OpenLAB CDS
ChemStation Edition

Guide for Administrators

Agilent Technologies

Notices

Manual Part Number

Edition

Software Revision

This guide is valid for revision C.01.07 SR3 of OpenLAB CDS ChemStation Edition.

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 manual describes the concepts of OpenLAB CDS ChemStation Edition (system architecture, licensing strategy, data integrity) and the administration of OpenLAB CDS with the OpenLAB Control Panel. In addition, it contains specific information on the administration of OpenLAB CDS ChemStation Edition.

Table 1   Terms and abbreviations used in this document

Term	Description
CDS	Chromatography Data System
ChemStation	OpenLAB CDS ChemStation Edition
Secure Workstation	Secure Workstation for OpenLAB CDS ChemStation Edition
Data Store	OpenLAB Data Store; as of rev. 2.1, the product name is OpenLAB Server
OpenLAB Server	New product name, formerly known as OpenLAB Data Store.
Content Management	Data storage component provided as part of OpenLAB Server
ECM	OpenLAB Enterprise Content Manager
AIC	Agilent Instrument Controller
Control Panel	OpenLAB Control Panel
Microsoft Control Panel	Part of the Microsoft Windows operating system
Shared Services	Set of components and services for licensing, users and roles, instrument configuration, security policy and more. Installed on all computers; accessed via the OpenLAB Control Panel.
OpenLAB CDS Shared Services Server	Server running the Shared Services. Formerly known as OpenLAB Shared Services Server.

1 Architectural Concepts of OpenLAB CDS

This chapter gives you an overview of the general concepts of Agilent OpenLAB CDS architecture. In the following, the term ChemStation refers to OpenLAB CDS ChemStation Edition.

2 OpenLAB Control Panel

Using the OpenLAB Control Panel, you can access OpenLAB CDS Shared Services control features such as security policy, central configuration, or lab status at a glance. These features are described in more detail in this chapter.

3 OpenLAB CDS Shared Services Server

This chapter describes the OpenLAB Shared Services Maintenance tool.

4 ChemStation-Specific Administration

This chapter describes various tools that are helpful for diagnosis, support and troubleshooting.

5 Appendix

This chapter contains information on privileges used in OpenLAB CDS.

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Architectural Concepts of OpenLAB CDS

This chapter gives you an overview of the general concepts of Agilent OpenLAB CDS architecture. In the following, the term ChemStation refers to OpenLAB CDS ChemStation Edition.

Agilent Technologies

Overview

Figure 1 OpenLAB CDS architecture

OpenLAB CDS contains the following software and interface modules:

- OpenLAB Control Panel

  The OpenLAB Control Panel is the user interface that provides access to OpenLAB CDS components, as well as administrative functions used for managing Shared Services features.

- Shared Services

  These services offer central access, central configuration, lab status at a glance, and remote control of instruments. The central functions can be used by all OpenLAB modules.

- Instrument control, data acquisition and data analysis module (ChemStation/EZChrom)

  This module is available as either ChemStation or EZChrom Edition. Data acquired with previous versions of the respective software can be processed. ChemStation and EZChrom share several common functions such as Easy Sequence, RC.NET drivers, or Intelligent Reporting.

OpenLAB CDS System Architecture

Workstation

In a workstation, all components (shared services, CDS, control panel) are installed on the same computer.

The following figure shows the configuration of an OpenLAB CDS Workstation. You can have multiple instruments on one workstation (see *OpenLAB CDS ChemStation Edition Requirements* guide).
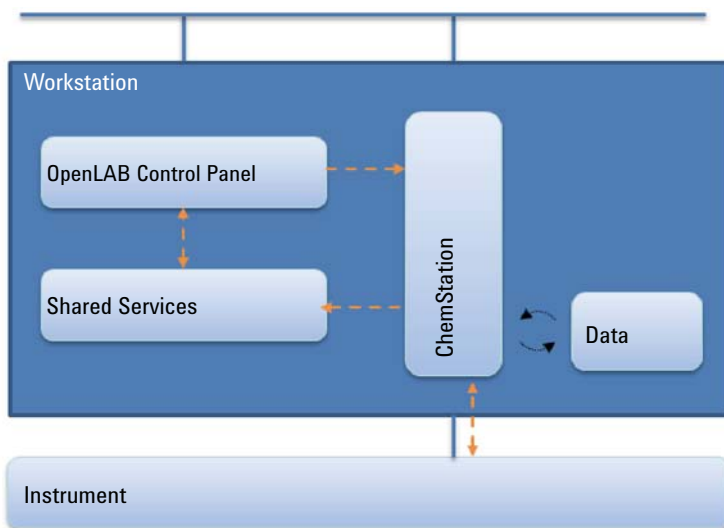
Figure 2   OpenLAB CDS Workstation

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◄·············► Data upload and download

◄ – – ► Logical communication
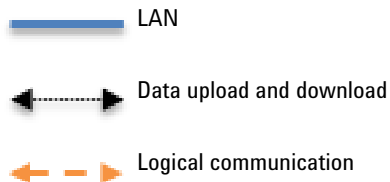
Networked Workstation

In larger laboratories with many instruments in a network, you can install Shared Services on a either a dedicated "OpenLAB CDS Shared Services server" or an "OpenLAB Server 2.1". The latter has been introduced with SR3 and does also provide Shared Services. Networked Workstations offer central administration of users, roles, and licensing.

The instrument status can be viewed from any Networked Workstation. However, you can launch and configure instruments only from the specific PC on which you configured the instrument.

The following figure shows an OpenLAB CDS Networked Workstation configuration. There can be multiple workstations that are part of the Networked Workstation system. The figure shows only one ChemStation instance, but you can configure multiple instances and associated instruments on the same machine.
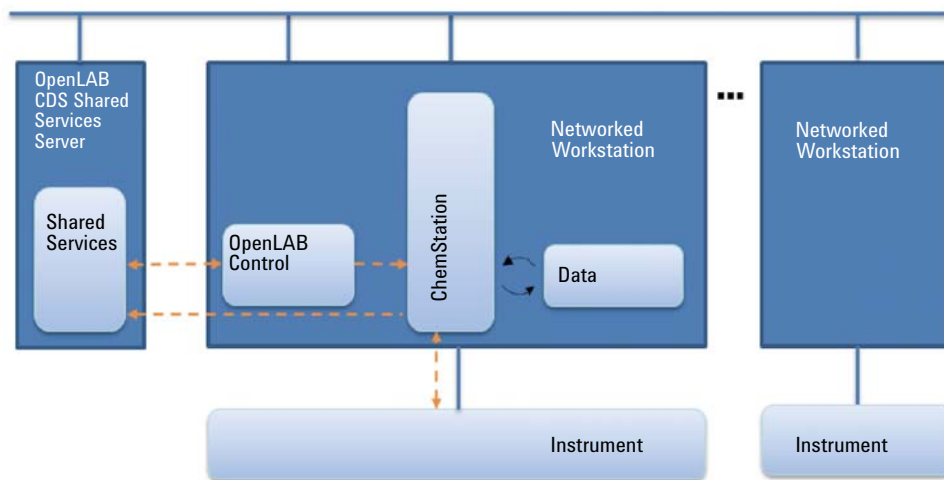
Figure 3   OpenLAB CDS Networked Workstation

LAN

Data upload and download

Logical communication

You can use the OpenLAB CDS ChemStation Edition Networked Workstation configuration with or without central data storage. If you are connected to a central repository, the data stored on the workstation is synchronized with the central repository. For more information on ChemStation with central data storage, refer to the *OpenLAB CDS ChemStation Edition with Central Data Storage - User's Guide*.

If you use the Content Management provided by OpenLAB Server, Content Management and Shared Services are installed on one server. In case of OpenLAB ECM systems, separate Shared Services servers are required per ECM Account.

Distributed Systems

With OpenLAB CDS installed as a Distributed System, you are able to access and run instruments from any CDS client PC in the system.

As in the Networked Workstation installation, the OpenLAB Control Panel provide an overview of all instruments in the system. You can access all information provided by Shared Services from any OpenLAB CDS Client. For example, you can see which instruments are available in which location and which status (Online, Offline, Error, In Run, Not Ready, etc.) the instruments currently have.

In contrast to the Networked Workstation installation, in a Distributed System you can configure, launch and control any instrument from any OpenLAB CDS Client PC.

The Distributed System configuration enables you to work more flexibly with instrument sessions. You can, for example, launch an online instrument, start a sequence, and then disconnect only the CDS Client while the instrument continues to run on the Agilent Instrument Controller machine (AIC). You or another user can later connect to this instrument again from a different OpenLAB CDS Client to finish work on the online instrument or to analyze the data.

ChemStation Architecture

NOTE	The Distributed System configuration requires either OpenLAB Server or OpenLAB ECM.

In a ChemStation Distributed System, the instruments are controlled by the AIC. The AIC is a Windows server. Each AIC can control up to ten instruments. You can access the ChemStation instance on the AIC machine from any OpenLAB CDS Client. The connection between the CDS Client and the AIC is transparently using Remote Desktop Services. When you disconnect the CDS Client, you disconnect the Remote Desktop Connection. ChemStation continues to run on the AIC. For more information on remote instrument control, session takeover, session disconnect, or force shutdown, refer to the *OpenLAB CDS ChemStation Edition Concepts and Workflows Guide* (CDS_CS-concepts.pdf).

The Distributed System configuration of OpenLAB CDS ChemStation Edition requires a central data storage. The data acquired on each AIC is uploaded to the central repository. For more information on ChemStation with central data storage, refer to the *OpenLAB CDS ChemStation Edition with Central Data Storage User's Guide* (CDS_CS-with-DataStorage.pdf).

The following figure shows the system architecture of ChemStation with OpenLAB ECM. If you use the Content Management provided by OpenLAB Server, Content Management and Shared Services are installed on one server. In case of OpenLAB ECM systems, separate Shared Services servers are required per ECM Account.
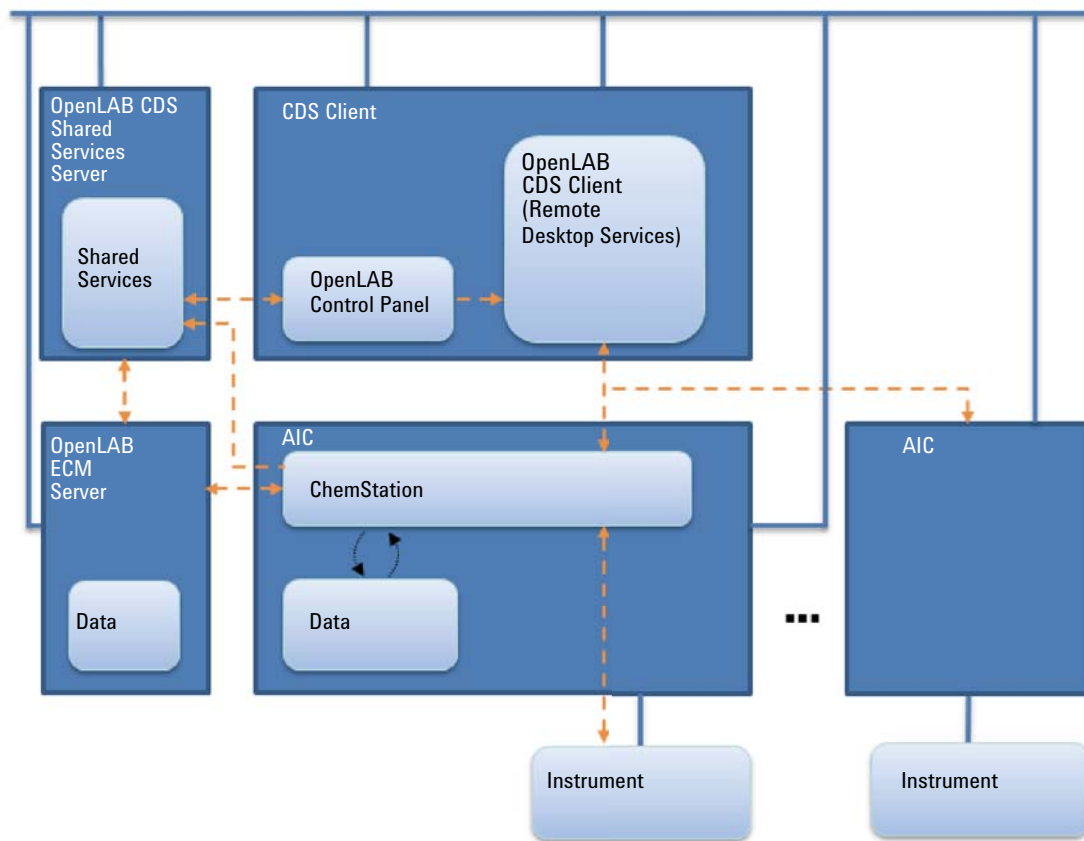
Figure 4 OpenLAB CDS Distributed System with ChemStation and OpenLAB ECM

LAN

Data upload and download

Logical communication
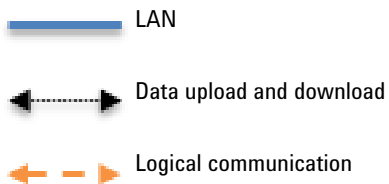
Networked Workstations in Distributed Systems

When an instrument cannot be controlled by an AIC or needs to be isolated and controlled by a single computer, you can add one or multiple Networked Workstations to a Distributed environment.

The following figure shows a mixed topology with one Networked Workstation, one CDS Client, one AIC, and central data storage. You can have multiple Networked Workstations, multiple CDS Clients, and multiple AICs in this topology.

In a mixed environment, you can use the Networked Workstation to access all instruments configured on this workstation, and you can also use it as a CDS Client for all instruments configured on AICs. Instruments configured on a Networked Workstation cannot be controlled from a CDS Client.

Systems with both ChemStation Edition and EZChrom Edition being controlled by the same OpenLAB CDS Shared Services Server are not supported.
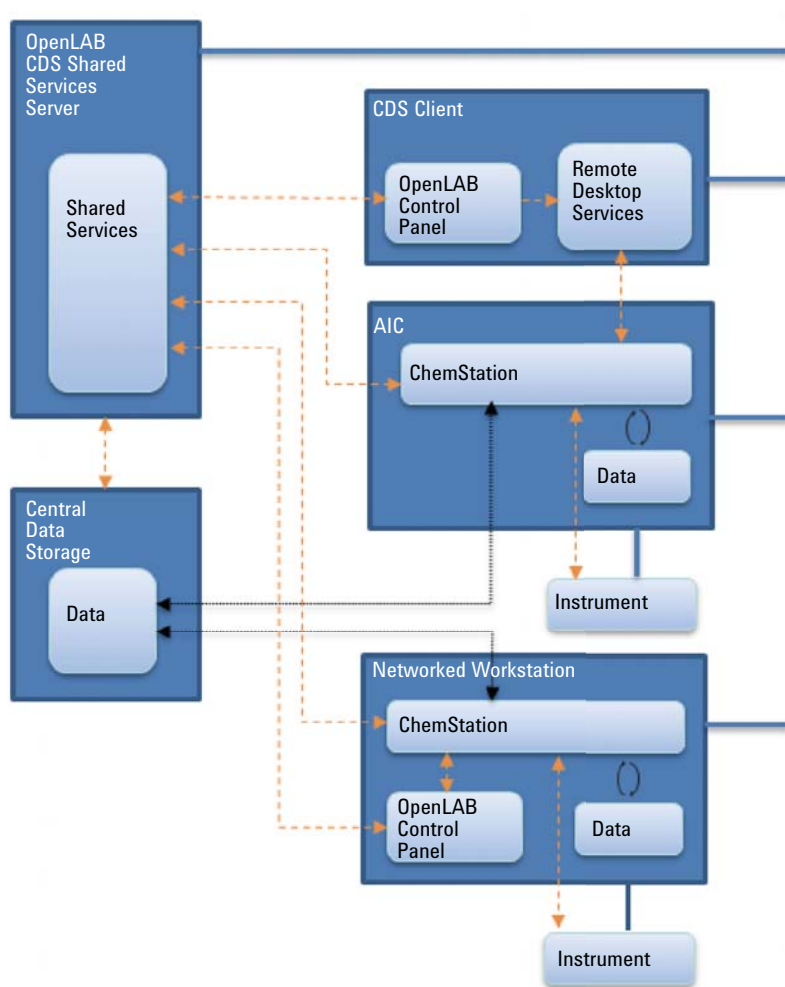
Figure 5   OpenLAB CDS mixed topology

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◀┈┈┈┈┈▶ Data upload and download

◀─ ─ ─ ▶ Logical communication
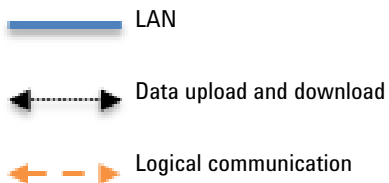
Backward Compatibility During Upgrade

Backward compatibility was introduced in OpenLAB Shared Services A.02.01 and OpenLAB Data Store A.02.01 (corresponds to ChemStation rev. C.01.06). It allows lab operation and minimizes lab downtime during an upgrade by having the existing and the newer version of the data system on the same Networked or Distributed environment. The environment with different versions is to be used only during the upgrade phase. Procedures must be in place so older clients or workstations are not used to access and reprocess data created by newer clients or workstations.

During the upgrade phase, the **Instruments** and **Projects** tabs will be fully functional in the existing revision of the Control Panel. You can start and operate an instrument that was configured and running prior to the upgrade. Administrative tasks such as adding users or changing passwords must be done on the newer revision of the software. No other functionality is supported until the system upgrade is completed.

The following table shows the compatibility between the ChemStation edition with OpenLAB Shared Service Server during an upgrade:

	OpenLAB Shared Services A.02.01	OpenLAB Shared Services A.02.02	OpenLAB CDS Shared Services 2.1
ChemStation C.01.04	Yes with Hotfix OLSSA010405[1]	No	No
ChemStation C.01.05	Yes with Hotfix OLSSA010501	Yes with Hotfix OLSSA010501	No
ChemStation C.01.06	Yes	Yes	No
ChemStation C.01.07	No	Yes	Yes

[1] get latest Hotfixes/Updates from SubscribeNet

The following table shows compatibility between the ChemStation edition with OpenLAB Data Store and OpenLAB Server during an upgrade:

	Data Store A.02.01	Data Store A.02.02	Data Store 2.0	OpenLAB Server 2.1
ChemStation C.01.04	Yes with Hotfix (OLSSA010405)	No	No	No
ChemStation C.01.05	Yes with Hotfix 01 (OLSSA010501)	Yes with Hotfix 01 (OLSSA010501)	No	No
ChemStation C.01.06	Yes	Yes	No	No
ChemStation C.01.07	No	Yes	Yes	Yes

NOTE Different revisions can be used during the upgrade phase. Agilent recommends that installations are on the same software version. Acquisition and data analysis are supported on the same version of software last used for reprocessing, or on a newer version of the software.

Mixed Configuration with ChemStation and OpenLAB CDS 2.1

An environment with an OpenLAB Server 2.1 supports using both OpenLAB CDS 2.1 and ChemStation C.01.07 SR3 clients and AICs.

All instruments are visible on any client or Networked Workstation.

Routine work   During routine work, use the ChemStation clients to access instruments that are controlled by a ChemStation AIC, and use OpenLAB CDS 2.1 clients to access instruments controlled by an OpenLAB CDS 2.1 AIC. The data storage is provided by OpenLAB Server 2.1. Both environments share the same storage.
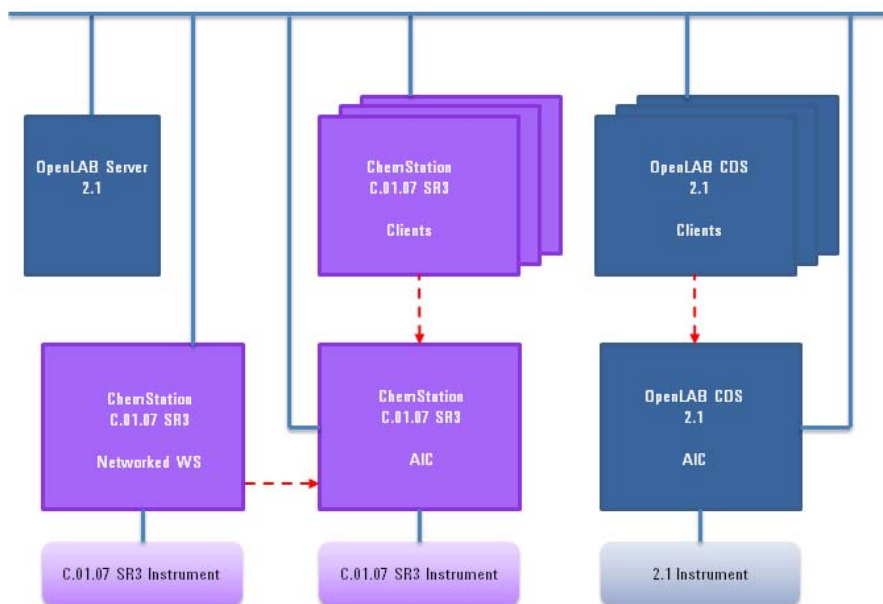
Figure 6   Routine work with ChemStation C.01.07 SR3 and OpenLAB 2.1

Use an instrument structure in the Control Panel that helps you differentiating the instruments.
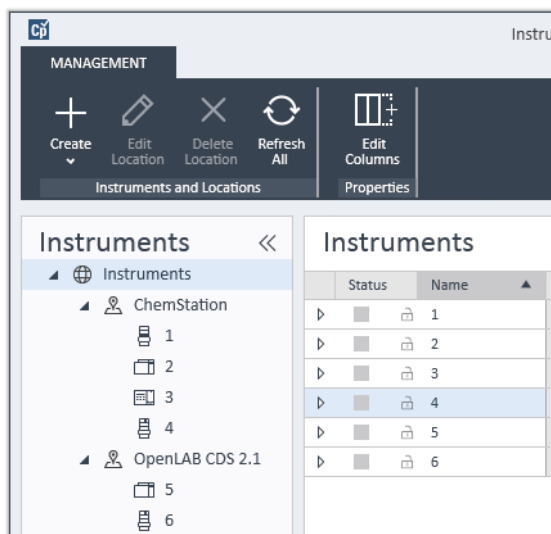
Figure 7   Instrument structure example

Migration   The mixed configuration allows to transfer your acquisition method setpoints from ChemStation systems to OpenLAB CDS 2.1.

1 Configure the same instrument on both ChemStation AIC and OpenLAB CDS 2.1 AIC.

2 Start the instrument from a ChemStation client, and upload the acquisition method setpoints to the instrument. Close the ChemStation (a simple disconnect is not sufficient).

3 Start the same instrument from the OpenLAB CDS 2.1 client, and download the acquisition method setpoints from the instrument. Save with a new method name.

Close the instrument connection before starting it again from a ChemStation client.

CAUTION   Instrument access from different systems

The instrument may become inaccessible

→ Always launch and close instruments from the same system. Do not launch an instrument from ChemStation and close it from OpenLAB CDS 2.1, or vice versa
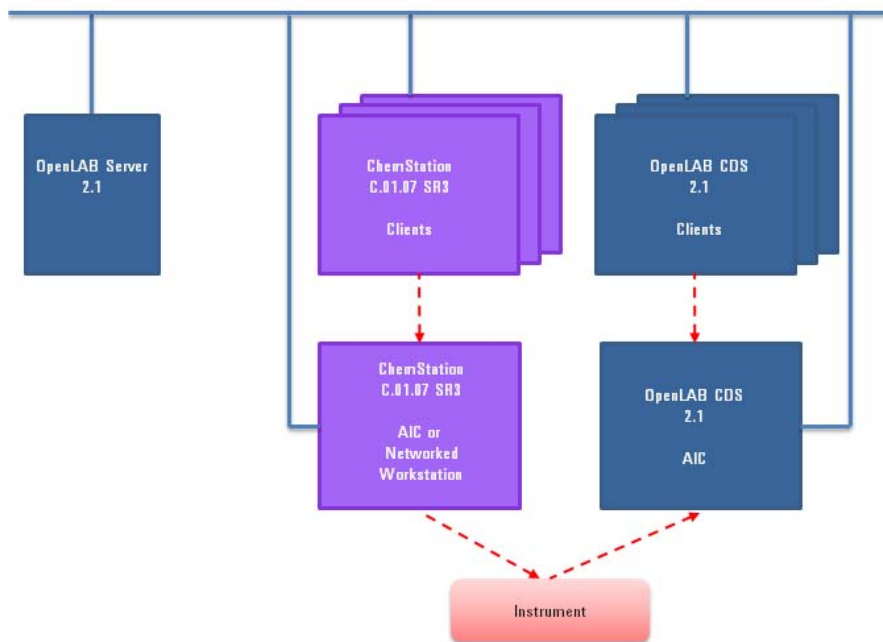
Figure 8   Transfer of method setpoints from ChemStation to OpenLAB CDS 2.1

The transfer is one-way only. After transferring, you can use the ChemStation method on the OpenLAB CDS 2.1 system. You cannot transfer acquisition methods from OpenLAB CDS 2.1 to ChemStation, or process OpenLAB CDS 2.1 data in ChemStation.

For details, refer to the *Migrating from OpenLAB CDS ChemStation Edition to OpenLAB CDS Version 2.1 - Workstation to Workstation* guide.

OpenLAB CDS Licensing

This chapter summarizes the main components and features of Agilent OpenLAB CDS ChemStation Edition, and outlines the licensing strategy for these components and features.

For procedures on how to obtain and install licenses, please refer to the *Licensing* chapter in the respective installation guide.

General Product Structure

OpenLAB CDS ChemStation Edition has been designed as a combination of software modules for instrument control, data acquisition and data analysis (integration, quantification and reporting), automation and customization. Technique-specific single instrument products provide control capabilities for a given separation technique, e.g. for a Gas Chromatograph or Liquid Chromatograph. A single instrument configuration may be expanded by additional software modules (Add-ons).

The sections below describe the product modules. For more information on the product licenses, see "Licensing Scheme" on page 23.

Core module

The core module provides data analysis, automation and customization functions (no instrument control) for the following separation techniques:

• Gas chromatography (GC)

• Liquid chromatography (LC)

• Analog data acquisition with external event protocol (A/D)

• ChemStation only: Capillary Electrophoresis (CE)

Instrument drivers

Technique-specific single instrument drivers provide control capabilities for the separation techniques listed above. By installing multiple instrument drivers, Agilent OpenLAB CDS ChemStation Edition is capable of controlling more than one analytical system, for example, two LCs, two GCs, or an LC and a GC.

The instrument control capability of OpenLAB CDS ChemStation Edition may be expanded by purchasing additional modules to allow mixed technique configurations.

Add-ons

The acquired data is typically two-dimensional ("2D"), that is, by measuring detector response over time. Spectroscopic detectors can deliver three-dimensional ("3D") data, by additionally measuring detector response over a third axis (for example, wavelength or mass range).

For 2D data, OpenLAB Data Analysis provides a single data analysis product for LC and GC data from both ChemStation and EZChrom.

For 3D data, the following modules permit analysis and reporting:

- OpenLAB CDS 3D UV Add-on
- ChemStation only:
  - OpenLAB CDS ChemStation CE 3D MS Add-on
  - OpenLAB CDS ChemStation LC 3D MS Add-on
  - OpenLAB CDS ChemStation LC/MS Deconvolution and Bioanalysis

License Types

The licensing strategy introduced with OpenLAB CDS ChemStation Edition helps you use your licenses more effectively. In contrast to B.04.xx ChemStation revisions, licenses for instrument control, drivers and add-ons are *floating licenses*. Any instrument that starts up requests the necessary licenses from license management, and when the instrument is closed, it returns the licenses. Therefore, you only need licenses to cover the maximum number of concurrently running instruments rather than one for each installed instrument. License management is accessed via the OpenLAB Control Panel.

Licenses are of two types:

- *Counted licenses* are consumed once for each associated software or instrument module.

- *Shared licenses* can be shared per PC or instrument. For example, the Agilent OpenLAB CDS core license is a shared license, which means you need only one license per PC, no matter how many ChemStation or EZChrom instances you run on it.

There is a 60-day Startup License for the entire OpenLAB CDS ChemStation Edition installation. The expiration period starts with the installation.

Licensing Scheme

Figure 9 on page 24 shows the licenses for OpenLAB CDS ChemStation Edition in the different installation scenarios:

- OpenLAB CDS Workstation
  - One OpenLAB CDS ChemStation Edition core license
  - Instrument and Add-on licenses as needed; you can run up to four 2D LC or GC instruments on the same workstation.
- Networked Workstation
  - One OpenLAB CDS Shared Services server license
  - One OpenLAB CDS ChemStation Edition core license for each Networked Workstation; you can connect multiple Networked Workstations to the OpenLAB CDS Shared Services server.
  - Instrument and Add-on licenses as needed; you can run up to four 2D LC or GC instruments on the same Networked Workstation.
- Distributed System
  - One OpenLAB CDS Shared Services server license
  - One OpenLAB CDS ChemStation Edition core license and AIC-Add-on license for each Agilent Instrument Controller (AIC) machine. You need on AIC license for each AIC connected to the server.
  - Instrument and Add-on licenses as needed; you can run up to ten 2D LC or GC instruments on the same AIC.

To control instruments from vendors other than Agilent, an Agilent Instrument Control License is required in addition to the driver license for the other vendor's instrument. A list of driver licenses that are available for instruments from other vendors can be found in the *Supported Instruments and Firmware Guide.*

For Agilent instruments, Agilent Instrument Control licenses and Agilent Driver licenses are always bundled together. They are shown as one product license in the License Management. You can see these items as separate lines in the license file itself only.
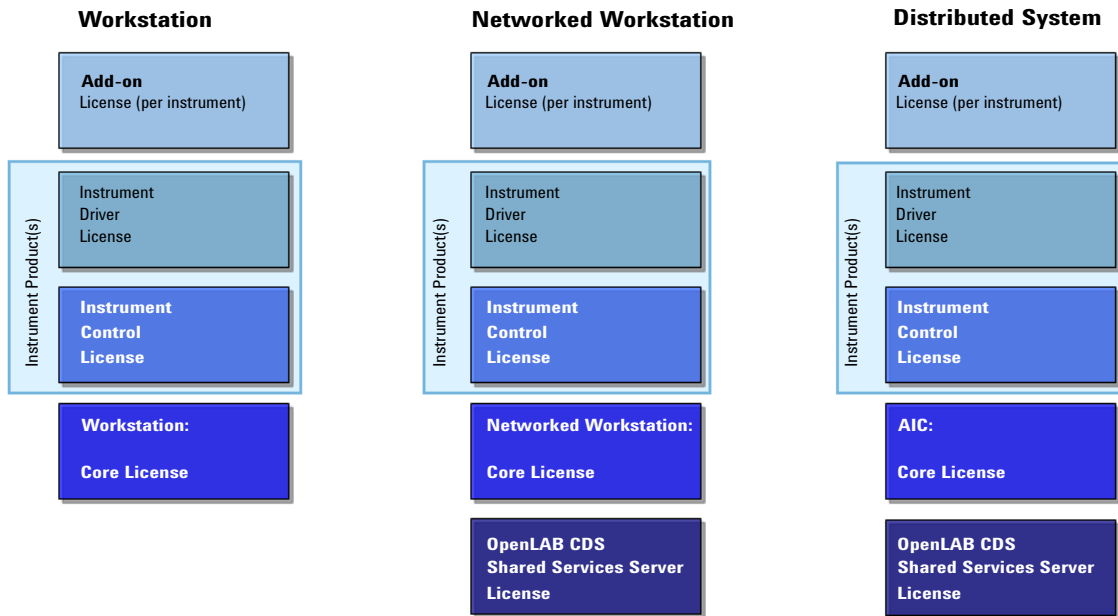
Figure 9   Licensing schema

Main Features for Licensing

The following table shows the main features that have to be licensed. If you purchase an Agilent product, the licenses for several features are already included by default. The following tables show the license features associated with Agilent products.

Table 2   Main license features

License Feature	License Type	Required For	Comment
AgilentOpenLABCDSChemStation	Shared per PC	All ChemStation instances	ChemStation full core license Supports up to four instruments with the LC full driver or GC full driver package (including CE, ADC, CE/MS or LC/MS).
AgilentOpenLABCDSChemStationVL	Shared per PC	1220/1260 Infinity LC and 7820 GC	ChemStation VL core license Sufficient to control one 1220/1260 Infinity LC (selected modules only), 7820 GC, 490 micro GC or 790 micro GC.
AgilentOpenLABCDSAICAddon	Shared per PC	All AICs with ChemStation or EZChrom instances	This feature turns a core license into an AIC-core license.
AgilentOpenLABCDSCSDAOnly	Shared per PC	ChemStation "classic" Data Analysis	License for the "classic" data analysis in OpenLAB CDS ChemStation Edition (required for "DA Only" workstations).

Table 3   Shared Services license features

License Feature	License Type	Required For	Comment
AgilentOpenLABSharedServices	Counted	Only for Shared Services running on a separate server	The OpenLAB Control Panel does not need an extra license. Also Shared Services running on an OpenLAB CDS Workstation do not need an extra license.

Table 4 Driver license features

License Feature	License Type	Required For	Comment
AgilentInstrumentControl	Counted	Only online instances	The license is consumed whether OpenLAB CDS can connect to the instrument or not. The instrument control license comes as part of the driver product.
AgilentDriversLC **AgilentDriversGC** **AgilentDriversADC**	Counted	Only online instances	The license is consumed whether OpenLAB CDS can connect to the instrument or not.
AgilentDriversLCVL **AgilentDriversGCVL**	Counted	Only online instances	Drivers for OpenLAB CDS VL are not available separately. They are always bundled with an instrument or with the OpenLAB CDS VL core license. See "VL License Features" on page 33. These license features can be combined with a OpenLAB CDS VL core license or a full core license.
AgilentLCCoreVL	Counted	Only online instances	This driver comes with the OpenLAB CDS VL version and allows to control one 1260 Infinity Instrument. See "VL License Features" on page 33.
AgilentDriversCE **AgilentDriversMS**	Counted	Only online instances	The license is consumed whether ChemStation can connect to the instrument or not.
VarianCP_4900	Counted	Only online instances	The license is consumed whether OpenLAB CDS can connect to the instrument or not.
Other drivers	Counted	Only online instances	There are a several driver license features available for instruments of vendors other than Agilent. See Appendix for a complete list.

Table 5   Add-on license features

License Feature	License Type	Required For	Comment
AddOn3DUV	Shared (per instrument)	Online and offline instances (only if 3D option is selected in the Setup Wizard.)	The license is optional. If the license is not available, spectra analysis is disabled in the software.
AgilentAddOnMSDataAnalysis	Shared (per instrument)	Online and offline instances.	If MS is configured in ChemStation, the MS Data Analysis Add-on is mandatory.
AgilentAddOnMSDeconvolution	Shared (per instrument)	Online and offline instances (only if Bioanalysis option is selected in the Setup Wizard).	This license is only mandatory for LC/MS with Deconvolution in ChemStation.

License Features Associated with Agilent OpenLAB CDS Products

When you purchase an Agilent OpenLAB CDS product, several license features are included by default.

Table 6 License Feature Associated with Agilent OpenLAB CDS Products

Description	License Feature(s) in OpenLAB CDS
OpenLAB CDS Instrument Driver for 490uGC and 790 uGC	1 x VarianCP_4900 1 x AgilentInstrumentControl
OpenLAB CDS ChemStation Edition Workstation	1 x AgilentOpenLABCDSChemStation
Right-to-copy OpenLAB CDS ChemStation Edition Workstation	1 x AgilentOpenLABCDSChemStation
OpenLAB CDS ChemStation Edition Workstation VL	1 x AgilentOpenLABCDSChemStationVL 1 x AgilentLCCoreVL
OpenLAB CDS ChemStation AIC	1 x AgilentOpenLABCDSChemStation 1 x AgilentOpenLABCDSAICAddon
OpenLAB CDS Shared Services Server Software	1 x AgilentOpenLABSharedServices
OpenLAB CDS ChemStation Edition LC Upgrade	1 x AgilentOpenLABCDSChemStation 1 x AgilentInstrumentControl 1 x AgilentDriversLC 1 x AddOn3DUV
OpenLAB CDS ChemStation Edition GC Upgrade	1 x AgilentOpenLABCDSChemStation 1 x AgilentInstrumentControl 1 x AgilentDriversGC
OpenLAB CDS ChemStation Edition CE Upgrade	1 x AgilentOpenLABCDSChemStation 1 x AgilentInstrumentControl 1 x AgilentDriversCE 1 x AddOn3DUV
OpenLAB CDS ChemStation Edition LC-MS Upgrade	1 x AgilentOpenLABCDSChemStation 1 x AgilentInstrumentControl 1 x AgilentDriversLC 1 x AddOn3DUV 1 x AgilentDriversMS 1 x AgilentAddOnMSDataAnalysis 1 x AgilentAddOnMSDeconvolution
OpenLAB CDS 3D UV Add-on	1 x AddOn3DUV

Table 6   License Feature Associated with Agilent OpenLAB CDS Products

Description	License Feature(s) in OpenLAB CDS
OpenLAB CDS ChemStation Edition CE 3D MS Add-on	1 x AgilentDriversMS 1 x AgilentAddOnMSDataAnalysis
OpenLAB CDS ChemStation Edition LC 3D MS SQ Add-on	1 x AgilentDriversMS 1 x AgilentAddOnMSDataAnalysis
OpenLAB CDS ChemStation Edition LC/MS Deconvolution Bioanalysis	1 x AgilentAddOnMSDeconvolution
OpenLAB CDS ChemStation Edition LC Dissolution	1 x AgilentAddOnCSLCDissolution
OpenLAB CDS ChemStation Data Analysis Only	1 x AgilentOpenLABCDSCSDAOnly
OpenLAB CDS Instrument Control License	1 x AgilentInstrumentControl
OpenLAB CDS Instrument Driver for Agilent GC	1 x AgilentInstrumentControl 1 x AgilentDriversGC
OpenLAB CDS Instrument Driver for Agilent A/D	1 x AgilentInstrumentControl 1 x AgilentDriversADC
OpenLAB CDS Instrument Driver for Agilent GC VL	1 x AgilentInstrumentControl 1 x AgilentDriversGCVL
OpenLAB CDS Instrument Driver for Agilent LC	1 x AgilentInstrumentControl 1 x AgilentDriversLC
OpenLAB CDS Instrument Driver for Agilent CE	1 x AgilentInstrumentControl 1 x AgilentDriversCE 1 x AddOn3DUV
OpenLAB CDS Instrument Driver for Agilent LC VL	1 x AgilentInstrumentControl 1 x AgilentDriversLCVL
OpenLAB CDS Waters Acquity LC Driver	1 x AgilentDriversWatersAcquity

Licensing Examples

Example 1: Workstation (with ChemStation full core license)

Table 7   Purchased products and associated license features

Quantity	Product	License Feature
1	OpenLAB CDS ChemStation Workstation	AgilentOpenLABCDSChemStation
1	OpenLAB CDS Instrument Driver for Agilent LC	AgilentInstrumentControl AgilentDriversLC
1	OpenLAB CDS Instrument Driver for Agilent CE	AgilentInstrumentControl AgilentDriversCE AddOn3DUV

A ChemStation set up with the above set of licenses allows running a 2D LC and a CE instrument. If a 3D LC is started, the 3D-UV license required for the CE is consumed and the CE will not start:

• No license is required for Shared Services with a standalone workstation.

• An LC ChemStation with 3D option enabled is started. The following licenses are consumed: 1x OpenLAB CDS ChemStation; 1x Instrument Control; 1x LC Driver; 1x Add-on 3D UV.

• On the same PC, a CE ChemStation should be started. ChemStation would require additionally 1 Instrument Control, 1 CE Driver and 1 Add-on 3D UV. The ChemStation fails to start, because no Add-on 3D UV license is available.

Example 2: Networked Workstation

Table 8   Purchased products and associated license features

Quantity	Product	License Feature
1	OpenLAB CDS Shared Services server	AgilentOpenLABSharedServices
2	OpenLAB CDS ChemStation Workstation	AgilentOpenLABCDSChemStation
2	OpenLAB CDS Instrument Driver for Agilent LC	AgilentInstrumentControl AgilentDriversLC
1	OpenLAB CDS 3D UV Add-on	AddOn3DUV

- The OpenLAB CDS Shared Services server license is consumed when the Shared Services are started on the server.

- On PC1, ChemStation with 3D option is started. The following licenses are consumed: 1x OpenLAB CDS ChemStation; 1x Instrument Control; 1x LC Driver; 1x Add-on 3D UV.

- On PC2, a second ChemStation application is started. The 3D option is not available, as the 3D UV Add-on license has already been consumed on PC1. The following licenses are consumed on PC2: 1x OpenLAB CDS ChemStation; 1x Instrument Control; 1x LC Driver.

Example 3: Distributed System

Table 9   Purchased products and associated license features

Quantity	Product	License Feature
1	OpenLAB CDS Shared Services server	AgilentOpenLABSharedServices
1	OpenLAB CDS ChemStation AIC	AgilentOpenLABCDSChemStation AgilentOpenLABCDSAICAddon
6	OpenLAB CDS Instrument Driver for Agilent GC	AgilentInstrumentControl AgilentDriversGC
2	OpenLAB CDS Instrument Driver for Agilent LC	AgilentInstrumentControl AgilentDriversLC
2	Add-on	AddOn3DUV

- The OpenLAB CDS Shared Services server license is consumed when the Shared Services are started on the server.
- On an AIC machine, six GC ChemStations are remotely started. The following licenses are consumed: 1x OpenLAB CDS ChemStation; 1x AIC Add-on; 6x Instrument Control; 6x GCDriver.
- On the same AIC machine, two LC ChemStations with 3D option enabled are remotely started. No additional ChemStation or AIC Add-on licenses are required. The following licenses are consumed: 2x Instrument Control; 2x LC Driver; 2x Add-on 3D UV.

VL License Features

With an OpenLAB CDS VL core license, you can control one LC or GC instrument without purchasing additional instrument driver licenses.

OpenLAB CDS VL licenses are supported only for standalone workstation scenarios. They do not run on Networked Workstations or Distributed Systems. LC-MS configurations are not possible with an OpenLAB CDS VL system, neither is an integration with OpenLAB ECM.

The 3D UV Add-on always requires the full AddOn3DUV (M8360AA) license.

Driver licenses for OpenLAB CDS VL are not available separately. They are either bundled with the respective instruments or with the OpenLAB CDS VL core license. Depending on the instrument type chosen when creating the instrument the following applies:

- *Agilent LC Core*: Driver bundled with the OpenLAB CDS VL core license. You can run one full 1260 Infinity LC Instrument with selected modules (for details, see *Supported Instruments and Firmware Guide*).
- *Agilent 1220 LC System*: Driver bundled with 1220 Infinity LC instruments. You can run one Agilent 1220 Infinity LC system, including individual Agilent LC modules except modular pumps (for details, see *Supported Instruments and Firmware Guide*).
- *Agilent 7820 GC system*: Driver bundled with the 7820 GC instrument

Example: Pure VL configuration

Table 10   Purchased products and associated license features

Quantity	Product	License Feature
1	OpenLAB CDS ChemStation Workstation VL	AgilentOpenLABCDSChemStationVL
1	Agilent 1220 LC	AgilentInstrumentControl AgilentDriversLCVL
1	Agilent 7820 GC	AgilentInstrumentControl AgilentDriversGCVL
1	OpenLAB CDS 3D UV Add-on	AddOn3DUV

- No license is required for OpenLAB CDS Shared Services with a standalone workstation.

- An Agilent 1220 LC with 3D option enabled is started. The following licenses are consumed: 1x ChemStation VL; 1x Instrument Control; 1x 1220 LC Driver for OpenLAB CDS VL; 1x Add-on 3D UV.

- On the same PC, an Agilent 7820 GC is started. As the ChemStation core license is shared, no additional ChemStation core license is required. The following licenses are consumed: 1x Instrument Control; 1x 7820 GC Driver for OpenLAB CDS VL.

Flexera License Manager

The Shared Services use a 3rd party tool called *FlexNet Producer Suite* from Flexera to manage the licenses. The required components are installed by default together with OpenLAB CDS Shared Services. The license server can be the local PC or a remote Shared Services server.

License Management in Shared Services requires an additional Windows service to be running. This Windows service is called *Agilent OpenLAB License Server*. This service must be running on the server where you manage your licenses. Each time you start an instrument, the instrument requests licenses from the License Server service; therefore, you can only start an instrument if this service is running.

License Upgrade

If you are upgrading from an older version, you will need to upgrade your licenses in SubscribeNet prior to upgrading to the next version of OpenLAB CDS ChemStation Edition. We strongly recommend upgrading your 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 Log into the Agilent Electronic Software and License Delivery (https://agilent.subscribenet.com/).

2 Navigate to **Manage Licenses by Host**, and search for the machine hosting your workstation. Alternatively, select the machine from the drop-down list.

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 workstation licenses.

3 Click **Upgrade All** to upgrade all licenses on this host to the most recent version. Confirm the upgrade on the next screen.

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

4 Put the new license file on your system.

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

In systems that include a server, you only need to provide the license file once, as licenses are managed on the central OpenLAB CDS Shared Services server.

Windows Server Licensing

OpenLAB CDS ChemStation Edition Distributed Systems are taking advantage of Microsoft Remote Desktop Services. In addition to the Client Access Licenses, this technology requires additional licenses called Remote Desktop Services Client Access License (RDS CAL).

Client Access License (CAL)

A Client Access License permits client computers to connect to Microsoft server hosting shared resources.

Remote Desktop Services CAL (RDS CAL)

The OpenLAB CDS ChemStation Instrument Controller (AIC) software uses the Remote Desktop Services (RDS) role in Windows Server. Using this role requires a Windows Server Remote Desktop Services CAL (RDS CAL), in addition to the Windows Server Client Access License (CAL), to access any application or graphical user interface remotely hosted by Windows Server.

You need at least one Remote Desktop Services Licensing Server deployed and activated in your environment. During a grace period of 120 days no license server is required. At the end of the grace period, remote connections will be refused.

Both the Client Access License (CAL) and Remote Desktop Services CAL (RDS CAL) can apply to a device or to a user.

For more information about CAL and RDS CAL requirements, see:

- Client Access Licenses and Management Licenses
  (http://www.microsoft.com/licensing/about-licensing/client-access-license.aspx)

- Understanding Remote Desktop Licensing
  (http://technet.microsoft.com/en-us/library/cc772298.aspx)

- Licensing Windows Server 2012 R2 Remote Desktop Services
  (http://download.microsoft.com/download/3/D/4/3D42BDC2-6725-4B29-B
  75A-A5B04179958B/Licensing-Windows-Server-2012-R2-RDS-and-Desktop-
  Apps-for-RDS.pdf)

  Client Access Licenses and Management Licenses
  (http://download.microsoft.com/download/3/D/4/3D42BDC2-6725-4B29-B
  75A-A5B04179958B/Licensing-Windows-Server-2012-R2-RDS-and-Desktop-
  Apps-for-RDS.pdf)

Security and Data Integrity

This chapter explains the built-in security and how it complies with the FDA 21 CFR Part 11. It also explains the system security features provided by OpenLAB CDS Shared Services.

Security

In OpenLAB CDS, user level security is managed by the OpenLAB Control Panel. Folder level security is managed by the ChemStation Administration Tool.

The OpenLAB Control Panel functionality related to security includes the following (see "OpenLAB Control Panel" on page 39 for details):

• System Activity Log

• Selection of authentication provider

• User Management

• Security Policy

Data Integrity

The result data is stored either locally or in a central data repository, depending on the installed OpenLAB CDS configuration. If you store the data in the local file system, you must manually back up the data. With ChemStation, you can reach full compliance with 21 CFR Part 11 together with OpenLAB ECM, OpenLAB Data Store, or OpenLAB Server. These systems store data in compliance with 21 CFR Part 11. They provide secure data storage with access control and an audit trail. Data files are versioned to ensure data integrity and traceability. In addition, OpenLAB ECM and OpenLAB Server provide electronic signatures allowing users to sign off on data. The systems can be configured to automatically back-up and archive data on a regular basis.

For more information on ChemStation with central data storage, refer to the *OpenLAB CDS ChemStation Edition with Central Data Storage User's Guide*.

2

OpenLAB Control Panel

Using the OpenLAB Control Panel, you can access OpenLAB CDS Shared Services control features such as security policy, central configuration, or lab status at a glance. These features are described in more detail in this chapter.

Agilent Technologies

Instrument Management / Lab Status at a Glance

The **Instruments** view in OpenLAB 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 (including color-coded state, current run, and run status)

The status is stored and constantly updated in the Shared Services database in which the instrument is stored. It can be monitored by every OpenLAB Control Panel connected the corresponding server.

• Instrument Name

• Instrument location

• Instrument type

• Last change of configuration

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

You can create a tree of different locations in the OpenLAB 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.

| NOTE | Mixed scenarios with ChemStation and EZChrom instruments are not supported. |

Depending on your privileges in OpenLAB CDS ChemStation Edition, 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 on the local PC or AIC, but you access the configuration tool from the OpenLAB Control Panel.

- Launch the instrument online or offline.

  Workstation and Networked Workstation: As the instrument configuration is stored on the local PC, you only launch instruments that are configured on this PC.

  Distributed System: As the instrument configuration is stored on an AIC, you can launch all 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 54).

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, refer to the *Licensing* chapter in the respective installation guide.

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 22).
- **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.

System Activity Log

The System Activity Log allows you 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 events of a specific type, in a specific time range, created by a specific user, or containing a specific description only.

The following types of events are recorded:

- System (e.g. Control Panel specific events)
- Instrument Management (e.g. Adding instruments)
- Instrument (e.g. instrument specific error messages)
- Instrument Controller (e.g. adding a new Networked Workstation or AIC)
- User (e.g. adding a new user or changing user privileges)
- Group (e.g. adding a new user group or changing group privileges)
- Security (e.g. successful and unsuccessful login events)
- License (e.g adding a new 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. ChemStation records these events in its own environment but also sends the events to the System Activity Log. 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.

| NOTE | By default, activity logging is disabled. To enable it in OpenLAB Control Panel, you must have the **Edit activity log properties** privilege. Once enabled, activity logging cannot be disabled again. |

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

Authentication providers are used to prove the identity of users that log in to the system. OpenLAB CDS Shared Services support the following Authentication providers:

• **None**

In this mode, no login screen is shown when you access the OpenLAB Control Panel. The user is automatically logged in to the application with security disabled. All log entries record the user as "Anonymous". With the authentication provider **None**, the Security Policy and User Management nodes are unavailable in OpenLAB Control Panel.

| NOTE | With the authentication provider **None**, any activity logs will display a generic **System** operator with no additional identification. This is not recommended for regulated environments. |

• **Internal**

In this mode, the user's credentials are created and stored in the OpenLAB CDS Shared Services database. You are asked to create an administrator account for OpenLAB CDS Shared Services before setting up other users. This is the only mode in which you can create new users within the system.

• **Windows Domain**

You import existing Windows users into OpenLAB CDS Shared Services. The authentication is done either by a Windows Active Directory domain or NT 4.0 Domain within the Enterprise. Shared Services only use the identity and password of the mapped users; roles and privileges for OpenLAB CDS are still configured with the Shared Services.

• **ECM**

In this mode, an OpenLAB ECM system is responsible for authentication. When you start the OpenLAB Control Panel, the application will prompt for ECM credentials to validate a user. You must choose an existing ECM user as an administrator for the Shared Services. The Search function helps you to find specific ECM users. The Shared Services only use the identity and password of the mapped users; roles and privileges for OpenLAB CDS are still configured with the Shared Services.

Setting the Authentication Provider and Storage Location

1 Open OpenLAB Control Panel from the OpenLAB Control Panel shortcut on the desktop, or go to **Start > All Programs > Agilent Technologies > OpenLAB > OpenLAB Control Panel**.

2 From the navigation pane, select **Administration > System Configuration**.

3 In the **System Configuration** toolbar, select **Edit System Settings**.
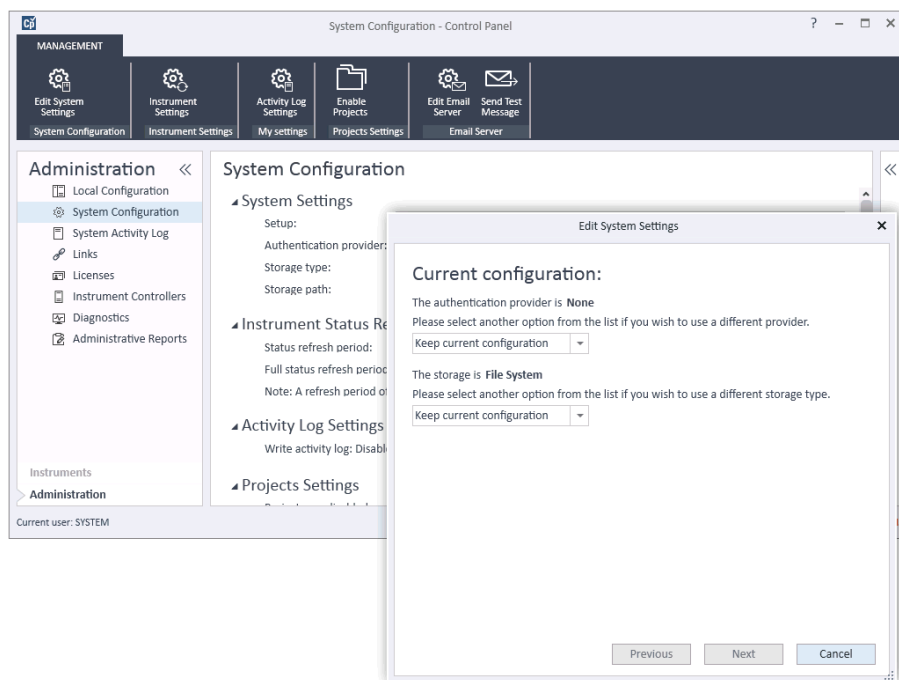
Figure 10 **Edit System Settings** dialog in the OpenLAB Control Panel

4 In the **Edit System Settings** window, select your authentication provider from the drop-down list.

If you installed a server, the **Internal** authentication provider is automatically configured during the installation. If required, you can change the authentication provider to **Windows domain**.

5 Select your storage provider from the drop-down list.

The storage type **Content Management** is available only if OpenLAB Server has been deployed.

6 Select **Next**.

7 Select a user to administrate the system.

    a If you selected **Internal** as an authentication provider:

        • Select **Create Account**.

        • In the **Create Administrator Account** dialog box, enter a **Name** and a **Password**.

    b If you selected **Windows Domain** as an authentication provider:

        • Select the check box to activate the input fields.

        • Enter a **Domain**, **User**, and **Password**.

        • Select **Select Account**.

        • Enter a search string.

        • In the **Search Users** dialog box, select **Search** to view a list of users.

        • Select a user.

    c If you selected **ECM** as an authentication provider:

        • Provide the **ECM Server URL** and enter the ECM user credentials.

        • Select **Select Account**.

        • Enter a search string.

        • In the **Search Users** dialog box, select **Search** to view a list of users.

        • Select a user.

8 Select **OK**.

9 Select **Next**.

10 Review your settings and select **Apply**.

Security Policy

Once an authentication provider is configured, security policy is enabled and allows you to configure, for example, an inactivity timeout or password policies.

With the authentication provider **Internal**, you can set all of the parameters described below in the OpenLAB Control Panel. With an external authentication provider (e.g. Windows Domain), you can only set the inactivity time in the OpenLAB Control Panel; all other parameters are defined by the external system.

For more information on 21 CFR Part 11 requirements for ChemStation, refer to the *OpenLAB CDS ChemStation Edition with Central Data Storage User's Guide*.

Table 11 Security Policy settings

Setting	Description	21 CFR Part 11 Requirements
Minimum password length	If users change their passwords, they must choose a password with at least the given number of characters. The default setting is *5*. Only available for authentication provider **Internal**.	You should require a minimum password length of at least 5 characters.
Password expiration period (days)	The default value is 30 days. When the user tries to log in after this period of time, the system will ask him to change the password. The expiration period starts with the last password change or with the creation of a user with a new default password. Only available for authentication provider **Internal**.	You should use an expiration period of 180 days or less.
Maximum unsuccessful login attempts before locking account	If a user tries to log in with invalid user credentials a number of times, the user is locked out of the system for a certain period of time (**Account lock time**, see below). Login is impossible, even with valid user credentials. You can define the number of allowed login attempts. The default setting is *3*. Only available for authentication provider **Internal**.	You should limit the number of allowed login attempts to three.
Account lock time (minutes)	Once a user has exceeded the maximum number of allowed unsuccessful login attempts, this is the amount of time that must pass before he can try again. The default setting is *5 min*. Only available for authentication provider **Internal**.	
Inactivity time before locking the application	If the OpenLAB Control Panel is inactive for this amount of time, the user interface will be locked. This setting is also used to set the time-based session lock in ChemStation. The default setting is *10 min*. Set the value to zero to never lock.	
Single Sign-On	With Single Sign-On enabled, the user will not see the OpenLAB Control Panel login screen. Only available for authentication provider **Windows Domain**.	

User Management

Once an authentication provider is set, you can configure Groups and Roles.

Each user can be member of multiple groups. You must assign a specific role 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.

The roles are equipped with numerous specific privileges which define what the users are allowed to view or do in OpenLAB Control Panel and in OpenLAB CDS.

Users

The following information is required if you create a new internal user:

Table 12 User Credentials

Value	Description	Mandatory
Name	Username to log in to the system. **NOTE** The following characters are not allowed as part of a username: < > : " / \ | % * ? ' °	Yes
Description	Additional information about the user (e.g. department, function etc.)	No
Password	Password for the user; minimum password length is defined in the Security Policy.	Yes
Email address	Email address of the user.	No
Full name	The full (long) name of the user.	No
Contact Information	General contact information (e.g. telephone number, pager etc.)	No

Table 12 User Credentials

Value	Description	Mandatory
Password never expires	The password will never expire, even if a password expiration period is set in the security policy.	No
Account is disabled	Select the check box to disable an account. Users with disabled accounts cannot log in any more. Accounts may be automatically disabled after too many failed login attempts. If an account is disabled, a corresponding message is displayed instead of the check box. After a given time (see **Account lock time** in the **Security Policy** settings), the account is automatically enabled again.	No
User cannot change password	Flag that indicates whether the user can change his own password. The flag is false by default (that is, users CAN change their passwords).	No
User must change password at next login	If set to true, the user has to change his password at the next login. The flag is automatically set to false after the user has changed the password successfully. The flag is true by default for new users.	No
Group Membership	Assign the user to the relevant groups.	
Role Membership	Assign roles directly to the user.	

When using an external authentication provider (Windows Domain or ECM), the OpenLAB Control Panel allows you to search and import the user into the application. In the OpenLAB Control Panel, you can manage the roles for those external users, but not the actual user credentials such as user name and password. If you want to remove an external user, you delete the user in the OpenLAB Control Panel. The user continues to exist in the external authentication system.

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 ChemStation Edition, 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 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 54). 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 54). 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.

Table 13 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 level.

Specific Roles for Individual Instruments or Projects

By default, the roles of users or groups are globally set for all locations or instruments. The role settings are inherited from the root node **Instruments**. In order to assign a different role to a user or group for one specific node, you can deselect the **Inherit privileges from parent** check box in the **Edit Privileges** dialog for the required node. 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.

Administrative roles are always set globally.

3

OpenLAB CDS Shared Services Server

This chapter describes the OpenLAB Shared Services Maintenance tool.

Agilent Technologies

Shared Services Maintenance

The Shared Services Maintenance tool helps managing the system. It is automatically installed with your OpenLAB software.[1]

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

1 To start the application, go to **Start > All Programs > Agilent Technologies > OpenLAB SharedServices > Shared Services Maintenance**.
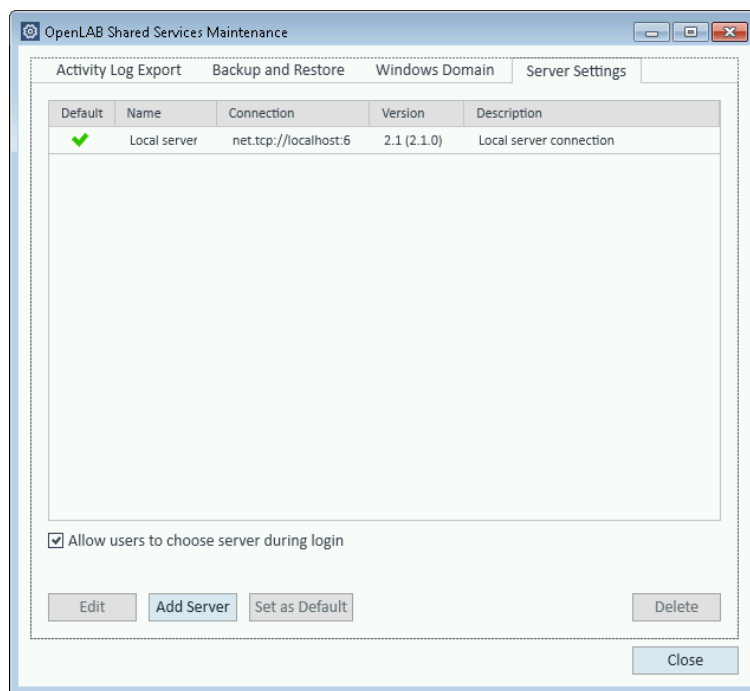
Figure 11 OpenLAB Shared Services Maintenance (for example with **Server Settings** tab selected)

[1] If you upgrade from OpenLAB CDS ChemStation Edition C.01.07, C.01.07 SR1, or C.01.07 SR2, the tool is called OpenLAB Server Utility.

Exporting and Purging Log Entries

For Workstations up to C.01.07 SR2: Activity log databases can become large over time and affect performance of activity log related operations. Use the **Export** and **Purge** functions on the **Activity Log Export** tab to export the activity log entries to an XML file and purge them from the Activity Log database.

This export can only access logs that are stored on the computer where you are using the **Shared Services Maintenance** program.
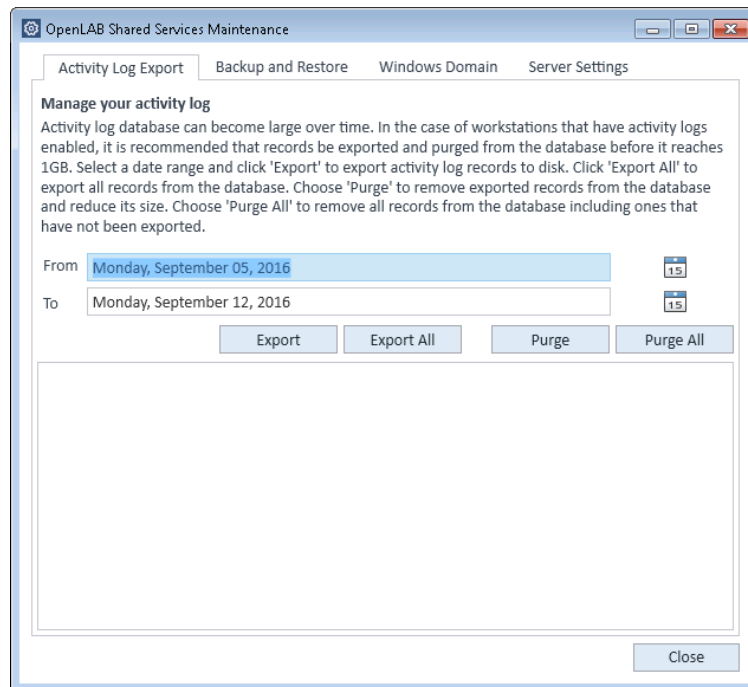

Figure 12   Activity Log Export tab

Export current activity log for a workstation

1 Access the **Shared Services Maintenance** program that is installed on the server.

2 Specify a date range, and click **Export.**

Export an archived activity log for a workstation

During an upgrade of a standalone workstation, if the size of the Activity Log database is larger than 1 GB, the installer will create a new file. The previous Activity Log database then becomes the archived Activity Log database.

1 Access the **Shared Services Maintenance** program that is installed on the workstation.

2 Select **Export from archived activity log database**.

3 Browse for and select the archived database.

4 Click **Export**.

During the export or purge, the OpenLAB Control Panel is disconnected from the server. Agilent recommends that you notify all users before beginning an export.

Using Backup and Restore Functions

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

These functions are supported by the following database types:

• SQL Server Express or Compact

• PostgreSQL

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

Backup

Backup options offered by the utility depend on the SQL server edition installed on the system.

When using SQL Server Compact (installed on workstations), only a *full* database backup is allowed. This is a direct file copy of the existing database files used for the workstation.

When using SQL Server Express (installed with a Distributed System), you have the option to perform both full and incremental (transaction log) backups.

To perform a backup:

1 Specify the backup directory and retention time.

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

2 Click **Backup**.

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

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

3 Select the type of backup.

> **NOTE**   For an SQL Server, backups are grouped into related sets, where each set contains a single full backup and all the incremental backups based on it.

For an SQL Server, a new backup file is created for each month regardless of the method selected.

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

Restore

Restore operations behave slightly different depending on what version of SQL Server you are using.

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

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

When restoring SQL Server Express, or compact database backups for client or server systems, you will restore to the selected backup in the list.

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

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

This message will not display for restore operations with an SQL Server Compact (installed on workstations).

Configuring Access to Windows Domain

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

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

This feature can only access credentials that are stored on the computer where you opened the Shared Services Maintenance program.
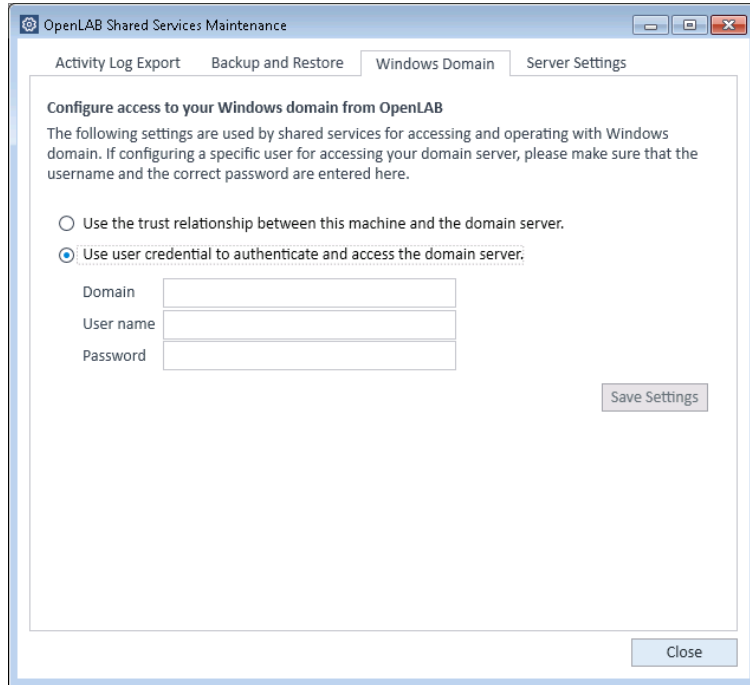
Figure 13   **Windows Domain** tab with specific user credentials

1 Choose the **Windows Domain** tab.

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

Managing Server Settings

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

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

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

In a workstation configuration, there is typically one server connection so this feature is not used.

1 Select the **Server Settings** tab.

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

For workstation installations, by default there is one entry for the local OpenLAB CDS Shared Services server. For distributed or networked workstation installations, there is a second entry for the central OpenLAB CDS Shared Services server (default).

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

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

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

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

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

Maintenance Procedures

Update Database Statistics

To maintain optimal database performance, periodically update the Shared Services server database statistics. These statistics are used by the database engine to determine the most optimal way to execute queries.

You need to update statistics for the OLSharedServices database. If a custom database name was chosen during installation, use the correct name from your installation notes.

Procedures for PostgreSQL Database

For PostgreSQL database, these procedures must be performed on a regular basis. The frequency depends on the usage of the system. As a guideline, you should at least do this every time a full backup is taken.

Updating Statistics Using the Maintenance Wizard

1 Start PostgreSQL pgAdmin, connect as the database administrator, and select the database you want to update the statistics. The default database administrator user name is 'postgres' and the default password is an empty string (no characters).

2 Right-click the database and select **Maintenance...**. The following form is displayed.
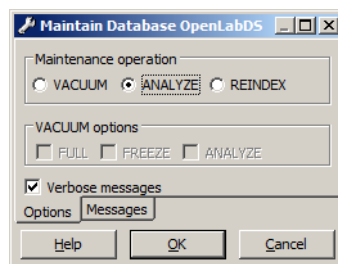
Figure 14 Maintain Database

3 Choose **ANALYZE**, and click **OK** to analyze the database.

Additional Maintenance for PostgreSQL Database

PostgreSQL supports some additional maintenance commands that can be beneficial to helping keep your database system running smoothly. These include VACUUM and REINDEX. See the PostgreSQL documentation for additional details about these commands.

CAUTION	PostgreSQL Service packs or Hotfixes
	→ Only apply Agilent provided service packs or Hotfixes retrieved from SubscribeNet to your OpenLAB PostgreSQL server.

Procedures for SQL Server

For MS SQL Server database the procedure to update statistics can be easily automated using the SQL Server Management Studio.

Updating Statistics Using Maintenance Plan Wizard

1 Start SQL Server Management Studio and connect as the database administrator.

2 Expand the server.

3 Expand the Management folder.

4 Right-click **Maintenance Plans** and select **Maintenance Plan Wizard**. Use the wizard to create a plan customized to meet your maintenance requirements.

   a Select a **Weekly Schedule** to be executed at a time when there may be minimal activity (for example, Sunday, 12:00 noon).

   b Select Update Statistics as the maintenance task.

   c Choose the Shared Services database (OLSharedServices) as the database against which the task will be executed.

Monitor Resource Usage on OpenLAB CDS Shared Services Server

Administrators of the system must regularly monitor disk space usage on all disks where data is stored. When the used disk space is close to 80 %, consider increasing disk space.

CPU, memory and network usage must be monitored to check for performance bottlenecks on the server.

Recommended Best Practices for Monitoring Resource Usage

1 Monitor the disk usage of OpenLAB CDS Shared Services server at least weekly.

2 Optionally, implement automated disk space monitoring tools that send e-mail alerts when disk usage exceeds the thresholds. Examples of such tools are: Monit, Munin, Cacti, and Nagios.

3 Monitor system resource usage such as memory, CPU, and network throughput. Windows Performance Monitor can be used for this purpose.

Domain or Server Name Change

Contact Agilent before changing the domain membership or renaming the OpenLAB CDS Shared Services server.

Changing the name of a workstation is described in the respective installation guides under *Optional Procedures / Change the PC Name*.

Additional Best Practices

1 Apply 3rd party updates and patches on the OpenLAB CDS Shared Services server.

   Software patches and updates for OpenLAB CDS and OpenLAB DataStore are hosted on the https://agilent.subscribenet.com software distribution site. A separate login and an active Software Maintenance Agreement (SMA) are required for this site.

   For further assistance, see http://www.agilent-labinformatics.com/ContactUs.htm.

2 Apply Agilent software updates.

   Apply software updates for Shared Services on your OpenLAB CDS Shared Services server. When you receive notification of an update, please take note and read the information to determine if the update is applicable, and its urgency.

4

ChemStation-Specific Administration

This chapter describes various tools that are helpful for diagnosis, support and troubleshooting.

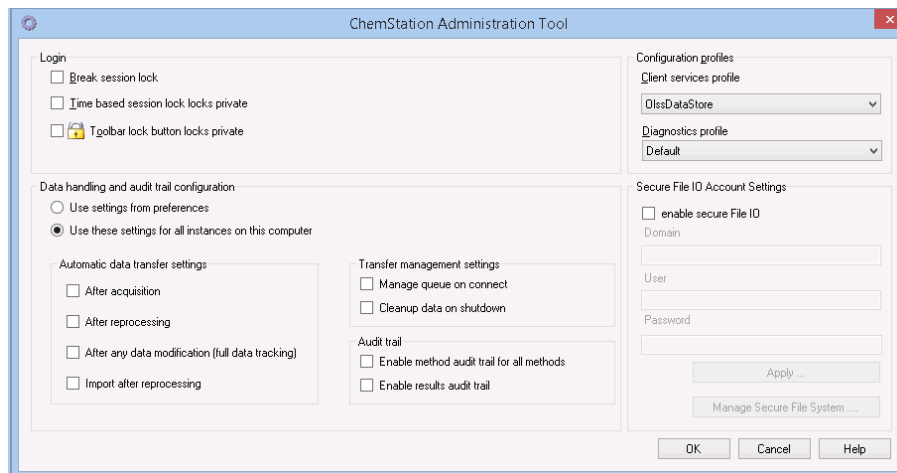**Agilent Technologies**

ChemStation Administration Tool

About the ChemStation Administration Tool

The ChemStation Administration Tool offers a number of functions related to the ChemStation configuration. One of these functions is to configure the data handling and audit trail settings per ChemStation instance (that is, per instrument and per online or offline instance). Alternatively, this function allows using the same settings for all instances running on a workstation, networked workstation, or Agilent Instrument Controller (AIC). Access to the ChemStation Administration Tool is therefore strictly limited:

- The ChemStation Administration Tool can only be opened directly on the ChemStation PC. In Distributed System installations, you must open the tool directly on the relevant AIC, not on a client.

- The ChemStation Administration Tool can only be started by users who are a member of the local user group **CSAdministrators** (see "Enabling users to start the ChemStation Administration Tool" on page 70).

To start the ChemStation Administration Tool:

1 From the Start menu in the Task Bar, select **Start > All Programs > Agilent Technologies > OpenLAB CDS ChemStation Edition > ChemStation Administration Tool**.

Figure 15   ChemStation Administration Tool

Enabling users to start the ChemStation Administration Tool

During the installation of OpenLAB CDS ChemStation Edition, the local user group **CSAdministrators** is automatically created. Only members of this group are allowed to run the ChemStation Administration Tool. The user who installs ChemStation is automatically added to the **CSAdministrators** group. Additionally, the Windows group **Administrators** and the user who installs ChemStation are granted Full Control privileges on the Administration Tool program executable (Agilent.ChemStation.ECM.ECMAdmin.exe) itself, thus they are able to run the tool.

To add a Windows user to the CSAdministrators group:

1 Go to **Start > Control Panel > Administrative Tools**[1].

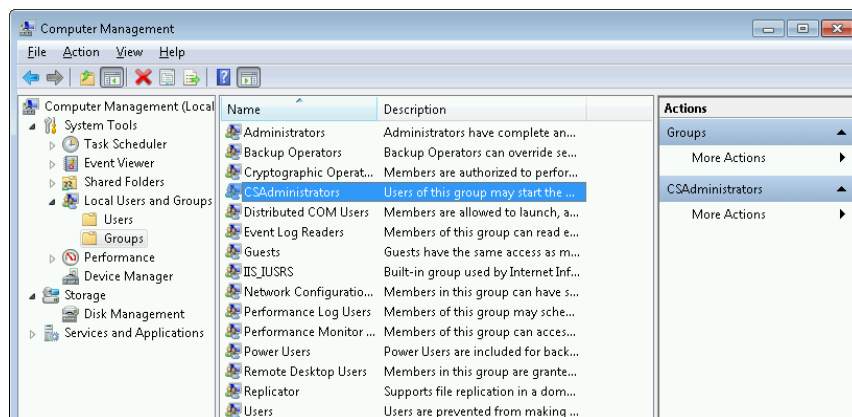**2** Select **Computer Management**

Figure 16 Computer Management window

3 Under **Groups**, right-click the group **CSAdministrator** and select **Add to Group...** from the context menu.

The **Properties** dialog shows the users who are currently members of the group.

---

[1] View the items by icon to see a list of all items
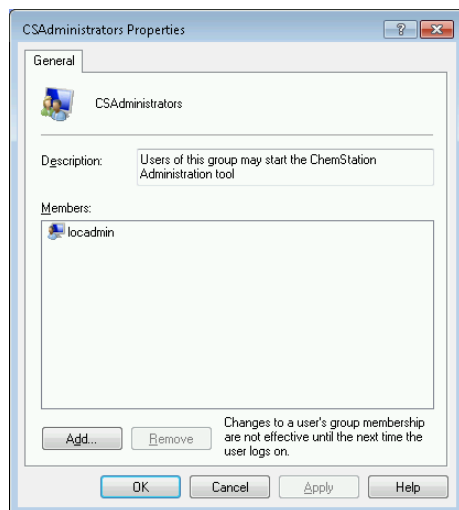
4 Use the **Add** button to add the required users.

After confirming with **OK**, the **Properties** dialog also contains the newly added users.

Machine-dependent encryption

When you call the ChemStation Administration Tool, it encrypts parts of the ChemStation application configuration file on the system. This encryption is machine-dependent.

NOTE   If you want to create an image of a ChemStation installation that can be cloned and distributed to other PCs, you must not call the ChemStation Administration Tool prior to creating this image. ChemStation will not work on images with an encrypted ChemStation application configuration file.

ChemStation Session Locks

Concept of Session Locks

If you leave the ChemStation computer for a certain period of time, you can lock ChemStation so that no other user can access the application. This is a safety feature to ensure that there is no unauthorized access to ChemStation. When you activate the session lock, you or another user must first provide a valid login before continuing to work with ChemStation.
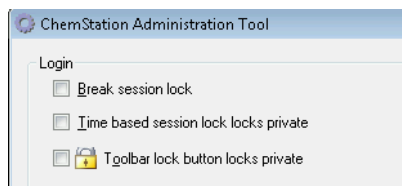
In ChemStation, there are the following options to activate the session lock:

- *Privately* (**User > Lock Session > privately**): Only the user who activated the session lock, or a user with the **ChemStation: Break session lock** privilege, can log in. You can set this privilege in the OpenLAB Control Panel. It is part of the project privileges (see "Specific Roles for Individual Instruments or Projects" on page 54).

- *Non-privately* (**User > Lock Session > non privately**): Any valid user can log in. This is useful, for example, if there is a shift change, and the personnel ending their shift secure ChemStation until the personnel of the new shift start work.

- *Toolbar lock button*: The toolbar lock button can be configured to lock the ChemStation session privately or non privately.

- *Time-based*: Depending on the configuration in OpenLAB Control Panel, ChemStation is automatically locked after a given period of time without any user interaction (see **Inactivity Timeout** under "Security Policy" on page 49).

The time-based session lock can be configured to lock the ChemStation session either privately or non-privately (see Figure 17 on page 73).

Session Lock Settings in the Administration Tool

Figure 17 ChemStation Administration Tool

In the ChemStation Administration Tool, you can set the following options for creating and breaking session locks:

- **Break session lock**: If you select this check box, a locked ChemStation can be accessed by any user just by clicking **Cancel** in the **Login** dialog. If a ChemStation is currently locked and the authentication provider is unavailable, selecting this check box is the only way to regain access to the current ChemStation session.

NOTE Be aware that, as a consequence, the user who regained access to ChemStation now has unlimited access to all ChemStation functions.

- **Time based session lock locks private**: If ChemStation has been locked by a session time out, only the current user or a user with the required privileges can unlock this session.
- **Toolbar lock button locks private**: If ChemStation has been locked using the Lock button on the ChemStation toolbar, only the current user or a user with the required privileges can unlock this session.

Automatic Data Transfer Settings

You can apply the following options either individually in each ChemStation instance, or globally across all instances of ChemStation on a workstation or AIC.

After Acquisition

If you select this check box the data is automatically uploaded to the central repository after an acquisition. The raw data files are written to the local ChemStation file system while the sequence is still running. When the complete sequence is finished, the raw data files are packed in an SSIZip file which is then uploaded to the central repository.

After Any Data Modification

If you select this check box, the result set is automatically uploaded to the central repository after you changed the data analysis parameters for a sample and generated a report. The data is uploaded even if you do not reprocess the sequence.

Manual Integration will be disabled when **After Any Data Modification** is selected.

After Reprocessing

If you select this check box, the result set is automatically uploaded to the central repository each time after you reprocessed the sequence.

Import after Reprocessing

If you select this check box, a sequence that is only stored locally is automatically uploaded to the central repository after reprocessing. This setting is useful, for example, if you reprocess data from an older version of ChemStation.

Transfer Management Settings

You can apply the following options either individually in each ChemStation instance, or globally across all instances of ChemStation on a workstation or AIC.

Manage queue on connect

If the connection to the central data storage is interrupted for any reason, a running data upload might be interrupted. In this case, the remaining data is written to an internal queue on the workstation or AIC.

If you select the **Manage queue on connect** check box, the queue is shown allowing the user with sufficient privileges to resume the data upload.

If you select the **Cleanup on shutdown** check box, ChemStation checks the local file system at each shutdown. It deletes all local data and sequence files that have been stored in the central repository. Methods and sequence templates remain on the local file system.

NOTE	Consider selecting the **Cleanup data on shutdown** check box when the system shall be compliant to 21 CFR Part 11.

CAUTION	Inadequate check box selection
	Loss of data
	→ If you select the **Cleanup data on shutdown** check box, you should also select the Automatic data transfer settings **After acquisition**, **After reprocessing**, and **After any data modification**. Otherwise, if the users forget to upload the data to the central data storage before closing ChemStation, data might be lost.

Audit Trail Settings

Audit Trail

In the **Audit Trail** group, specify the conditions for the automatic audit trails for methods and results.

Enable Method Audit Trail for all Methods	Mark this check box to switch on the Method Audit Trail for all methods.
Enable Results Audit Trail	Mark this check box to switch on the Results Audit Trail for all results, and the Sequence Audit Trail for all sequences created with **Unique folder Creation ON**.

These settings override the settings in the **Audit Trail** tab of the **Preferences** dialog box in the ChemStation.

Configuration Profiles

Client Services Profile

By providing specific client services profiles, you activate specific functions and behaviors in ChemStation.

- **Olss**

  ChemStation communicates with the Shared Services; it sends status information to the Shared Services, and uses the settings defined in the Shared Services (for example, user authentication, roles and privileges, configuration settings, audit trail settings). Use this profile for ChemStation instances that are connected to the Shared Services, but have no connection to a central data storage system.

- **OlssEcm**

  In addition to communication with Shared Services, ChemStation allows transferring data files to and from OpenLAB ECM. Use this profile for ChemStation instances that are connected to both Shared Services and OpenLAB ECM.

  In a fail over scenario, where the connection between the workstation and OpenLAB ECM is interrupted, you can set the authentication provider in

OpenLAB Shared Service to **None**. This allows you to log on to ChemStation in the absence of OpenLAB ECM.

In this case, using the **OlssEcm** profile allows ChemStation to send the data files to the queue. Once the authentication provider in the Shared Services is set back to ECM, the upload can be resumed.

- **OlssDataStore**

   In addition to communication with Shared Services, ChemStation allows transferring data files to and from OpenLAB Server. Use this profile for ChemStation instances that are connected to OpenLAB Server.

Diagnostics Profile

For each ChemStation instrument, the system creates two log files with information for diagnostic purposes:

- Review.svclog for the offline instrument
- Acquisition.svclog for the online instrument

With the **Diagnostics profile** setting, you can define the level of logging information that is written to these files. You can select a level of logging between **None** and **Maximum**; the normal amount is provided by the **Default** selection. With the **ECM Troubleshoot** selection, more of the ECM specific information is added to the log files. With the **Troubleshoot** selection, the system not only adds the information to the log files but also creates small memory dump files in case of critical errors.

NOTE	Only change the **Diagnostics profile** setting if instructed to do so by an Agilent Support representative.

Folder Protection with Secure File I/O

ChemStation metadata such as validated master methods or sequences templates must be stored in secured locations in your content management system. For usage with your instruments these methods or sequence templates are also stored in various local folders. By default, the content of these folders is not protected against modification or deletion from local file browsers or from file dialogs within ChemStation.

To ensure data integrity, enable the Secure File I/O function for ChemStation. All relevant local paths will then be protected. The relevant paths are set by default, but can also be configured. The content of protected paths can no longer be modified by Windows file operations because members of the Windows user group **Interactive**[1] are denied access. The protected folders can only be used inside ChemStation. If user authentication is enabled, only users with sufficient privileges can delete the locally stored data for housekeeping purposes. If those methods or sequences have been actively used with your instrument, copies are also stored along with results and their associated audit trails.

Prepare Secure File I/O in Windows

1 Ensure that all relevant ChemStation folders are on an NTFS file system.

2 Do not use ChemStation folders on removable storage devices (for example, external disks or USB media).

3 Create a standard user account (local or domain) with the same or fewer privileges than a normal ChemStation user. Do not grant administration or power user privileges.

This account will be used by the ChemStation for internal file operations. As the user is not supposed to log on interactively, do not use the option **Change password at next logon**.

NOTE Consider using a password that never expires. If this is not possible due to your security policy, plan a downtime for ChemStation while updating the password.

As long as the password for this user account is expired, do not use the ChemStation. ChemStation will not work properly until you have updated the password in the ChemStation Administration Tool.

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[1] In Windows, all users who log on interactively are automatically assigned to the *Interactive* group. The membership persists for the time the users remain logged in.

Enable Secure File I/O in ChemStation

1 Click **Start > All Programs > Agilent Technologies > OpenLAB CDS ChemStation Edition > ChemStation Administration Tool** to open the ChemStation Administration Tool.

2 In the ChemStation Administration Tool, select the **enable secure file IO** check box.

3 Provide the credentials of the special user account that you have prepared.

4 Click **Apply.**

5 A dialog lists all directories that are going to be protected. Click **OK** to confirm.

A protection information file is stored inside the folder to document the date, time and user who has enabled the protection. The file can be used to demonstrate the uninterrupted protection status of a folder.

6 For administrative tasks, you can temporarily disable the protection of specific folders:

   a Shut down all ChemStation sessions.

   b In the ChemStation Administration Tool, click **Manage Secure File System**

   c In the list of directories, find the relevant path and click **Unprotect**.

      The protection information file is deleted to document the interruption of the protection state.

   d After finishing your tasks, click **Protect All** to restore protection for all relevant folders.

      New protection information files are created.

   e Start ChemStation again.

      ChemStation will only start if all folders are protected.

Check privileges for Chemstation users

Users can load data, methods, or sequences from paths that are set up in the ChemStation Preferences. New paths can be added to the Preferences. Adding paths to directories that are not empty requires specific privileges which are granted by default.

To remove the corresponding privileges, edit the user's role in OpenLAB Control Panel and clear the following check boxes:

- **ChemStation: Data > Load data using not configured path**
- **ChemStation: Method > Load/Save method using not configured path**
- **ChemStation: Sequence > Load/Save sequence template using not configured path**

Important Notes for Working with Secure File I/O

When using Secure File I/O to protect your ChemStation folders:

- Do not share protected folders. Sharing a folder will break the protection.
- Do not log in interactively with the user account provided in the ChemStation Administration Tool.

  If this user logs in interactively, you will not be able to save any changed data in ChemStation until the user logs out again.
- If the password for this user account has expired, do not use the ChemStation until you updated the password in the ChemStation Administration Tool. ChemStation will not work properly as long as the password is outdated.
- When uninstalling ChemStation, it is recommended that you first disable Secure File I/O and start the uninstallation afterwards.

Limitations

The following features are not supported when Secure File I/O is enabled:

- Import/Export eMethods
- Migration of non-container data to new result sets
- Backflush Wizard, SIMDIS, and MatchCompare
- M8370AA OpenLAB Data Analysis A.01.02
- Download files (method, sequence, data) using the content management web interface, and storing them to a protected folder

  These files must be downloaded from within the ChemStation application.
- Easy SamplePrep
- G7818A Cirrus GPC Software

Support Reports

ChemStation allows you to create a support report. This report contains status information on the ChemStation and its environment, for example, the serial number and firmware revision of configured instruments.

To create a support report:

1 Click **Help > Generate Agilent Support Information** in ChemStation.

The file SystemState_Review.svclog is created in a temporary ChemStation directory, typically chem32\X\temp with x as the instrument number.

NOTE	Fine granular device information can only be provided for RC.NET and is not supported by classic drivers.

OpenLAB CDS Config Checker

The OpenLAB CDS Configuration Checker helps to troubleshoot the Operating System configuration and to prevent computer problems. It checks and repairs all *mandatory* settings. It does not check optional settings or settings that improve the performance.

The OpenLAB CDS Configuration Checker comes as .diagcab file, which is a file format used with the Microsoft Windows Troubleshooting Platform (WTP) program. The Microsoft Windows Troubleshooting Platform (WTP) is a platform to locate and fix hardware and software settings in Windows. It is used specifically for diagnosing and repairing computer settings.

In general, .diagcab files are useful for deploying troubleshooting packs because they are self-contained and require no installation. They can be deployed onto web sites, network shares, or copied to USB keys. The .diagcab file name extension is a registered file name extension that can be executed by WTP.

To start the OpenLAB CDS Configuration Checker, call the file Agilent.Wtp.ChemStation.WindowsConfiguration.diagcab. This file is located in Disk6\Tools\OpenLAB CDS ChemStation Edition\Diagnostics\WindowsConfiguration\Cab\

| NOTE | While using the Configuration Checker:

- Ensure that this computer is not turned off by another user.

- Ensure that the menu bar is enabled.

Fail Over Procedures

Introduction

OpenLAB CDS is supported in a number of different configurations. All these configurations may require network communication beyond instrument connectivity. The networking infrastructure in different laboratories can have different levels of stability, reliability, and robustness.

OpenLAB CDS provides a number of features to make it resilient against network or server outages. In case of a network or server outage, all running or queued sequences continue to run, and the data acquired is stored in the OpenLAB ECM or Content Management queue. The data can be uploaded to the central repository once the systems have been restored to normal operation. However, there will also be situations where users will want to start a ChemStation session during a network or server outage.

This chapter describes fail over and fail back concepts and procedures that ensure continued operation of OpenLAB CDS ChemStation Edition in case of network or instrument failures or server outages.

For the OpenLAB CDS Distributed System, this concept uses a workstation-based approach to remediate server unavailability. It requires dedicated failover workstation licenses that are commercially available.

Networking is involved in multiple areas:

- Instrument communication: Transfer of commands, methods and data
- Authentication: Startup of the OpenLAB Control Panel and startup of ChemStation (from OpenLAB Control Panel)
- Status reporting: ChemStation to OpenLAB CDS Shared Services server
- Data upload: ChemStation to central data storage
- Licensing: Licenses are retrieved from the License server (OpenLAB CDS Shared Services server by default)

Communication can be impacted if either the network or one of the following backend services is not available:

- CDS Shared Services server
- ECM server or OpenLAB server
- Windows Domain Controller, DNS server etc.
- License server

Depending on the system configuration, ChemStation has a number of connections to other systems,
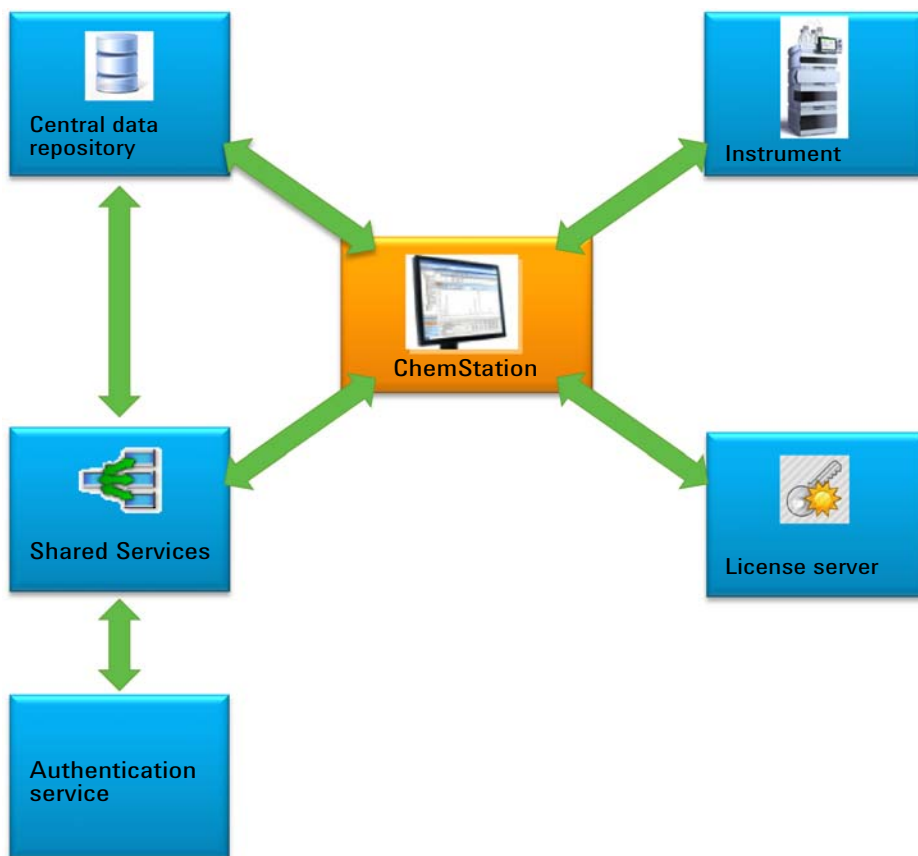
Figure 18   Connections to other systems depending on the system configuration

Table 14 Purpose of the various communication channels and backend systems

System	Purpose	Startup	Runtime	Comment
OpenLAB CDS Shared Services server	Always required. • Transfers authentication information. • Provides privileges for current user (authorization). • Provides information about license server location. • Receives and distributes instrument status. • Receives activity log.	Authentication/ authorization/ license server	Instrument status and activity log	Runtime communication is not mandatory - status information is discarded in case the server is not available. The activity log is buffered. Authentication may need a backend authentication service (e.g. Windows Domain Controller).
License server	Always required. Provides licenses for OpenLAB CDS features.	Provides licenses	N/A	At runtime no further license checks are done. Licenses are mandatory. License server is installed on the OpenLAB CDS Shared Services server host machine.
OpenLAB ECM server or OpenLAB Server	Optional data storage backend.	Authentication (through OpenLAB Control Panel and Shared Services)	Data upload and download	The server has two roles - authentication and backend storage. The runtime dependency for ChemStation is not mandatory, since ChemStation places uploads into a queue if the central repository is not available.

Scenarios

There are two main scenarios in case of a failure of a backend system or a network outage. In the first scenario the application (OpenLAB Control Panel or ChemStation) is already running and continuous operation must be ensured. In the second scenario the application has not been started and has not yet established connections to one or more of the backend systems.

Scenario 1: ChemStation is Running

ChemStation acquires all of the required resources at startup:

- Licenses
- Privileges
- Connection token for central data storage (if applicable)

Once the ChemStation is started, the OpenLAB CDS Shared Services server and/or central data storage server may become unavailable:

- If the OpenLAB CDS Shared Services server is not available, then instrument status is no longer reported and activity logs are buffered for deferred upload. Data acquisition and upload to the central repository are still possible.

- If the central data storage is not available, then data upload to the central repository is no longer possible. Instead data is put into the queue and can be uploaded once the central data storage is available again.

- If the authentication provider is unavailable, re-authentication is not possible, i.e. it is not possible to switch to a different user or to log in in case of a session lock. To allow users to break the session lock, select the **Break Session Lock** check box in the ChemStation Administration Tool "Session Lock Settings in the Administration Tool" on page 73.

NOTE	Data is automatically queued if the central data storage is unavailable. Once it is available again, queued data needs to be manually uploaded to the central repository (see the *Troubleshooting - Server is not Available After Login* section in the *Agilent OpenLAB CDS ChemStation Edition with Central Data Storage User's Guide*.

NOTE	In the Distributed System, the existing ChemStation sessions on the AIC continue to run and acquire data. However, it is not possible to connect to these sessions from the remote client and to see their status in OpenLAB Control Panel.

Scenario 2: ChemStation Startup

For ChemStation startup two main services are required:

- Licenses: Depending on the instrument configuration some licenses are mandatory in order to start up ChemStation. A core license is always required. This requires a connection to the license server.

- Authentication: When an authentication mode other than **None** is specified, the user must authenticate with his username and password. This requires a connection to the authentication backend (OpenLAB CDS Shared Services server, OpenLAB ECM server, or Domain Controller).

Licensing OpenLAB CDS ChemStation Edition needs to connect to a license server that holds valid licenses. If the license server is unavailable or ChemStation cannot connect to it, ChemStation cannot start up. If the central license server is not available it is possible to fall back onto a local licensing service. In this case failover licenses are required and must be configured on the fail over workstation. For details on populating the local licensing service with failover licenses, see "Preparing Local Failover Licenses (In Case the Central License Server Becomes Unavailable)" on page 92.

For a system with central data storage, please ensure that you maintain a local copy on your workstation of all methods and sequences that are required if the central repository is unavailable. This may require periodic updates of the local methods and sequences from master methods and sequences kept in the central repository (for details, see "Preparing Local Methods and Sequences" on page 94).

Authentication Service If any of the required authentication backends (OpenLAB CDS Shared Services server, OpenLAB ECM server, or Domain Controller) is not available, users can connect to a local instance of Shared Services instead. This allows users to startup ChemStation. Instruments need to be set up in the local Shared Services database manually (for details, see "Preparing Local Instrument Configuration" on page 91).

Since OpenLAB CDS ChemStation Edition workstations run a local copy of Shared Services and provide their own license server, traditional failover licenses would not apply. Instead, if the workstation failed, there could be a replacement workstation as part of a business continuity plan.

If OpenLAB CDS ChemStation Edition is integrated with and using OpenLAB ECM authentication, if the connection to OpenLAB ECM is lost, then the workstation can no longer be started.

## Preparations for Networked Workstations

Connecting to the Local Server

OpenLAB CDS has an option to connect to another instance of Shared Services. This gives you the ability to switch to local Shared Services when the central OpenLAB CDS Shared Services server in a Networked Workstation or Distributed System becomes unavailable.

1 To connect to the local Shared Services instances, select **[Local] Local server** under **Connect to** when starting the OpenLAB Control Panel.

NOTE   If you are not allowed to switch servers, select the corresponding check box in the OpenLAB Shared Services Maintenance (see "Managing Server Settings" on page 62).
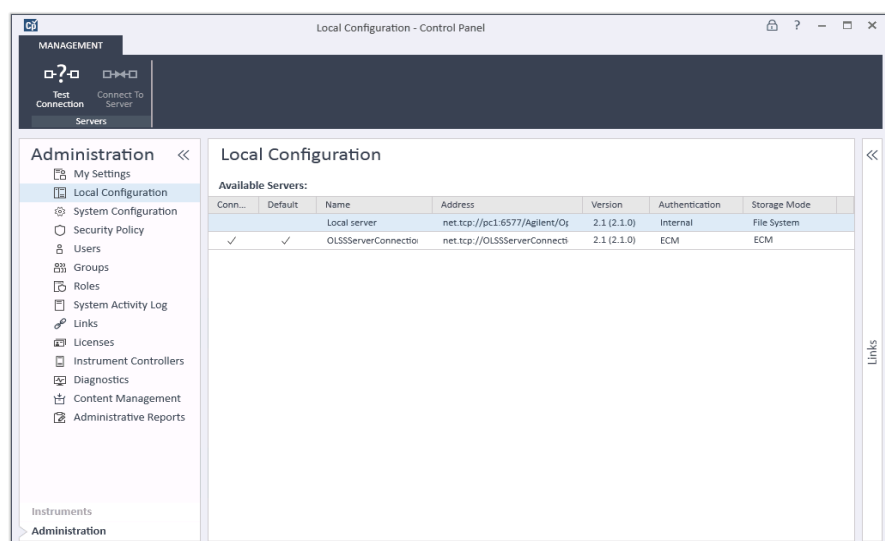

OR
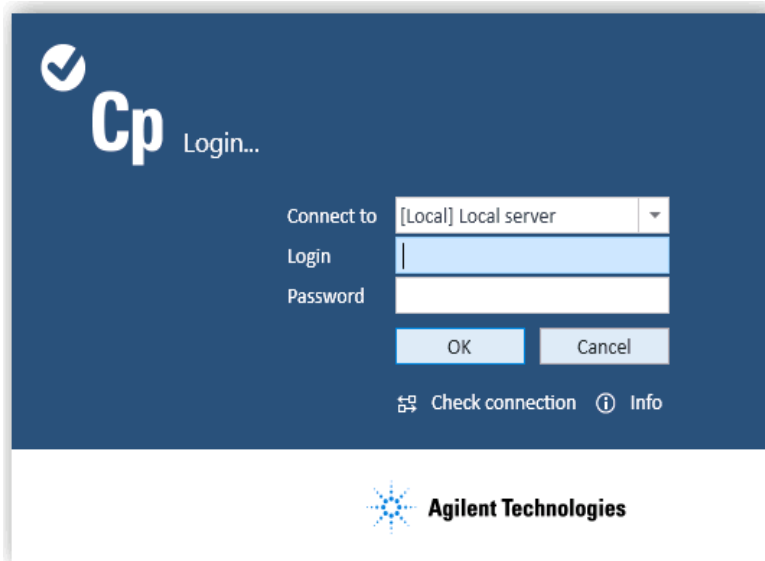
Alternatively, you can connect to the local Shared Services instance under **Administration > Local Configuration**. Select the local server, and click **Connect to Server**.

You can adjust the list of available servers from the OpenLAB Shared Services Maintenance program (see "Managing Server Settings" on page 62).

Preparing Local Authentication Mode

If you are connecting to a local Shared Services instance, the default authentication mode is **None**. This allows users to work with the ChemStation without authentication. All users have all privileges. If user authentication is desired, use the authentication mode **Internal**. The other authentication modes (Windows Domain and OpenLAB ECM) are not adequate for a fail over because they introduce dependencies to external systems.

The authentication mode **None** is the default and nothing needs to be done in preparation for the authentication mode **None**. If you wish to use the authentication mode **Internal** for a fail over configuration, you will need to switch to the local Shared Services instance, configure it to use the authentication mode **Internal**, and setup users and assign roles as required.

Prerequisites   On the central OpenLAB CDS Shared Services server, the **Allow users to choose server during login** check box must be selected in the OpenLAB CDS Shared Services Maintenance. See "Shared Services Maintenance" on page 56.

1 Connect to the local instance of OpenLAB Shared Services (see "Connecting to the Local Server" on page 89).
2 Set up the authentication mode **Internal**.
3 Set up users, and set up and assign roles as desired.
4 When finished, connect to the central OpenLAB Shared Services server again.

Preparing Local Instrument Configuration

In order to use the instruments that are configured on the central OpenLAB CDS Shared Services server and connected to a given workstation, they need to be made available in the local Shared Services instance on that workstation.

With ChemStation, you can use a batch file to make the instruments available on the workstation PC:

• Open a command prompt on the workstation and navigate to the OpenLAB CDS ChemStation core directory in the ChemStation installation folder (e.g., c:\Chem32\Core).

• Run the OlssFailover.bat script file.

 This script copies instruments configured on the central OpenLAB CDS Shared Services to the local Shared Services database.

If the local Shared Services instance has been configured to use an authentication other than **None**, provide the username and password of an administrative user as parameters in the syntax OlssFailover.bat [username] [password].

If you have made instruments available on the local Shared Services and then configured additional instruments, or removed instruments on the central OpenLAB CDS Shared Services server, repeat the above.

You can omit this preparation step and execute the batch file once the fail over has occurred. This has the advantage that all instrument configurations are current. However, we recommend executing the batch file ahead of time because a user in the laboratory may not able to execute a batch file and will not have the required user credentials available.

Preferably, put a procedure in place to ensure that the batch file is executed every time instruments are added or removed.

NOTE   All instruments that are part of a business continuity plan using the fail over licenses, must first be configured on the central OpenLAB CDS Shared Services server.

Preparing Local Failover Licenses (In Case the Central License Server Becomes Unavailable)

If the central license server becomes unavailable, the OpenLAB CDS application on a workstation PC can fall back to a local license service.

To prepare for this scenario, you can install failover licenses on the local license service. Failover licenses are additional workstation licenses that are installed on a workstation PC.

1 Obtain a failover license product.

For example, obtain product number M8205AA *Option 002: OpenLAB CDS ChemStation Failover Workstation License*). This failover license product includes a workstation core license, drivers, and add-ons for a workstation with up to four instruments.

2 Add the failover license product to the license pool in SubscribeNet.

NOTE   You can also use the licenses already available in your license pool. However, this is going to remove them from the pool of concurrent licenses.

3 In SubscribeNet, register the authorization codes, generate the failover licenses for the workstations, and configure the instruments for fail over mode.

For example, a failover license for a workstation with one GC- and one 3D LC instrument includes:

- one OpenLAB CDS core license
- one OpenLAB CDS Instrument Driver for Agilent GC license
- one OpenLAB CDS Instrument Driver for Agilent LC license
- one OpenLAB CDS 3D UV Add-on license

Configure a license file with the required licenses, and enter the MAC Address of the workstation PC that the license file is to be put on. Store it locally on the workstation PC where you want to install it.

4 Connect to the local instance of Shared Services (see "Preparing Local Authentication Mode" on page 91).

5 In OpenLAB Control Panel, go to the **Administration** page and click the **Licenses** node.

6 In the ribbon, click **Add**.

**7** In the **Add Licenses** dialog browse to the location of the license file and add it.
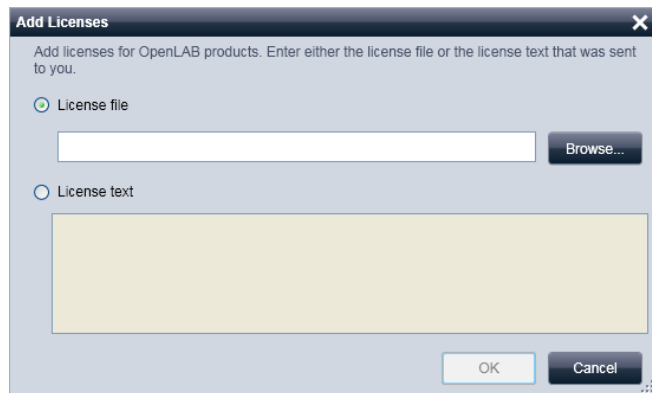
Figure 19   Entering the failover license for the local license service in the **Add Licenses** dialog

Preparing Declaration of License Server (In Case the Central License Server is Still Available)

If the central data storage and/or Domain Controller are unavailable, and the central license server (on the OpenLAB CDS Shared Services server host machine) is still available, the central license server can still be used. However, it is necessary to use the local Shared Services instance with the authentication mode **None** or **Internal**. Example: OpenLAB ECM server is unavailable, license server is available. Using local authentication is necessary since authentication cannot be against OpenLAB ECM, but licenses can still be retrieved from the central license server.

The central license server needs to be declared in the local Shared Services instance.

1 Connect to the local instance of Shared Services (see "Preparing Local Authentication Mode" on page 91).

2 Go to **Administration > Licenses**.

3 Click **Change Server**. In the **Change License Server** dialog, enter the name of the central license server to be used.
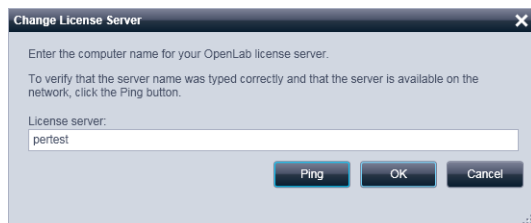
Figure 20   Change License Server dialog

4 Once the central license server has been declared in the local Shared Services instance, reconnect to the central OpenLAB CDS Shared Services server.

### Preparing Local Methods and Sequences

For a system with central data storage, please ensure that you maintain a local copy on your workstation of all methods, sequence templates and report templates that are required if the central repository is unavailable. As mentioned before, this may require periodic updates of the local files from the master data kept in the central repository (see "Preparing Local Instrument Configuration" on page 91).

Fail Over Instructions for Networked Workstations

Connecting to the Local Server in Case of a Fail Over

If the OpenLAB Control Panel cannot communicate with the OpenLAB CDS Shared Services server or with its authentication backend, the start-up screen will show a corresponding message (see Figure 21 on page 95). You can connect to the local server instead.

If OpenLAB Control Panel cannot communicate with its authentication backend (OpenLAB ECM server and/or Domain Controller), the OpenLAB Control Panel application will not start. If this happens, disconnect the ChemStation workstation PC from the network while starting the OpenLAB Control Panel. When starting a ChemStation workstation PC disconnected from the network, OpenLAB Control Panel shows a dialog box that allows users to connect to the local server.
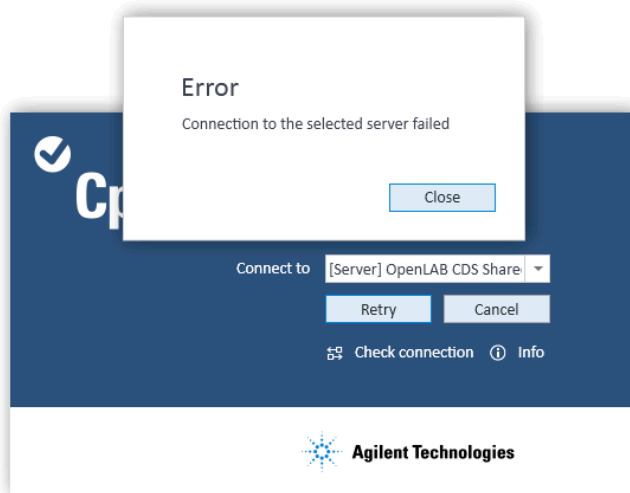
Figure 21   OpenLAB Control Panel starting up without connection to the OpenLAB CDS Shared Services server

1 Select the **[Server]** entry, and click **Info** button. This will give you some diagnostics information. Click **Check connection** to ping the server.

2 If it has become clear that the network or server outage is going to be longer, login to the **[Local]** machine. If authentication is setup on the local Shared Services instance you will be asked for your credentials.

3 Since the instruments and licenses have been made available in the preparation steps, instruments can immediately be used. All instrument-related data, methods and configurations are available at their original locations. In addition, the instrument configuration is also available at its original location.

WARNING **Inconsistencies between the local Shared Services configuration and the central Shared Services configuration**

→ Do not create new instruments or delete existing ones while connected to the local Shared Services instance.

Restoring the Connection

Once the connection to the central OpenLAB CDS Shared Services server or authentication backend is restored, the OpenLAB Control Panel can be reconnected to the central OpenLAB CDS Shared Services server.

Preparations   Shut down ChemStation instances running on the local Shared Services instance before reconnecting to the central OpenLAB CDS Shared Services server.

1 When starting the OpenLAB Control Panel, the default connection configured in the OpenLAB Shared Services Maintenance will be used. If this is not the central OpenLAB CDS Shared Services server, select the **[Server]** entry under under **Connect to**, and log in with the required user credentials.

OR

Alternatively, you can connect to the central Shared Services instance in OpenLAB Control Panel under **Administration > Local Configuration**.

2 OpenLAB CDS Control Panel will connect to the remote OpenLAB Shared Services server.

NOTE   Instruments are already available in the remote OpenLAB CDS Shared Services server and do not need to be reconfigured.

Preparations for Distributed Systems

If any of the required authentication backends (OpenLAB CDS Shared Services server, OpenLAB ECM server or Domain Controller) is not available, or in case of a network outage, it is not possible to work directly on the CDS client or the AIC.

There are different approaches for the OpenLAB CDS Distributed System. In general, the system offers a workstation-based approach to remediate server unavailability. It requires dedicated failover workstation licenses that are commercially available. Different scenarios that have to be considered include:

- No authentication provider
- No central OpenLAB CDS Shared Services Server
- No network

For instruments that are required to run continuously (24/7), Agilent suggests to set up a Networked Workstation on a separate PC using failover licenses, and to use this workstation in case of a fail over. This *fail over workstation* allows controlling instruments in case of a failure of any of the authentication back-ends as well as a network outage.

Recommendations for the Fail Over Workstation

The fail over workstation will be used in case ChemStation remote desktop sessions on the AIC are no longer accessible.

Prepare a Fail Over Workstation

1 Determine required workstations and licenses.

As part of a business continuity plan, assess how many and which workstations and instruments need to be available as part of the fail over plan. Based on the assessment determine the required number of failover licenses.

An option to reduce hardware costs is to use fail over workstations as client PCs in a Distributed System.

NOTE The OpenLAB CDS hardware and software requirements for Networked Workstations apply. It is recommended to use a PC with two LAN cards:

- One to connect directly to the instrument.
- One to connect to the laboratory network: This allows easy retrieval of data once systems have been restored to normal operation.

2 Determine IP address needs.

The fail over workstation may need a different IP address to connect to the instrument to support fail over mode.

Ensure common network settings for the LAN cards of the fail over workstation and the AIC. Thus you can reuse the instrument's IP address.

If the instrument is set up on the LAN (that is, not directly connected to the AIC), the IP-address of the instrument needs to be adapted to the subnet of the fail over workstation's network card.

After the fail over has occurred, and systems have been restored, the instrument's configuration needs to be restored before it is reconnected to the AIC.

3 Determine additional equipment needs

You may require additional hardware such as switches, network cabling, etc.

4 Install an OpenLAB CDS ChemStation Edition Networked Workstation on each fail over workstation. Add central data storage and configure the same database server as for the AIC. Register in the central Shared Services database.

5 Execute IQ/OQ procedure if required.

6 While connected to the central OpenLAB CDS Shared Services server, configure all instruments for which you require continued operation in case of an anomalous event.

Use a different instrument name, e.g. "<instrument name>_failover".

Start a session for each instrument (online or offline) and configure the upload path in the preferences.

7 Lock all failover instruments using the **Lock** function in OpenLAB Control Panel.

During normal operation these instruments remain locked.

8 Close OpenLAB Control Panel, and start it again. This time, connect to the *local* Shared Services database.

9 Recreate the instruments on the local server using the script OlssFailover.bat developed for networked workstations (see "Preparing Local Instrument Configuration" on page 91).

10 If required, prepare the authentication mode on the local server.

On the fail over workstation, the local Shared Services must use the authentication mode **None** or **Internal**.

In case of internal authentication, you must set up fail over users and roles (see "Preparing Local Authentication Mode" on page 91).

11 Install failover licenses (see "Preparing Local Failover Licenses (In Case the Central License Server Becomes Unavailable)" on page 92).

- If the license server remains available (that is, only the authentication provider becomes unavailable):

  The central license server needs to be declared in the local Shared Services (see *Change the license server* in the OpenLAB Control Panel Help).

- If the license server becomes unavailable, too:

  Failover licenses need to be available in the license pool. Generate the corresponding license file in SubscribeNet, and add it to the fail over workstation using the local Shared Services instance.

  This licenses file is then bound to the MAC address of the fail over workstation.

12 Make all required methods, sequence and report templates available locally.

Consider using acquisition only methods for the anomalous event, and to postpone processing until the system has been fully recovered.

13 When the anomalous event is over:

- If you want to use the workstation as a normal client or Networked Workstation, switch back to the central OpenLAB Shared Services database.

- If the PC is a dedicated fail over workstation, turn the workstation off.

In your Standard Operating Procedures, define that the usage or changed purpose of the machine needs to be documented.

| NOTE | Fail over workstations need regular maintenance. They require the same level of operating system updates and OpenLAB CDS updates as the Distributed System. |

Fail Over Instructions for Distributed Systems

Using the Fail Over Workstation

During an anomalous event, the OpenLAB CDS ChemStation Edition instances on the AIC continue to run even if the server is unavailable.

To make an instrument available during an anomalous event, follow the instructions below.

1 Check whether the sequences running on the AIC are completed and the instrument is idle. To confirm this, open the sequence folder and review the log files.

2 Reconfigure the instrument. This step depends on the topology used.

   • The AIC has two network cards; the instrument is directly connected to one of them.

     Disconnect the instruments from the AIC (by removing the network cable from the instrument) and connect the instrument directly to the fail over workstation.

   • The instrument is connected to the laboratory network.

     You may need to change the instrument's IP address.

3 On the AIC, close the ChemStation sessions using the Windows Task Manager.

4 Power on the fail over workstation, or use the dedicated Networked Workstation, and connect to the local server.

   Since the instruments and licenses have been made available in the preparation steps, instruments can immediately be used on the fail over workstation.

5 Start acquiring data.

   The instrument name now includes the term *failover*. The data is securely buffered in the queue.

Restoring the Connection

Once connection to the OpenLAB CDS Shared Services server or central data storage is reestablished, proceed as follows:

NOTE	Once systems have been restored to normal operation, instruments may need to be reconfigured to their original IP-addresses before connecting them to the AIC again.

1 On the fail over workstation, connect to the central OpenLAB CDS Shared Services server.

2 Start the online or offline ChemStation instrument sessions and resume the queue.

Acquired data will be uploaded to the central repository.

The data acquired during the anomalous event will have the user configured in the failover mode as the Acquisition User.

- If authentication mode **None** was configured in the local Shared Services database, the user **System** will be the Acquisition User.

- If a fail over user was set up for the failover scenario, this fail over user will be the Acquisition User.

3 Close the instrument sessions.

4 Power off the fail over workstation.

5 Reconnect the instruments to the AIC by unplugging the network cable from the fail over workstation and connecting the LAN cabling with the AIC. If applicable, reassign IP addresses to the instruments.

6 On the CDS Client, launch OpenLAB Control Panel and connect to the central OpenLAB CDS Shared Services server. Check the status of the individual instruments in the **Instruments** panel to ensure they are connected and available.

Disk Space Limits

For ChemStation, two disk space limits can be defined:

• Warning limit: Triggers a message during startup of an online or offline session. The default value is 2,000,000,000 bytes.

• Critical limit: Exceeding this limit prevents acquisition and even reprocessing of existing data. The default value is 500,000,000 bytes.

Users can redefine the values for both limits by making entries in the chemstation.ini file. It is recommended to make a safety copy of the ini file before editing it. Locate the file in the Windows folder and open it with notepad. Find the entry [PCS].

Add two lines at the end of this PCS section:

```
CriticalDiskSpace=500000
```

```
WarningDiskSpace=10000000
```

The numbers are the respective limits in bytes and can be changed:

• 1 GB = 1024 MB

• 1 MB = 1024 kB

• 1 kB = 1024 Bytes

5
Appendix

This chapter contains information on privileges used in OpenLAB CDS.

Agilent Technologies

Privileges in OpenLAB Control Panel

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

- Everything
- System Administrator
- Instrument Administrator
- Project Administrator
- Instrument User

Additional default roles are available depending on the installed components. With an OpenLAB CDS ChemStation Edition installation, the following additional default roles are available:

- ChemStation Administrator
- ChemStation Lab Manager
- ChemStation Analyst
- ChemStation Operator

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

NOTE	Roles are only visible if user authentication is required.

Project Privileges

Table 15   Project Management

Name	Description	Relevant for ...
View project or project group	User can see a project and project details but cannot edit. With Content Management: User can view the content of the Content Management repository. *Note:*This privilege is required for all users.	ChemStation Content Management
Manage project or project group	User can create, edit, or move projects but cannot access settings.	Content Management
Edit content of project	User can create new versions of documents in the Content Management system.	Content Management
Manage project or project group access	User can edit project access settings.	Content Management
Access content using web client	User with this privilege is able to open the Content Browser interface.	Content Management

Table 16   E-Signature

Name	Description
E-Signature Sign Data Files	User can sign data files (with ChemStation, this privilege is only relevant if you use OpenLAB Data Store).

ChemStation-Specific Privileges

Table 17 ChemStation: Control

Privilege	Description
Run Acquisition	Start acquisition (single sample or sequence).

Table 18 ChemStation: Data

Privilege	Description
Delete Data	User can delete data files in ChemStation Explorer.
Load data using not configured path	If Secure File IO is enabled, this privilege is required for … • loading data from unprotected paths • adding paths that are not empty to the ChemStation (**Preferences** dialog)
Manual Integration	User can perform manual integration.
Save data to storage	Interactive saving of data to the central data storage system.

Table 19 ChemStation: Instrument

Privilege	Description
Modify instrument configuration	User can modify the instrument configuration parameters.

Table 20 ChemStation: Logbook

Privilege	Description
Clear Logbook	Clear the current logbook.
Save Logbook	Save the current logbook.

Table 21 ChemStation: Method

Privilege	Description
Edit calibration table	Create and modify the calibration table; change calibration settings.
Delete method	Delete a method in ChemStation Explorer.
Edit integration events	Modify integration events and perform Auto Integration.
Edit ion labels	Edit options for ion labels (LC/MS only).
Edit system suitability	Edit noise ranges and performance limits.
Enable audit trail	Enable the audit trail for a specific method.
Load method from not configured path	If Secure File IO is enabled, this privilege is required for ... • loading a method from an unprotected path • saving a method to an unprotected path • adding paths that are not empty to the ChemStation (**Preferences** dialog)
Modify instrument method	Modify instrument method parameters.
Modify method properties	Modify Run Time Checklist and Method Information.
Perform method recalibration	Perform interactive recalibration.
Save method changes	Save method changes (includes Update Sequence/Master Method in Data Analysis view).

Table 22 ChemStation: Report

Privilege	Description
Preview/print report	User can preview/print a report.
Modify report	User can modify report calculation/print style and can edit Instrument Curves dialog.
Lock/unlock report template items	Only relevant with Intelligent Reporting: User can lock or unlock report items and composite groups in a report template.

Table 23 ChemStation: Security

Privilege	Description
Break session lock	Unlock a ChemStation session locked by other users.
Command line	Turn on / off the command line
Manage transfer queue	Access to the Transfer Queue and the Queue Management.
Modify storage transfer preferences	Modify transfer settings for data upload to the central data storage system.
Take over ChemStation Remote Session	Only relevant for ChemStation in a Distributed System: User can take over a running remote session.

Table 24 ChemStation: Sequence

Name	Description
Change priority in run queue	User can submit samples or sequences to the front of the queue, and change the order of items in the run queue.
Delete entries from run queue	User can remove queued samples or sequences from the run queue.
Delete sequence	User can delete sequences in ChemStation Explorer.
Edit sequence summary	User can modify sequence summary report and extended statistics settings.
Load sequence from not configured path	If Secure File I/O is enabled, this privilege is required for ... • loading sequence templates from unprotected paths • saving sequence templates to unprotected paths • adding paths that are not empty to the ChemStation (**Preferences** dialog)
Reprocess	User can reprocess a sequence.
Save sequence template	User can save sequence templates locally (on workstation or AIC).

Table 25 ChemStation: View Access

Privilege	Description
Access Data Analysis view	User has access to Data Analysis view.
Access Diagnostic view	User has access to Diagnostic view.
Access Method & Run Control view	User has access to Method and Run Control view.
Access retention time lock	User has access to the Retention Time Lock menu (GC only).
Access retention time search	User has access to Retention Time Search menu (GC only).
Access Review view	User has access to Review view
Access Tune view	User has access to Tune view (LC-MSD ChemStation only).
Access Verification view	User has access to Verification (OQ/PV) view.
Access Report Layout view	User has access to Report Layout View, ability to create/edit/save report templates.
Enable Batch view	Enables all operations in Batch view.

Instrument Privileges

Table 26 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 27   System Administration

Name	Description
Manage printers	Can add/remove printers and print server.
Edit activity log properties	Can change the Activity log Settings in OpenLAB 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. Can edit (add, change etc) users, groups and roles. *Note:* A user with this privilege can grant himself access to all settings in the OpenLAB Control Panel. Be careful who you grant the Manage Security privilege.
Manage instrument controllers	Can edit AIC configuration, manage the AICs in the Shared Services Maintenance tool.
Unlock any locked UI	Can login into any locked portal or instrument session (will be a re-login), even if privately locked.

Table 28   Content Management

Name	Description
Archive content	User can archive the content of the data repository.

Index

In This Book

This manual contains information on the concepts of OpenLAB CDS ChemStation Edition, and the administration of OpenLAB CDS with the OpenLAB Control Panel.

General concepts:

- System Architecture
- Licensing Strategy
- Security and Data Integrity

OpenLAB Control Panel

- Instrument Management
- License Management
- Log Files and Diagnostics
- Authentication Provider
- Security Policy
- User Management

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