Notices

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Contents

Introduction 4
Who should read this guide? 4
Maintenance procedures 4
Update database statistics 4
Procedures for PostgreSQL database 4
Procedures for SQL Server 5
Monitor resource usage on Data Store server 6
Additional best practices 6
Disaster recovery planning 7
Data Store backup procedure 8
Determine your database, content and index folders 8
Stop Data Store services 9
Backup databases 9
Backup content and index folders 11
Start Data Store services 11
Data Store restore procedure 11
Create a new system 12
Install Data Store using original configurations 12
Stop Data Store services 12
Restore the Databases 12
Restore Content and Indexes 12
Start Data Store services 12
Data Store activation 13
Changing Data Store storage location 14
Introduction

Agilent OpenLAB Data Store is used to centrally manage data files generated by supported analytical systems. This document provides information about maintenance procedures that must be taken to ensure that the system remains stable and performs well over time.

It also provides guidelines for taking regular backups of your server and procedures for restoring your server in the event of a disaster such as a server hardware failure.

Note that tools mentioned in the document are for demonstration of the concepts. If your organization has standardized on other tools, you may use them as long as you can confirm that they perform the exact same tasks.

Who should read this guide?

This document is targeted for the system administrator of the OpenLAB Data Store system. Basic administrative knowledge of the underlying database management system is required. In addition, familiarity with Windows backup/restore is also required.

Maintenance procedures

Update database statistics

To maintain optimal database performance, periodically update the OpenLAB Data Store 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 two databases OpenLABDS and OLSharedServices. If custom database names were chosen during installation, use the correct names 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 and connect as the database administrator and select the database for which 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 the Maintenance... context menu option. The following form is displayed.

![Maintain Database OpenLABDS](image)

**Figure 1** Maintain Database OpenLABDS

3 Choose the “ANALYZE” radio button, 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.

[http://www.postgresql.org/docs/9.0/static/maintenance.html](http://www.postgresql.org/docs/9.0/static/maintenance.html)

### 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

- Start SQL Server Management Studio and connect as the database administrator.
- Expand the server.
- Expand the Management folder.
- Right-click Maintenance Plans and select Maintenance Plan Wizard. Use 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 at least activity (for example, Sunday, 12:00 noon)
  - b. Select Update Statistics as the maintenance task.
  - c. Choose the Data Store database (OpenLABDS) and the Shared Services database (OLSharedServices) as the database against which the task will be executed.
Monitor resource usage on Data Store server

The data files, indexes, and database are stored on the server hard disk. Depending on your server’s configuration these may be on one or more disk drives.

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

CPU, memory and network utilization must be monitored to check if there are any performance bottlenecks on the server.

Recommended best practices for monitoring resource usage

1. Monitor the disk usage of OpenLAB Data Store at least weekly.
2. Optionally, implement automated disk space monitoring tools that send e-mail alerts when disk usage exceeds the thresholds. Some 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.

Additional best practices

1. Apply 3rd party updates and patches on the OpenLAB Data Store Server.
   On the Agilent Customer Care Portal, Agilent regularly posts information on 3rd party updates and patches that have been validated for use with the OpenLAB software suite. These include OS security patches and updates, database updates, and application updates.
   The Customer Care Portal is available at: http://www.ccportal.chem.agilent.com/PortalHome

2. Apply Agilent software updates.
   Apply software updates for Agilent OpenLAB Data Store and OpenLAB Shared Services on your Data Store 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.
Disaster recovery planning

Prepare a recovery plan for the unlikely case of the OpenLAB Data Store becoming inoperable due to a hardware or software failure. This plan must include information and procedures for completely restoring the operating system, the Data Store software and data – if need be to a physically different server. Make sure that the disaster recovery plan has been tested and confirmed to be working.

“Disaster Recovery Plan” must include the following:

1. Server hardware information: CPU, Memory and Hard disk configuration information.
2. Server identity: Name, IP, domain, URI, etc.
   - Server administrator information: username and passwords for logging into the server. If applicable, usernames and passwords for the database.
3. Server software information: OS version, Patch level
4. OpenLAB Data Store Installation Parameters:
   Installation folder:
   Installation log file:
   OpenLAB Data Store database type:
   OpenLAB Data Store content directory:
   OpenLAB Data Store indexes folder:
   OpenLAB Shared Service language:
   OpenLAB Shared Services database name:
   Installed licenses:
   Registered applications:
5. 3rd party software information: applications and their revisions and install paths
6. Backup procedures (discussed below)
7. Backup media location and organization details
8. Restore procedures (discussed below)
Data Store backup procedure

It is mandatory that every Data Store server be backed up regularly. Periodic full backups and differential backups between the full backups must be created by Data Store administrators. These backups are the only way to restore a Data Store system in the event of a hardware or software failure.

It is also mandatory that the restore procedures (discussed below) be tested to make sure that the backups are being performed properly and can be used for a restore. In order to do an effective restore a disaster recovery plan must also be created.

OpenLAB Data Store stores files and indexes on your server’s file system. The location of this folder is determined when the product is installed. Other data such as folder information, audit trails, signatures and lab applications data are stored in a relational database.

A full backup captures a complete set of data in the Data Store, including uploaded files and its databases. A differential backup contains changes that have occurred since the last full backup. The differential backup process is generally faster when compared to the full backup since it is backing only the changed elements.

Determine your database, content and index folders

To backup and restore OpenLAB Data Store, you will need to know the name of your databases, the location of the stored content folder, and the location of the stored indexes folder.

There are two databases that need to be backed up. One is the Data Store database which is named “OpenLABDS” and the other is the Shared Services database. The Shared Services database name is chosen when the installation is done. Unless it was customized, typically it will be named “OLSharedServices”.

Similarly, the content folder path is also a parameter that is specified during the server installation. You can use the tool “Agilent OpenLAB Data Store Utility” shown below to determine these paths.

![Agilent OpenLAB Data Store Utility](image)
Stop Data Store services

Open Windows Services (services.msc) and Stop the services

- alfrescoTomcat
- Agilent OpenLAB Shared Services
- postgresql-x64-9.0 (only applicable when using PostgreSQL database for Data Store)

Backup databases

This section provides a simple and interactive approach to backup databases. Please refer to PostgreSQL or MS SQL Server documentation for other options – some of which may allow you to automate the process as well.
Procedure for PostgreSQL

The location where the database files are stored is specified during the server installation. By default it is “C:\PostgreSQL Data”. If customized during installation, you can refer to your installation notes. This information is also recorded in Windows registry at “HKEY_LOCAL_MACHINE\SOFTWARE\PostgreSQL\Installations\postgresql-x64-9.0\Data Directory”.

Back up the PostgreSQL database by backing up the database folder (C:\PostgreSQL Data) using “Windows Server Backup” tool or any other tool of your choice.

Procedure for MS SQL Server

Use “SQL Server Management Studio” to backup Shared Services database (OLSharedServices) and the Data Store database (OpenLABDS). The tool allows users to perform “Full Backups” as well as “Differential Backups”.

![Using SQL Server Management Studio for backup](image)

Figure 4  Using SQL Server Management Studio for backup
Backup content and index folders

Use the “Windows Server Backup” or any other tool of your choice to backup the Data Store content folder (C:\DSContent) and index (C:\DSIndex) folders.

![Backup Schedule Wizard](image)

**Figure 5** Using Windows Server Backup

Start Data Store services

Open Windows Services (services.msc) and Start the services

- **postgresql-x64-9.0** (only applicable when using PostgreSQL database for Data Store)
- **Agilent OpenLAB Shared Services**
- **alfrescoTomcat**

You will need to wait a couple of minutes for the services to fully start.

Data Store restore procedure

Use these procedures to restore your system from an existing backup if the OpenLAB Data Store becomes inoperable due to a hardware or software failure.
**Data Store restore procedure**

**Create a new system**

Reformat your existing machine and reinstall the OS. Make sure to configure the server with the same names and paths as before. Refer to your installation notes or disaster recovery plan for the original names and paths.

**Install Data Store using original configurations**

Follow the installation procedures to install and configure a brand new Data Store on the machine. Once again refer to your installation notes or disaster recovery plan for the original configuration.

**Stop Data Store services**

Open Windows Services (services.msc) and Stop the services.

- alfrescoTomcat
- Agilent OpenLAB Shared Services
- postgresql-x64-9.0 (only applicable when using PostgreSQL database for Data Store)

**Restore the Databases**

**Procedure for PostgreSQL**

Determine your database folder (e.g., C:\PostgreSQL Data) and restore the PostgreSQL databases to it from your backup.

**Procedure for MS SQL Server**

Use “SQL Server Management Studio” to restore Shared Services database (OLSharedServices) and the Data Store database (OpenLABDS).

**Restore Content and Indexes**

Determine the locations of your Data Store content folder (C:\DSContent) and index (C:\DSIndex) folder and restore them from your backup.

**Start Data Store services**

Open Windows Services (services.msc) and Start the services

- postgresql-x64-9.0 (only applicable when using PostgreSQL database for Data Store)
- Agilent OpenLAB Shared Services
- alfrescoTomcat

You will need to wait a couple of minutes for the services to fully start.
Data Store activation

In order for Data Store security synchronization to work, the Data Store server needs to be “activated” after installation. This gets done as one of the configuration steps that follow immediately after Data Store installation.

In the event of the server being moved to a new machine, or in the event of a software upgrade, it may be required to reactivate Data Store. This is done from the OpenLAB Control Panel “Administration” tab. Click on the "System Configuration" entry in the "Navigation" view and then click on the "Edit System Settings" button in the tool bar to edit the system configuration. For authentication provider, the value needs to be either “Internal” or “Windows domain”. If you had already configured with one of these values previously, you can choose “Keep current configuration”. You must choose “Data Store” as the storage type and hit “Next”. Then choose “Change server” option and provide the Data Store Server URL and hit Activate to reactivate Data Store synchronization.

The system uses a built-in password for the activation process. If you would like to protect the activation process, the default built-in password may be changed using the “OpenLAB Data Store Utility”. Click on the “Change Activation Password” and provide a new password. Once the activation password has been changed, activating Data Store will request for a password.
Changing Data Store storage location

Every file that is uploaded to Data Store is kept on the server’s hard disk. After using Data Store for a long period of time, eventually the disk will start filling up. When this happens, you must provide additional disk space for the system to function. If your server has been configured with RAID you may be able to simply increase the available disk space by adding larger disks.

In the event that you want to change the disk storage location for Data Store files and indexes, you will first need to determine the location of the content folder, and the location of the indexes folder. These paths are determined during the installation process. You can use “Agilent OpenLAB Data Store Utility” shown below to determine the current paths used.

Figure 7  Agilent OpenLAB Data Store Utility

Use the following procedure to move the content folder to a different location.

1 Stop alfrescoTomcat service.
2 Move the entire content folder to the new location.
3 Update dir.root value in "C:\Program Files (x86)\Agilent Technologies\OpenLAB Data Store\tomcat\shared\classes\alfresco-global.properties".
4 Update keystorefile and truststorefile attributes of Connector elements for ports 443 and 8444 in the file "C:\Program Files (x86)\Agilent Technologies\OpenLAB Data Store\tomcat\conf\server.xml".
5 Start alfrescoTomcat service
Use the following procedure to move the index folder to a different location.

1. Stop alfrescoTomcat service.
2. Move Data Store index folder “solr” to its new location.
3. Update data.dir.root value in the following two files in that folder:
   a. solr\archive-SpacesStore\conf\solrcore.properties
   b. solr\workspace-SpacesStore\conf\solrcore.properties
4. Replace the old directory path with the new path in the file "C:\Program Files (x86)\Agilent Technologies\OpenLAB Data Store\tomcat\conf\Catalina\localhost\solr.xml".
5. Start alfrescoTomcat service