OpenLab CDS Workstation Plus
(with Content Management)

Installation and Configuration

Notices

Document Information

Copyright

Software Revision

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

Warranty

Technology Licenses

Restricted Rights Legend

Safety Notices

CAUTION

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

WARNING

A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

In this Guide ...

This document provides instructions for installation, configuration, administration, and maintenance of an OpenLab CDS Workstation with Content Management (OpenLab CDS Workstation Software Plus). It includes information on the license generation with SubscribeNet and operating system configuration.

Table 1   Terms and abbreviations used in this document

Term	Description
Content Management	Component of OpenLab Server used to manage your analytical data, including a database. Always used in Client/Server systems, optional for Workstations.
AIC	Agilent's Analytical Instrument Controller
Control Panel	Control Panel for Agilent OpenLab software
Microsoft Control Panel	Part of the Microsoft Windows operating 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   Prepare your PC

This chapter describes how to configure your PC hardware, and prepare for installation of your OpenLab CDS software. Agilent-delivered PC Bundle systems are delivered with the supported pre-installed Windows operating system, so you may skip some of the steps.

2   Install an OpenLab CDS Workstation with Content Management

This chapter describes the installation of the software.

3   Post Installation Tasks

This chapter describes tasks that are relevant after finishing the installation.

Contents

1 Prepare your PC

This chapter describes how to configure your PC hardware, and prepare for installation of your OpenLab CDS software. Agilent-delivered PC Bundle systems are delivered with the supported pre-installed Windows operating system, so you may skip some of the steps.

Install and Update Windows

1 Install the Windows operating system from the Microsoft installation media or qualified PC image media provided by your IT department. During the setup, provide the computer name, administrator password, and network settings.

   For the computer name, do not use underscores; installation is not possible if the computer name contains an underscore.

   Choose to either join an existing domain or set up the system in a workgroup mode. Domain naming has to be consistent with RFC-1034.

2 In the Microsoft Control Panel under **System >Windows activation**, click **Change product key**. Enter a valid value to activate Windows.

3 Update to the recommended version of Windows. See the FAQ section of the OpenLab CDS page (**https://www.agilent.com/** under **Products >Software & Informatics >Chromatography Software >Chromatography Data Systems >OpenLab CDS >Support**).

4 Check for Windows quality updates, and apply all critical security patches. Do not choose to install a newer version of Windows (see previous step). Make sure the Windows quality updates have finished installing before proceeding to install OpenLab CDS.

5 Check that your computer meets all requirements. You can access the *Requirements and Supported Instruments for Instrument Controllers, Clients, or Workstations* guide (CDS_v2.7_Requirements_en.pdf) from the Setup\Docs folder on the installation media.

   Use this PDF to check that your settings comply with the network requirements, and to determine whether your hardware and software will support the system.

6 Install an antivirus program.

7 Be sure to open the firewall ports listed in the Firewall Settings in the *Requirements and Supported Instruments for Instrument Controllers, Clients, or Workstations* guide (CDS_v2.7_Requirements_en.pdf).

   Make sure that the TCP ports 80 and 443 are available.

NOTE   If these ports are occupied by other programs: Try setting the startup type of the **World Wide Web Publishing Service** to **Manual** or **Disabled**, or disable Internet Information Services (IIS).

8 In the Microsoft Control Panel under **Date and Time**: Choose the time zone of your regional location.

Install the .NET 3.5 and 4.x Framework

If .NET 3.5 and .NET 4.x are not installed on your system, their installation will automatically be triggered by the installation wizard. However, this may require a system reboot. To avoid the system reboot during installation, install .NET in advance.

1 Go to the Microsoft Control Panel.

In the Windows Start menu, enter "Control Panel" in the **Search programs and files** field (alternatively, press [Win+R] and enter "Control panel"). To view all items in the Control Panel view, select **Small icons** in the **View by** field.

2 Go to **Programs and Features**.

3 Go to **Turn Windows features on or off**.

4 Enable .NET 3.5 as follows:

a Expand the **.NET Framework 3.5 (includes .NET 2.0 and 3.0)** node.

b Select the **Windows Communication Foundation Non-HTTP Activation** check box.
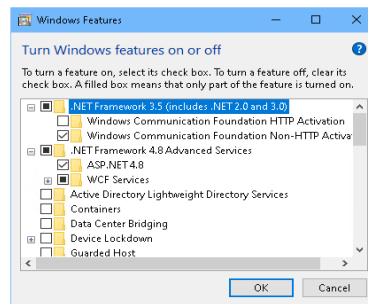
Figure 1   Enable .NET 3.5 (Win 10)

NOTE	This requires an internet connection. If it does not work as expected, or the computer has no internet access, install .NET 3.5 manually. Microsoft offers several options for the installation. For details, refer to:

- https://docs.microsoft.com/en-us/windows-hardware/manufacture/desktop/deploy-net-framework-35-by-using-deployment-image-servicing-and-management--dism

  or

- https://docs.microsoft.com/en-us/dotnet/framework/install/dotnet-35-windows

5 Select the **.NET Framework 4.8 Advanced Services** check box. Use the default values for sub items.

Before You Begin the Installation of OpenLab CDS

To simplify installation of the software, it is helpful to decide on some configuration options before you begin the actual software installation.

1 Decide on a computer name.

The computer name will be reflected in the license. To avoid effort, it is recommend to keep the computer name unchanged after installing OpenLab CDS.

NOTE To make sure that a DNS server can resolve the computer name, follow the internet standard for protocols (*RFC952*) and use only the following characters:

- Letters (a-z, A-Z)

- Digits (0-9)

- Hyphen (-)

  Do not use an underscore. Installation is not possible if the computer name contains an underscore.

2 Install all required hardware, including any cables, instrument detectors, and communication cables. GPIB interfaces may be required for some non-Agilent instruments.

3 Prepare an account with administrative privileges to run the installation.

4 To allow the successful installation and activation of all components, make sure that the LAN-cable is connected and a network is available. A local network is sufficient. If you install the workstation without a network cable, the activation of the Content Management component will fail, and trying to run the database will return an error.

5 Make sure that the antivirus software is disabled during the installation.

6 Check the Agilent Service Notes for software updates for your installation package and software products. Service Notes are available from your Agilent support representative.

7 If you use Trend Micro^{TM} as an antivirus software, turn off **Web Reputation** to allow the installation of all components.

8 If you plan to upgrade from a previous version of OpenLab CDS please refer to the *Upgrade OpenLab CDS* chapter.

Run the System Preparation Tool

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. 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).

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.
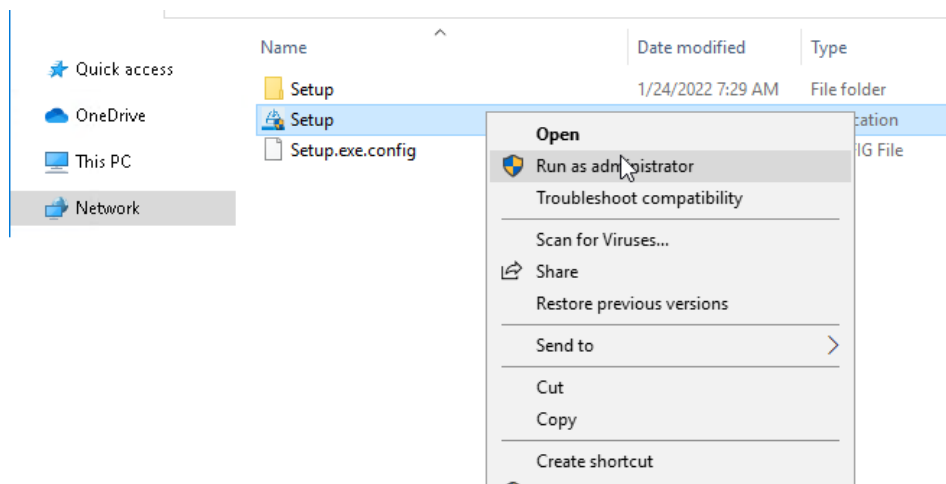
3 On the start screen, select **OpenLab CDS**, and click **OK**.

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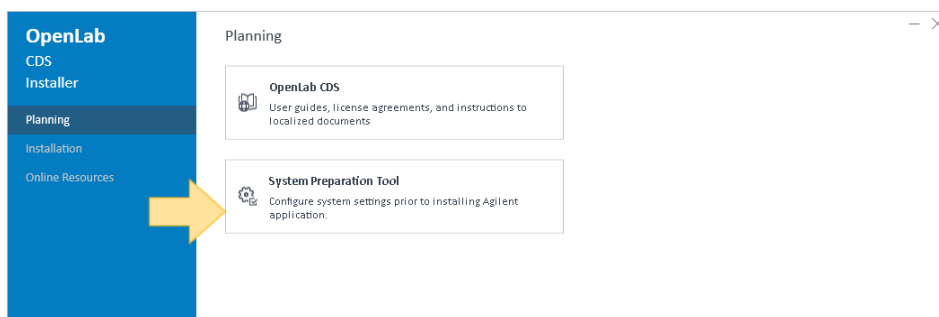
The **System Preparation Tool** window opens.

5 Select the product configuration **OpenLab CDS~2.7~WorkstationPlus~Win10** or **OpenLab CDS~2.7~WorkstationPlus~Win11** from the drop-down list, and click **Continue**.

The installer automatically applies all mandatory Windows settings 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 update 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.

2 Install an OpenLab CDS Workstation with Content Management

This chapter describes the installation of the software.

Installation Workflow Overview

Prepare

- Check OpenLab CDS Requirements
  Guide for details
- Run System Preparation Tool

▽

- Running the System Preparation Tool before starting the installation is recommended to reduce or avoid reboots during the installation. See "Run the System Preparation Tool" on page 12.
- If you plan scripted installations, see "Silent Installation" on page 22.

Install

1. Run Installation wizard,
   incl. software verification
2. Post Installation:
   Prepare Centralized Printing
3. Optional:
   Improve performance on offline machines

▽

- See "Install an OpenLab CDS Workstation with Content Management" on page 15
- See "Post Installation Tasks" on page 28
- See "Optional Procedures" on page 39

Get Licenses

1. Obtain licenses via SubscribeNet
2. Install your license

▽

See "Licensing" on page 43

Configure

- Authentication
- Projects, incl. audit trail settings
- Instruments

See "Configure OpenLab CDS Workstation with Content Management" on page 51.
All configuration tasks are performed in the administrative and management center of OpenLab, the Control Panel.
For more details, refer to the Control Panel section in OpenLab Help & Learning.

Prepare for Installation

1 Make sure that the antivirus software is disabled during the installation.

2 Ensure that .NET pipe communication is allowed among the OpenLab components.

3 Do not run the Windows Update Service during installation. Make sure that no Windows updates are performed during the installation.

4 Make sure that no system reboot is pending.

Pending reboots are indicated in the System Preparation Tool (see "Run the System Preparation Tool" on page 12).

Run the OpenLab Installer

This section describes a new installation of the software. For information on upgrading an existing OpenLab CDS installation, see "Upgrade OpenLab CDS" on page 93.

1 To open the installer, right-click the setup.exe file, and run it as administrator.
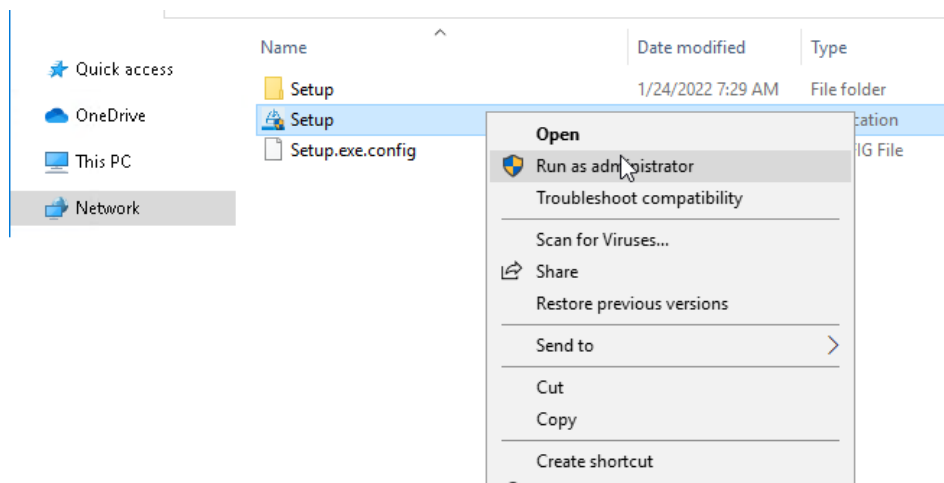
2 On the start screen, select **OpenLab CDS**, and click **OK**.

3   On the **Installation** tab, click **Workstation with CM**.
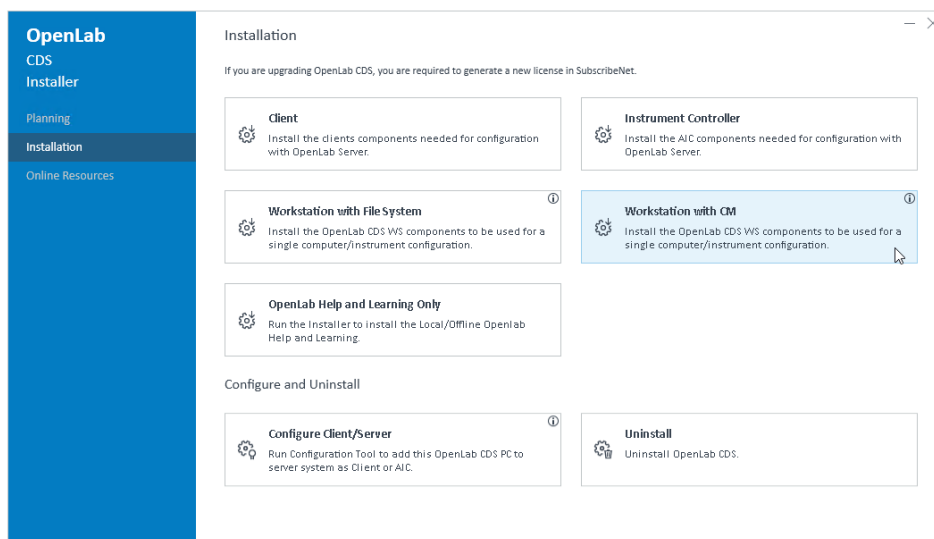
4   **License Agreement**: Read and confirm Agilent terms and conditions.

5   **Installation Folder**: Provide an installation folder for OpenLab CDS. Do not use the root folder of any drive.

6   **Content Management**:

Content Management Storage Path: Provide a folder for the content and archive files.

We recommend using a disk drive different from the one used for the main installation. Do not use the root folder of any drive.

'Admin' user's password: Password to log in to the Control Panel as administrator (user *admin*).

Content Management database user's password: Password to log in directly to the database as administrator (user *admin*).

NOTE   Make sure to document the passwords at a secure location.

7 **Data Repository**: Provide a password for Data Repository accounts. In case of an upgrade the new password will reset an existing password.

Make sure to document the password at a secure location.

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

8 **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.

9 **Review**: All components that will be installed, and all settings that will be applied are listed here.

- To save a properties file for a future silent installation (see "Silent Installation" on page 22), click **Save to config File**.
- To start the installation, click **Install**.

10 If there are still manual actions required before installation, a warning is shown.
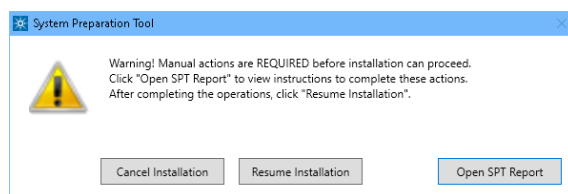
Options to proceed

- *Recommended*: Click **Open SPT Report** to view instructions to complete these actions. In the report, check the **Required Actions** section. 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. If

needed, the settings can be updated after the installation has been completed.

11 **Install**: After the installation has completed, click **Next**.

12 **Configure**: Configuration tools run in the background to configure Content Management. This takes about 10 min. When finished, click **Next**.

In case of registration problems, a potential conflict may be a blocked firewall port. For example, check if ports 80 and 443 are open. If they are blocked by the **World Wide Web Publishing** service, stop this service.

13 **Finish**:

- To view the report of the applied Windows settings, click the link under **System Preparation**. If you still need to apply settings manually, a warning will be displayed. You will find details in the linked report.

- To confirm everything has been installed correctly, click **Run Software Verification**[1].

- To complete the installation, select the **Reboot the computer now** check box, and click **Finish**.

14 In case of errors during the installation: Check the installation log files under C:\ProgramData\Agilent\InstallLogs\<date and time>. Note that ProgramData is a hidden folder.

The installation includes a set of standard instrument drivers. If you need other instrument driver software, install it in a separate step. See "Install or Upgrade Driver Software" on page 26.

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[1] To start the tool separately at a later point in time, select *Start > Agilent Technologies > Software Verification Tool.*

Silent Installation

OpenLab CDS supports a command-line mode for installation, also referred to as *silent installation*. This mode supports installation, upgrade, and uninstallation. You can execute silent installations either manually or as part of software management systems such as LANDesk or HP CM.

Export Properties File

The OpenLab Installer supports a feature to export the installation parameters into a properties file which you can then use for the silent installation.

1   Launch the OpenLab Installer.

2   Follow the instructions of the wizard.

3   When you have reached the **Review** screen, click **Save to config file**.

Save the file to a suitable location. The file will automatically be saved as a .properties file.

You can now use the properties file for the silent installation.

Run Installation

Prerequisites
- You have prepared a properties file for silent installation. See "Export Properties File" on page 22.
- .Net Framework is present on your system.

  If it is not present, it will automatically be installed. You must then manually select **Accept** to agree with the license agreement.

1 Copy the content of the USB media to a centralized folder.

2 Copy the properties file to the same directory as the CDSInstaller.exe.

3 Right-click the executable of the command prompt or Power shell prompt, and run it as administrator.

4 Navigate to the location where you have saved the installation files.

For example: C:\CDS

5 To start the installation, call CDSInstaller.exe with the following syntax:

CDSInstaller.exe -s -config <PropertiesFile>

For example:

CDSInstaller.exe -s -config Silent.Properties

With this command, you start the OpenLab Installer without a user interface.

6 Wait about 5 minutes while the installation takes place. To check the process of installation, look at the log files under %ProgramData%\Agilent\InstallLogs.

If a required installable is missing, the OpenLab Installer will create an entry in a log file, and, depending on the component type, will continue or roll back the installation. An error code will be returned in such scenarios.

7 After the installation has finished, reboot the PC.

Parameters and Return Codes

Parameters

Use the following parameters when calling CDSInstaller.exe in command-line mode:

- *-s*

  Silent mode - no user interface will be shown.

- *-config*

  Configuration file - a properties file contains all parameters.

- *<PropertiesFile>*

  The properties file contains all required inputs for the installer. Replace <PropertiesFile> with the correct file path and file name. The file must be located in the same directory as the CDSInstaller.exe.

- *-ExcludeHelpSystemCP=true*

  Allows to exclude the OpenLab Help&Learning package in the installation. Note: If you do not install the H&L package, no context sensitive help will be available in the system! You may however access OpenLab H&L (Online Help and Manuals) via: **https://openlab.help.agilent.com**.

- *-uninstall*

  Uninstall the currently installed CDS.

Return Codes

After installation, uninstallation, or upgrade in the command-line mode, the system will return a number code which is explained below.

Table 2   Return codes

Error/return code	Return value
Success. You can see all of the information in the log file.	0
Reboot required. After reboot you need to execute installation command again.	3010 1641 350
Failure. Verify against the log file to see what failed.	any other number

Logging and Tracing

All exceptions, errors and information messages are logged under C:\ ProgramData\Agilent\InstallLogs\<date and time>. Note that ProgramData is a hidden folder.

Install or Upgrade Driver Software

The following driver software packages are automatically installed with OpenLab CDS. For details, refer to the *Requirements and Supported Instruments Instrument Controllers, Clients, or Workstations* guide (CDS_v2.7_Requirements_en.pdf).

- Agilent GC & GC/MS
- Agilent LC & LC/MS
- Agilent 35900 A/D
- Agilent SS420x
- Agilent Data Player (Virtual Instruments)

Other instrument driver software, add-on software, or upgrades to existing driver software, must be installed and configured manually. Instrument driver software and add-on software packages can be found on the installation media under Setup\Packages\Add-Ons.

The latest Agilent drivers are available in SubscribeNet. To manage software entitlements and download software, log in to SubscribeNet by pasting this link in your browser: **http://agilent.subscribenet.com**. In the Product List, select **OpenLab Software >OpenLab Agilent Instrument Drivers**.

Install or upgrade add-on driver software

1 Run the driver installer package, and follow the installation wizard.

   For details on the installation or upgrade procedures, refer to the respective driver documentation.

2 Register driver software with OpenLab CDS.

   See "Register driver software with OpenLab CDS" on page 27.

The **OpenLab Configuration** tool will find all newly installed or updated instrument drivers and register them with the Shared Services. New instrument types will be available in the Control Panel.

Register driver software with OpenLab CDS

The following procedure must be carried out after installing drivers other than the ones listed above, and after upgrading any driver. With these steps you make the new drivers available in OpenLab CDS.

1 In Windows, select **Start >Agilent Technologies >OpenLab Configuration**.

2 In the **OpenLab Configuration** tool, enter *localhost* as a server hostname.

3 Click **Connect** to enable the input boxes for the user credentials.

4 Under **Step 2 - Authentication**, enter your user credentials.

5 Make sure the **Register as Instrument Controller** check box is cleared.

6 Click **Register**.

A Registration Results dialog will be shown.

7 Reboot the PC.

3 Post Installation Tasks

This chapter describes tasks that are relevant after finishing the installation.

Run a Software Verification after Software Installation

The Software Verification Tool (SVT) provides documentary evidence that your system has been built and installed correctly, and that all design specifications have been met. You do not need to run the software verification again if it has run successfully at the end of the installation.

1 Using your Windows operating system, go to **Start >All Programs >Agilent Technologies >Software Verification Tool**.

2 Select the components to qualify.

3 Select **Qualify**.

   The system will run the application and generate a Software Verification Report. Reports are automatically saved to C:\SVReports.

4 If the report indicates failure, verify the computer requirements and reinstall the data system.

   Do not use the system until the Software Verification Report gives a 'pass' result.

Configure the Antivirus Program

1 Be sure to open the firewall ports listed in the Firewall Settings in the *OpenLab CDS Workstation Requirements and Supported Instruments* guide (CDS_v2.7_Requirements_en.pdf).

2 The following folders should be excluded from Antivirus scan. 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 AV program and the CDS Application.

- [C:\]DsData\DsArchive
- [C:\]DsData\DsContent
- [C:\]DsData\DsIndex
- [C:\]Program Files (x86)\Agilent Technologies
- [C:\]ProgramData\Agilent
- [C:\]ProgramData\Agilent IPB Files
- [C:\]ProgramData\Agilent Technologies
- [C:\]ProgramData\ChromatographySystem
- [C:\]ProgramData\Firebird
- [C:\]ProgramData\IsolatedStorage

Refer to your specific antivirus software documentation on how to configure folder exclusions.

NOTE For antivirus software with network intrusion prevention, expect to see some degradation in general system performance. To disable network intrusion prevention, refer to your antivirus software instructions.

Settings for Trend Micro^{TM} antivirus software

OpenLab CDS can be used with other antivirus programs as well. If you use Trend Micro^{TM}, the following settings are recommended to optimize system performance.

1 If your version of Trend Micro has **Web Reputation**: Turn 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. These production machines should not have access to Internet websites where most of the infections are coming from.

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

Exclusions ensure that the working directory of Agilent Technologies will not be scanned, thus improving performance.

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

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

3 **Behavior Monitoring**: Add below list of programs to **Approved programs**.

- OpenLab\Services\Distributed Transaction Coordinator Service\ Agilent.OpenLab.DistributedTransactionCoordinator.Rest.exe
- OpenLab Backup Utility\Monitoring Service\ Agilent.OpenLab.BackupRestore.BackupMonitoringService.exe
- OpenLab Backup Utility\Notification Service\ Agilent.OpenLab.BackupRestore.NotificationService.exe
- OpenLab Backup Utility\Task Status Cache Service\ Agilent.OpenLab.BackupRestore.TaskStatusCacheService.exe
- OpenLab\Services\Electronic Signature Service\ Agilent.OpenLab.ESignature.Rest.exe
- OpenLab Acquisition\ Agilent.OpenLab.Acquisition.AcqInstrumentService.exe
- OpenLab Acquisition\Agilent.OpenLab.AcquisitionClient.exe

- OpenLab Data Analysis\Bin\
  Agilent.Chromatography.DataAnalysis.Processing.ProcessingServer.exe
- OpenLab Data Analysis\Bin\
  Agilent.Chromatography.DataAnalysis.UI.CustomCalculationDesigner.exe
- OpenLab Data Analysis\Bin\Agilent.OpenLab.DataAnalysis.exe
- OpenLab Data Analysis\Bin\
  Agilent.OpenLab.DataAnalysis.Api.ApplicationService.exe
- OpenLab Data Analysis\Bin\Reporting\
  Agilent.OpenLab.Reporting.RdlDescriptor.exe
- OpenLab Data Analysis\Bin\Reporting\
  Agilent.OpenLab.Reporting.RdlDescriptorContextMenu.exe
- OpenLab Data Analysis\Bin\Reporting\
  IntelligentReporting.RenderServiceHost.exe
- OpenLab Data Analysis\Bin\Reporting\TemplateDocumentation.exe
- OpenLab Platform\Data Repository\Data Repository\Base\BaseService\
  Agilent.OpenLab.DR.BaseService.exe
- OpenLab Reverse Proxy Configuration Service\ConfigurationService\
  Agilent.OpenLab.ReverseProxy.ConfigurationService.exe
- OpenLab Services\Distributed Transaction Coordinator Service\
  RegistrationTool\Agilent.OpenLab.DataRepository.RegistrationTool.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
- OpenLab Services\UI\Agilent.OpenLab.ControlPanel.exe
- Test Services\Agilent.TestServices.WebService.exe
- Test Services\Central Management Service\
  Agilent.TestServices.Server.Main.exe

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

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

4 **Realtime monitoring**: Add below folder to the exclusion list of Realtime Monitoring setting:

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

Prepare Centralized Printing

OpenLab CDS allows you to automatically process your data during acquisition, without opening Data Analysis. During this processing, injection reports may need to be printed. With centralized printing, these reports are copied into shared print folders. A third party program such as FolderMill then accesses the shared folders and sends the contained files to a printer.

1 In the Microsoft Control Panel, navigate to **All Control Panel Items >Administrative Tools**, and double-click **Services**.

2 Right-click **Agilent OpenLab Copy To Server** and select **Properties**.

3 Click the **Log On** tab, select **This account** and enter the login credentials of a domain user. The user must be a member of the local Administrators group and must have the privileges to write to the print folders.

4 Confirm your settings, and restart the service.

5 Set up the shared print folders in the OpenLab Control Panel under **Administration >Print Folders**.

   a Click **Add Print Folder**.

   b Provide a name, folder path (UNC format), and description (optional), and click **Save**.

6 Optional: Configure queue size.

   Each Print Folder will have its own queue. The size of each queue is defined in the configuration file *C:\ProgramData\Agilent\CopyToServer\ CacheSizeLimit.ini*. The parameter **CacheSizeLimit** can be configured to change the size of the queue.

   The default value is 500 MB, which means that each queue (print folder) will have a size limit of 500 MB by default. Files will enter the queue until the maximum size of the cache is reached. When this happens, the queue will stop accepting requests. The queue will automatically restart and begin accepting requests after it has been cleared.

Troubleshooting Print Folders

Issue	Resolution
The **Agilent OpenLab CopyTo Client** or **Agilent OpenLab CopyTo Server** service has crashed	The service should automatically restart.
Network issue between workstation and print folder	Centralized printing requests will be buffered on the workstation. The files will be automatically copied to the print folder as soon as the network is back.
Print folder cache full	Check print folder access. Consider increasing the cache size (see "Prepare Centralized Printing" on page 33).
Print folders are not accessible due to insufficient permissions	Check that the domain user logged into the **Agilent OpenLab CopyTo Server** service is a local administrator and has permissions to write into the print folders.
Reports are stuck in print folders	Check that the third party software being used to access print folders for printing is functioning correctly. Check that there are no printer errors.

Prepare Exports to Network Shares During Unattended Processing

Carry out the following steps if you want to:

- Generate reports and save them as files during unattended processing. Exporting the reports to a network share is a typical way how they are sent to an external system (for example, LIMS)
- Export raw data or results during unattended processing, and save the files to a network share

For this approach, specific domain user privileges are required to access a network share and log on as a service.

Set Up Domain User Account

1 Log in as Windows domain user who has local administrative privileges on the AIC.

2 In the Microsoft Control Panel, go to **All Control Panel Items >Administrative Tools**, and double-click **Services**. Make sure the status of **Agilent OpenLab Instrument Service** is **Started** or **Running**. If it is not, right-click and select **Start**.

3 Right-click **Agilent OpenLab Instrument Service** and select **Properties**.
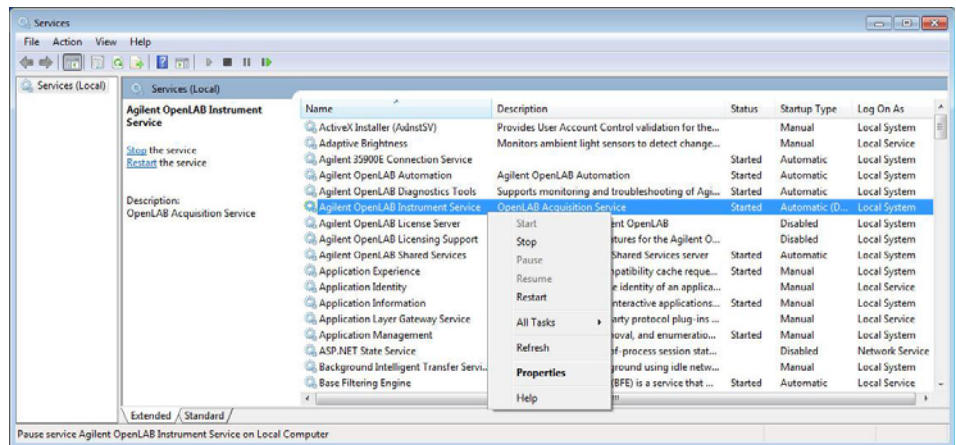
4 Click the **Log On** tab, select **This account** and enter the login credentials of a domain user who has network printing privileges.

NOTE   The user must be a member of the local Administrators group on the AIC.

Click **OK**.
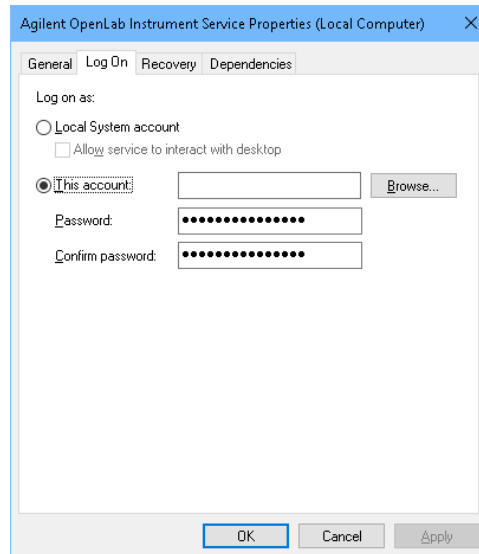
5 The **Services** window confirms that the account has been granted the **Log On As A Service** right. Click **OK**.
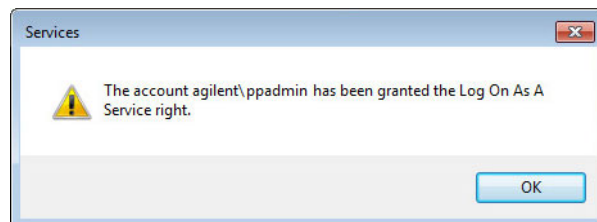
6 Click **OK** in the Services window to acknowledge that **The new logon name will not take effect until you stop and restart the service**.
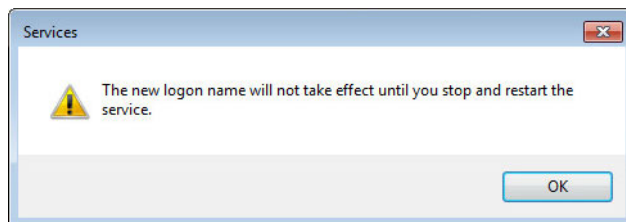
7 Restart the PC. This will enable the *Log On* user specified in Instrument Service to automatically export files to network shares in Data Acquisition.

Enable Automatic Printing to Network Printers

Follow this procedure if you do not want to use centralized printing and need to print to network printers during unattended processing.

Prerequisites   You have set up a domain user account (see "Prepare Exports to Network Shares During Unattended Processing" on page 35).

1 Log in using the domain user account specified in the **Log On** tab of **Agilent OpenLab Instrument Service Properties** window.

2 Go to **Control Panel >All Control Panel Items >Devices and Printers** and click **Add a printer**.

3 Select **Add a network, wireless or Bluetooth printer** and browse or type a shared printer name that you want to add. Once the printer is added, print a test page.

4 In the Windows printer settings, set the shared printer as the local default printer.

4 Optional Procedures

This chapter describes the installation or upgrade of additional software. It also contains information on the installation of OpenLab Help and Learning only, and on performance improvement on offline machines.

Install OpenLab Help and Learning Only

Use this option to install OpenLab Help and Learning content without installing OpenLab CDS applications.

Do not use this option on a machine where OpenLab CDS is, or will be, installed.

1   Insert the USB media, right-click the setup.exe file, and run it as administrator.

2   On the start screen, select **OpenLab CDS**, and click **OK**.

3   In the OpenLab CDS Installer, click **Installation**.

4   Click **OpenLab Help and Learning Only**.

5   Select your language, and click **Next**.

6   Accept the terms on the **License agreement** page, and click **Next**.

7   Review the installation directory. If desired, click **Change...** to specify a different directory.

8   Click **Install**.

9   When the installation is complete, click **Finish**.

You can uninstall or repair OpenLab Help and Learning from the same link in the installer (see "Uninstall OpenLab Help and Learning Only" on page 101).

Improve Performance on Offline Machines

Computers running OpenLab CDS may exhibit slow performance when they are not connected to the Internet.

The windows operating system has routines built into its operation that causes it to continuously search for an online connection in order to update to all the latest Windows security certificates when using secure software.

Use the following system settings on all workstations to remedy this problem.

1 In the Windows Settings, search for **Internet Options**. The **Internet Properties** dialog opens. In the **Advanced** tab, clear the following check boxes:

- **Security >Check for publisher's certificate revocation**

- **Security >Check for server certificate revocation**

2 Change or add the following registry keys:

- [HKEY_LOCAL_MACHINE\SOFTWARE\Policies\Microsoft\ SystemCertificates\AuthRoot]

    "DisableRootAutoUpdate"=dword:00000001

- [HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Policies\ Microsoft\SystemCertificates\AuthRoot]

    "DisableRootAutoUpdate"=dword:00000001

3 Document that you turned off the Root Certificates, as this will cause the OpenLab CDS installer to fail. The root certificates need to be turned on to prevent installation failures.

Set up NIST Library Search

In order to use MS library searching within OpenLab CDS, the NIST MS Search program must be installed locally on the workstation (or, in a Client/Server setup, on the client or AIC) which is to perform the library search.

For details on the installation and configuration of the NIST library framework within standalone, Client/Server, or Citrix/Terminal Server setups, please refer to *Setup and Configuration of MS Library Search* (CDS_Configure_MS_Libraries.pdf). That document also discusses the use and management of other commercial and user-created libraries with OpenLab CDS MS library search.

5 Licensing

This chapter provides basic information on OpenLab licensing. It describes how you generate a license file with SubscribeNet and install the license in the Control Panel.

About OpenLab CDS Licensing

Software subscriptions and Software Maintenance Agreement (SMA)

Bundled into OpenLab CDS is a one-year software subscription which provides access via SubscribeNet to new software updates, product upgrades, e-introduction and media.

As a best practice, we recommend customers to renew subscriptions annually so as to maintain their licenses and have full access to the newest updates, upgrades, media and e-introduction. To manage software entitlements and download software, log in to SubscribeNet by pasting this link in your browser: **http://agilent.subscribenet.com/**

Software subscriptions do not include installation services. Installation or upgrade services must be purchased by contacting your sales representative in your region.

License Types

The license file is a collection of Product, Instruments and Add-on licenses (or activation keys), and is installed to your OpenLab System.

The licenses or activation keys in the license file can either be Shared or Counted:

- Shared licenses — system computers and other components can have shared, or add-on, licenses — because they share a core license.

- Counted licenses — these licenses are part of the OpenLab CDS floating licensing strategy. They are not permanently assigned to any one component. Instead they are automatically assigned to components, such as AICs and instruments, while the components are starting up. The licenses are automatically returned when the component is closed. The license management program controls license issuance and retrieval.

    In this case, the only requirement is that a component is licensed while running. You only need enough licenses for all components running concurrently, rather than for each installed component.

A startup license for the system allows you to run OpenLab CDS for 60 days after the installation. In order to run the data system software after the 60-day period, you must install your license file.

License File

A license file will contain your software license. This file is installed on the workstation. The license file is bound to this computer, and cannot be moved to another workstation without regenerating the license in SubscribeNet.

Information in the license file defines the number of instruments and other options that may be used concurrently with your system.

The most efficient way to manage and maintain your licensing is through the Internet.

Get a License

Obtain a License with SubscribeNet

Use the following procedure to generate and download your license. In case you do not have internet access, skip to the section "Other Ways to Obtain a License" on page 48.

If you are a new user who has not registered with SubscribeNet, continue with the section *New Users*.

If you have registered with SubscribeNet, skip to the section *Users registered with SubscribeNet*.

Prerequisites   To generate, download, and install a final license for your product, you will need:

- The authorization code label provided in the lavender envelope containing your Software Entitlement Certificate.

  If you have not received a lavender envelope for your product, contact your vendor or internal support.

- The URL for SubscribeNet from the Software Entitlement Certificate.

- The host name of the computer where the Control Panel is running.

- The MAC address.

  To retrieve your MAC address from a computer where OpenLab CDS is already installed, open the Control Panel and browse to the **Administration >Licenses** section. Use the **Copy MAC Address** or **Save MAC Address** function to obtain the MAC address for license generation.

  During this process you will have to enter the MAC address of your license server. For workstations, this is the local computer. For client/server systems, this is the server.

NOTE   If any changes are made to the computer name or domain reference after the license is installed, remove the license. A new license will need to be created in SubscribeNet, downloaded, and installed.

NOTE   If the network adapter that provides the MAC address used during license creation is removed from the machine, your license will no longer be valid. A new license will need to be generated with a currently available MAC on the license server.

New Users

1 Go to https://agilent.subscribenet.com/control/agil/AgilRegisterToAccount to register the product with SubscribeNet.

2 On the registration page, enter the authorization code from the label and complete the profile information (required fields are marked with an asterisk *).

The email address you enter will become your login ID.

3 Click **Submit**. The system will generate and display an account name for you.

SubscribeNet will send a welcome email with your login ID and password.

4 Log in to SubscribeNet using your login ID and password.

Once you log in, you can use the online user manual link for help with any questions you have.

5 Select **Generate or View licenses** from the left navigation bar.

6 Follow the prompts to generate your new license. You will be prompted for the HOST NAME of the computer.

Enter the server hostname. Do not include any DNS suffix (*domain.com*) references in the entered machine name.

7 When the system generates the license, view its details, then click **Download License File**. Save the license file to your computer and to a backup location (such as a portable storage device).

Use your login ID and password when you revisit the Agilent SubscribeNet site to regenerate a license file, add new authorization codes, or further configure the license for your system.

Users registered with SubscribeNet

1 If you already have a SubscribeNet account, use https://agilent.subscribenet.com/.

Lost your SubscribeNet password? Use https://agilent.subscribenet.com/control/agil/password to have it emailed to you.

2 Select the SubscribeNet account associated with this authorization code, if you have more than one account.

3 From the SubscribeNet navigation pane, select **Register Authorization Code**.

This will allow you to enter your new authorization code and make available the new license entitlements.

4 Follow steps 5 through 7 in the previous procedure, *New Users*, to *generate or view* your new licenses.

Other Ways to Obtain a License

If you are unable to generate a license, contact your nearest Agilent technical support office. A representative will tell you how to submit an OpenLab License Generation Form in your location.

Offline Licensing

If an internet connection is not available in your laboratory:

You or your local on-site service engineer will collect the necessary information from you to allow Agilent to create a license account on your behalf. For phone support in your region, call the sales and service number for your region. See the Appendix for contact information.

Required Customer Information for Agilent License Support:

The following information must be provided to Agilent in order to enable us to create a licensing account on your behalf.

1 Collect Account Information:

Your account name will be your company name and Lab name separated by a comma. Employee information provided here will be used to define the first administrator of your account for future access to the system as required. Please prepare the following pieces of information prior to contacting your local Agilent sales and service center in order to expedite service:

- Company Name
- Lab/Department Name
- First Name
- Last Name
- E-mail address
- Job Title
- Phone #
- Address, City, State/Province, Postal Code, Country

2 Collect Authorization Code(s):

The authorization code is an alpha-numeric code provided on a label which is enclosed in a lavender envelope. If you have received more than one code you must provide all codes to ensure that all ordered licenses are granted to your account.

3 Receiving your license:

Once the above information is provided Agilent will then work on your behalf to generate a license file through SubscribeNet. The license file will either be sent to your shipping address (on a CD), or your local FSE will deliver it in person (usually on USB media). Once your license is received follow the below section on "Install your License" to finish installing your license on your system(s).

Install Your License

The license must be added to your system using the Control Panel.

1 Start the **Control Panel** shortcut on the desktop or go to **Start >All Programs >Agilent Technologies >OpenLab Shared Services >Control Panel**.

2 Navigate to **Administration >Licenses**.

3 In the ribbon, click **Add License** ╋ .
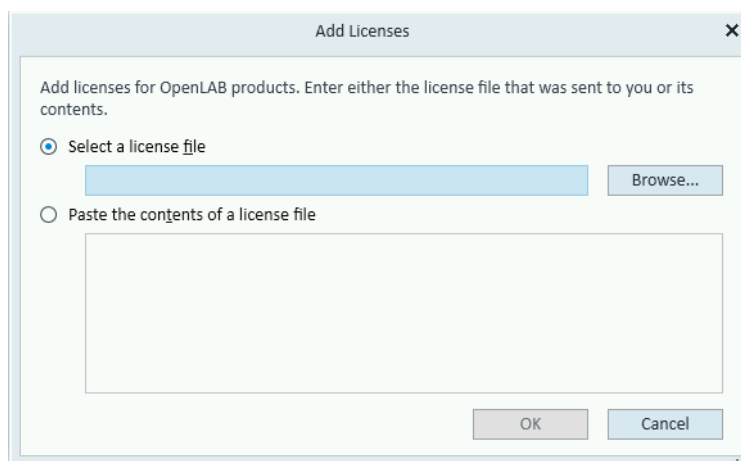
4 Choose to install the license by:

   • Using the license file option to browse to and open the license file (.lic) saved from the license generation process in SubscribeNet.

   • Selecting the License Text option and copying the license text from a text file received into the provided field.

5 Click **OK**.

   The **Administration** interface in the Control Panel will now display the status of installed licenses.

> **NOTE**   A full restart is required in order for any license to have an immediate effect.

6 Configure OpenLab CDS Workstation with Content Management

This chapter describes the initial configuration steps after installing the software. All configuration tasks are performed in the Control Panel. For more details, refer to the Control Panel section in OpenLab Help & Learning.

Configure Authentication

OpenLab CDS supports the following authentication providers:

- **Internal**

  In this mode, the user's credentials are stored in the OpenLab CDS system. You are asked to create an administrator account for OpenLab CDS before setting up other users. This is the only mode in which you can create new users within the system; in all other modes you can only map to users that exist in a different system.

- **Windows Domain**

  You import existing Windows users into OpenLab CDS system. The authentication is done either by Windows Active Directory domain or NT 4.0 Domain within the Enterprise. OpenLab CDS only uses the identity and password of the mapped users; roles and privileges for OpenLab CDS are still configured in the Control Panel.

After the installation, internal authentication is configured by default. If you want to use internal authentication, nothing needs to be done. The following procedure describes how to configure domain authentication instead.

1   Launch the Control Panel. Log in with the username *admin* and the password you provided during installation.

2   Navigate to **Administration**.

3   In the navigation pane, select **System Configuration**.

4   In the ribbon, click **Edit System Settings** ⚙ .

5   Select the authentication provider **Windows Domain** from the drop-down list, then click **Next**.

NOTE   Do not change the storage type.

6   Select the check box to use a domain user, and provide user credentials with the rights to obtain user and group information. Then click **Select Account** to open the **Search Users** dialog and select an administrator account.

7   Confirm your settings. When complete, the Control Panel will restart.

Configure Security Policy

If you need to comply with specific standards (for example, 21 CFR Part 11), adjust the security policy as required.

With the authentication provider **Internal**, you can set all parameters in the Control Panel.

With an external authentication provider (Windows Domain), you can set the inactivity time or enable single sign-on; all other parameters are defined by the external system.

1   Launch the Control Panel and navigate to **Administration**.

2   In the navigation pane, select **Security Policy**.

3   In the ribbon, click **Edit Security Policy**.

4   Set the parameters as required, and confirm your changes.

     Restart the Control Panel to apply your changes.

NOTE	To meet 21 CFR Part 11 requirements, set the **Password expiration period** to 180 days or less. Do not change the other default values, they comply with 21 CFR Part 11.

Configure users, roles, and privileges

To define what users are allowed to view or do, OpenLab CDS offers predefined roles and allows you to define your own specific roles.

Roles are equipped with numerous specific privileges. 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.

Each user can be member of multiple groups. You must assign one or more specific roles to each group. You can also assign roles to single users; however, for the sake of clarity, it is strongly recommended to assign roles only on the group level. Every member of a group automatically has all roles of this group.

1 Launch the Control Panel and navigate to **Administration**.

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

3 Create new items, or edit the existing ones.

Create or import users

With internal authentication, you create the required users in the Control Panel. With Windows domain as an external authentication system, you import the Windows domain users.

Add users (Internal Authentication only)

1 From the navigation pane, click **Administration >Users**.

2 In the ribbon, click **Create User**.

3 In the **Create User** dialog, provide the relevant parameters:

- Enter the name and password for the new user.

- By default, the new user will need to change the password at next logon. If this is not required, clear the **User must change password at next logon** check box.

- In the **Role Membership** tab, assign the user to an appropriate role. You can use the default roles, or prepare your own roles in the Control Panel under **Administration >Roles**.

4 Click **OK**.

Import users (Windows Domain Authentication only)

To add users to your system, you must have privileges to obtain user and group information from the domain.

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 Windows domain 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**.

Groups

If you use an external authentication provider, you can either import the names of groups that exist in the external system, or create new internal groups. There is no limit on the number of groups that can be mapped or created.

Assign users to groups either in the external system or in the Control Panel. If you need additional user assignments that are relevant only for OpenLab CDS, create them in the Control Panel. Otherwise it is sufficient to only import the groups and assign the required roles to the groups.

If you delete or unmap a group, the users who were members in this group remain unchanged.

Roles and Privileges

Roles are used to assign privileges to a user or a user group globally or for a specific instrument, project, project group or location. The system contains a list of predefined roles which are installed as part of the system installation (for example, **Instrument Administrator**, **Instrument User**, or **Everything**). Each role has certain privileges assigned.

Privileges are grouped according to the three main role types (Project role, Instrument role, and Administrative role). When you assign privileges to a role, you first select the required role type and then select the privileges related to this role type. Each role can only have privileges of one specific role type; the only

exception is the predefined role **Everything**, which has all privileges of all role types. Users or groups may require multiple roles to perform system functions. For example, a user with the role *Chemist* may need another role such as *Instrument User* with the privilege to run an instrument.

You can create a tree of different locations in the Control Panel, and add instruments to the relevant locations. For each instrument or instrument group, you can assign different instrument roles (see also "Specific Roles for Individual Instruments or Projects" on page 57). For example, a user can have the role **Instrument Administrator** for one instrument, and **Instrument User** for another instrument.

You can also create a tree of different projects or project groups in the Control Panel, and assign different Project roles for different projects (see also "Specific Roles for Individual Instruments or Projects" on page 57). For example, a user can have the role **Project Administrator** in one project, so that he can manage the settings in the Control Panel. In a second project, he may have a role that allows him to edit the content of a project, but not to change the project settings.

For more information on privileges, see the Appendix.

Table 3   Description of role types

Role Type	Description
Administrative privileges	These privileges are globally assigned to a user or group and cannot be changed on the instrument/location level. They are the typical administration 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 or project group level.

Add users or groups to a role

1 From the navigation pane, click **Administration >Roles**.

2 In the **Roles** window, select the role you want to assign to users or groups.

3 In the ribbon, click **Edit Role**.

4 In the **Edit Role** dialog box, click the **Members** tab.

5 Click **Add user or group**.

6 In the **Search Users and Groups** dialog box, enter the name of a user or group, and click **Search** to view a list of all users and groups that meet the search criteria.

7 Under **Search Results**, select a user or group, and click **Add**.

8 Click **OK**.

Specific Roles for Individual Instruments or Projects

By default, the roles of users or groups are globally set for all locations, instruments, project groups, or projects. The role settings are inherited from the root node **Instruments** or **Projects**, respectively. In order to assign a different role to a user or group for one specific project:

1 Select the relevant project.

2 In the ribbon, click **Edit Privileges**.

3 In the **Edit Privileges** dialog, clear the **Inherit privileges from parent** check box.

Afterwards, you can assign a different role that will be valid only for the specific node.

You can assign **Instrument** roles to individual locations or instruments.

If you use projects, you can assign **Project** roles to individual project groups or projects.

Administrative roles are always set globally.

Configure Initial Project

1   Launch the Control Panel and navigate to **Projects**.

2   Click **Create** in the ribbon to create a new project.

On the **CDS Settings** tab:

- Enter the locations for Methods, Sequences, Results, Sequence Templates and Report Templates.
- Consider the required audit trail settings for this project.

To access the data from outside the OpenLab software, use the local FTP host (**ftp://localhost/**).

For more details, refer to the Control Panel section in OpenLab Help & Learning.

Configure Initial Instrument

1   Launch the Control Panel and navigate to **Instruments**.

2   Click **Create** in the ribbon to create a new instrument.

3   Select the new instrument, and click **Configure Instrument** in the ribbon.

4   It is recommended that you use Auto Configuration (if available) to configure your instruments: Click **Auto Configuration**, and provide the instrument's IP address or hostname.

For more details, refer to the Control Panel section in OpenLab Help & Learning.

Other settings in the Control Panel

Consider also other settings in the Control Panel, such as:

- Changing the instrument status reporting frequency
- Changing audit trail settings for a project
- Editing signature levels for a project

For more details, refer to the Control Panel section in OpenLab Help & Learning.

7 About the OpenLab CDS Software

This chapter contains an overview of the basic software features.

Software Architecture

OpenLab CDS is a data system solution for analytical workflows that controls a wide variety of instruments including the industry-leading GC and GC/MS-SQ instruments, along with best-in-class LC and LC/MS-SQ. By combining chromatography and single-quad mass spectrometry into a single scalable solution with centralized system administration, you can streamline your laboratory workflows and maximize productivity. A tailored and simplified user interface with a new state-of-the-art user experience, along with e-learning tools, helps you to get up to speed and productive as fast as possible.

The Agilent OpenLab CDS software is provided on read-only USB media that contains all required executable files and documents. This includes:

- Acquisition
- Data Analysis and Reporting
- Shared Services
- Content Management
- Custom Calculation Editor
- Help and Learning Platform
- User documentation
- Instrument driver software for Agilent LC, GC, LC/MS, GC/MS, or A/D
- Instrument driver software for virtual instruments (Data Player)
- Agilent Parts Finder
- Third party tools

On a *Workstation Plus (with Content Management)*, all components are installed on a single PC. Results are stored in a database provided by the Content Management component. Users have no access to the data via the local file system. The system supports up to four instrument connections.

Workstation

Figure 2   **Workstation and instruments**

Components on a Workstation Plus
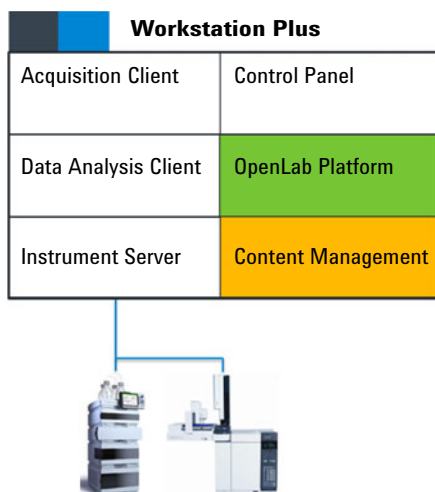
Figure 3   Components on a Workstation Plus

Acquisition client	Acquire raw data with a configured instrument.
Data Analysis Client	Analyze acquired data.
Instrument Server	Control connections to all configured instruments.
Control Panel	User interface to access Shared Services control features.
OpenLab Platform	Provides services and tools that run in the background.
Content Management	Secure storage for your analytical data.

OpenLab Platform Services and Components

The following services and components are installed as part of the OpenLab Platform:

- Audit Trail Service

  Service that encapsulates the retrieval and display of Audit Trail content. Currently not used by OpenLab CDS.

- Certificate Service and Tool

  Serves as a solution to secure network traffic in case commercial certificates are not available. Installed and running, even though not used on a Workstation.

- Data Collection Service and Agent

  Service to collect system and topology related information in distributed systems.

- Data Repository

  Storage infrastructure to store diagnostic and topology related information.

- Shared Services

  Set of services and tools that offer system configuration, security, application configuration, licensing, logging, and notification capabilities.

- Data Analysis Service

  Manages Data Analysis instances for improved performance.

- Distributed Transaction Coordinator Service

  Handles transaction coordination between microservices. Ensures that all connected actions succeed or fail as one unit.

- ECM XT Backup services

  For systems with Content Management or ECM XT: Services to monitor the backup on a schedule, send notifications, and customize the notification process.

- Electronic Signature Service

  Provides document signing as a service. To achieve this, ES is based on a centralized storage of electronic signatures.

- Proxy Configuration Service

  Provides access to OpenLab components to software applications through an Apache reverse proxy.

- Test Services

  Former QualA. Communicates with the Data Repository.

- CopyTo Server, and CopyTo Client

  Manage centralized printing.

21 CFR Part 11 Compliance

To fulfill the FDA rules and guidelines for compliant electronic records and computerized systems, it is important to understand the basic aspects of secure data handling.

- *Data security:* physical protection of data by limiting access to the system and preventing unauthorized access.
- *Data integrity:* protecting raw data and metadata and preventing these from unauthorized modification, and linking raw data and results to reproduce the original results at any time, for example, in an audit situation, and document each new result copy.
- *Audit traceability:* documenting who did what to the results and when, and tracing the user adding new reanalyzed versions to the original raw data.

Data Security

The Shared Services functionality related to security includes the following (see):

- System Activity Log
- Selection of authentication provider
- Management of users, groups, roles, and privileges
- Security Policy

Data Integrity

OpenLab CDS stores data in a manner that ensures compliance with 21 CFR Part 11. It provides secure data storage with access control and an audit trail. Data files are versioned to ensure data integrity and traceability. In addition, OpenLab CDS provides electronic signatures allowing users to sign off on data.

Audit traceability

There are different types of audit trails:

- The *sequence audit trail* is a record of changes made to the sequence when acquiring the data.
- The *method audit trail* provides a detailed list of modifications to a sample preparation method, an acquisition method, or a processing method.
- The *injection audit trail* is the record of a single injection that lists all modifications during the run and in Data Analysis.
- The *result set audit trail* is a superset of injection audit trails for all injections that are contained in a sequence/result set.

The specific behavior of an audit trail depends on the project settings in the Control Panel.

Customization

OpenLab CDS can be customized to support various workflows and applications. Customizing capabilities are available via different approaches.

For more information on how to use the different tools, refer to OpenLab Help & Learning.

Customization via custom calculations

Data Analysis can be enriched by calculating additional values. The calculations are done with the Custom Calculation Editor and referenced by or embedded in a processing method.

These calculations can be quite complex. The calculation results are directly visible in Data Analysis, no report generation is needed.

Custom calculations are processed on result set level. They are only computed if all injections of the result set are processed together.

Customization via report templates

In a report template you can call calculation results from a method-specific custom calculation, or define additional, template-specific calculation expressions. The template-specific values are only visible in the report preview or the final report.

Reports are generated on either injection level, result set level, or across multiple result sets. Reports can be used for automated result evaluation on all the mentioned levels.

Example report templates for typical petrochemical or pharmaceutical applications are provided with the application and can be imported in Data Analysis (see *Import default templates* in OpenLab Help & Learning).

Customize application to start external programs

The customization capabilities allow to add ribbon groups and icons in the **Data Selection** and **Data Processing** views of OpenLab Data Analysis.

It is possible to start an external program via an icon and to hand over the project data path and the path of the current injection as parameters to the program.

The customization is based on a file CustomToolsConfiguration.xml at C:\ ProgramData\AgilentTechnologies\OpenLab DataAnalysis\ that needs to be created by the user. An example CustomToolsConfiguration.xml file is included on the media at **Setup >Tools >Support >UCL >Customization** folder.

For more information, refer to OpenLab Help & Learning.

Export raw data and results

Data Analysis offers the possibility to execute post processing plug-ins as part of the processing method. These post processing plug-ins allow to export raw data or results as part of the processing routine of single runs as well as sequence runs, also in unattended mode. Scripts are available for the export in the following formats:

- ChemStation Export (.D/.ch format)
- AIA Export (OpenLab CDS 2.x raw data and peak results as netCDF format (revision 3.4) according to AIA Chromatography Data Standard Specification V1.0)
- ASR Export (OpenLab CDS 2.x raw data as an ASR (Analytical Studio Reviewer) file format)
- OpenLab CDS 2.x raw data export (native .dx files for ACE)
- CSV export (OpenLab CDS 2.x raw data as comma separated values in .csv file format)

Other plug-ins such as the Allotrope Data Format (ADF) plug-in are available via SubscribeNet.

8 System Setup and Maintenance

This chapter contains information on the Control Panel and Shared Services Maintenance. In addition, it describes various maintenance procedures.

Control Panel

Using the Control Panel, you can access Shared Services control features such as security policy, central configuration, or lab status at a glance.

Accessing the functions described below may require specific privileges.

Instrument Management / Lab Status at a Glance

The **Instruments** view in the Control Panel offers an overview of all instruments in the network or on the workstation. You can see the following information for all instruments, summarized on one page:

• Status of the instrument with related color code

• Status of the software

• Instrument name

• Instrument location

• Instrument type

• Last change of configuration

Depending on the configuration, this information may be accessed from a single workstation PC or from multiple clients in a network.

You can create a tree of different locations in the Control Panel, and add instruments to these locations. Using locations, you can organize your instruments for example by department, by laboratory, or by lab bench. For each instrument, you can provide basic information such as the name, description, and instrument type.

Depending on your privileges in OpenLab CDS, you can perform several operations on the instruments:

• View instrument information (instrument status, instrument details, activity log)

• View the locations and instruments tree

• Edit the instrument information

- Configure the instrument

   The instrument configuration is stored in the Shared Services database. You access the configuration tool from the Control Panel.

- Launch the instrument

   On a Workstation, you can only launch instruments that are configured on this PC.

   With a Client/Server system, you can launch instruments remotely from any OpenLab CDS client in the network.

Your privileges can differ for the different locations and instruments (see "Specific Roles for Individual Instruments or Projects" on page 57).

License Management

This service includes the administration of all licenses that are required for your system.

Before adding a license file, you must first purchase the license and generate the license file using SubscribeNet. For more information on generating new license files, see "Obtain a License with SubscribeNet" on page 46.

License Management in the Control Panel provides the following functions:

- You can add license files to the license server.
- You can navigate to the license monitor and view the properties of all licenses installed on a given license server.
- You can remove license files from the license server. This may be useful if an invalid license file has been added.
- You can view or change the license server.
- You can view, copy, or save the MAC Address of the license server.
- You can navigate to the Agilent Electronic Software and License Delivery web page to obtain a license.

The following properties are shown for installed licenses:

- **Feature**: This indicates the type of license used.
- **Version**: If a license is versioned, you can see the version number. For licenses that are not versioned, the version is always shown as 1.0.
- **In Use (Available)**: This indicates the number of licenses that are currently in use and, in brackets, the total number of licenses. With the OpenLab CDS

licensing strategy, a license is only in use as long as a software instance is running (see "License Types" on page 45).

- **Expiration**: If the license is only valid for a certain period of time, the expiration date is displayed.

In the **Alerts** pane, you are informed if the number of available licenses has gone down to zero for a specific feature, or if you have started a software instance which requires a license that is unavailable.

For more information on adding license files and viewing the license properties, refer to the Control Panel section in OpenLab Help & Learning.

System Activity Log

The System Activity Log allows users with the **View Activity Log** privilege to centrally access all system activities. It contains information on the various events associated with Shared Services or with specific instruments. You can filter the list in order to view only events of a specific type, in a specific time range, created by a specific user, or containing a specific description.

The following types of events are recorded:
- System
- Instrument Management
- Instrument
- Project Management
- Instrument Controller
- User
- Group
- Security
- Printer
- License

The messages can come from other components, such as the user management, or from an instrument module. Instrument messages include error messages, system messages, or event messages. The System Activity Log records these events irrespective of whether you have been alerted to them or not. To get more information on an event, expand the line of interest in the activity logbook viewer.

Diagnostics

The **Diagnostics** view allows you to access several reports and tools for diagnostic purposes:

- Ping the server.
- Create a report, either for the local system or for the server, with information on the operation system, processors, disk drives, processes, network, and connections.
- Centrally access and download all the log files, trace files, etc. that are created by the registered modules.

Administrative Reports

In the **Administrative Reports** view, you can additionally create and export various XML or PDF reports related to the system configuration:

Instrument Controllers Report

Detailed information of all Instrument Controllers. When this report is generated on a Workstation, the information presented relates to the local system. When this report is generated on a client-server system, all Instrument Controllers are included.

Instruments Report

Provides detailed information about configuration and access privileges for all instruments on the system. On client-server systems, this report includes all instruments on all Instrument Controllers.

Projects Report

Provides detailed information about configuration and access privileges for all projects on the system.

Roles and Privileges Report

Describes all roles defined on the system, including details of all privileges included in each role.

System Report

This report provides a consolidated view of the system, which includes all information about instrument controllers, instruments, projects, roles, users, and groups.

User's and Group's Role Assignment Report

This report provides an overview of all users and groups with their assigned roles.

Authentication Provider

The authentication provider is described under *Configure OpenLab CDS*. For details, see "Configure Authentication" on page 52.

Security Policy

The security policy is described under *Configure OpenLab CDS*. For details, see "Configure Security Policy" on page 53.

User Management

The user management is described under *Configure OpenLab CDS*. For details, see "Configure users, roles, and privileges" on page 54.

Shared Services Maintenance

The **Shared Services Maintenance** program is automatically installed with your OpenLab software to help administrators manage the system.

To open the utility, select **Start >Agilent Technologies >Shared Services Maintenance**. A user must have Windows administrator rights to access this utility.

Windows Domain tab

In this utility, the **Windows Domain** tab is relevant if you use windows domain authentication to identify your OpenLab users.

OpenLab CDS must be given access to the server where these credentials are stored. In the **Windows Domain** tab, you specify or change the credentials that OpenLab CDS will use to access your windows domain server.

For client/server systems: This feature can only access credentials that are stored on the computer where you launched the **Shared Services Maintenance** program. To specify or change the **Domain**, **User name**, or **Password** for the windows account that will be used to access your windows domain server, use the **Shared Services Maintenance** program that is installed on the server.

Server Settings tab

The **Server Settings** tab can be used to manage different server connections. In a workstation configuration, there is typically only the connection to the local machine.

Backup and Restore tab

The settings on this tab do not apply to a workstation with Content Management.

Important Information about Backup and Restore

It is mandatory that you back up OpenLab CDS Workstation Plus regularly. Use the Backup Utility to perform immediate or scheduled backups. The Backup Utility supports periodic full backups and differential backups between the full backups. These backups are the only way to restore an OpenLab CDS Workstation Plus if a hardware or software failure occurs.

Agilent recommends using the Backup and Restore utilities whenever possible.

The backup only reduces the amount of data loss if a catastrophic system failure occurs. Performing backups guarantees that any data that was committed at the time of the backup can be restored. Data that was queued for upload and not yet committed or was added or updated in the system after the backup was performed will not be recoverable by restoring a backup.

It is also mandatory that you test the restore procedures to ensure that the backups are performed properly and can be used for a restore. To do an effective restore, you must create a disaster recovery plan. See "Create a Disaster Recovery Plan" on page 77.

NOTE   In cases where a restored system will run at the same time as the source system, it is imperative that the restored system is on a network *isolated* from the source system. See "Data Loss" on page 88.

Content of a Backup

OpenLab CDS Workstation Plus stores files and indexes on your machine file system. The location of this folder is determined during product installation. Other data, such as folder information, audit trails, and signatures are stored in a database.

A full backup captures a complete set of data from OpenLab CDS Workstation Plus, including uploaded files and its databases. An incremental backup contains changes that have occurred since the last full backup. The incremental backup process is faster than the full backup because only the changed elements are backed up.

The complete backup includes:
- Configuration file
- Databases for Shared Services, Content Management, and Data Repository
- Solr Indexes
- Content and Archive storage locations
- Alfresco cache
- Certificate server

Space required

The free space required for the backup procedure depends on different factors, including the system configuration, backup location, and database backup size. In the most resource-intensive case, free space should be twice as much space as is stored on-perm (local or network share) or bigger in the most demanding case. This is needed to avoid rewriting a previous successful backup with a backup that finished in the middle for any reason.

Additionally Backup and Restore Utilities use specific databases folders as temporary backup locations during backup/restore. See "Configure Custom Data Directory for PostgreSQL Databases" on page 85.

If you plan to use incremental backups, you must configure the OpenLab CDS and Data Repository PostgreSQL databases first. See "Incremental Backup Support of PostgreSQL Databases" on page 84.

Troubleshooting

The Backup Utility collects logs in the %ProgramData%\Agilent\LogFiles\Backup folder. During the backup procedure, all steps are checked, and the procedure will stop on the first failed step. A link with the failed step opens the current backup log file to help identify the issue. In case of a failed backup, the partial backup is stored in a Temp folder in the backup location.

Create a Disaster Recovery Plan

Prepare a recovery plan for the unlikely case that OpenLab CDS becomes inoperable due to a hardware or software failure. This plan must include information and procedures for completely restoring the operating system, the software, and data - if necessary, to a physically different machine. Ensure that the disaster recovery plan has been tested and confirmed to be working.

The Disaster Recovery Plan must include the following:

- Hardware information: CPU, Memory, and Hard disk configuration information.
- Computer identity: Name, IP, domain, URI, etc.
  - Computer administrator information: username and passwords for logging in to the server
  - If applicable, usernames and passwords for the database
- Software information: OS version, Patch level.
- Installation parameters:
  - Installation folder
  - Installation log file
  - Content Management content folder
  - Content Management indexes folder
  - Shared Services language
  - Shared Services database name
  - Installed licenses
  - Registered applications
- 3rd party software information: applications and their revisions and install paths.
- Backup procedures (see "Backup Procedures" on page 78).
- Backup media location and organization details.
- Restore procedures (see "Restore Procedures" on page 87).

Backup Procedures

Backup before an Upgrade

If you are upgrading your machine, perform the following procedures on your machine before upgrading. Clear all work areas and file upload queues before the upgrade procedure. Do not have data in any queues when performing the upgrade to a different operating system. Make sure all file uploads are complete. Clear the file buffer upload queue before the upgrade.

Anti-virus scanning during backup

CAUTION   **Anti-virus scanning during backup can prevent successful completion of the backup.**

✓ **Make sure that the backup location is excluded from anti-virus scanning.**

✓ **A Retry policy may prevent failing. Consider modifying the Retry policy.**

✓ **Verify that the backup finished successfully.**

1 Make sure that the backup location is excluded for both regular/scheduled scans and real-time protection.

If the backup location cannot be excluded from real-time protection and real-time protection cannot be turned off, it is possible the final backup tasks might not finish successfully.

2 If you have an anti-virus running during backup, verify that the backup finished successfully:

- After the backup completes, check that the backup location contains only "Current" (or "Current" and "Incremental") sub-folder(s).

- Check that the log file corresponding to the backup time contains an entry stating "The backup has completed" at the end. Backup logs are placed in the C:\ProgramData\Agilent\LogFiles\Backup folder.

3 Modify the Retry policy:

By default, the Backup Utility tool tries 3 times to finalize the backup, with a 10 seconds delay inbetween.

To modify the backup finalization settings, change the Delay and Retry properties in the **Backup >BackupFinalizationSettings** section of the *configuration.xml* file. This file is located in the%ProgramData%\Agilent\ Installation folder. Only a user with System Administrator privileges can update this file. Acceptable values are more than 0 for Delay, and more than 1 for Retry.

A new value will be applied during a backup; for *Backup now* at the Processing Page before the first step, for *Backup by schedule* when a backup is started.

Use the Backup Utility

Prerequisites   System administrator privileges are required to run and execute the Backup Utility.

1   Start Backup Utility from **Start >Agilent Technologies >Backup Utility**. If a request for User Account Control access appears, click **Yes**.

The **Status** page displays the date and time of the latest successful backup. Click the link to go to the backup location.

If a backup is scheduled, the page displays the current backup status and the next backup start date and time.

If a backup is currently running, the status shows **Running**. If a scheduled backup has failed, the status shows **Failed**.

The **Last successful backup** shows the date/time when the latest successful backup ("by scheduler" or "backup now" type) was taken, and its location. It will contain information right after the first successful backup.

NOTE   Reboot the system if the time zone has been changed. Otherwise, the date and time on the **Status** page can show mismatched values.

2   On the **Backup option** page, select one of the following options:

- **Set backup schedule**

   Use this option as part of an automatic backup procedure. The schedule time uses a 24-hour format.

   Scheduling automatic backups is recommended. To disable automatic backups during maintenance periods, clear the **Enable backup schedule**

check box. Be sure to enable the scheduled backups when maintenance is completed.

- **Backup now**

  Backup using hot or cold backup will start immediately.

  There is no impact on a scheduled backup.

  This option can be helpful for checking the correctness of the backup settings, how much disc space and how much time a single backup requires. In addition, this option can be a part of the testing of the whole recovery procedure.

3 On the **Configure** page, configure your backup settings.

- For backup schedule, enable and set up schedule for backups.

  Select if you want your system to be available during backup (**Yes** for hot backup, **No** for cold backup).

  Select to enable incremental backups. Enter the time and days for incremental backups

  It is highly recommended to enable the backup by schedule. Clearing the **Enable backup schedule** check box turns the scheduled backup off.

  When full and incremental backups are scheduled on the same day, the full backup will be performed.

  Incremental backups require at least one full backup performed first.

  If a scheduled full backup fails, the subsequent incremental backups will fail until the next successful scheduled full backup. To prevent failure of the incremental backups, perform an immediate backup to the location designated for the scheduled backups.

- For Backup now, select if you want your system to be available during backup. Select **Yes** for hot backup, or **No** for cold backup.

  - Hot backup: System remains operational during backup.
  - Cold backup: Requires stop of all OpenLab CDS operations. The Backup Utility does this automatically.

4 On the **Backup location** page, provide a path to the local file system. Network drives are not supported.

The backup can be configured to a folder without permissions for the current Windows user. The backup executes from the System user, which allows saving of a successful backup. In the case of scheduled backup, the backup will be executed, but the current Windows user will not be able to view the results without the appropriate privileges.

5 If you scheduled a backup: On the **Notifications** page, enable and set up backup notifications. If you selected to backup now, this is skipped.

• Use a *From* address that is configured in the Control Panel. For information on how to set up email addresses, see the Control Panel online help.

Use a comma to separate multiple *To* addresses. Each address can be represented in long-form (name and email) or in short-form (only email).

• Under **Subject starts with**, specify a prefix in the notification e-mail subject.

• Use **Send test message** to ensure that the notification settings are correct.

6 On the **Review** page: Review your settings, and click **Apply** to start the backup or save the backup schedule.

Progress is tracked on the Processing page.

7 When backup is complete, click **Done**.

Backup folders are created in the location specified when you run the Backup utility.
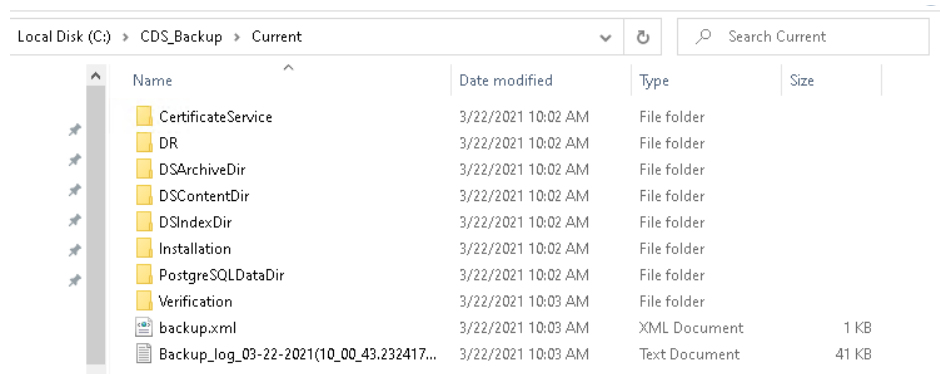
In the event of a failed backup, the partial backup is saved in a Temp folder in your backup location.
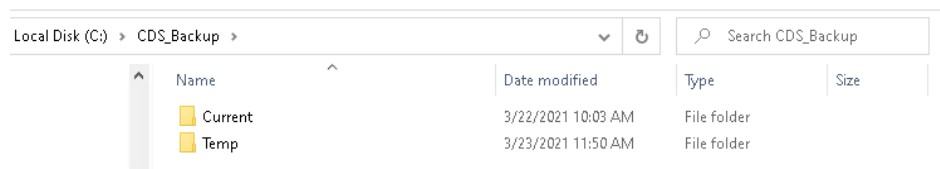
NOTE   If a backup failed for some reasons during the final backup tasks execution, the backup can still be considered successful if the **Temp** folder contains **backup.xml** file.

In this case, you may rename the **Temp** folder as follows:

- If a full backup has been performed , rename the **Temp** folder to **Current**.

- If an incremental backup has been performed, rename the **Temp** to **Incremental**.

Backup verification

The backup verification step verifies the backed-up data after the completion of the backup procedure. This step generates two reports. Both reports are located in the Verification sub folder.

- *VerificationReport.xml* - This file contains the technical information about the backed-up entities such as files, their hashes, databases' entities, and so on. In case of restoration, this report will be used for comparison of the files and databases' entities.

- *VerificationReport.html* - This report contains information about backup, number of verified files, information about failed file verification, and database entity verification results in a human-readable view.

The verification step checks that main entities (files, database entities) are backed up properly. The number of files for verification is specified in the configuration file after backup configuration (10 % by default). Files will be verified and included in the report after the backup procedure. In case of restoration, all entities which have been included in the report will be verified. Any entity (or its version) modified after the backup start time will not be included in the reports and will not be verified during the restoration procedure.

Files Verification

For the file verification, the following logic is used:

- The Backup Utility first counts all backed up files and randomly takes 10 % of the amount of the files. The taken percent of the files for the verification is always rounded up, for example, for 3 files 10% is 0.3, and this value is rounded to 1. It is useful for a small number of files in Content Management; the tool guarantees that at least 1 file will be verified.

- Then the utility takes a random version of each file. For example, if a file in Content Management has three revisions (1.0, 2.0, and 3.0), the utility will randomly take one of them.

- The Verification excludes deleted files.

- The Verification procedure compares the checksum and size of backed up files with file information from Content Management. If the checksums are equal, the verification is passed. Otherwise, the verification is failed.

The amount of files for verification can be configured in the *configuration.xml* file, located in the %ProgramData%\Agilent\Installation folder. Only a user with System Administrator privileges can update this file. Modify the following properties in the Backup section:

- **PercentFilesVerification**: the percentage of files verified (10% by default). Acceptable values are in the range from 1 to 100.

- **TotalFilesVerificationLimit**: the upper limit files for verification (10 000 by default). Acceptable values are greater than 0; negative and fractional values are not acceptable.

. Negative, fractional, and values above 100 are not accepted.

A new value will be applied during a backup; for *Backup now* at the Processing Page before the first step, for *Backup by schedule* when a backup is started.

Database Verification

Verification includes checking of number of database entities for:

- Methods
- Samples with unique names
- Shared Services Activity Log
- Content Management Activity Log

Incremental Backup Support of PostgreSQL Databases

Cumulative incremental backup is a process that saves data files and objects that have been modified since the last full backup. It is a data backup technique that only updates modified data rather than the complete data.

PostgreSQL does not have a tool that performs incremental backup but has an incremental backup strategy (*Continuous Archiving*). With Continuous Archiving enabled, PostgreSQL records every change made to the database's data files in a log (process called Write Ahead Log, WAL). You can combine a file-system-level backup with a backup of the WAL files.

To recover successfully using Continuous Archiving (also called *online backup* by many database vendors), you need a continuous sequence of archived WAL files that extends back at least as far as the start time of your backup. So to start, set up and test your procedure for archiving WAL files before you make your first base backup.

The *Incremental Config Tool* allows you to to configure incremental backup support automatically for all PostgreSQL instances used by OpenLab CDS Workstation Plus. The tool performs following actions:

- update settings for incremental backups of both OpenLab CDS PostgreSQL and Data Repository PostgreSQL
- restart required PostgreSQL services after updating
- update the BackupUtility.config file to enable incremental backups in the Backup Utility

1 Run a Command Prompt as administrator.

2 Navigate to installation path of the tool. By default, this is C:\Program Files (x86)\Agilent Technologies\OpenLab Backup Utility\Incremental Config Tool\

3 Run the Incremental Config Tool using the following parameters:

-on or -off	mandatory; enable incremental backup and set up default paths, or disable incremental backup
-olcmWalDir <path>	optional; set up specified path for the OpenLab CDS PostgreSQL database. Applicable only with "on" parameter.
-drWalDir <path>	optional; set up specified path for the data repositories PostgreSQL database. Applicable only with "on" parameter

Examples:

- `PgIncrementalConfigTool.exe -on`

  Enable incremental backup, setup default paths.

- `PgIncrementalConfigTool.exe -off`

  Disable incremental backup.

- `PgIncrementalConfigTool.exe -on -olcmWalDir D:\wal\ olcm -drWalDir "D:\wal\dr files"`

  Enable incremental backup and set up specified paths.

The tool configures the PostgreSQL databases and restarts the PostgreSQL services. On successful completion, it shows the message **Configuration completed successfully**. If an error occurs, it shows the message **PgIncrementalConfigTool has failed. The log files: <log file path>**.

Configure Custom Data Directory for PostgreSQL Databases

OpenLab CDS PostgreSQL Database

1 To get the current PostgreSQL service settings, run a command line and execute the following command:
`sc qc olcm-postgresql-x64-14`

In the output, the value after the -D option shows the current data location.

2 Stop the PostgreSQL service **olcm-postgresql-x64-14**.

3 Move the content of the current data location to the new location.

4 To modify the PostgreSQL service settings and set up a new data location, enter the corresponding command. For example:

sc config olcm-postgresql-x64-14 binPath="\"C:\Program Files\ PostgreSQL-14-OLCDS\bin\pg_ctl.exe\" runservice -N \ "olcm-postgresql-x64-14\" -D \"E:\NewDataLocation\" -w\"

5 Update the registry values for PostgreSQL service. Set up the new data location in the following keys:

- HKEY_LOCAL_MACHINE\SOFTWARE\PostgreSQL\Installations\ olcm-postgresql-x64-14\DataDirectory

- HKEY_LOCAL_MACHINE\SOFTWARE\PostgreSQL\Services\ olcm-postgresql-x64-14\DataDirectory

6 Start the service **olcm-postgresql-x64-14** again.

Data Repository PostgreSQL Database

1 To get the current PostgreSQL service settings, run a command line and execute the following command:

`sc qc postgresql-x64-14-dr`

In the output, the value after the -D option shows the current data location.

2 Stop the PostgreSQL service **PostgreSQL 14.1.1 (x64)**.

3 Move the content of the current data location to the new location.

4 To modify the PostgreSQL service settings and set up a new data location, enter the corresponding command. For example:

sc config postgresql-x64-14-dr binPath="\"C:\Program Files\PostgreSQL\14\bin\pg_ctl.exe\" runservice -N \"postgresql-x64-14-dr\" -D \"E:\NewDrDataLocation\" -w\"

5 Update the registry values for PostgreSQL service. Set up the new data location in the following keys:

- HKEY_LOCAL_MACHINE\SOFTWARE\PostgreSQL\E998E784-031A-4F94-9A3A-AB474D21C135\Installations\postgresql-x64-14\DataDirectory

- HKEY_LOCAL_MACHINE\SOFTWARE\PostgreSQL\E998E784-031A-4F94-9A3A-AB474D21C135\Services\postgresql-x64-14\DataDirectory

6 Start the service **PostgreSQL 14.1.1 (x64)** again.

Restore Procedures

Use the Restore Utility to restore your Workstation Plus from an existing backup if it becomes inoperable due to a hardware or software failure.

If you are upgrading your machine, perform the following procedures on your machine before the upgrade.

The restore procedure will restore only committed data captured by the successful backup procedure. Any data that was created or updated after the backup was performed are not recovered by restoring a backup. Re-configuration and restore procedure from AWS S3 backup location are not supported for Workstation Plus.

NOTE   The Restore Utility can restore a system from cold and hot backups created with the Backup Utility. The Restore Utility can be run on systems with OpenLab CDS installed or on clean systems (see "Restore on a clean machine without OpenLab CDS Workstation Plus installed" on page 91).

NOTE   If you are using non-default paths for configuring PostgreSQL for incremental backup in a backed-up system, please follow the instructions under "Incremental Backup Support of PostgreSQL Databases" on page 84 after the restore.

Data Loss

CAUTION	In cases where a restored system will run at the same time as the source system (where the backup was taken), it is imperative that the restored system is on a network isolated from the source system.

If a test system is created from a backup of the production system, and the test system and the production system are on the same network, it may cause the two machines to create a cluster and interact with each other. This can lead to data corruption and loss.

- ✓ **The restore system must be on a network that is isolated from the production system.**

- ✓ **In addition, it is important to turn clustering off on the restored system using the following steps:**

- ✓ **On the restored machine, open** C:\Program Files (x86)\Agilent Technologies\ OpenLAB Data Store\tomcat\shared\classes\alfresco-global.properties**. Find the alfresco.cluster.enabled property, and set it to false (alfresco.cluster.enabled=false).**

- ✓ **Restart the alfrescoTomcat service.**

Troubleshooting the restore procedure

The Restore Utility collects logs in the %ProgramData%\Agilent\LogFiles\Restore folder. During the restore procedure, all steps are checked and the whole restore procedure stops on the first failed step. A link with the failed step opens the current restore log file to help identify the root cause of the problem.There are validations on each page during restore configuration to prevent possible errors with no access to backup data and incorrect format.

Restore on an existing OpenLab System

Use the Restore Utility to restore to an system with OpenLab CDS Workstation Plus installed. Use the procedure below to restore a previously-installed system that was backed up using the Backup Utility.

Prerequisites

- You must have System Administrator privileges to run and execute the Restore Utility.
- To successfully access the folder with the backup, the application must be launched by a user with reading rights in this folder.

1   Stop all OpenLab CDS Workstation Plus operations before performing the restore process.

2   Make sure that any instruments or other parts of the system are not using the system during the restore process.

3   From the Windows Start menu, select **Agilent Technologies >Restore Utility**.

4   On the **Backup Location** page, choose your backup location.

Select **File system** as the backup location if the backup is located locally or on Windows share. Select the backup folder that was used by the Backup Utility.

Restore and Verify is selected by default. For normal recovery, select **Restore only**.

Click **Next**.

5   On the **Review** page, review the settings and click **Apply**.

The restore procedure progress is tracked on the **Restore** page.

6   When the restore procedure is complete, click **Done**.

If you selected **Restore and Verify** or **Verify only**, a verification step is displayed as the last step. Click the verification status **Done** link to open the verification report.

7   When the restore procedure is complete, click **Done**.

8   Reboot the restored OpenLab CDS Workstation Plus system.

Select **Yes** to reboot the system immediately. Select **No** if you want to postpone the reboot and perform it manually

Rebuild the Activity Log Index

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

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

- The Shared Services database has been restored with a fresh installation
- You are migrating or updating your data

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 Execute the following command:

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

Possible errors include:

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

Probable cause	Suggested actions

1 The Agilent OpenLab Shared Services service is already stopped.	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.

Probable cause	Suggested actions
1 The Command Prompt has insufficient privileges.	Make sure the Command Prompt has been started as an Administrator.

Verification

Verification is available only for systems on which the OpenLab software has already been installed.

Verification reports are saved at C:\ProgramData\Agilent\Restore\Verification.

The Restore Utility collects logs in the %ProgramData%\Agilent\LogFiles\Restore folder.

During the restore procedure, validations on each page prevent possible errors, such as no access to content and archive locations, or incorrect formats. The procedure will stop on the first failed step. A link with the failed step opens the current restore log file to help identify the issues.

Restore on a clean machine without OpenLab CDS Workstation Plus installed

Use this procedure to restore a backed up OpenLab CDS Workstation Plus to a machine that does not have OpenLab CDS Workstation Plus installed. The utility will restore all PostgreSQL databases on a clean system along with other OpenLab CDS data. You will need to install the software after the restore is complete.

1 From the OpenLab CDS installation media, go to **Setup >Tools >RestoreTool** and launch **RestoreUtility.exe**.

2 On the **Backup Location** page, choose your backup location.

   Select **File system** as the backup location if the backup is located locally or on Windows share. Select the backup location that had been used by the Backup Utility.

   AWS S3 backup location is not supported for Workstation Plus.

   When restoring to a machine where OpenLab CDS Workstation Plus is not installed, verification is not available.

3 Review the settings and click **Apply**.

4 The restore procedure progress is tracked on the **Restore** page. When the restore procedure is complete, click **Done**.

5 After the OpenLab CDS Workstation Plus software is installed, run **Restore Utility** with the option **Verify only** to check data and get a verification report.

6 After a successful restore procedure, proceed with standard installation of OpenLab CDS. All the values reviewed and configured during restore procedure will be automatically captured during the installation and should not be changed during the process.

Routine Maintenance

Routine maintenance procedures should be carried out on a regular basis. They are related to the Content Management database, the OLShared Services, and the DataRepository databases. They are also provided by OpenLab Server.

Please refer to the *Agilent OpenLab Server and OpenLab ECM XT Administration Guide* (ECM_XT_2.7AdministrationGuide_en.pdf) for more information on the following topics:

• Monitor resource usage

• Update database statistics

• Additional best practices

9 Upgrade OpenLab CDS

This chapter describes the upgrade of the software.

License Upgrade

Get Upgraded License File

You will need to upgrade your licenses in SubscribeNet prior to upgrading to the next version of OpenLab CDS. We strongly recommend upgrading your workstation licenses *before* upgrading the core software. Standalone workstations which are upgraded to the new core software version, without a new workstation license, will not work until the new workstation licenses are added to the OpenLab Control Panel.

If you are under SMA subscription, proceed as follows to upgrade your licenses:

1 During the following process, you will be prompted in SubscribeNet for the host name or MAC address of the workstation where OpenLab CDS is already installed.

To retrieve this hostname and MAC address, open the Control Panel and browse to the **Administration >Licenses** section. Note down the host name and use the **Copy MAC Address** or **Save MAC Address** function to obtain the MAC address.

2 Log into the Agilent Electronic Software and License Delivery (**https://agilent.subscribenet.com/**).

3 Navigate to **Manage Licenses by Host**. In the **Host ID** field, enter the previously noted MAC address, and click **Search**.

If the relevant host name does not appear, you may be managing your licenses in multiple SubscribeNet accounts. You will need to log into those accounts to upgrade those licenses.

4   If your license(s) are eligible for an upgrade, you will see the **Upgrade All** button. Otherwise you will need to contact your Agilent Sales Representative to renew your Software Maintenance Agreement (see "Sales and Support Assistance" on page 113). To proceed with generating your upgrade license, click the button.

5   On the **Upgrade All Licenses for License Host** page, review the data, and confirm by clicking **Upgrade All**.

    This upgrades the license file to the most current version. SubscribeNet will send you an email with a new license file.

6   Put the new license file on your system (see "Add Upgraded License File to the System" on page 95.

    If you have multiple standalone Workstations, repeat this step for each individual workstation.

    Note that each workstation's MAC address is the file name. This helps identify the correct license file to import into the workstation's Control Panel.

Add Upgraded License File to the System

If you have purchased new options, such as additional instrument controls or client license and regenerated your license in SubscribeNet, the upgraded license file must be re-applied to the system.

1   Start the Control Panel from any machine connected to the system you want to install the license for.

2   Navigate to **Administration >Licenses**.

3   Select a license, then click **Remove License** ✕ .

4   In the ribbon, click **Add License** ╋ .

5   Browse to and open the license file saved from the license generation process in SubscribeNet.

NOTE   A full restart is required in order for any license to have an immediate effect.

Upgrade OpenLab CDS Workstation to Latest Version

You can upgrade an OpenLab CDS standalone workstation to the latest version using the OpenLab CDS Installation Wizard. A direct upgrade is supported from OpenLab CDS rev. 2.4 or higher.

CAUTION   **Uninstallation of ADFExport 1.3 or lower after an upgrade may cause the Data Analysis application to fail to start.**

Rev. 1.3 or lower of ADFExport is not compatible with OpenLab CDS 2.7. Uninstallation of one of those ADFExport versions after an upgrade (e.g. during its own upgrade) may remove vital files from OpenLab CDS. This may cause the Data Analysis application to fail to start. Automated processing and data analysis during acquisition may fail. A re-installation of OpenLab CDS might become necessary.

✓ **If Rev. 1.3 or lower of ADFExport for OpenLab was installed with your OpenLab CDS version, uninstall it** *before* **upgrading OpenLab CDS to Rev. 2.7.**

1 Run the setup.exe file from the installation media as a user with administrative rights.

2 Select **OpenLab CDS**.

3 In the OpenLab CDS Installer, select the **Installation** screen.

4 Select **Workstation with CM**.

5 In the **License Agreement** screen, read and confirm Agilent terms and conditions. Click **Next**.

6 In the **Server Information** screen, click **Connect**. If your previous installation required user authentication, provide the OpenLab Control Panel login credentials of an administrator. Click **Next**.

7 In the **Data Repository** screen, provide a new password for Data Repository accounts. The new password will reset an existing password. Click **Next**.

NOTE   Make sure to document the password at a secure location.

8 In the **System Preparation** screen, the upgrade wizard 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 the upgrade. 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.

9 In the **Review** screen, click **Upgrade** to start the upgrade.

10 If there are still manual actions required before installation, a warning is shown.
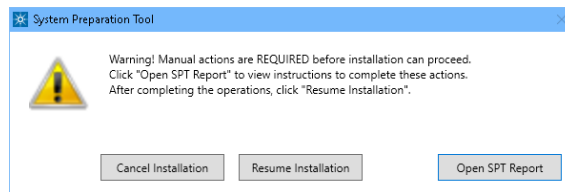
Options to proceed

- *Recommended*: Click **Open SPT Report** to view instructions to complete these actions. In the report, check the **Required Actions** section. 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. If needed, the settings can be updated after the installation has been completed.

11 On the **Upgrade** tab, click **Next** after all components are installed.

12 In the **Configure** screen, click **Next**.

13 On the **Finish** page, click **Run Software Verification**.

14 On the **Finish** page, keep the **Reboot** check box selected, and click **Finish**.

15 If you use a GC/MS instrument: Upgrade the GC/MS firmware to the latest revision. The upgrade is required for the GC/MS software to work properly with OpenLab CDS 2.7.

For more information on driver upgrades, see "Install or Upgrade Driver Software" on page 26.

It is recommended that you reconfigure the instrument in the Control Panel.

NOTE   After the upgrade completes, the Activity Log Index will be rebuilt. The time required to rebuild the index depends on the number of Activity Log records. It and can take up to a few hours. During this interim period, Activity Log searches in the application provide a user-friendly message about indexing.

New Privileges and Roles

On upgrade from a previous version, new privileges and roles may be created. For example, Starting with Shared Services version 3.6 / OpenLab CDS 2.7, the privilege **View activity log** has been added. This privilege is now required to view activity logs and audit trails (see Appendix for details on roles and permissions). This privilege is by default assigned to the new role **Activity Log Access**. During the upgrade, this new role is automatically assigned to all existing users and groups.

The **View activity log** privilege is also automatically added to the **System Administrator** default role.

10 Uninstall OpenLab CDS With All of its Components

This chapter describes the uninstallation of the software.

Uninstall OpenLab CDS

1   Log in as an administrator.

2   In the Windows Settings, open **Apps >Apps and features**.

3   Select **Agilent OpenLab CDS**, and confirm uninstallation.

☼ Agilent OpenLAB CDS	Agilent Technologies
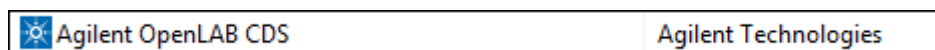
The OpenLab CDS Uninstallation Wizard opens[1]. In the wizard, click **Uninstall**, and follow the wizard.

4   In the Windows Settings under **Apps >Apps and features**, continue the uninstallation by removing the following features:

- **Agilent Software Verification Tool**

- **PostgreSQL - OLCM**

  When uninstalling PostgreSQL, a warning will be shown that the data directory has not been removed. If you want to remove it, manually delete the folder that you defined during installation (for example, C:\DSData).

- Instrument drivers

  Drivers installed by OpenLab CDS are uninstalled automatically. If you installed other drivers, uninstall them manually.

5   Reboot.

[1]   The Uninstallation wizard can also be started from the Installation Wizard used to install the software.

Uninstall OpenLab Help and Learning Only

If you installed OpenLab Help and Learning only, follow this procedure to uninstall it.

1 From the installation media, right-click the setup.exe file, and run it as administrator.

2 On the start screen, select **OpenLab CDS**, and click **OK**.

3 On the **Installation** page, select **OpenLab Help and Learning Only**.

    The **Agilent OpenLab CDS Help and Learning** wizard opens.

4 Click **Remove**.

    The wizard removes OpenLab Help and Learning from your system.

5 After completion of the uninstallation, click **Finish** to close the wizard.

Troubleshooting Tips

Required Disk Space

For upgrading an OpenLab CDS application to revision 2.7, a minimum of 10 GB of free disk in the C:\ drive is required, as all installed packages will be copied to C:\ProgramData\Package Cache. If you copy the content of the USB to your computer, you will need additional 10 GB of free disk space.

Failure due to low disk space

If there is insufficient free disk space, the installation fails midway, and the logs indicate failure due to low disk space.

How to recover

If there is not enough space for installation, proceed as follows:

1 Uninstall the OpenLab CDS Application, and delete the content of C:\ProgramData\Package Cache.

2 Run the installation of OpenLab CDS 2.7 again

11 Appendix

Privileges in the Control Panel

The privileges described in the following can be associated with different roles in the Control Panel. The following roles are available:

- Everything
- System Administrator
- Instrument Administrator
- Project Administrator
- Project Content Deletion
- Instrument User
- Technician

- Chemist
- Activity Log Access
- Archivist
- Content Management Approver
- Content Management Contributor
- Content Management Reader
- Content Management PDF Template Manager
- Content Management Administrator

In the Control Panel under **Administration >Roles**, you can view or change the associated privileges, or create your own roles.

Project Privileges

Table 4   **Project Management**

Name	Description
Manage project or project group	User can create or edit project properties and can move the project but cannot view or edit the project access settings.
Manage project or project group access	User can view and edit the project access settings.
View project or project group	User can see a project and project details but cannot edit. *Note:* This privilege is required for all users.
Access content using web client	User can view the data via the Content Management web interface.

Table 4   Project Management

Name	Description
Edit content of project	User can create new versions of documents (e.g. data, methods, or templates).
Delete content of project	If using OpenLab CDS with Content Management: • Required to move and delete project files or folders (e.g. data, methods, or templates) via the Content Management web interface. • Required to delete templates and methods in the **Data Selection** view of Data Analysis. *Note:* To move or delete files and folders in the Content Management database that are *outside* of a project, this privilege is not sufficient; the administrative privilege **Manage security** must be granted!

Table 5   E-Signature

Name	Description
E-Signature Sign Data Files	User can sign data files
Revoke E-Signature	User can revoke the e-signature.
Change method status	User can change the status (Generic, Approved, Obsoleted) of sample prep methods, acquisition methods and processing methods.

Table 6   Sample Prep

Name	Description
Create and modify sample prep	View, edit, and save an autosampler sample prep file
Use generic sample prep methods	Use sample prep methods that have the status **Generic**.

Table 7   Acquisition Method

Name	Description
Create and modify acquisition method	Create, edit and save an acquisition method file (*.amx)
Use generic acquisition methods	Use acquisition methods that have the status **Generic**.

Table 8   Processing Method

Name	Description
Create processing method	Create a new processing method (*.pmx), or save a method under a new name.
Save master method	Save changes to a processing method in the Methods folder.
Save result set method	Save changes to a processing method in the result set folder.
Edit integration parameters	View and edit the parameters in the **Integration Events** section of a method.
Edit identification parameters	View and edit the parameters in the **Compounds >Identification** section of a method.
Edit chromatogram extraction parameters	View and edit the parameters in the **Extraction >Chromatogram** section of a method.
Edit spectrum extraction parameters	View and edit the parameters in the **Extraction >Spectrum** section of a method.
Edit MS library search parameters	View and edit the parameters in the **MS Library Search >Properties** section of a method.
Edit calibration parameters	View and edit the parameters in the **Compounds >Calibration** section of method.
Edit spectra parameters	View and edit the parameters in the **Compounds >Spectra** section of method.
Edit system suitability parameters	View and edit the parameters in the **Compounds >System Suitability** section of method.
Edit custom calculation parameters	View and edit the parameters in the **Tools >Custom Calculation** section of a method.
Edit signal parameters	View and edit the parameters in the **General >Signals** section of a method.

Table 8   Processing Method

Name	Description
Edit sample purity parameters	View and edit the parameters in the **MS Sample Purity** section of a method.
Edit reporting parameters	View and edit the parameters in the **Reports >Injection Report** section of a method.
Edit general parameters	View and edit the parameters in the **General >Properties** section of a method.
Load older master method	With Content Management, load an older version of a master method.
Edit Post Processing Plugins parameters	View and edit the parameters in the **Post Processing Plugins** section of a method.
Use generic processing methods	Use processing methods that have the status **Generic**.

Table 9   Report Template

Privilege	Description
Unlock/lock report template items	Lock and unlock report template items (tables, chromatograms, groups of items, ...) to control who is allowed to modify those.
Validate report template	Confirm usage of report templates that have been modified outside OpenLab CDS.
Create report template	Create and edit report templates in the Reporting view.

Table 10   Sequence Template

Name	Description
Create and modify sequence template	Create, edit and save sequence creation templates (*.stx).

Table 11   Sequence

Name	Description
Edit any users running sequence	Edit any user's running sequence (status **Acquiring** in the Run Queue).
Create and modify sequence	Create, edit and save sequences (*.sqx)
Edit users own running sequences	Edit your own running sequences (status **Acquiring** in the Run Queue).
Edit method override parameters	Override parameters in a predefined acquisition method.

Table 12   Audit Trail

Name	Description
Change method audit trail settings	Edit and save method audit trail settings (project properties in the Control Panel).
Review audit trail	Confirm that you reviewed a changed audit trail.
Add manual audit trail entry	Add a manual entry to document your own actions in the audit trail.

Table 13   Control

Name	Description
Abort any running sample	Abort any running sequence or single run.
Manual control (in run)	Access manual control functions while the instrument is running.
Manual control (only when instrument idle)	Access manual control functions while the instrument is idle.
MS autotune and manual tuning	Access all MS tune and maintenance functionality, including manual tune, autotune, and check tune.
MS autotune	Perform MS autotune and check tune.
Cancel any pending run	Cancel pending runs in the run queue submitted by any user.
Cancel my pending run	Cancel own pending runs in the run queue.
Reorder pending runs	Reorder pending run queue items in the run queue. Moving items around in the run queue.

Table 13   Control

Name	Description
Run priority sample	Submit *Priority* single samples.
Run single sample	Submit regular single samples.
Modify Instrument configuration in CDS Client	Change instrument configuration directly from a running Acquisition client . Note: This privilege is not yet used by all instrument drivers.
Request access	Request access to a sequence, run queue, or instrument that is currently locked by another user.
Enable Ad Hoc mode	Enable and disable Ad Hoc mode for an instrument
Override Ad Hoc mode	Disable Ad Hoc mode that was enabled by any other user

Table 14   Data Processing

Name	Description
Create new result set	Combine single samples or sequences from different sources in a new, self-assembled result set.
Disable/enable calibration points	Disable or enable individual points of a calibration curve.
Do manual compound identification	Manually assign a compound to a peak.
Do manual chromatogram extraction	Manually extract MS (TIC-SIM/TIC-SCAN) chromatograms from your data.
Do manual integration	Activate manual integration in the **Chromatograms** window.
Do manual MS library search	Manually search for matches in an MS library.
Do manual spectrum extraction	Manually extract UV or MS spectra from your data.
Integration Optimizer: Display peak results	Show the retention time, area, and area % for each integrated peak in the Integration Optimizer.
Launch Custom Calculation Editor	Start the Custom Calculation Editor from Data Analysis.

Table 14   Data Processing

Name	Description
Update master processing method	Save changes from a result set method to the corresponding master processing method in the Methods folder.
Use Integration Optimizer	Edit parameters for the integration optimizer, step through the wizard, and use functions offered by the wizard.
Reprocess data	Reprocess injections or result sets.
Print results reports	Create reports for your methods or results.

Table 15   File and Folder Operations

Name	Description
Delete report templates	Delete report templates (*.rdl) in the **Data Selection** view of Data Analysis (requires also the **Project Management >Delete content of project** privilege).
Delete sequence templates	Delete sequence templates (*.stx) files in the **Data Selection** view of Data Analysis (requires also the **Project Management >Delete content of project** privilege).
Delete methods	Delete processing methods (*.pmx) or acquisition methods (*.amx) in the **Data Selection** view of Data Analysis (requires also the **Project Management >Delete content of project** privilege).

Table 16   Data

Name	Description
Export data	Export data into an OpenLab archive (*.olax).
Import data	Import data from OpenLab archives (*.olax) into the OpenLab system.
Save reports to disk	Save or export a report to a location on a disk or network share.
Edit sample information	Edit information in the **Injection List** window.

Table 17 Lock

Name	Description
Lock Results	Lock a result set to protect it from being changed.
Unlock Results	Unlock a locked result set.

Table 18 Custom Tools

Name	Description
Access Custom Tools section	Start external programs that were added to the application via the customization tool

Table 19 Snapshot

Name	Description
Review snapshot results	From Acquisition, open a currently running sample in Data Analysis.

Instrument Privileges

Table 20 Instrument Management

Name	Description
View instrument or location	User can view and access a location in the tree, but not edit access security, can view properties.
Manage Instrument or location	User can create and move locations and edit properties (name, description, etc).
Manage instrument or location access	User can view and edit the location access settings.
Run instrument	User can start an instrument session.
Service instrument	User can lock or unlock an instrument (to service it).

Administrative Privileges

Table 21   System Administration

Name	Description
Manage printers	Can add/remove printers and print server.
Edit activity log properties	Can change the Activity log Settings in the Control Panel (that is, can turn logging on for the System Activity Log).
Create administrative reports	Can create any of the system admin reports.
Manage system components	Can install/remove components (applications).
Manage security	Can change security settings and assign security roles. Can edit (add, change etc) users, groups and roles. In the Content Management web interface: Can move and delete files and folders outside of a project. *Note:* A user with this privilege can grant himself access to all settings in Shared Services. Be careful who you grant the Manage Security privilege.
Manage instrument controllers	Can edit Instrument Controllers in the Control Panel.
Unlock any locked UI	Can log in to another user's locked session.

Table 22   Content Management

Name	Description
Archive content	User can archive the content of the Content Management data repository.
Manage Templates	View, create, update and delete PDF templates.

Table 23   Activity Log Access

Name	Description
View activity log	Access to the System Activity Log (recording of log entries is not impacted)

Sales and Support Assistance

Please check the following web site for your local sales and support contact:

https://www.agilent.com/en/support

Agilent Community

To get answers to your questions, join over 10,000 users in the Agilent Community. Review curated support materials organized by platform technology. Ask questions to industry colleagues and collaborators. Get notifications on new videos, documents, tools, and webinars relevant to your work.

https://community.agilent.com/

In This Book

This document provides instructions for installation, configuration, administration, and maintenance of an OpenLab CDS Workstation with Content Management (OpenLab CDS Workstation Software Plus). It includes information on the license generation with SubscribeNet and operating system configuration.

The manual describes the following:

- Install OpenLab CDS Workstation with Content Management
- Generating and Downloading Your Software License
- Configure OpenLab CDS Workstation with Content Management
- Optional Procedures
- Customization
- About the OpenLab CDS software
- System Setup and Maintenance

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