

OPENLAB CDS EZCHROM EDITION IN CLIENT/SERVER NETWORK



OpenLAB

Chromatography Data System

Advantages, Architecture,
Workflow, VWR Support



OpenLAB CDS EZChrom Edition is a modern Chromatography Data System that is part of the new Agilent OpenLAB software suite for analytical laboratories and enterprise.

The multi-instrument control capabilities, scalability, compliance and many new features such as Control Panel and Data Analysis plus Intelligent Reporting modules are ideal to fulfil the requirements of today's chromatography laboratories and to optimise their efficiency.

OpenLAB CDS EZChrom Edition Software is uniquely designed to fit the needs of every chromatography laboratory, from a single user controlling a single instrument all the way to a multi-user, multi-site enterprise with hundreds of instruments. It can also easily be connected to the OpenLAB Data Store for permanent data storage in a secure data repository.

Following options are available:

- As a stand-alone workstation with 1 to 4 LC or GC chromatography instruments connected
- As Client/Server (Distributed) system
- As Client/Server (Distributed) system/Enterprise system connected to the OpenLAB Data Store database

Advantages of a Client/Server installation.

The installation of OpenLAB CDS EZChrom Edition in a client/server network is particularly advantageous with regards to cost and performance for laboratories operating 4 or more chromatography instruments (LC or GC).

The particular advantages are:

- **Full GxP/FDA/EU Annex 11 compliance**
 - Controlled access: Enterprise level security on Windows
 - Central administration of users, user-rights, projects and instruments with the OpenLAB Shared Services Control Panel
 - Central data storage
 - Data security, integrity, version history and traceability, secure workflow
 - Audit trails
 - Electronic signature
- **Multi-Vendor instrument control**
One software platform to control all chromatography instruments – so minimum training required
- **Client PCs (PCs the users work with):**
Can be located anywhere in the network (in the lab, in the office, ...)

- **Acquisition Servers** (PCs to which the chromatography instruments are connected):
Data buffering of the acquisition servers ensures avoiding data loss in case the network has problems
- **Scalability**
Easy upgrade of the Client/Server system by addition of further instrument and acquisition server licenses
- **Less effort for the IT department**
When a lab-wide operational change needs to be made, it can be carried out once over the network, rather than multiple times on every chromatography workstation
- **Full backward compatibility**
for raw data, methods, workflows and results of your current EZChrom Elite software systems (if applicable)

Architecture of an OpenLAB CDS EZChrom Edition Distributed (Client/Server) system

The Client/Server system consists of the following components (see Figure 1):

- **Local Area Network (LAN)**
to which Acquisition Servers, Clients and Central Servers are connected - throughout the lab, several labs, several buildings and even several sites
- **Acquisition Servers:**
PCs to which the chromatography instruments are connected (up to 4 instruments per acquisition server)

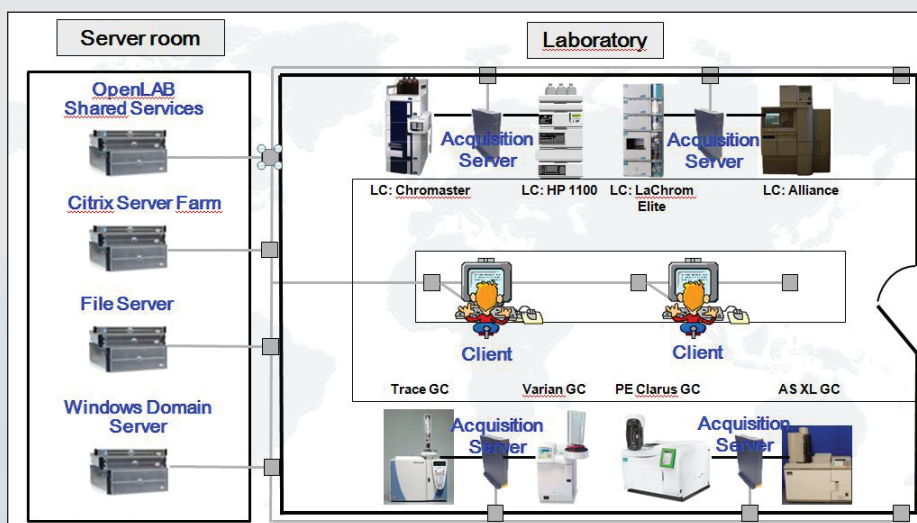


Figure 1. Architecture of the OpenLAB CDS EZChrom Edition client/server (distributed) system.

Status	Name	Project	Location	Application	Type	Controller	Description
▶	Agilent 1290 LC	RDLCPProd 1	RD LAB1 LG	EZChrom	Agilent LC	VWRDEMO-PC	
▶	Agilent 6890 GC	QCQCProd 2	QC LAB2 GC	EZChrom	Agilent 6890 GC	VWRDEMO-PC	
▶	Agilent 7890 GC	QCQCProd 1	QC LAB2 GC	EZChrom	Agilent 7890 GC	VWRDEMO-PC	
▶	Agilent 7890 GC	RDGCProd 1	RD LAB2 GC	EZChrom	Agilent 7890 GC	VWRDEMO-PC	
▶	Hitachi Chromaster 400 UV	QCQCProd 1	QC LAB1 LG	EZChrom	Hitachi Chromaster	VWRDEMO-PC	
▶	Hitachi Chromaster 600 UV	QCQCProd 2	QC LAB1 LG	EZChrom	Hitachi Chromaster	VWRDEMO-PC	
▶	Hitachi Chromaster Ultra RS	RDLCPProd 2	RD LAB1 LG	EZChrom	Hitachi Chromaster	VWRDEMO-PC	
▶	Hitachi LaChrom DAD	QCQCProd 3	QC LAB1 LG	EZChrom	Hitachi LaChrom	VWRDEMO-PC	
▶	Hitachi LaChrom Elite DAD	QCQCProd 2	QC LAB1 LG	EZChrom	Hitachi LaChrom	VWRDEMO-PC	
▶	Hitachi Primea DAD	RDLCPProd 3	RD LAB1 LG	EZChrom	Hitachi Primea	VWRDEMO-PC	
▶	Perkin Elmer Clarus 500 GC	QCQCProd3	QC LAB2 GC	EZChrom	Perkin Elmer GC	VWRDEMO-PC	
▶	Perkin Elmer Clarus 500 GC	RDGCProd 3	RD LAB2 GC	EZChrom	Perkin Elmer GC	VWRDEMO-PC	
▶	Varian CP 3800 GC	QCQCProd 2	QC LAB2 GC	EZChrom	Varian CP-3800 GC	VWRDEMO-PC	
▶	Waters Alliance LC	RDLCPProd 2	RD LAB1 LG	EZChrom	Waters Alliance LC	VWRDEMO-PC	

Figure 2. OpenLAB CDS EZChrom Edition Control Panel with "Lab-at-a-glance view" of all connected instruments.

- **Clients:**
PCs the users work with
- **Servers** (can be operated as virtual machines, usually located in a server room):
 - **Windows Domain Server:**
Enterprise level security is provided by your IT department using Windows administration - user-accounts and passwords will be defined on this level
 - **OpenLAB Shared Services Server:**
Data Base based central OpenLAB administration of users, user-groups, user-rights (roles), projects, project groups,
- **File Server:**
For storage of all data files
- **Citrix Server** (optional, for working with "thin" clients):
Supplies the application software (OpenLAB CDS EZChrom Edition) for the clients in terminal-server mode.
- **Advantage:** Central location of the application software, easy upgrade.

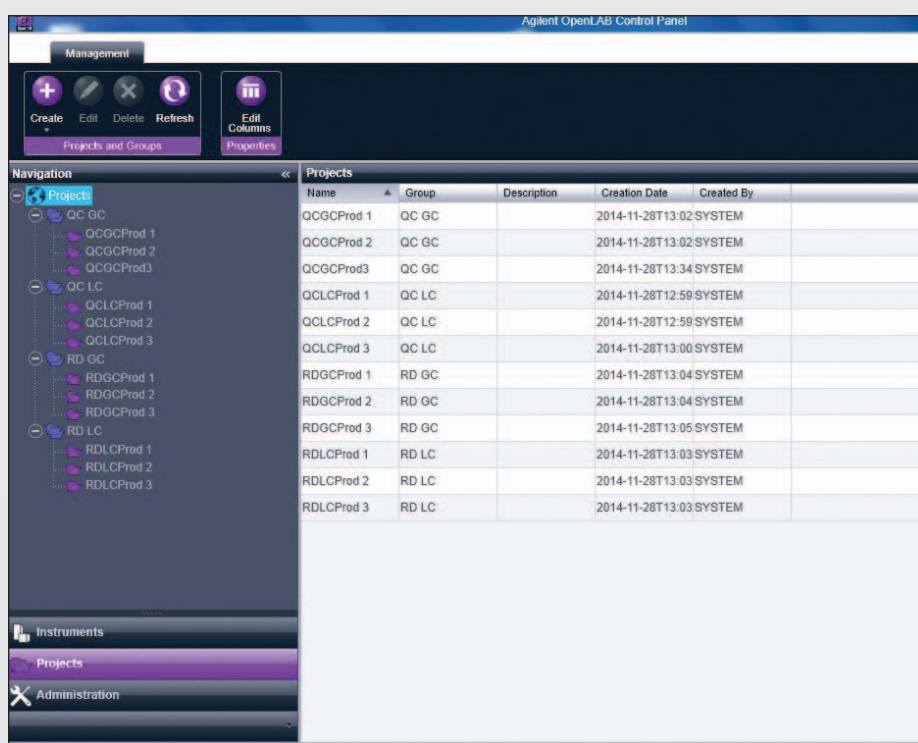


Figure 3. OpenLAB CDS EZChrom Edition Control Panel with view of all projects and project groups. The projects contain methods, sequences, results including data and reports.

Workflow in an OpenLAB CDS EZChrom Edition Distributed (Client/Server) System

The users work with the client PCs on which they create methods and sequences, start analyses, reprocess data and create reports.

According to their user-rights they have access to chromatography instruments and projects via the OpenLAB Shared Services Server. They can view the status of the instruments by the "lab-at-a-glance view" (see Figure 2).

Acquisition Servers are connected to the instruments. Via the network they receive the sequences which include the relevant methods and start command to run the sequence(s). They control the instruments according to the sequences and the included methods, they acquire and buffer the data and send the data via the network to the file server.

If the network is down the acquisition servers complete the running sequence and intermediately store the data until the network is up again. Data is stored on the File Server.

For data reprocessing, the data is transferred via the network to the clients. On the clients users can view the data, if necessary optimise the integration of the chromatograms, create reports and store the final data file (Result Set) including the processing method on the file server.

VWR support of OpenLAB CDS EZChrom Edition Client/Server installations

A team of experienced and trained software specialists from VWR currently support many small, medium sized up to very large

EZChrom Elite and OpenLAB CDS EZChrom Edition client server systems. Starting in 1999 VWR has 15 years experience in this field.

To make your client/server project a success VWR offers the following software services:

- **Assessments and planning** of the client/server project to understand all details of your needs
- **Project management** - planning, organising and managing resources to implement the software system, optimise the architecture to maximise performance
- **Implementation services** - installation and testing of all software components on all servers, acquisition servers and clients
- **Test environment** - preliminary test installation to verify performance
- **Validation services** - Installation Qualification (IQ) and Operational Qualification (OQ) of the Client/Server system and preparation of the corresponding documentation
- **Training** - educate your staff to work with the software (administration and chromatography)
- **Software Maintenance Agreement (SMA)** for free updates, upgrades, support line and remote support
- **On-site support** for maintenance, troubleshooting, installation of upgrades etc

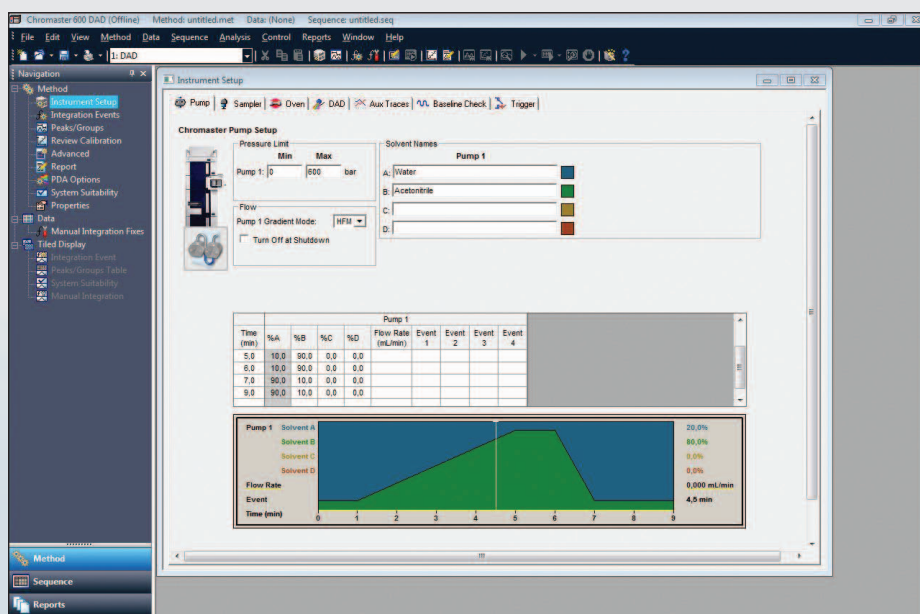


Figure 4. Method Instrument Set-up user-interface for the Hitachi Chromaster 600 HPLC instrument.

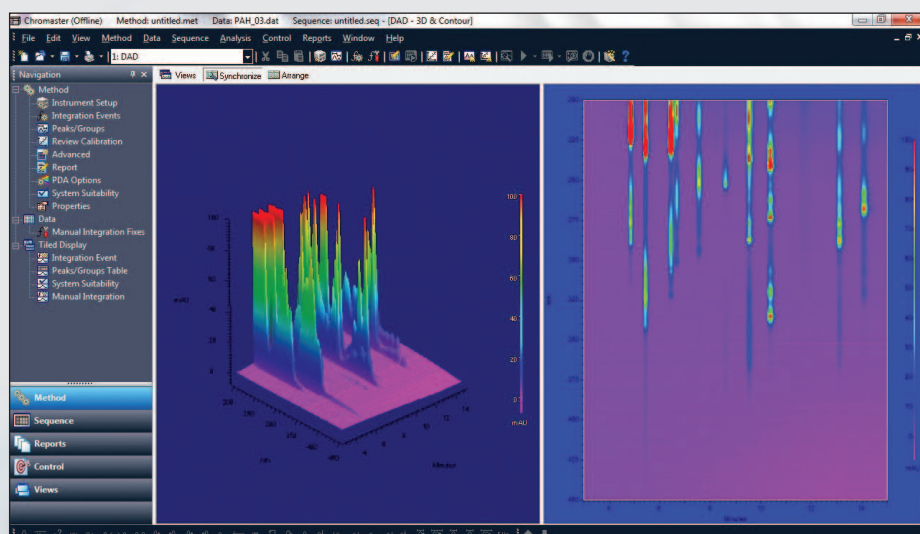


Figure 5. OpenLAB CDS EZChrom Edition data processing: View of PDA data.

Summary

An OpenLAB CDS EZChrom Edition Client/Server system offers important advantages for laboratories with several chromatography instruments.

The Client/Server deployment is ideal in order to achieve full regulatory compliance. Clients can be located at any desired place in the network and offer comfortable working conditions to create methods and sequences, to start analyses and to reprocess data. The multi-vendor instrument control capability of OpenLAB CDS EZChrom Edition enables the installation of one single software

platform to control all chromatography instruments, as a result reducing training requirements for users.

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For further information on OpenLAB CDS EZChrom Edition workstation and Client/Server systems please contact your local VWR chromatography specialist or email chromjournal@eu.vwr.com today!

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