



OpenLab CDS ChemStation Edition

## Requirements

# Notices

## Document Information

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### Software Revision

This guide is valid for OpenLab CDS  
ChemStation Edition C.01.10.

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## In this Guide ...

This document details the minimum requirements for network, hardware and software to support OpenLab CDS ChemStation Edition C.01.10.

- OpenLab CDS ChemStation Edition C.01.10
- Secure Workstation for OpenLab CDS ChemStation Edition C.01.10
- OpenLab CDS Shared Service Server Software 2.2, 2.3 or 3.2

These requirements also apply to the Value Line (VL) Edition of OpenLab CDS ChemStation unless otherwise stated.

**Table 1** Terms and abbreviations used in this document

Term	Description
AIC	Agilent's Analytical Instrument Controller
CDS	Chromatography Data System
ChemStation	OpenLab CDS ChemStation Edition
Control Panel	OpenLab Control Panel
Microsoft Control Panel	Part of the Microsoft Windows operating system
Secure Workstation	Secure Workstation for OpenLab CDS ChemStation Edition

## **1 Introduction**

This chapter contains an overview of the installation scenarios and general software requirements.

## **2 Stand-Alone Workstation or Networked Workstation**

This chapter describes the requirements for stand-alone workstations or networked workstations running OpenLab CDS ChemStation Edition.

## **3 Secure Workstation for OpenLab CDS ChemStation Edition**

This chapter describes the requirements for a Secure Workstation for OpenLab CDS ChemStation Edition.

## **4 Distributed System**

This chapter describes the requirements for instrument controllers or clients running OpenLab CDS ChemStation Edition.

## **5 OpenLab CDS Shared Services Server**

This chapter describes the requirements for an OpenLab CDS Shared Services server. A Shared Services server is required for Networked and Distributed Systems.

## **6 Network Requirements**

This chapter describes the network requirements that must be met in order to support the environmental computing needs.

## **7 Licensing**

This chapter contains information on the software used for licensing.

## **8 Required Windows Users**

This chapter contains recommendations about Windows users for OpenLab CDS ChemStation Edition in different configurations.

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# 1

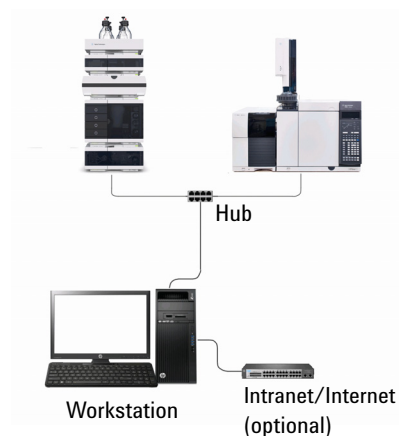
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This chapter contains an overview of the installation scenarios and general software requirements.

## Different Installation Types

Depending on the type of installation, you may need different hardware components. The following graphics show the required components for each scenario.

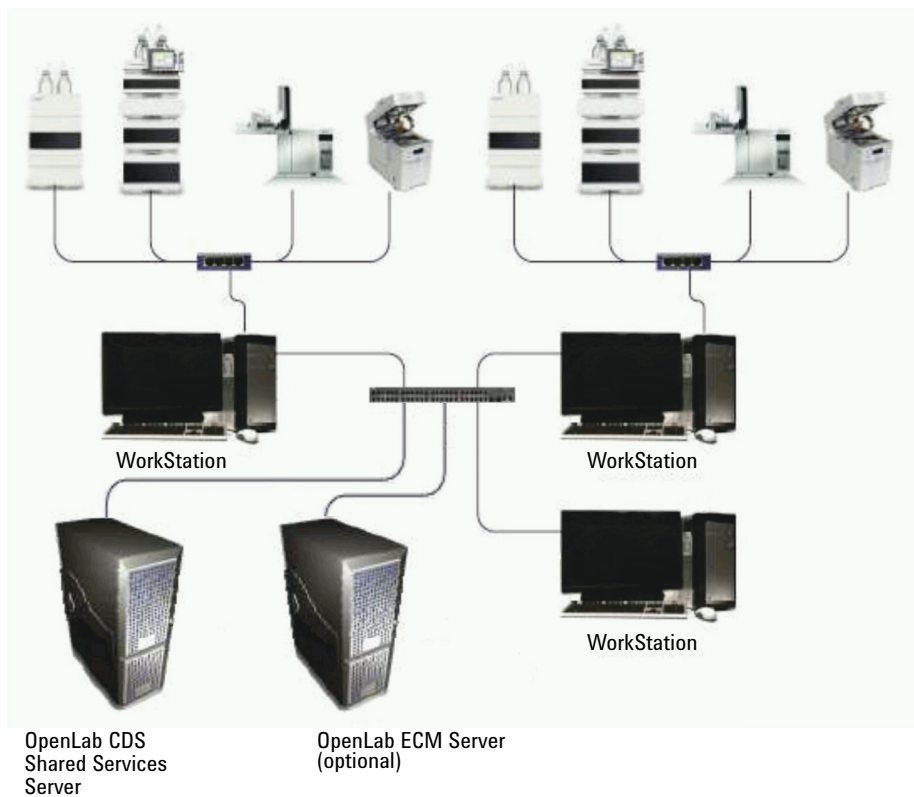


**Figure 1** OpenLab CDS ChemStation Edition Workstation



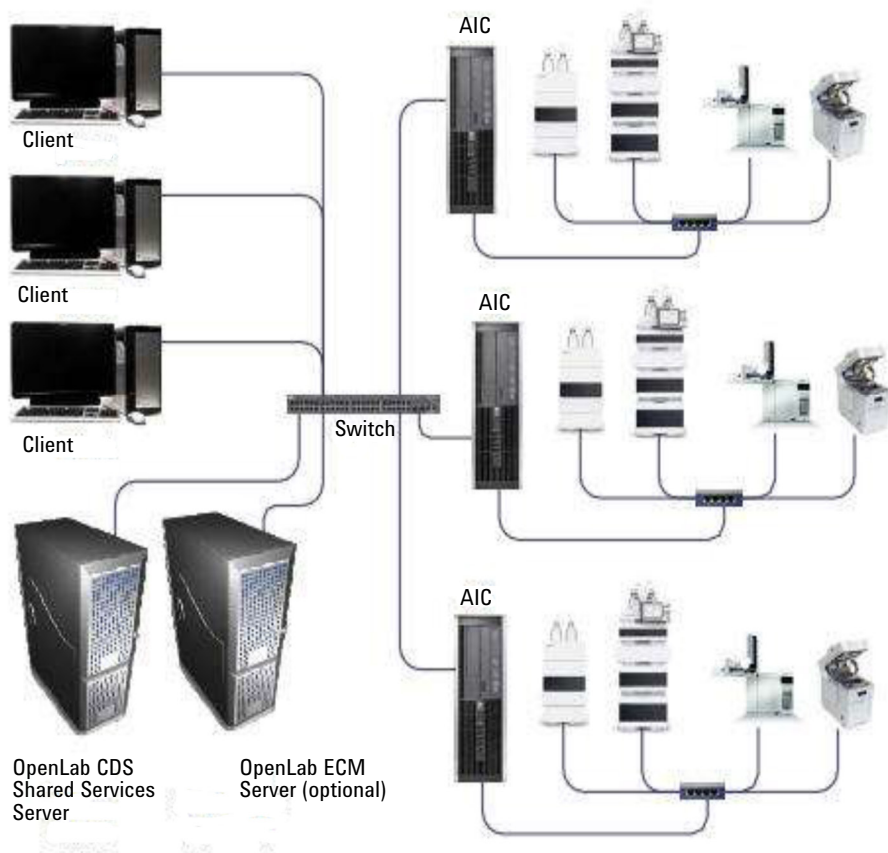
## Introduction

### Different Installation Types



**Figure 2 Networked Workstation configuration (example)**

For an installation with OpenLab Server, the Shared Services component and Content Management module are installed on the same server.



**Figure 3** Distributed System Configuration

For an installation with OpenLab Server, the Shared Services component and Content Management module are installed on the same server.

## General Software Requirements

The following software is needed to operate the ChemStation or one of its components.

Software	Notes
.NET Framework	Automatically provided or activated during installation: 4.7.2 and 3.5.1
PDF reader	A PDF Reader is required to view site prep or administrative reports, to use the Report Viewer Feature, or to view the documentation ( <b>Start&gt; All programs&gt; Agilent Technologies&gt; Documentation and Learning</b> ). Provided with this revision: Adobe Acrobat Reader 2017
	<b>NOTE</b> If an older version of Acrobat Reader (2016 or lower, XI or lower) or a Reader version from the <i>DC Continuous</i> track is installed on your system, you must deinstall it first. Otherwise, the installation would result in an Acrobat Reader version that pushes automatic updates on a regular basis.
PDF writer	Automatically provided during installation: PDF XChange 6.0
Web browser	A web browser must be installed to open the <b>Documentation and Learning</b> page. It is also required by content management systems as a content browser.
Adobe Flash	Must be installed independently. Needed to view the eFamiliarization.

## **Power Management and Screen Savers with ChemStation**

In general, screen savers should not be used together with the ChemStation. Simple screensavers such as blank screen may be used. OpenGL screen savers must not be used.

Screen savers can cause undue loading of the CPU that may result in the loss of data from the GC during high data collection periods. Translucent windows themes introduced with Windows 7 can cause graphic artifacts in various ChemStation screens like Online Plot or Data Analysis. To avoid these effects select a Windows Classic Theme for your desktop (Windows 7), or disable the taskbar transparency in the Windows color settings (Windows 10).

Advanced power management features of the PC BIOS must be disabled for systems that have to perform instrument control and data acquisition.

Disable any Energy Save features for any Energy Star compliant PC to prevent the loss of data during high data collection periods. Problems may also be exhibited by I/O error with the instruments. I/O errors will result in the loss of data. They can be found in the log book.

## **Co-Residence with UV-Vis ChemStation Software**

ChemStation for GC, LC, CE, A/D, CE/MS, and LC/MS, revision C.01.xx is not supported for co-execution or co-installation with Agilent ChemStation for UV-visible Spectroscopy.

## Language Compatibility

Localized versions of OpenLab CDS ChemStation Edition are supported on localized language versions of Windows operating systems, using the following default system fonts:

- Chinese: Sim Sun
- Japanese: MS UI Gothic

## Important Notes

### Disk Space

Disk space requirements should be adjusted based on the number and type of instruments and archival periodicity. Agilent recommends providing enough disk space for one year of lab operation, in addition to the operating system and OpenLab CDS ChemStation Edition requirements

**Table 2** Typical expected file sizes

	Run time	Description	Expected data size
2D data	60 min	10 Hz, 2 channel data	~600 KB
3D data	60 min	10 Hz, 5 channel data, plus spectra at 1 nm resolution from 200 to 400 nm	~30 MB
LC/MS data	60 min	Scan mode	~30 MB

### Dedicated Servers

For the server-based products (e.g. OpenLab Shared Services Server, OpenLab CDS ChemStation Edition AIC), use dedicated servers to avoid conflicts with other applications and optimize performance.

## System Configuration Checker

The System Configuration Checker helps you to make sure that the PC matches all requirements. You can use it for all supported operating systems and applications.

- 1 Run the installer from the USB medium or from a centralized folder. From the **Planning** screen, select **System Configuration Checker**.
- 2 The **Site Preparation Tool** opens. Select **OpenLab CDS ChemStation Edition C.01.XX** from the drop-down list.
- 3 Select **OK**.
- 4 Complete page 1 of the **Contact Information—System details** by typing in the fields provided.
  - System Location fields
  - System Information fields
  - Configuration fields
- 5 Review the system details and make any necessary entries. The system will follow the paths specified.
- 6 Select the green check mark icon in the top left corner of the screen to begin the software check. A summary report is displayed showing the results for each check category. Results are expressed as **Pass**, **Warning**, **Critical Warning**, or **Fail**.

**Fail** results must be corrected before continuing with the installation. Agilent recommends investigating and correcting any **Critical Warnings** and **Warnings** whenever possible before proceeding.

### NOTE

If the firewall is controlled by security software, the Site Preparation Tool cannot read the firewall settings because of security limitations and will display **Status "Fail"** for the firewall settings.

In this case, make sure the firewall is disabled and enter the status in the Site Preparation Tool report manually.

- 7 To view details of the report, select the appropriate link: **System Hardware Details**, **Operating System and Software Details**, or **Manual Verification Required**.
- 8 To save the report, select the **Save** icon at the top left of the screen.
- 9 E-mail the saved report to your Agilent Service Representative for evaluation, and for validation of your personal computer for Agilent Software Systems Installs.

## Application Virtualization

### VMWare Support

Though Agilent has been testing and is confirming the reliability of ChemStation on VMWare we do not support issues in conjunction with this platform. Customers who want to use this technique must always provide their own properly trained and adequately skilled personnel.

Workstations, clients, and Analytical Instrument Controllers (AICs) can be virtualized using VMWare vSphere 6.x.

When using virtual machines as instrument controllers, confirm that the virtual network connection allows access to other system components with no routing between instruments and the instrument controller.

Virtualization of instrument controllers introduces a risk to data buffering functions for the system. In the event of a network failure, the connection to the instrument will be severed and acquisitions in progress will fail. To avoid this scenario use physical instrument controllers.

Strictly adhere to the ChemStation requirements. They also apply to virtual machines.

Further settings are recommended. For additional information, refer to the technical note 5991- 3637EN, *Virtualizing Agilent OpenLab CDS ChemStation Edition with VMware*.





## 2

# Stand-Alone Workstation or Networked Workstation

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Software 20

This chapter describes the requirements for stand-alone workstations or networked workstations running OpenLab CDS ChemStation Edition.

## Hardware Requirements

**Table 3** Minimum hardware configuration (ChemStation workstations)

Item	HW requirements
Processor speed (CPU)	3 GHz Dual Core
Physical memory (RAM)	4 GB (single instrument) 8 GB (multi-instrument or MSD)
Hard disc	160 GB, SSD recommended (20 GB for the software plus disk space for data, see "Disk Space" on page 14)
Video	17" * 1280x1024 (SXGA) 19" * 1440x900 recommended
Mouse	Microsoft Windows compatible pointing device No support for touchscreen functionality
Removable media	USB Port
Network	100/1000 LAN <sup>1</sup>

<sup>1</sup> A second LAN interface is recommended to isolate the instrument's data traffic.

## Number of Instruments

There is a limit to the number of instruments (for example, GCs, LCs or CEs) that can be concurrently controlled by an OpenLab CDS ChemStation Edition workstation:

- GC, LC (2D): 4 instruments
- LC (3D): 2 instruments
- CE: 2 instruments
- LC/MS, CE/MS: 1 instrument

Each instrument can consist of several modules, as in the case of Agilent modular LC systems. The recommended maximum number of modules depends on the types of modules and the exact configuration. Agilent recommends to not exceed a maximum of 18 modules (12 standard modules plus 6 CAN-slave modules such as valves or UIB interfaces). See the Configuration Guide (CDS\_CS\_Configure.pdf) for more detail.

### NOTE

Interactive data reprocessing is not recommended when acquiring data in a three- or four-instrument configuration on a workstation or an AIC at full load (for example, 7–10 2D instruments).

On a ChemStation VL Workstation, you can configure 1 GC or 1 LC with specific modules. For details on the configurable modules, please refer to the *Supported Instruments and Firmware Guide*.

## Software

**Table 4** Supported Operating Systems for OpenLab CDS ChemStation Edition workstations and clients

Operating System	Details
Windows 7	<ul style="list-style-type: none"><li>• Service Pack 1</li><li>• Enterprise or Professional<sup>1</sup></li><li>• 64 bit</li></ul>
Windows 10	<ul style="list-style-type: none"><li>• Enterprise or Pro: version 1803<sup>1</sup>, 1809, 1903<sup>2</sup>, or 1909</li><li>• Long Term Servicing Branch (LTSB): version 1507, 1607, or 1809</li><li>• 64 bit</li><li>• Touchpad functionality is not supported</li></ul>

<sup>1</sup> if you use Adobe Acrobat Reader version 17.011.30138 with Windows 7 Professional or Windows 10 1803 Enterprise, you need to deactivate "Protected Mode" in Acrobat Reader

<sup>2</sup> With 1903 the Net.TCP Port Sharing Service must be enabled by running the PowerShell command "Enable-WindowsOptionalFeature -online -All -FeatureName WCF-TCP-Activation45"



## 3

# Secure Workstation for OpenLab CDS ChemStation Edition

Hardware Requirements 22

Number of Instruments 22

Software 23

This chapter describes the requirements for a Secure Workstation for OpenLab CDS ChemStation Edition.

## Hardware Requirements

**Table 5** Minimum hardware configuration for Secure Workstation

Item	HW requirements
Processor	Intel® Xeon® E5-1620 (3.60 GHz, 10 MB cache, 4 cores) or equivalent
Physical memory	16 GB
Hard disc	4 x 500 GB or 2 x 1TB (20 GB for the software plus disk space for data, see "Disk Space" on page 14)
Video	17 " 1280x1024 (SXGA) 19 " 1440x900 recommended
Mouse	Microsoft Windows compatible pointing device
Removable media	USB Port
Network	100/1000 LAN <sup>1</sup>

<sup>1</sup> A second LAN interface is recommended to isolate the instrument's data traffic.

## Number of Instruments

There is a limit to the number of instruments that can be concurrently controlled by a Secure Workstation:

- LC, GC, CE, A/D, SFC: 2 instruments
- LC/MS, CE/MS: 1 instrument

## Software

**Table 6** Operating Systems and Applications for Secure Workstation

ChemStation Edition	C.01.07 SR1, SR2	C.01.07 SR3	C.01.08	C.01.09	C.01.10
Windows 7 SP1 64-bit <sup>1</sup> Enterprise or Professional (English US, Japanese, or Chinese)	✓	✓	✓	✓	✓
Windows 8.1 64-bit Enterprise or Professional (English US, Japanese, or Chinese)	✓	✓ <sup>2</sup>	✗	✗	✗
Windows 10 64-bit Enterprise or Pro: version 1803 <sup>3</sup> , 1809, 1903 <sup>4</sup> , or 1909 Long Term Servicing Branch (LTSB): version 1507, 1607, or 1809 (English US, Japanese, or Chinese)	✗	✓	✓	✓	✓
Internet Explorer 10 (64 bit)	✓	✓ <sup>5</sup>	✓ <sup>3</sup>	✗	✗
Internet Explorer 11 (64 bit)	✓	✓	✓	✓	✓
Microsoft Edge	n/a	✗	✗	✗	✓
PostgreSQL	The required PostgreSQL version is automatically installed during the Secure Workstation installation.				

<sup>1</sup> With Windows hotfixes KB2577795 and KB2999226



<sup>2</sup> Updates only

<sup>3</sup> if you use Adobe Acrobat Reader version 17.011.30138 and Windows 10 1803 Enterprise, you need to deactivate "Protected Mode" in Acrobat Reader

<sup>4</sup> With 1903 the Net.TCP Port Sharing Service must be enabled by running the PowerShell command "Enable-WindowsOptionalFeature -online -All -FeatureName WCF-TCP-Activation45"

<sup>5</sup> Only with Windows 7

Legend:

-  : supported
-  : not supported

If you use enable the Secure File I/O function in ChemStation, several features are not supported anymore. For details, refer to the *Secure Workstation for OpenLab CDS ChemStation Edition Installation Guide*.





## 4 Distributed System

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This chapter describes the requirements for instrument controllers or clients running OpenLab CDS ChemStation Edition.

## Analytical Instrument Controller (AIC)

### Hardware Requirements

**Table 7** Minimum hardware configuration for ChemStation Edition AIC

Item	HW requirements
Processor speed (CPU)	Single Processor with 6 cores, 1.8 GHz or 2x Quad Core 1.8 GHz
Physical memory (RAM)	24 GB
Hard disc	2x 250 GB, SSD recommended (20 GB for the software plus disk space for data, see "Disk Space" on page 14)
Video	17" * 1280x1024 (SXGA) minimum 19" * 1440x900 <sup>1</sup>
Mouse	Microsoft Windows compatible pointing device <sup>1</sup>
Removable media	USB Port
Network	100/1000 LAN <sup>2</sup>

<sup>1</sup> Only for installation and administration. Touchscreen functionality is not supported.

<sup>2</sup> A second LAN interface is recommended to isolate the instrument's data traffic.

### Number of Supported Instruments

There is a limit to the number of instruments (for example, GCs, LCs or CEs) on an OpenLab CDS ChemStation Edition AIC. You can configure up to 40 instruments, and run up to 10 online and 10 offline instances concurrently. ChemStation Edition supports instruments and modules connected exclusively via LAN.

One LC/MS Single Quad instrument is equivalent to four 2D LC instruments.

There is no limit to the number of AICs in a distributed system.

## Software

**Table 8** Supported Operating Systems for OpenLab CDS ChemStation Edition AICs

Component	C.01.07	C.01.08	C.01.09	C.01.10
Windows Server 2008 R2 SP1 Enterprise or Standard	✓	✗	✗	✗
Windows Server 2012 R2 <sup>1</sup> Standard or Data-center	✓	✓	✓	✓
Windows Server 2016 Standard or Data-center	✗	✗	✓	✓

<sup>1</sup> With Windows hotfix KB2999226

Legend:

- ✓ : supported
- ✗ : not supported

## Client in a Distributed System

**NOTE**

For troubleshooting purposes, it is highly recommended to have at least one Agilent ChemStation bundle PC operating as an OpenLab CDS ChemStation client. This PC should be kept as a reference to identify client PC hardware-related display and performance problems.

## Hardware Requirements

**Table 9** Minimum hardware configuration for ChemStation clients in a Distributed System

Item	HW requirements
Processor speed (CPU)	3 GHz Dual Core
Physical memory (RAM)	4 GB minimum 8 GB recommended with co-existent software
Hard disc	160 GB
Video	17" 1280x1024 (SXGA) 19" 1440x900 recommended
Mouse	Microsoft Windows compatible pointing device <sup>1</sup>
Removable media	USB Port
Network	100/1000 LAN

<sup>1</sup> Touchscreen functionality is not supported.

## Software

**Table 10** Supported Operating Systems for OpenLab CDS ChemStation Edition workstations and clients

Operating System	Details
Windows 7	<ul style="list-style-type: none"><li>• Service Pack 1</li><li>• Enterprise or Professional</li><li>• 64 bit</li></ul>
Windows 10	<ul style="list-style-type: none"><li>• Enterprise or Pro: version 1803, 1809, 1903<sup>1</sup>, or 1909)</li><li>• Long Term Servicing Branch (LTSB): version 1507, 1607, or 1809</li><li>• 64 bit</li><li>• Touchpad functionality is not supported</li></ul>

<sup>1</sup> With 1903 the Net.TCP Port Sharing Service must be enabled by running the PowerShell command "Enable-WindowsOptionalFeature -online -All -FeatureName WCF-TCP-Activation45"

## Supported Server Products

ChemStation C.01.10 supports the following server products in Networked or Distributed Systems.

- OpenLab Server 2.2 or OpenLab ECM XT 2.2
- OpenLab Server 2.3 or OpenLab ECM XT 2.3
- OpenLab Server 2.4 or OpenLab ECM XT 2.4
- OpenLab ECM 3.4.1 SP2 Hotfix04
- OpenLab ECM 3.5 with Update 5 (or higher)
- OpenLab ECM 3.6

## Options for combining different Agilent CDS Products in a Distributed System

### Configurations with OpenLab Server or OpenLab ECM XT

Sharing of data in a mixed environment with ChemStation C.01.10 AICs/clients and OpenLab CDS 2.x AICs/clients is supported with the following server products:

- OpenLab Server 2.2 or OpenLab ECM XT 2.2
- OpenLab Server 2.3 or OpenLab ECM XT 2.3
- OpenLab Server 2.4 or OpenLab ECM XT 2.4

Note that the version of your OpenLab CDS 2.x AICs and need to be compatible to the server product.

### Configurations with OpenLab ECM 3.x

ChemStation C.01.10 and CDS 2.4 Clients are supported on one single Shared Services Server rev. 3.2 with the following OpenLab ECM products:

- OpenLab ECM 3.5 with Update 6
- OpenLab ECM 3.6

Shared Services Server 3.2 is included with ChemStation C.01.10 and with OpenLab CDS 2.4.



## 5

# OpenLab CDS Shared Services Server

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This chapter describes the requirements for an OpenLab CDS Shared Services server. A Shared Services server is required for Networked and Distributed Systems.

## Hardware

**Table 11** Minimum hardware configurations for Shared Services Server

Item	HW requirements
Processor speed (CPU)	3 GHz Dual core
Physical memory (RAM)	12 GB (64-bit)
Hard disc	160 GB
Screen resolution <sup>1</sup>	17": 1024x768 (SXGA) recommended: 19": 1440x900
Mouse <sup>1</sup>	Microsoft Windows compatible pointing device No support for touchscreen functionality
Removable media	USB Port
Network	100/1000 LAN

<sup>1</sup> Only for installation and administration. Touchscreen functionality is not supported.



## Software

**Table 12** Operating Systems for an OpenLab CDS Shared Services server

Operating System	A.02.02	2.1	2.2	2.3	3.2
Windows Server 2008 R2 SP1 Enterprise or Standard	✓	✓	✗	✗	✗
Windows Server 2012 R2 Standard or Datacenter	✓	✓	✓	✓	✓
Windows Server 2016 Standard or Datacenter	✗	✗	✗	✓	✓

Legend:

- ✓ : supported
- ✗ : not supported

## Databases

Agilent OpenLab Shared Services manage information using a database. The database is created and configured automatically during the OpenLab Shared Services server installation.

When deploying networked system configurations, the database requires additional installation to ensure acceptable performance of the system.

**Table 13 Supported Operating Systems and Databases for Shared Services Server**

Shared Services	A.02.02	2.1	2.2	2.3	3.2
ChemStation	C.01.07 SR1, SR2	C.01.07 SR3	C.01.08	C.01.09	C.01.10
SQL Server 2008 R2 SP1 Express	✓ (Upgrades only <sup>1</sup> )	✓ (Upgrades only <sup>1</sup> )	✗	✗	✗
SQL Server 2008 R2 SP2 Enterprise or Standard	✓	✓	✗	✗	✗
SQL Server 2012 Enterprise or Standard	✓ (SP2)	✓ (SP2)	✓ (SP3)	✓ (SP3)	✓ (SP4)
SQL Server 2014 Enterprise or Standard	✗	✓	✓	✓	✓ (SP2)
Microsoft SQL Server 2016 Enterprise or Standard	✗	✗	✗	✗	✓ (SP2)
Microsoft SQL Server 2017 Enterprise or Standard	✗	✗	✗	✗	✓
PostgreSQL 9.2	✓	✗	✗	✗	✗
PostgreSQL 9.3	✗	✓	✓	✓	✗
PostgreSQL 10.3	✗	✗	✗	✗	✓
Oracle 11g R2	✓	✓ (Upgrades only <sup>2</sup> )	✓ (Upgrades only <sup>2</sup> )	✗	✗

**Table 13 Supported Operating Systems and Databases for Shared Services Server**

Shared Services	A.02.02	2.1	2.2	2.3	3.2
ChemStation	C.01.07 SR1, SR2	C.01.07 SR3	C.01.08	C.01.09	C.01.10
Oracle 12c R1	✓	✓	✓	✓	✗
Oracle 12c R2	✗	✗	✗	✗	✓

<sup>1</sup> Upgraded systems are supported with their existing database. On environments with more than ten instruments, upgrade SQLServer Express to a supported version for improved performance

<sup>2</sup> Upgraded systems are supported with their existing database.

Legend:

- ✓ : supported
- ✗ : not supported

#### NOTE

It is strongly recommended that you store database files and transaction logs (when applicable) on physically exclusive hard drives.



## 6 Network Requirements

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This chapter describes the network requirements that must be met in order to support the environmental computing needs.

## Introduction

OpenLab CDS ChemStation Edition systems rely on network infrastructure in order to support the communication between various system nodes. This communication is based on standard TCP/IP protocols. In order to provide optimum performance and uptime, the network must meet design criteria for available bandwidth, IP address assignment, name resolution and appropriate isolation of the lab subnet from the corporate network.

## LAN Connectivity

When using LAN communications to connect workstations or instrument controllers to an instrument, use one of these methods:

- Directly connect the instrument using a crossover CAT-5 (or higher quality) cable
- Connect via an isolated switch (see “[Network Isolation](#)” on page 50) using standard CAT-5 (or higher quality) network cabling
- Use professional switches only instead of consumer products as those often do not provide the enhanced protocol features for performance optimization

LAN communication hardware should be 100/1000 mbps speed capable. Do *not* team LAN cards for instrument communications.

## LAN Power Management

Avoid data capture or transfer interruptions in your data acquisition system by making LAN communication cards available for instrument and system component communications.

Windows may be set to turn instruments/components off to save power while sleeping or hibernating. To change this setting:

- 1 In the Microsoft Control Panel, open the **Network and Sharing Center**<sup>1</sup>.
- 2 Select **Change adapter settings**. Right-click **Local Area Connection**> **Properties**> **Configure**.
- 3 Select the **Power Management** tab.
- 4 Clear the **Allow the computer to turn off this device to save power** check box.

## Firewall Settings

Following is a list of ports used by the OpenLab CDS ChemStation Edition. These ports are required to be opened in order for the OpenLab software applications to communicate. The ports for OpenLab CDS ChemStation are programmed into the Windows Advanced Firewall for the active profile during installation. The exception to this is some of the instrument communication ports. These ports must be configured on other software/hardware firewalls being used. The ports for Oracle, SQL Server and PostgreSQL databases and ECM are not configured by the installation. Depending on your firewall configuration this list may not be all inclusive of the configurations that are required for the software to function correctly. In addition, many applications contact a server on the listed (listener) port but transfer information using a dynamically allocated port.

A domain service user account is also required for inter-server communication. It is required that this account be set explicitly to have local Administrative privileges on the OpenLab CDS Shared Services, ECM, and OpenLab servers. In some cases it may also be required to have local Administrative privileges on the clients.

<sup>1</sup> View the items by icon to see a list of all items.

## OpenLab Server or OpenLab ECM EXT Server

Table 14 OpenLab Server - Inbound Rules

Application	Protocol	Port	Remote System	Description
CM Server	TCP	21	Any	[Optional] Only if FTP service is turned on for OpenLab Server. By default it is off. Used by C:\Program Files (x86)\Agilent Technologies\OpenLAB Data Store\tomcat\bin\tomcat8.exe
CM Server	TCP	80	Any	OpenLab Server website and REST APIs operate on this port. Configurable. Used by C:\Program Files (x86)\Agilent Technologies\OpenLAB Data Store\tomcat\bin\tomcat8.exe
CM Server	TCP	443	Any	OpenLab Server secure website & REST APIs operate on this port if HTTPS is used. Used by C:\Program Files (x86)\Agilent Technologies\OpenLAB Data Store\tomcat\bin\tomcat8.exe
OLSS Diagnostics	TCP	3424	Clients, AICs, Servers	Used for collecting diagnostic logs
DR PostgreSQL Server	TCP	5433	DR Services	Database port (Firewall rule gets applied during installation of DR) Used by all internal + external applications and services, which connect against DR/PG: CDS, AT, QualA, Mercury.

**Table 14 OpenLab Server - Inbound Rules**

Application	Protocol	Port	Remote System	Description
CM Server	TCP	5701	Cluster Servers	OpenLab Server Cluster Used by C:\Program Files (x86)\Agilent Technologies\OpenLAB Data Store\tomcat\bin\tomcat8.exe
DCS	HTTP	6328	Any	Data Collection Service Legacy Port (ChemStation and CDS 2.4 and earlier) Used by C:\Program Files\Agilent Technologies\OpenLab Data Collection Server\Bin\DataCollectionService.exe
OLSS Server	TCP	6570	Clients, AICs	OpenLab Licensing (Flexera) Server Used by C:\Program Files\Agilent Technologies\OpenLab Data Collection Service\Bin\DataCollectionService.exe
OLSS Server	TCP	6577	Clients, AICs	OpenLab Shared Services
OLSS Server	HTTP	6624	Clients, AICs, Others	Legacy Shared Services REST API Legacy Licensing Support service REST API
OLSS Server	HTTP	6625	Clients, AICs	Shared Services REST API Licensing Support service REST API
OLSS Server	TCP	8084	Clients, AICs	Licensing Support service WCF API
OLSS Server	TCP	8085- 8099	Clients, AICs	OpenLab Licensing view-only web UI (Flexera). Default is 8090. Other ports may be used if 8090 is in use.
CM Search Service	TCP	8983	Clients, AICs	Search Service Used by C:\Program Files (x86)\Agilent Technologies\OpenLAB Data Store\java\bin\java.exe



**Table 14 OpenLab Server - Inbound Rules**

Application	Protocol	Port	Remote System	Description
QualA Service	TCP	9092	Any	QualA Web Service hosts REST APIs and website on this port. The port number can be changed using QualA Config tool.
QualA DR Microservice	TCP	9093	Any	Provides central management services for internal use from QualA Service
OLSS Server	TCP	27000-27009	Clients, AICs	OpenLab Licensing (Flexera) Server
ATS DCS CertSvc OLSS Server	HTTP	52080, 52088	Any	<p>Audit Trail Service (both ports) Data Collection Service (52088, for legacy http: 6328) at C:\Program Files\Agilent Technologies\OpenLab Data Collection Service\Bin\DataCollectionService.exe</p> <p>Certificate Service (52088 only): No program configured in Windows Firewall - path is C:\Program Files\Agilent Technologies\OpenLab Certificate Service\Bin\Agilent.OpenLab.CertService.CertServiceCore.exe</p> <p>Shared Services REST API and Licensing Support services REST API (52088 only)</p>

**Table 15 OpenLab Server - Outbound Rules**

Application	Protocol	Port	Remote System	Description
OLSS Server	TCP	25	Email Server	If email server uses a different port, or uses secure ports, the destination port will be different.
	TCP/UDP	53	DNS Server	DNS
	TCP/UDP	67, 68	DHCP Server	DHCP or BootP
	TCP	137-139	NetBios WINS	For NetBios/Name resolution for NT Share
OLSS Server	TCP	389	LDAP Server	LDAP
	TCP	445	NAS/Share Server	Server Message Block (SMB). Used for storage on a remote NAS share.
(OLSS Server)	TCP	636	Secure LDAP Server	Secure LDAP
CM Server, OLSS	TCP	1433	SQL Server	Only when using MS SQL Server. Configurable.
CM Server, OLSS	UDP	1434	SQL Server	Only when using MS SQL Server. UDP
CM Server, OLSS	TCP	1521	Oracle Server	Only when using Oracle Server. Configurable.
OLSS Server	TCP	3268	LDAP Server	Global Catalog LDAP
OLSS Server	TCP	3269	LDAP Server	Global Catalog LDAP SSL
CM Server, OLSS	TCP	5432	PostgreSQL Server	Only when using external PostgreSQL Server. Configurable.

## OpenLab ECM 3.x Server

**Table 16** ECM 3.x Server - Inbound Rules

Protocol	Port	Remote System	Description
TCP	80	Clients	OpenLab ECM Server website and REST APIs operate on this port. Configurable.
TCP	443	Clients	OpenLab ECM Server secure website & REST APIs operate on this port.

**Table 17** ECM 3.x Server - Outbound Rules

Protocol	Port	Remote System	Description
TCP	25	Email Server	If email server uses a different port, it can be specified in OpenLab Control Panel.
TCP/UDP	53	DNS Server	DNS
TCP/UDP	67, 68	DHCP Server	DHCP or BootP
UDP	161		Simple Network Management Protocol (SNMP)
TCP	389	LDAP Server	LDAP
TCP	636	Secure LDAP Server	Secure LDAP
TCP	1433	SQL Server	Only when using MS SQL Server. Configurable.
UDP	1434	SQL Server	Only when using MS SQL Server. UDP
TCP	1521	Oracle Server	Only when using Oracle Server. Configurable.
TCP	3268	LDAP Server	Global Catalog LDAP
TCP	3269	LDAP Server	Global Catalog LDAP SSL
TCP	8211	ECM Comm Service	If caller is a Service
TCP	18211	ECM Comm Service	If caller is Forms Host

## OpenLab ECM 3.x Clients

**Table 18** ECM 3.x Client - Inbound Rules

Protocol	Port	Remote System	Description
TCP	1801	MSMQ	MSMQ messages used in ECM Scheduler Agent

**Table 19** ECM 3.x Client - Outbound Rules

Protocol	Port	Remote System	Description
TCP/UDP	53	DNS Server	DNS
TCP/UDP	67, 68	DHCP Server	DHCP or BootP
UDP	161		Simple Network Management Protocol (SNMP)
TCP	389	LDAP Server	LDAP
TCP	636	Secure LDAP Server	Secure LDAP

## ChemStation Workstation, AIC, or Client

Please see the [Table 21](#) on page 45 and [Table 22](#) on page 47 for ports used for instrument communication.

**Table 20** ChemStation Workstation, AIC, or Client

Protocol	Port	System	Description
TCP, UDP	53	AICs, Workstations, Clients	DNS
TCP	80	AICs, Workstations, Clients	HTTP
TCP	443	AICs, Workstations, Clients	HTTPS
TCP	445	AICs, Workstations, Clients	Server Message Block (SMB)
TCP	2886	AICs, Workstations, Clients	OpenLab Automation Services
TCP	3389	AICs, Clients	Microsoft RDP

**Table 20 ChemStation Workstation, AIC, or Client**

Protocol	Port	System	Description
TCP	3424	AICs, Workstations, Clients	OpenLab Diagnostics Tools
TCP	6570	AICs, Workstations, Clients	OpenLab Licensing Support (Flexera)
TCP	6577	AICs, Workstations, Clients	OpenLab Shared Services
TCP	6624	AICs, Workstations, Clients	OpenLab REST API
TCP	8080	AICs, Workstations, Clients	OpenLab Licensing Support (Flexera)
TCP	8084	AICs, Workstations, Clients	OpenLab Licensing Support (Flexera)
TCP	(8085-8090)	AICs, Workstations, Clients	OpenLab Licensing alternates
TCP	8090	AICs, Workstations, Clients	OpenLab License web UI
TCP	9753	AICs, Workstations, Clients	Messaging communication
TCP	(11121-11141)	AICs, Workstations, Clients	Agilent Compliance Engine (ACE)
TCP	(27000-27009)	AICs, Workstations, Clients	OpenLab Licensing Support (Flexera)

## Agilent Instruments

**Table 21 Instruments - Inbound Rules**

Protocol	Port	Remote System	Description
TCP, UDP	20	AIC, Workstation	FTP is required for some instruments.
TCP	21	AIC, Workstation	FTP: GC/MSD - Firmware Installation (FTP). Needs to be open from PC used to do FW update to instrument

**Table 21 Instruments - Inbound Rules**

Protocol	Port	Remote System	Description
TCP	22	AIC, Workstation	SFTP is required for some instruments.
TCP, UDP, Telnet	23	AIC, Workstation	Required for GC/MS, all LC. For LAN config only, no telnet protocol implemented
UDP	69	AIC, Workstation	TFTP: Required for communication with legacy Instruments (Jet Direct Cards)
HTTP	80	AIC, Workstation	LC Infinity II modules only, closed by default, opened if Infinity Lab Companion G7108A license is installed
TCP	111, 1007, 1024- 1026	AIC, Workstation	LC/MS instrument communication
TCP	2101	AIC, Workstation	ELSD - communication with the ELSD RC.Net driver
TCP	2883-2885	AIC, Workstation	GC/MSD - Instrument control (Proprietary/SunRPC/TCP)
TCP	3068,3071	AIC, Workstation	GC/MSD - Instrument control (Proprietary/SunRPC/TCP)
TCP	4879	AIC, Workstation	Instrument communication (headspace)
TCP	4900, 4901	AIC, Workstation	Instrument communication (Micro GC 490, 990)
TCP	5813	AIC, Workstation	GC/MSD - Firmware installation (ICMP/Ping)
TCP	5973	AIC, Workstation	GC/MSD - Instrument control (Proprietary/SunRPC/TCP)
TCP	8194	AIC, Workstation	PAL3, data subscription
TCP	9001- 9002	AIC, Workstation	Instrument communication (GC/LC)
TCP, Licop	9100	AIC, Workstation	Instrument communication (GC/LC/35900)
TCP	9101	AIC, Workstation	Instrument communication (GC/LC)

**Table 21 Instruments - Inbound Rules**

Protocol	Port	Remote System	Description
TCP	9110	AIC, Workstation	Instrument communication (GC/LC)
TCP, Licop	9200	AIC, Workstation	Instrument communication (LC), Talk To Lab cards (G1369) only
TCP	10000- 10010	AIC, Workstation	Instrument communication (GC 78xx, 88xx, 9000)
TCP	30718	AIC, Workstation	Instrument utilities
TCP	55055- 55057	AIC, Workstation	Instrument utilities
TCP	61001	AIC, Workstation	Instrument utilities
TCP	64000,64001	AIC, Workstation	PAL3 communication
TCP	64500	AIC, Workstation	PAL3, plain socket protocol

**Table 22 Instruments - Outbound Rules**

Protocol	Port	Remote System	Description
TCP/UDP	53	DNS Server	DNS
TCP/UDP	67, 68	DHCP Server	DNS or BootP

### Dynamic Ports

**Dynamic Ports:** used for temporary communications between clients. The ports used depend on the operating system in use and are configurable. See the operating system documentation for more information.

## Domain Requirements

Domains support the flow of information and user access rights across machines in the network. This means that all machines within the Networked or Distributed OpenLab CDS ChemStation Edition system must reside within the same domain or have the appropriate cross domain trusts to allow name based communications between all components in the system. In the case of a workstation installation, domains are only relevant if you are using a Windows domain-based authentication model or the number of Networked Workstations is bigger than five. In this case the workstation or client must always be able to communicate with domain components in order to function as expected.

Installing OpenLab CDS ChemStation Edition will apply network exceptions to the Windows firewall under the domain profile to result in a functional system. The components necessary to support ChemStation on a domain are:

- *Domain controller* – broadcasts the domain name and negotiates access to machines.
- *Domain name server (DNS)* – maintains records of what hostnames belong to which IP on the network. This component is always required for effective components communications in networked systems.
- *Active directory* – maintains the list of users and their access rights on the domain.

**NOTE**

The domain name server (DNS) must be able to resolve the IPv4 address of all instrument controllers and instruments. Any unresolved instrument controller or instrument will disrupt the functionality of OpenLab resulting in errors or delays. IPv6 is not supported and must be deactivated.

**NOTE**

ChemStation components may not be installed on the same machine as the domain controller.

The domain components above host a variety of services and settings that must be configured appropriately to allow communication across machines. The following services and settings will need to be configured to fit your domain. Your internal IT group is responsible for proper configuration of any custom domain solutions. These include settings for:

- Lookup zones and hostnames
- Group and security policies
- Subnet masks and Virtual LANs
- IP reservation (static or DHCP)



## Environments with Proxy Servers

The servers in your environment (for example: Shared Services server, license server) must be accessible via http or https in the network. If you use proxy servers, make sure that accessing the servers is possible. If required, adjust the proxy settings.

## Network Assessment

If you use the Agilent Network Assessment Tool (NAT), make sure that you open the following ports in the firewall for this tool:

- 5002
- 7000
- 22943

## Network Isolation

It is recommended that Client/Server systems are isolated from network environments that experience frequent failures due to faulty switching, viruses, or worms. If network isolation is not possible, it is recommended that you reconfigure the machines and disconnect them from the problematic network until these issues can be resolved. On an isolated network, name resolution services must be hosted by a separate machine to enable proper communications between system components by name.

An isolated network is physically completely isolated so that no LAN switch connections on the network are shared with the corporate network infrastructure. [Figure 4](#) on page 51 shows a simple client/server topology. In this example, the connection highlighted in red prevents isolation of the system.

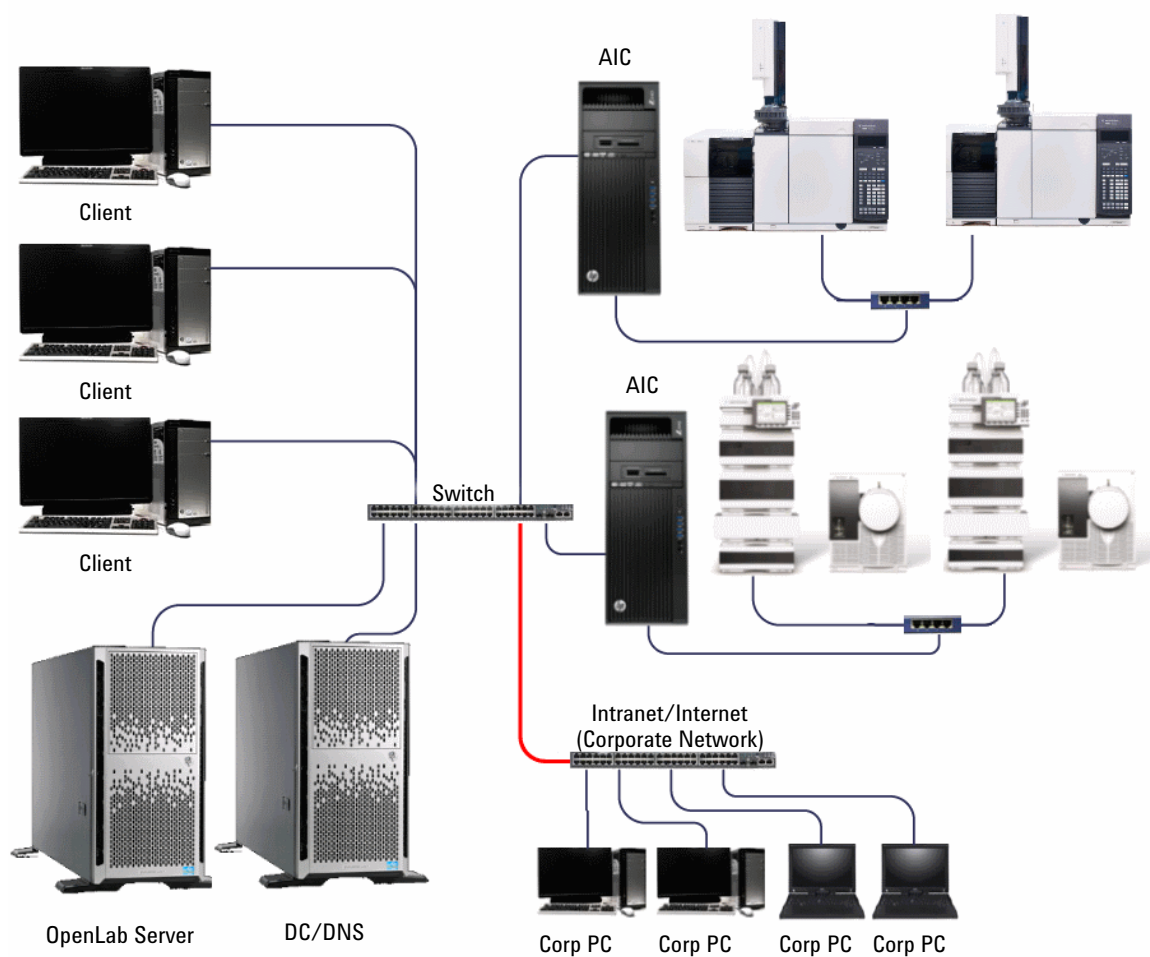


Figure 4 Sample client/server topology: Network Isolation

## Databases

For systems configured to use a database external to the OpenLab Shared Services Server, the network separation between the database and the Shared Services Server must be minimized for best performance. The database and shared services server should be physically connected to the same switch for optimal performance.

### Important Notes

- TCP/IP networking is required for all products.
- WANs (wide area networks) are not supported.



# 7

## Licensing

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This chapter contains information on the software used for licensing.

## Software subscriptions and Software Maintenance Agreement (SMA)

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

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

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

## Supported Software

Agilent OpenLab CDS ChemStation Edition supports the use of a central licensing server for the distribution and tracking of license entitlements. The following software is supported for this purpose:

- Flex-Net Publisher v. 11.12

This software is installed on the OpenLab CDS Shared Services server and on stand-alone workstations.



## 8 Required Windows Users

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Recommendations for Networked Workstations and Distributed Systems 57

This chapter contains recommendations about Windows users for OpenLab CDS ChemStation Edition in different configurations.

## Recommendations for Standalone Workstations

Agilent recommends that the following users are prepared for a ChemStation Workstation or for a Secure Workstation:

- Installation user  
This is the user who installs the software.
  - Either a local user or a domain user
  - Member of the local **Administrators** group
- ChemStation administrator  
This user can change settings for all ChemStation instances running on the workstation.
  - Either a local user or a domain user
  - Member of the local **Users** group
  - No need to be a member of any administrators group
  - Member of the local **CSAdministrators** group (adding the user to the group is only possible after installing the software, as the group will be created automatically).
- If you plan to use Secure File I/O: File operations user  
If you enable Secure File I/O, ChemStation will use this account exclusively for all file operations.
  - Either a local user or a domain user
  - Not member of the local **Users** group
  - Not member of any administrators or power users group
  - No administrative privileges
  - Ideally having a password that does not expire

Make sure that you use only the following characters for user names:

---

A-Z, a-z, 0-9, \_ (underscore), - (hyphen)

---



## Recommendations for Networked Workstations and Distributed Systems

Agilent recommends that the following users are prepared for Networked Workstations or Distributed Systems:

- Installation user  
This is the user who installs the software.
  - Domain user
  - Member of the local **Administrators** group on each computer where software components are installed
- ChemStation administrator  
This user can change settings for all ChemStation instances running on the Networked Workstations or AICs.
  - Domain user
  - Member of the local **Users** group on the Networked Workstations or AICs
  - No need to be a member of any administrators group
  - Member of the local **CSAdministrators** group on each Networked Workstation or AIC (adding the user to the group is only possible after installing the software, as the group will be created automatically)
- If you plan to use Secure File I/O: File operations user  
If you enable Secure File I/O, ChemStation will use this account exclusively for all file operations.
  - Domain user
  - Not member of any administrators or power users group
  - No administrative privileges
  - Not used for any other purpose
  - Ideally having a password that does not expire

Make sure that you use only the following characters for user names:

---

A-Z, a-z, 0-9, \_ (underscore), - (hyphen)

---

## In This Book

This document details the minimum network, hardware and software requirements for supporting OpenLab CDS ChemStation Edition C.01.10.

- OpenLab CDS ChemStation Edition C.01.10
- Secure WorkStation for OpenLab CDS ChemStation Edition C.01.10
- OpenLab CDS Shared Service Server Software 3.2

These requirements also apply to the Value Line (VL) Edition of OpenLab CDS ChemStation Edition unless otherwise stated.

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