the Shared Services Server, open the Control Panel from the desktop shortcut, or go to **Start >Agilent Technologies >Control Panel**.
2. Log in with your ECM administrator credentials.

Verify Connection of Shared Services Server to ECM

These settings are present by default. Follow the procedure to confirm everything is correct.

1. On the Shared Services Server, open the Control Panel from the desktop shortcut, or go to **Start >Agilent Technologies >Control Panel**.
2. From the navigation pane, select **Administration >System Configuration**.
3. Note the **Storage path**. This is the path in ECM that will contain all your projects. It may simply be a slash. The single project paths are configured manually (see "Configure Project Paths" on page 46)
4. In the **System Configuration** toolbar, select **Edit System Settings**.
5. In the **Edit System Settings** window, verify that **ECM** is currently configured as authentication provider and as storage type.
6. Click **Cancel** to close the dialog and keep current settings.

Configure Users and Roles

Roles are used to assign privileges to a user or a user group globally or for a specific project, project group or location. OpenLab Shared Services contains a list of predefined roles which are installed as part of the system installation. Each role has certain privileges assigned.

Table 3 Desription of role types

Role Type	Description
Administration privileges	These privileges are globally asssigned to a user or group and cannot be changed on the instrument/location level. They are the typical adminstration privileges such as **Backup and Restore**, **Manage security**, **Manage printers**, etc
Instrument privileges	These privileges can be assigned globally or on the instrument/location level. Privileges for instruments are, for example, **View instrument or location** and **Run instrument**. users need the **View instrument or location** privilege on the global level to see the locations and instruments tree in the Control Panel.
Project privileges	Privileges for accessing or modifying different levels of data. You can assign these privileges globally or on project group level

Use the Control Panel to manage the roles and privileges. You can create custom roles, or assign one or more of the predefined roles to give users varying degrees of access. When you set up a customized role, it is therefore recommended starting from a lower role (that is, with fewer privileges) and adding specific required privileges, rather than removing privileges from a higher role.

1 In the Control Panel, select **Administration**.

2 In the navigation pane, select **Users**, **Groups**, or **Roles**.

3 Create new items, or edit the existing ones.

Import Users

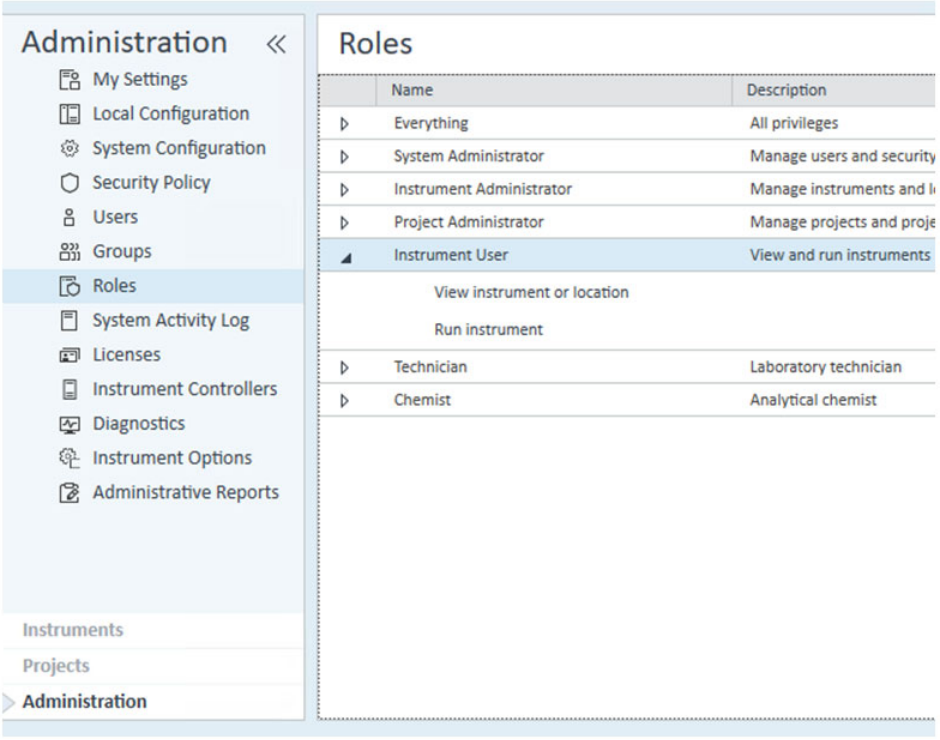
With ECM as an authentication provider, you have the option to import users from ECM. For example, import the built-in ECM users **Chemist** or **Technician**.

To import users from ECM into OpenLab Shared Services, you must have privileges to obtain user and group information from ECM 3.x.

1. From the navigation pane, click **Administration >Users**.
2. In the ribbon, click **Import User**.
3. In the **Search Users** dialog box, enter search string for the ECM 3.x username.
4. From the **Search Results** list, select the user you want to import, and click **Add**. The user is added to the **Selected Users** list.
5. Repeat steps 2 to 4 until you have added all the user names that you want to import to the **Selected Users** list, then click **OK**.
6. Assign roles to the users to give them the required permissions.

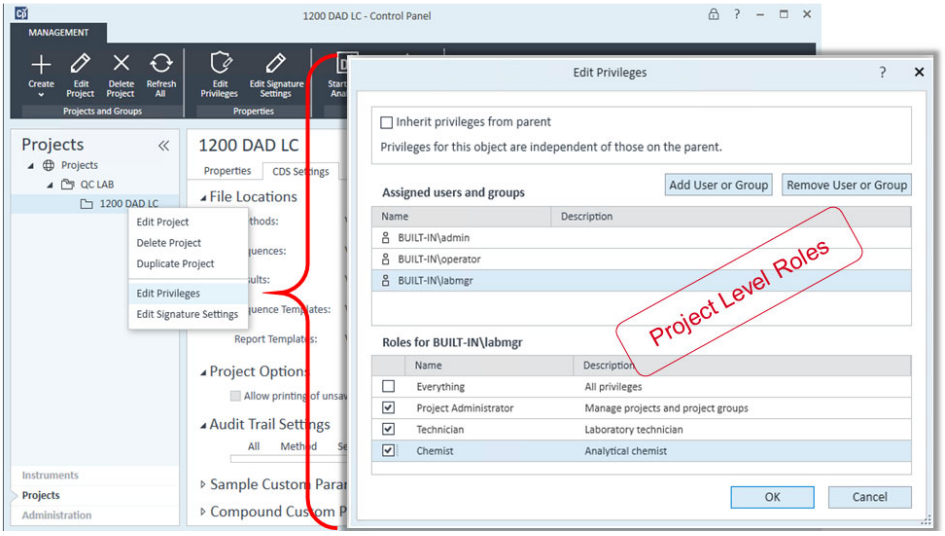
Default Roles

Several default roles are available, such as **Chemist**, **Technician**, or **Project Administrator**. Each role has specific project level privileges. If required, these roles may be edited. To configure roles, choose **Administration >Roles** in the OpenLab Control Panel.



Project-Level Roles

A user can have different roles for different projects. To change the settings for a project, right-click a project, select **Edit Privileges**, and clear the **Inherit privileges from parent** check box in the dialog.



Security Settings

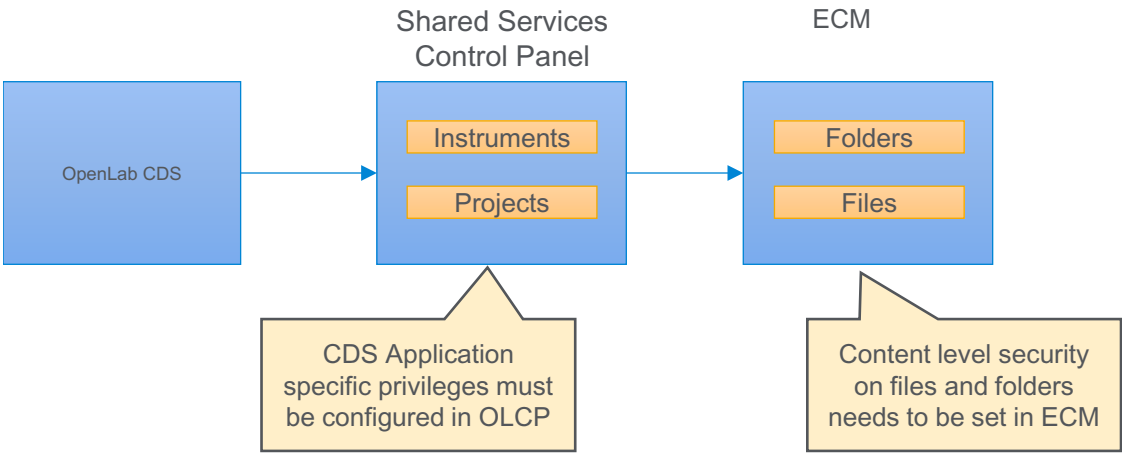
Users need permissions in both ECM and OpenLab CDS:

- OpenLab CDS:

  CDS application specific privileges are configured in the OpenLab Control Panel. OpenLab CDS provides default roles that can be adjusted. See "Default Roles" on page 37
- ECM:

  Privileges to access content stored in ECM are configured in ECM. See "Read/Write Access" on page 40 and "Read-Only Access" on page 42

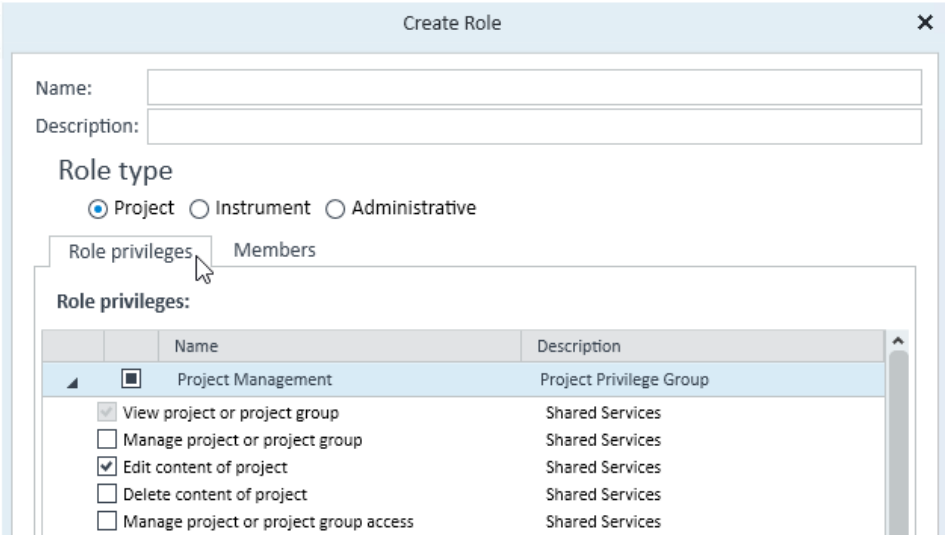
  ECM privileges must be assigned to at least one of your roles in order to become active.



Read/Write Access

OpenLab CDS

The Project privilege **Project Management > Edit content of project** is required in addition to the **view project or project group** privilege.



ECM

The list of ECM privileges described in the following table is the minimum set of privileges allowing full read/write access from OpenLab CDS. These ECM privileges are required to ensure that results from operations such as data acquisition, data analysis, or e-signature are uploaded to the repository.

Table 4 ECM privileges for read/write access in OpenLab CDS

Privilege	View	Edit	Add	Run	Description of privilege
Content: File	X		X		Access files • Required to acquire and process data
Content: File Filtering		X			Add files to an ECM folder • Required to acquire and process data
Content: File Revisions	X				View revisions • Required to acquire and process data
Content: File Associations	X				View associations • Required to acquire and process data
Content: File Type [XLS]			X		Add and check-in files with an .xls extension
Content: Folder	X	X	X		View ECM properties
System: Audit Trail	X				View ECM Audit Trail
System: Filtering Configuration	X				View or change the filtering configuration Use attribute extraction services Manage user-defined attributes
System: indexing Configuration	X				Access ECM indexing (minimum privilege)
System: Advanced Search				X	Use Search in OpenLab CDS • Required for Data Analysis
System: Quick Search				X	Use Search in OpenLab CDS

Privilege to Delete Content

OpenLab CDS By default the Read/Write Access does not include the privilege to delete content of projects. If the specific workflow requires to delete files within a CDS project, add the project privilege **Project Management > Delete content of project**.

ECM You need the ECM privilege **Content:File:Delete**. Note that it allows you to delete other files in ECM 3.x.

CAUTION

Handle the Content:File:Delete privilege with care.

If users shall be allowed to delete report templates, sequences, and methods from OpenLab CDS, they need the Content:File:Delete privilege in addition. However, users with this privilege can also delete any other data from ECM.

✓ **Only apply the Content:File:Delete privilege if this is needed for a specific workflow, and restrict it to the relevant folders.**

Read-Only Access

The list of ECM privileges described in the following table is required for read-only access from OpenLab CDS.

Table 5 ECM privileges for read-only access in OpenLab CDS

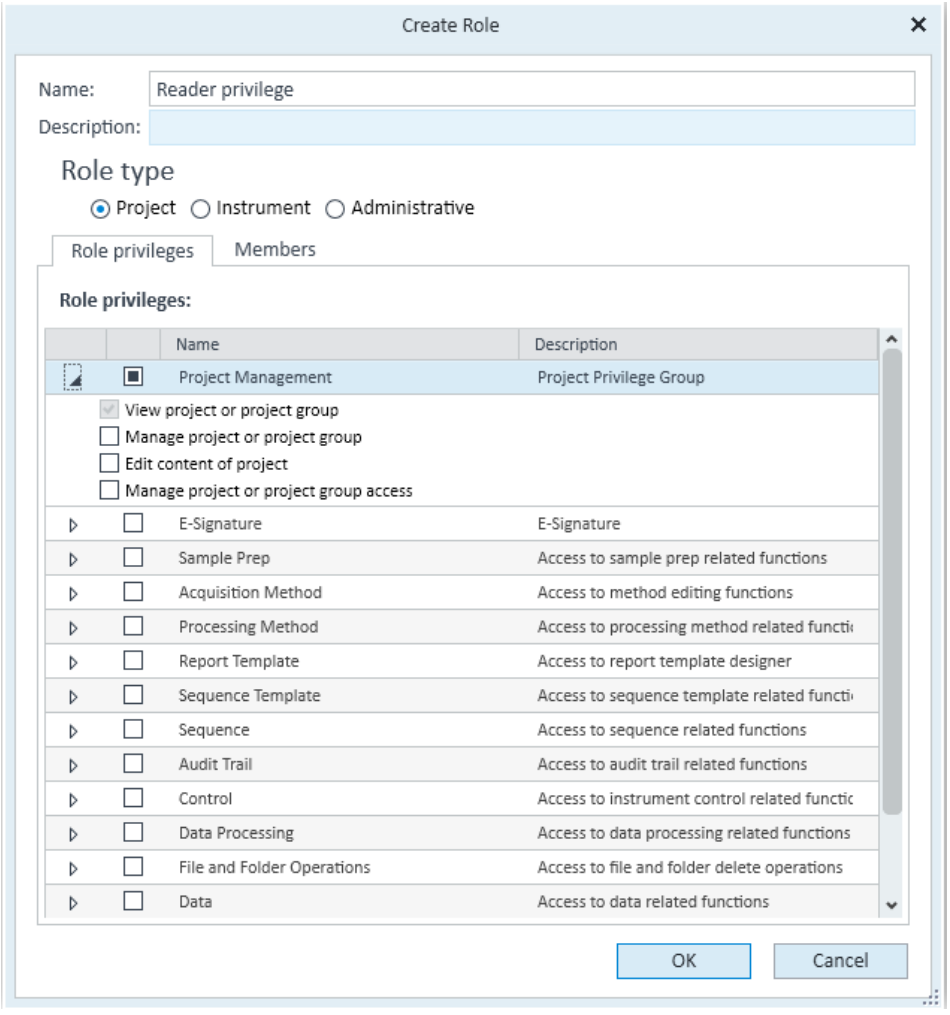
Privilege	View	Edit	Add	Run	Description
Content: File	X				Privilege to access files Required to acquire and process data
Content: File Filtering					Privilege to add files to an ECM folder Required to acquire and process data
Content: File Revisions	X				Privilege to view revisions Required to acquire and process data
Content: File Associations	X				Privilege to view associations Required to acquire and process data
Content: File Type [XLS]					Privilege to add and check in files with an .xls extension
Content: Folder	X				Privilege to view ECM properties
System: Audit Trail	X				Privilege to view ECM Audit Trail
System: Filtering Configuration	X				Privilege to view or change the filtering configuration Privilege to use attribute extraction services Privilege to manage user-defined attributes
System: indexing Configuration	X				Minimum privilege to access ECM indexing
System: Advanced Search				X	Privilege to use Search in OpenLab CDS Required for Data Analysis
System: Quick Search				X	Privilege to use Search in OpenLab CDS

Specific CDS Role for Read-Only Access

For a read-only access to ChemStation or EZChrom data stored in ECM, ECM privileges are not sufficient. In addition, you must configure and assign a specific CDS role in the OpenLab Control Panel.

Prerequisites The read-only access includes *ChemStation* or *EZChrom* data stored in ECM.

1 In the OpenLab Control Panel, navigate to **Administration >Roles**.
2 Click **Create role** with only the privilege **View project or project group**.



3 Save the new role.

4 Select the **Projects** page and navigate to the relevant project.

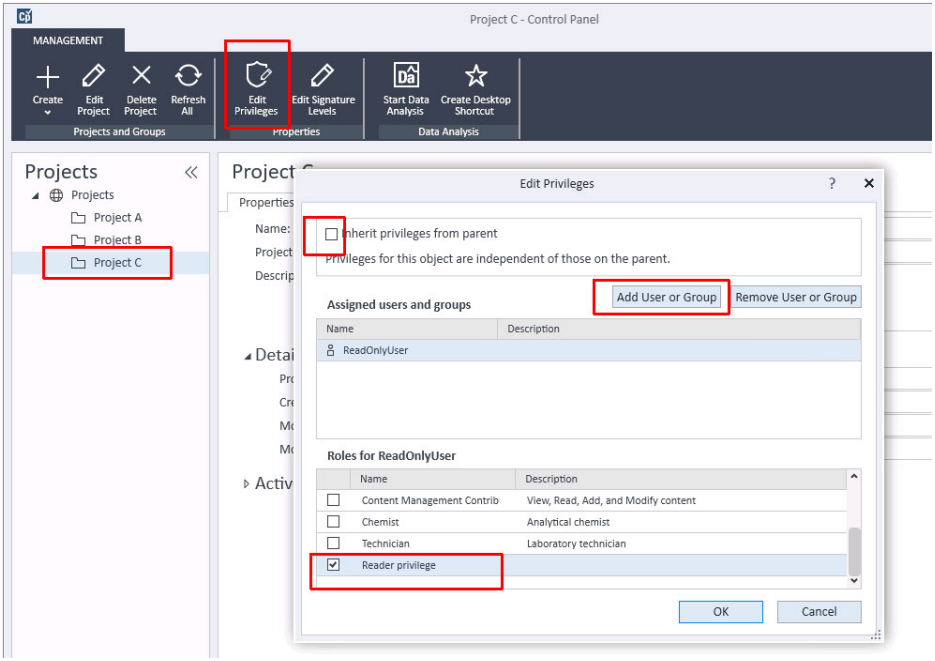
5 In the ribbon, click **Edit privileges**.

6 Clear the **Inherit privileges from parent** check box.

7 When you are asked if you want to copy settings from the parent node, click **No**.

8 Add the ECM user who shall have the read-only access to this project.

9 Assign the newly created role to this user.



10 Confirm your settings.

No Access

Roles and security allow you to completely isolate two projects - for example, for ChemStation data and new OpenLab CDS 2.x data.

Here is an example scenario: You have multiple divisions which have their own labs. Some of the divisions are working on secret projects and the work being

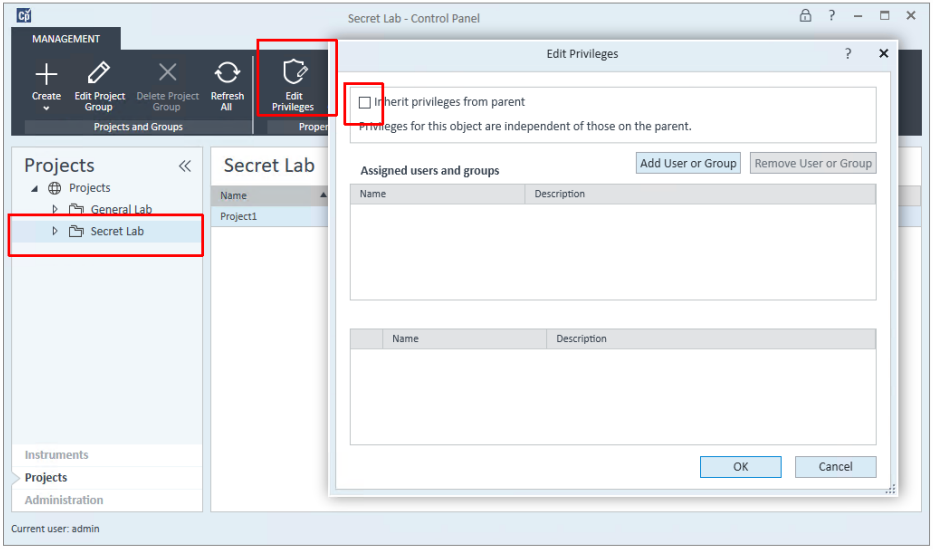
done in their labs (*Secret Lab*) must not be accessible to users in other labs (*General Lab*). There are multiple projects in each lab.

Currently users in all labs store their data generated in ChemStation in ECM 3.x. Security is set up so that the data, methods, etc. owned by users in Secret Lab are not visible to users in General Lab.

If some of the instruments are upgraded to CDS 2.x, you will be able to secure the system in a similar manner so that users in General Lab cannot view data from Secret Lab regardless of whether they are using ChemStation or CDS 2.x.

1 Create separate project groups for the two labs.

2 For the Secret Lab, edit the privileges, and clear the **Inherit privileges from parent** check box. When you are asked if you want to copy settings from the parent node, click **No**.



3 Add users and assign roles to the users as required. These settings are only relevant for the projects in the Secret Lab project group.

In addition to setting up restrictive project access in the Control Panel, privileges in the corresponding ECM paths must also be restricted. Users who should not have access to a path should not be given any privilege to those paths.

About Projects

Configure Project Paths

When creating a project in the OpenLab Control Panel, you must adjust the **Project folder path** and the **File Locations**.

1. From the navigation pane, select **Projects**, and navigate to your project.
2. Click **Edit Project**.
3. On the **Properties** tab under **Project folder path**, provide the root folder for your project. This path corresponds to the root path of your project in ECM.

   The first part of the path is the **Storage path**. It has been defined during installation.
4. On the **CDS Settings** tab under **File Locations**, provide the different paths.

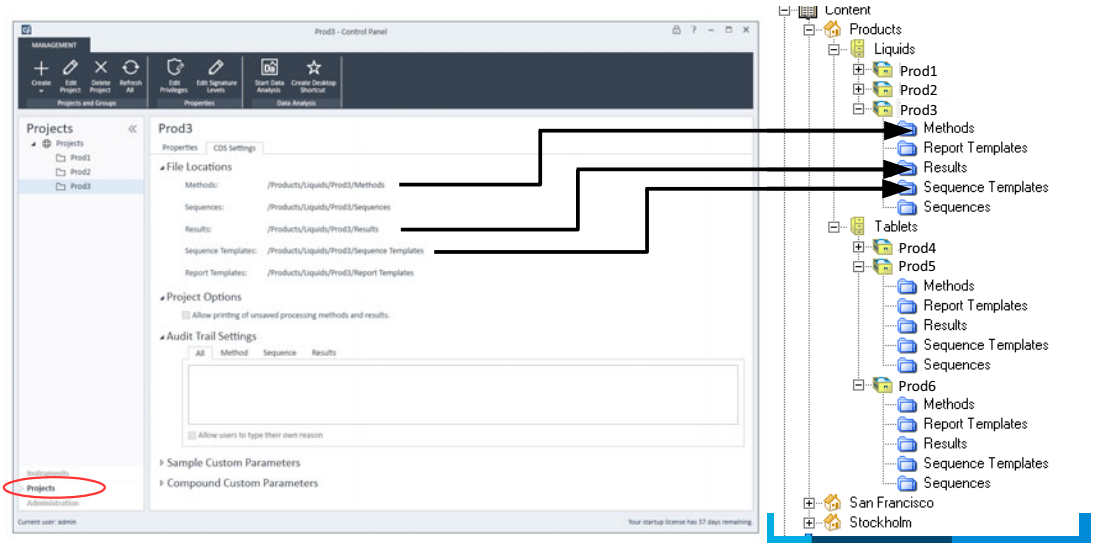
   All OpenLab ECM installations have exactly four levels (Location, Container, Drawer, Folder). Data can only be stored on folder level. Therefore, all file locations must point to an OpenLab ECM folder.

   The way you set up projects depends on how your data is organized in OpenLab ECM. For example, your data structure may be product centric, instrument centric, or user centric. See the following examples.

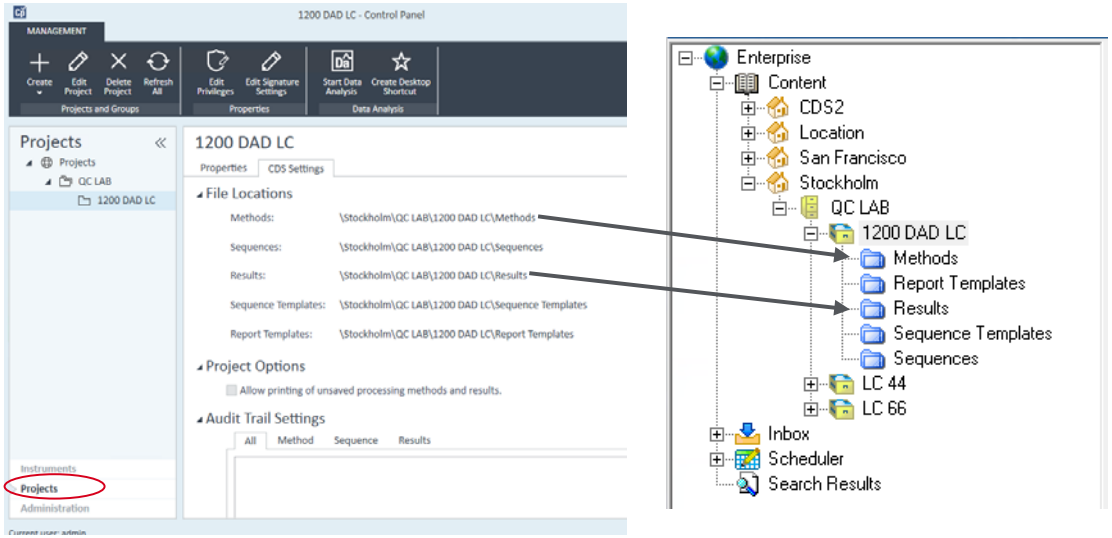
Examples for Organizing Data in OpenLab ECM

For details on creating and configuring projects, refer to the Control Panel Help.

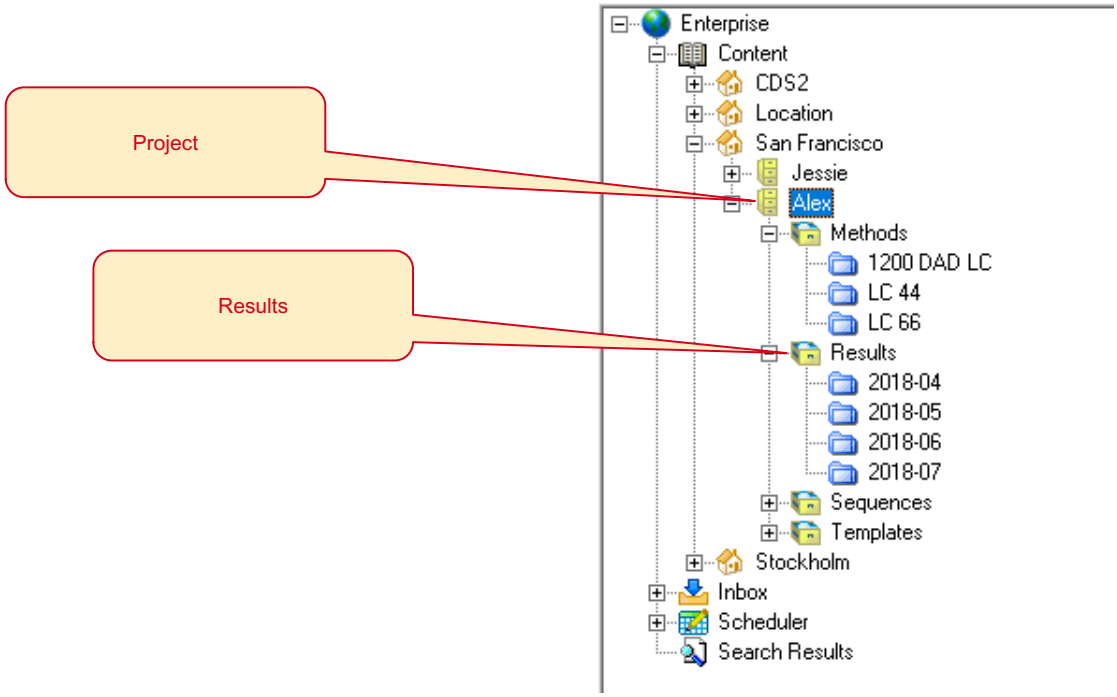
Product centric



Instrument centric



User centric



4 Working with OpenLab CDS and OpenLab ECM

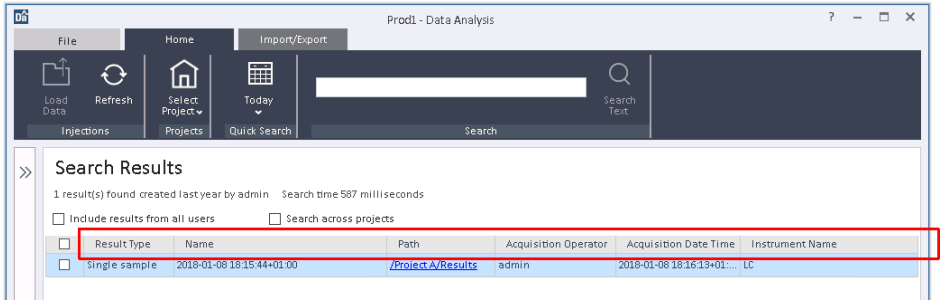
This chapter contains basic information on working with an Agilent OpenLab CDS system that is connected to OpenLab ECM.

Working with OpenLab CDS Data in OpenLab ECM

Search

To enable the Quick Search in OpenLab CDS, you must set the search keys in ECM.

The search keys correspond to the columns shown in the Quick Search results:



NOTE If a search key is not set for one of the search results columns, this field will either appear empty or show a default value.

Since OpenLab CDS 2.5, the search functionality gets enhanced when ECM 3.6 Update 02 or above is installed. In this case search results are based on the extracted metadata keys for OpenLab CDS.

When used with ECM 3.6 or ECM 3.5 Update 6, searching from within OpenLab CDS will find results based on CDS injection metadata.

For more details on search, please refer to the OpenLab ECM help.

Working with Existing ChemStation or EZChrom Data

Loading data

Your OpenLab ECM folders may contain SSIZip files produced by a ChemStation or EZChrom system. When you load such results, the data is automatically converted to the OpenLab CDS format before being displayed. On saving the results, a new result set in OpenLab CDS format is saved with the same name but with an OpenLab CDS extension. The original data remains unchanged. The **Result Set Audit Trail** of the new data will include the name of the original CS/EE SSIZip file.

A ChemStation or EZChrom result set will be displayed as read-only if it has already been upgraded and a corresponding OpenLab CDS format result set exists in ECM 3.x.

Original data and OpenLab CDS data are shown with different icons in the OpenLab CDS injection tree.

Revisions

In OpenLab CDS you can only load the latest revision of your ChemStation or EZChrom data.

OpenLab CDS 2.7 can coexist in Mixed Environments with

- OpenLab EZChrom A.04.09 and A.04.10, and
- OpenLab ChemStation C.01.10

Please check with your Agilent representative for further compatibility information.

Search

Since Openlab CDS v2.5, the search functionality gets enhanced when ECM 3.6 Update 02 or above is installed. In this case search results are based on the extracted metadata keys for OpenLab CDS. The search will also find ChemStation and EZChrom files by looking at extracted keys.

When used with older versions of ECM 3.x, searching from within OpenLab CDS will only find results based on OpenLab CDS injection metadata. SSIZip files that have been generated by ChemStation or EZChrom systems will not be listed in the search results.

After first saving with OpenLab CDS, the OpenLab CDS version of the ChemStation and EZChrom data will be found by the search. Please note that filter key extraction with ECM happens after saving the data. Therefore a delay between acquiring/saving data and finding them with a search is to be expected.

5 Maintenance of the Shared Services Server

This chapter contains information on specific backup and restore procedures.

OpenLab Shared Services maintenance

The Shared Services Maintenance tool is automatically installed with OpenLab software to help administrators manage the system. The user must have Windows administrator rights to access this utility. These are the available options:

- **Server Settings** tab: The Server Settings tab shows a table listing all configured OpenLab servers and the default server connection. The content is identical with the Local Configuration in the Administration view of OpenLab Control Panel (see section 12.3.2). While OpenLab Control Panel only permits viewing, the maintenance utility enables administrators to edit OpenLab servers. The default server can be switched, new servers can be added, or existing servers edited or deleted. A checkmark enables a function allowing users to choose the server during login.
- **Windows Domain** tab: If Windows domain security is being used, the credential used to interrogate the domain controller may be configured on the Windows Domain tab.
- **Backup and Restore** tab: The Shared Services database can be backed up or backups can be restored from the Backup and Restore tab. A backup directory and a retention time in days for old backup files can be specified. Available backups are listed in a table sorted by date. This tab is available for the following configurations:
  - Workstation using file system storage
  - Shared Services Server running on PostgreSQL, using a network share or ECM 3.X

Shared Services Maintenance Tool

The Shared Services Maintenance tool helps managing the system. It is automatically installed with your OpenLab software.

Start the Maintenance Tool

NOTE

The Shared Services Maintenance tool can only be started by administrators.

1 To start the application, go to **Start >All Programs >Agilent Technologies >Shared Services Maintenance**.

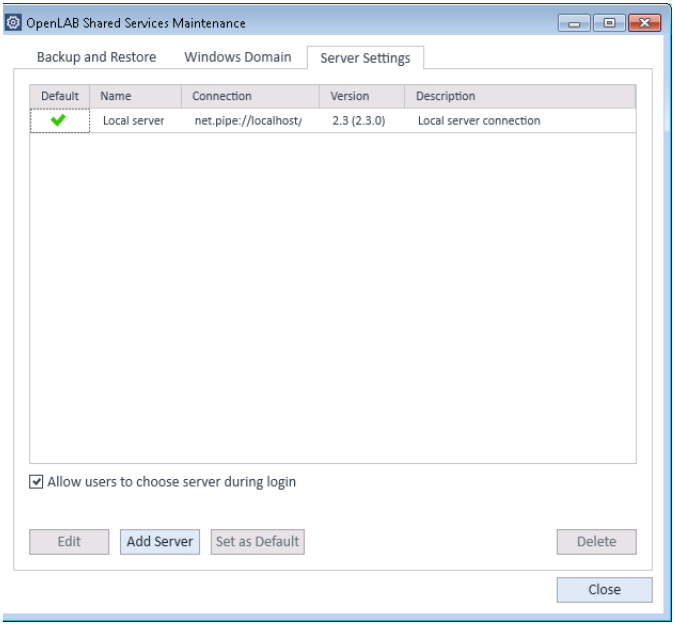


Figure 4 OpenLab Shared Services Maintenance (for example with Server Settings tab selected)

In order to simplify backup and restore tasks for the Shared Services database, the **Backup and Restore** tab of the **Shared Services Maintenance** provides a simple interface for performing these tasks.

For details on other maintenance of OpenLab Server and supported database types, refer to the OpenLab Server documentation on the OpenLab Server installation medium.

Configure Access to Windows Domain

If you use Windows domain authentication to identify your OpenLab users, OpenLab must be given access to the server where these credentials are stored.

Normally, if a machine has been joined to the domain, the trust relationship between this machine and the domain server is sufficient to grant this access. If a problem occurs while selecting an account: Use the **Windows Domain** tab in the **Shared Services Maintenance** program to specify or change the credentials that OpenLab will use to access your Windows domain server. The user specified here must have the privilege to obtain user and group information from the domain.

This feature is usable if Domain Authentication has been activated. It can only access credentials stored on the same computer on which you opened the Shared Services Maintenance program.

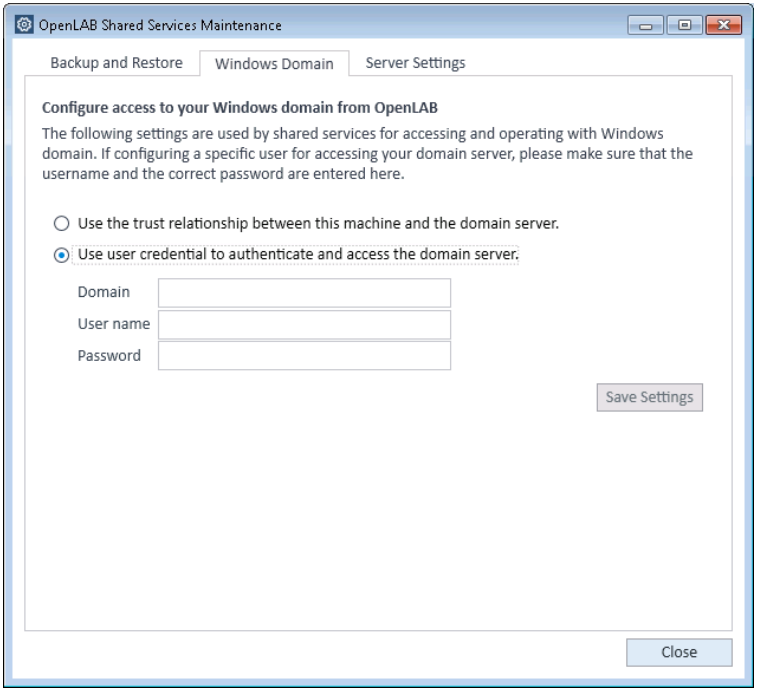


Figure 5 Windows Domain tab with specific user credentials

1 Choose the **Windows Domain** tab.

2 Enter the user credentials and click **Save Settings**.

Manage Server Settings

In a client/server configuration, use **Server Settings** to manage server connections for your local system. The list of servers here determines which servers users may choose to connect to when they log in to the OpenLab Control Panel. Administrators can limit users from switching to a non-default server from this tab.

This feature manages server connections for the computer where you are using the **Shared Services Maintenance** program.

The server connections for each client in a client/server system are managed through the client, therefore to change the server connections for a client, access the **Shared Services Maintenance** program installed on that client.

NOTE

The Shared Services Maintenance tool can only be started by administrators.

1 To start the application, go to **Start >All Programs >Agilent Technologies >Shared Services Maintenance**.

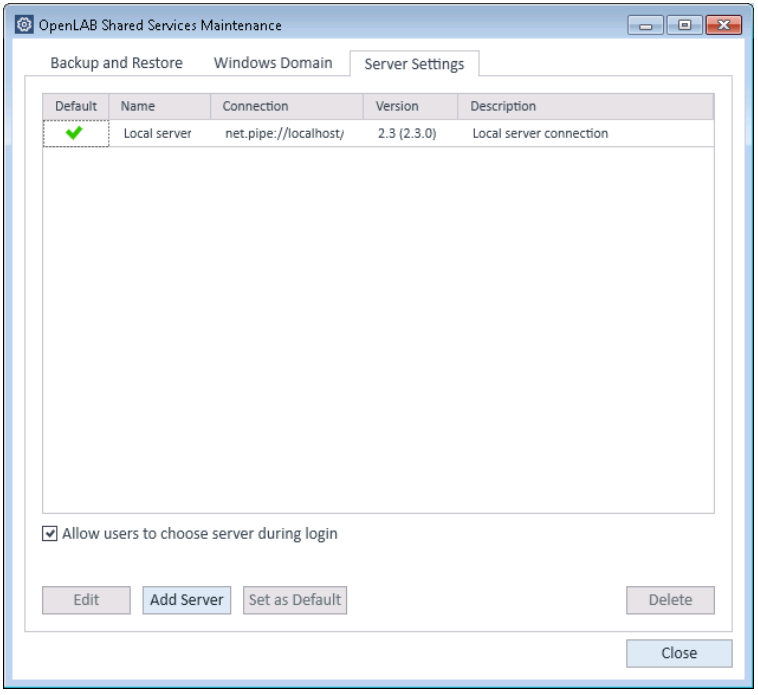


Figure 6 OpenLab Shared Services Maintenance (for example with Server Settings tab selected)

2 Select the **Server Settings** tab.

   A table shows all server entries and the default server connection.

   For workstation installations, by default there is one entry for the local OpenLab Shared Services server.

   For distributed or networked workstation installations, there is a second entry for the central OpenLab Shared Services server (default).

3 You can add more servers by clicking **Add Server**.

   You can switch the default server by selecting a server and clicking **Set as default**.

4 By default, the **Allow users to choose server during login** check box is selected. To forbid users to connect to non-default servers, clear this check box.

   Users will need to contact their administrator in order to connect to another server.

All connections provided here will be listed under **Local Configuration** in the OpenLab Control Panel.

Use Backup and Restore Functions

In order to simplify backup and restore tasks for the Shared Services database, the **Backup and Restore** tab of the **Shared Services Maintenance** provides a simple interface for performing these tasks.

These functions only apply to standalone workstations without Content Management.

Backup

To perform a backup:

1 Specify the backup directory and retention time.

When a new backup is performed, the currently set retention time is used to delete any files older than specified.

2 Click **Backup**.

The backup is placed in the specified backup directory. Backups older than the retention time are deleted.

NOTE

The tool automatically generates filenames for the backup files. Never change these filenames, as the tool relies on a specific naming convention.

3 Select the type of backup.

Retention time applies on a per transaction basis so that no month's backup file is deleted unless every transaction in that backup is younger than the set time. This includes the full and incremental log transactions.

Restore

1 Specify the backup directory and click **Restore**.

NOTE

The database is taken offline while this process executes a restore.

The restore function operates on backup sets, which include a full backup and all related incremental backups.

2 Verify that all connections to the system are shut down before performing a restore.

3 If you have selected the most recent backup, and if additional transactions have been executed against that database, the tool will also ask if you would like to save those changes prior to restoring the database. Click **Yes** to effectively perform a transaction log backup prior to the restore.

Data Repository

Data Repository Backup

The Data Repository provides a storage infrastructure used to store diagnostic and topology related information.

Prerequisites

Your Windows user must have read/write access to the backup directory.

PowerShell execution is enabled.

1. Run Windows PowerShell.
2. Navigate to the backup script path. By default, this is C:\Program Files (x86)\Agilent Technologies\OpenLab Platform\Data Repository\OpenLab DataRepository\Base\Scripts\PostgreSQL\Backup\.
3. Enter the following command:

   ```
   ./dr-db-backup.ps1 -user druser -path <backup path>
   ```

   For example:

   ```
   ./dr-db-backup.ps1 -user druser -path C:\temp
   ```

PostgreSQL backup files are created in the given location.

Return codes:

- 0: Success
- 1: Other error
- 2: Backup directory is invalid

NOTE

If the script returns an execution policy error, try the following commands in a Command window before running the script again:

```
PowerShell.exe Set-ExecutionPolicy RemoteSigned -Force
```

```
PowerShell.exe Unblock-File <script path>
```

If there is still an error, see **https://docs.microsoft.com/en-us/powershell/module/microsoft.powershell.core/about/about_execution_policies?view=powershell-5.1** for details on the execution policy.

Data Repository Restore

Prerequisites

Your Windows user must have read access to the backup directory.

PowerShell execution is enabled.

1. Run Windows PowerShell.
2. Navigate to the restore script path. By default, this is C:\Program Files (x86)\Agilent Technologies\OpenLab Platform\Data Repository\OpenLab DataRepository\Base\Scripts\PostgreSQL\Backup\.
3. Enter the following command:

   ```
   ./dr-db-restore.ps1 -user druser -path <backup path>
   ```

   For example:

   ```
   ./dr-db-restore.ps1 -user druser -path C:\temp
   ```

The Data Repository database is restored.

Return codes:

- 0: Success
- 1: Other error
- 2: Backup directory is invalid

NOTE

If the script returns an execution policy error, try the following commands in a Command window before running the script again:

```
PowerShell.exe Set-ExecutionPolicy RemoteSigned -Force
```

```
PowerShell.exe Unblock-File <script path>
```

If there is still an error, see **https://docs.microsoft.com/en-us/powershell/module/microsoft.powershell.core/about/about_execution_policies?view=powershell-5.1** for details on the execution policy.

In This Book

This document provides information on configuring OpenLab CDS with an OpenLab ECM system.

It includes information on OpenLab CDS interoperability with OpenLab ChemStation or EZChrom.

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