Agilent Lab Advisor B.02.06
User Introduction

START

Agilent Technologies
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1. Lab Advisor Overview

- Product Overview
- Lab Advisor Basic
- Lab Advisor Advanced
With its advanced diagnostic and maintenance capabilities, Agilent Lab Advisor helps you to keep your Agilent LC and CE instruments in top condition and thereby achieve high quality chromatographic results. Agilent Lab Advisor supports legacy Agilent systems such as 1100, 1120 and 1200, as well as the new Agilent 1220, 1260, 1290 and 7100CE instruments. Revision B.02.06 adds support for the Agilent 1290 Infinity II Series.

The Agilent Lab Advisor is an application-independent tool. It can support Agilent LC and CE instrumentation regardless of whether you are using Agilent or non-Agilent software to control the instruments.

Via Add-ons, the functionality can be expanded to other instruments, e.g. mass spectrometers.

The Agilent Lab Advisor is available in two flavors: Lab Advisor Basic and Lab Advisor Advanced.
Lab Advisor Basic provides state of the art tests, tools and calibrations to support you in the daily operation, maintenance and basic troubleshooting tasks.

The Basic version comes with a full set of diagnostic and maintenance capabilities, allowing you to perform troubleshooting and maintenance tasks efficiently and with little effort.

**Features:**
- System Overview
- Tests
- Tools
- Calibrations
- Basic EMF
- Firmware Update
- Logs and Results
- Fast Connect
- System Report
- Simple Instrument Control
Lab Advisor Advanced has been designed to support users who need the highest quality data and the utmost reliability from the Agilent LC and CE instrumentation.

This is provided with additional functionality that includes tools and features that allow you to carry out sophisticated diagnostic, usage-based maintenance, and generate traceable results, including features such as user log-on with password, traceable result files, advanced EMF functionality and data sharing facilities.

Features:

- System Overview
- Tests
- Tools
- Calibrations
- Advanced EMF
- Traceability
- Firmware Update
- Logs and Results
- Fast Connect
- System Report
- Extensive Instrument Control
- Data Sharing
- Review Client
2. Installation

- Prerequisites
- WorkStation Setup
- Local Area Network Setup
- Client/Server Setup
- Mobile Diagnostic Setup
- Installing the Lab Advisor
- Installation Qualification
- Updating the Lab Advisor
- Uninstalling Lab Advisor
- Installing Lab Advisor Add-ons
Installation - Prerequisites

Agilent Lab Advisor can run on any Microsoft Windows 7, Windows 8 or Windows 8.1 PC with Microsoft .NET 3 or higher installed. The software has been extensively tested with the following software packages:

<table>
<thead>
<tr>
<th>Element</th>
<th>Revision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows 7 SP1</td>
<td>32 bit</td>
</tr>
<tr>
<td>Windows 7 SP1</td>
<td>64 bit</td>
</tr>
<tr>
<td>Windows 8</td>
<td></td>
</tr>
<tr>
<td>Windows 8.1</td>
<td></td>
</tr>
<tr>
<td>Windows Server</td>
<td>2008 R2</td>
</tr>
<tr>
<td>Internet Explorer</td>
<td>9.0 or 10.0 or 11.0</td>
</tr>
<tr>
<td>.Net Framework</td>
<td>3.x (Windows 7)</td>
</tr>
<tr>
<td>.Net Framework</td>
<td>4.x (Windows 8)</td>
</tr>
<tr>
<td>Symantec Antivirus</td>
<td>12.0</td>
</tr>
<tr>
<td>Adobe Acrobat</td>
<td>11.0</td>
</tr>
</tbody>
</table>
For optimum performance of your Agilent Lab Advisor software, the following minimum requirements should be fulfilled.

The minimum supported configuration is based on the installation on a Netbook, but for larger installations, or for higher performance, the recommended configuration should be used.

<table>
<thead>
<tr>
<th></th>
<th>Minimum Configuration (Netbook)</th>
<th>Recommended Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor</td>
<td>Intel Atom processor</td>
<td>Pentium D or higher,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Intel Dual-Core 3.4 GHz or higher</td>
</tr>
<tr>
<td>RAM</td>
<td>2.0 GB or more</td>
<td>≥ 2 GB (Windows 7 or Windows 8)</td>
</tr>
<tr>
<td>Hard Disc</td>
<td>1 GB</td>
<td>2 GB or higher</td>
</tr>
<tr>
<td>Display Resolution</td>
<td>1024 x 600 pixels</td>
<td>1280 x 1024 pixels</td>
</tr>
<tr>
<td>Removable Media</td>
<td>(external) CD-Rom drive</td>
<td>DVD-drive</td>
</tr>
<tr>
<td>Mouse</td>
<td>MS Windows compatible pointing device</td>
<td>MS Windows compatible pointing device</td>
</tr>
<tr>
<td>LAN</td>
<td>10/100baseT</td>
<td>10/100baseT</td>
</tr>
<tr>
<td>Operating System</td>
<td>Windows 7 Starter</td>
<td>Windows 7 SP1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Windows Server 2008 R2 for server installations</td>
</tr>
<tr>
<td>Printer</td>
<td>all printers supported by the</td>
<td>all printers supported by the</td>
</tr>
<tr>
<td></td>
<td>operating system in use</td>
<td>operating system in use</td>
</tr>
</tbody>
</table>
System Configuration

One instrument connected through LAN or Serial interface to instrument controller PC. The Lab Advisor software is installed on instrument controller PC.

The Lab Advisor uses the same Connection address as the controlling software and it is recommended to close it down before launching the Lab Advisor software.
System Configuration

Multiple instruments, each connected through LAN to Local Area Network and individual instrument controller PCs connects to instruments via Local Area Network. Lab Advisor installed on individual instrument controller PCs as well as on optional PC with access to all instruments.

The Lab Advisor uses the same connection address as the controlling software and it is recommended to close it down before launching the Lab Advisor software.
System Configuration

Multiple instruments connected through LAN or Serial interface to UI-less instrument controller. Lab Advisor installed on external controller PC connecting via Ethernet to RS232 converter boxes (PN G1680-63722).

The Lab Advisor uses a different Connection address as the controlling software, but it is recommended to close other connected software before launching the Lab Advisor software to avoid access conflicts.
System Configuration

One instrument connected through LAN or Serial interface to instrument controller PC and occasionally connected to laptop PC with Lab Advisor software through Serial interface using the Fast Connect feature.

The Lab Advisor uses a different Connection address as the controlling software, but it is recommended to close other connected software before launching the Lab Advisor software to avoid access conflicts.
1. To install double click the Setup icon in the root of the installation CD-ROM.

The Lab Advisor software is available in three languages: English, Chinese and Japanese. The installer automatically picks the language that matches the PC language setting. If no matching language is found, the English version is used.

2. To change the default location click the **Change...** button to select a new location.
You can install Lab Advisor on a Windows 2008 Server and make it available for use on client systems.

1. Install Lab Advisor in the Windows 2008 Server as described in the previous slide.
2. Install the role Remote Desktop Services on the Windows 2008 Server.
5. Distribute the RDP file to all client systems.
The Agilent Lab Advisor software includes a built-in Installation Qualification that can be launched after the installation by going to

Start/All Programs/Agilent Lab Advisor/Installation Qualification

Select the program. To qualify and press the Qualify button.

The Installation Qualification Report will automatically be opened in a browser window on the screen.
To access the report a later time, go to

\Program Files\Agilent Technologies\Lab Advisor\QTool\QQProducts\Agilent Lab Advisor LC & CE\Reports
Installation - Updating Lab Advisor

The formerly used update process by downloading and executing *.dla files is no longer available.

As of revision B.02.05, updating an existing Lab Advisor installation is simply done by either double-clicking the SETUP icon on the Lab Advisor CD-ROM or by double-clicking the *AgilentLabAdvisor.msi* file. Existing instrument logs & result data is automatically migrated into the new Agilent Lab Advisor revision. Add-ons and licenses are migrated, too. However, in case an Add-on is not compatible with the new revision, it will be disabled.

In addition to the distribution via CD-ROM, the latest *AgilentLabAdvisor.msi* file can downloaded from the Agilent Support Portal.
To uninstall the Lab Advisor software open the Windows Control Panel, go to Add/Remove Programs and locate the Agilent Lab Advisor software. Click the Uninstall button and follow the instructions on the screen.
The Lab Advisor supports the installation of additional functionality outside of the core functions.

Agilent Lab Advisor supports both non-HW as well as HW Add-ons, which allows currently unsupported HW to be added.

To install an Add-on go to the Configuration screen and select “Apps & Add-ons.” Press the Install App/Add-on button and follow the on screen instructions.
3. Using Lab Advisor

- Navigation
The Lab Advisor User Interface is divided into six main areas. The content of these areas changes depending on the screen selected in the Agilent Lab Advisor software.
Title bar

The Title bar shows which of the configured systems in the System Overview is currently selected. It also hosts the buttons for maximizing, minimizing and closing of the Agilent Lab Advisor application.
Using Lab Advisor - Navigation

Navigation panel

The primary navigation between the different screens present in the Lab Advisor software is done in the Navigation Panel. The Navigation Panel consists of three areas.

• The Global Tasks lists system independent screens that access information or configurations regardless of the configured systems and their current state.

• The System Tasks on the other hand are system specific and changes with the System selected. The name of the selected System is visible in the header of the System tasks as well as in the Title bar.

• At the bottom of the Navigation Panel, the Help topics provide information about the software and about individual screens. Context sensitive help topics can also be accessed at any time by clicking F1.

The Navigation panel can be minimized by clicking the minimize icon in the top Task bar.
Information panel

The Information panel contains information about the currently selected screen and the Agilent Lab Advisor software revision and level. If the Traceability feature is in use, the Information Panel also includes information about the current logged-in user.
Application panel

This is the primary area where the different screens selected in the Navigation Panel of the Agilent Lab Advisor software are displayed. Refer to the individual applications for more detailed information.
System Groups

Lab Advisor supports the grouping of systems, e.g. by laboratory. Up to 25 systems can be assembled into a group. Each group can contain up to 50 devices. An unlimited number of groups can be defined.

To activate the System Grouping mark the “Activate Grouping” check box.
Group controls

If system grouping has been activated in software configuration, these controls allow you to switch between system groups, and to add a new system group or delete an existing group.

To navigate within the Group control use these buttons.

The number behind the group name indicates the number of connected systems in the group.

If the Group name becomes red it indicates that there are one or more Systems that has entered an Error state.

To add an additional group click this control.
Action panel

Additional buttons or actions that are applicable to the selected screen may be displayed in the Action Panel. Such controls are applicable to the entire selected screen; buttons or actions that are applicable to individual items within the screen are displayed in the screen itself.
Status bar

The left side of the Status Bar contains information about the connection used, details about the Agilent Lab Advisor revision, license level and usage are shown on the right side.

Connection Address: 192.168.254.11

Version B.02.05 [113] - Advanced | Licenses 34/60

- Connection Address of selected system
- License devices installed/available
- Lab Advisor revision
- License level
4. System Overview

• Information
• System Hierarchy
• Add a System
• System Properties
• Remove a System
• Fast Connect
The System Overview screen gives a fast overview of the state of all configured and connected systems. The System Overview is also the main selection screen for the System Tasks.
Lab Advisor recognizes three levels of hierarchy:

**System:**
The System is the highest level. A system consists of one or more Instruments, each with its own communication address. The System icon is always the same.

**Instrument:**
An Instrument is characterized by having an individual connection address to Lab Advisor. Instruments may comprise multiple Devices (for example, a modular LC system), but the Devices all communicate with Lab Advisor through a single connection address. Each Instrument has its own icon.

**Device:**
The Devices (sometimes referred to elsewhere as Modules) are the constituent parts of an Instrument, for example the pump, sampler, and detector in a modular LC system. Each Device type has its own icon.
To add a new system to the System Overview press the **Add System** button in the Action panel.

In the dialogue box add the system name and the connection address of the system. The connection address can be either an IP-address, host name or if connecting via serial cable the respective COM port.

Select the instrument type according to the connected hardware. When finished press OK. The system will become visible in the System Overview and Lab Advisor will automatically try to connect to the specified system.
To change a name or connection address of an existing system, to add additional information or to activate the automatic “Reconnect” feature for the system, select the system in the System Overview Screen by clicking it and either press the **System Properties** button in the Action Panel or right click on the system and select the **Properties** item.

When selecting the **Reconnect** checkbox in the System Properties window, the Agilent Lab Advisor software will automatically try to connect to the system, whenever the application is launched. This feature can be activated for all systems configured in the System Overview simultaneously.

Additionally the System Group can be selected and/or changed if needed.
To remove a system from the System Overview select it and press the **Remove System** in the Action panel. The data collected for the system will still be available in the Logs and Results application, but will be listed as unassigned systems.

Systems that have been removed from the System Overview Screen are still counted toward the module limit of the installed license. To permanently delete a module and loose all data see *Permanently deleting a Hardware module* in the Licenses section.
If using mobile laptops for servicing systems, a fast connection can be established via serial cable (RS232).

1. Connect the serial cable between system and PC.
   A USB to serial adapter might be necessary (PN 8121-1013).

2. Press the “Connect via Serial cable” button.
   Lab Advisor now searches all available COM ports for installed systems and adds them automatically to the Systems Overview screen. The Lab Advisor software can also be setup to do this automatically on start up by selecting the “On startup” checkbox in the Action Panel.

This feature is especially helpful for connecting systems with no LAN access as it will provide easy access to data such as LAN card configuration, MAC address and IP address without having to reconfigure the laptop’s internal IP address or setting up a BootP server.
5. Configuration

• Software
• Licenses
• Traceability
Configuring the Software

The software configuration provides the path to the data generated by the Lab Advisor software. This is a non-configurable path and it depends on operating system used and type of installation.

Software

Application Data Path: C:\Documents and Settings\All Users\Application Data\Agilent Lab Advisor\AgilentLabAdvisorData
**Import / Export data**

In order to distribute configured systems and the corresponding data, it is possible to make a Data export from one installation, and import it into other Lab Advisor installations. This feature can also be used as a Backup solution where the exported .ZIP file is stored in a safe location.
Tracing

If unexpected behavior is observed from the Lab Advisor software, a Trace file can be generated that helps the Agilent Technologies technicians locate the problem. If the problem is reproducible it is recommended to perform the task again with the “Activate full Tracing” selected, as it will generate more valuable information for debugging.
Language

The Lab Advisor software supports English, Chinese and Japanese languages. The language is usually selected during installation of the software. However there is a possibility to change the language later by selecting the appropriate language in the Software configuration screen. After the language has been changed, the software needs to be restarted for the new settings to take effect.
The licensing scheme of the Lab Advisor B.02.xx has changed compared to previous versions.

The unique combinations of Type and Serial number for each device configured is counted and tracked in the license module of the software. Each device configured, is deducted from the number of eligible devices and the license status can be tracked in the Status bar.
Lab Advisor licenses acquired for previous versions of Lab Advisor and Lab Monitor and Diagnostic software are still eligible for Lab Advisor B.02.xx and are transformed according to below table.

<table>
<thead>
<tr>
<th>Product Number</th>
<th>Description</th>
<th>HW Devices</th>
<th>Replaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>M8550A</td>
<td>Agilent Lab Advisor Advanced</td>
<td>10</td>
<td>G4800AA, G4809AA</td>
</tr>
<tr>
<td>M8551A</td>
<td>5 add-on HW modules*</td>
<td>5</td>
<td>G4801AA</td>
</tr>
<tr>
<td>M8552A</td>
<td>25 add-on HW modules*</td>
<td>25</td>
<td>G4802AA</td>
</tr>
<tr>
<td>M8553A</td>
<td>50 add-on HW modules*</td>
<td>50</td>
<td>G4803AA</td>
</tr>
<tr>
<td>M8554A</td>
<td>100 add-on HW modules*</td>
<td>100</td>
<td>New</td>
</tr>
<tr>
<td>M8555A</td>
<td>Agilent Lab Advisor Basic</td>
<td>10</td>
<td>Agilent Instrument Utilities</td>
</tr>
<tr>
<td>M8556A</td>
<td>Agilent Lab Advisor Advanced 1 Year License</td>
<td>unlimited</td>
<td>New</td>
</tr>
</tbody>
</table>

Any combination of the above listed Product Numbers is possible and it is also possible to install one Product Number multiple times (different licenses). Each unique license number is added to the limit of modules supported.
Permanently deleting a Hardware module

If a Hardware module is retired or removed from a system it can be permanently deleted from the count in the license of the Agilent Lab Advisor installation by pressing the **Permanently delete HW module** button in the License tab in the configuration screen.

This button will only be active if all systems are disconnected in the System Overview screen. The **Remove HW module** window that opens will list all modules counted toward the license limit and by selecting the appropriate module and pressing the OK button it will permanently delete this device. Beware that all data belonging to this device will also be deleted permanently.
The Traceability feature of the software enables tracing of which user did what procedure and when. This information is written into the Logs & Results and will be part of the Printed results. If using the Data Sharing feature this data is also being uploaded.
Traceability level

Lab Advisor offers three levels of traceability. Change of traceability level requires administrator rights. For initial setting, the user **Admin** is set up using the password **Admin**. After the first login, this password should be changed to prevent unauthorized access.

- **No Traceability** allows any user to access all parts of the Lab Advisor software, depending on Licenses. There will be no User names added to Logs & Results or Print-outs in this level.

- **Medium Traceability** requires the User to be selected from a drop down list. No password is required and users can register themselves. The selected name will be added to the print-outs and Logs & Results.

- **Full Traceability** will require Users to log in with a unique password. Users will have to be granted access by the Administrator before being able to access the Lab Advisor software.
Setup new User

To enable the Lab Advisor to print the user names in the reports and Log & Results, the users need to be set up. This is being done in the Traceability tab of the Configuration screen.

Press the “Add” button to add a new user and enter the User name, as it will be printed on reports, and optionally the Email address and phone number. If printing a System Report these information’s will be entered in the User section automatically.

If Full Traceability is active, an Administrator must activate the user before the user can use Lab Advisor.
6. Apps

- Data Sharing
- Review Client
- Data Sharing Examples
- Diagnostic Catalog
- Agilent Lab Advisor Relay Service
The Data Sharing feature of the Lab Advisor SW allows multiple Lab Advisor installations to upload and synchronize the collected instrument information and Data to an upload folder.
There are four possible settings available for the synchronization process. Each Lab Advisor installation has its own setting, which is chosen in the dropdown menu available in the Data Sharing app.

The data can be updated and merged at either the Data share folder or the Lab Advisor or both depending on the setting chosen. See below table for an overview, which data is updated.

<table>
<thead>
<tr>
<th>Use case</th>
<th>Manual</th>
<th>At startup</th>
<th>At shutdown</th>
<th>At startup and shutdown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Process to keep all data up to date, but timing of synchronization is manually chosen.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At startup</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Used for reviewing purposes. No own contribution to data share.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At shutdown</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Review of data is being done at other Lab Advisor installation. Contributions from others are not available.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At startup and shutdown</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Automated process to keep all data up to date</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
When clicking the synchronization button, all data and information for the systems and devices configured in the Lab Advisor installation will be uploaded to a specified upload folder.

If Data and information was already uploaded for these systems and devices to the upload folder, the uploaded Data will be merged with the existing Data. Additionally the delta between the two Data sets will be downloaded to the Lab Advisor installation, to complement the data.
The complete amount of data uploaded to the data share folder can be accessed by the build-in Review Client, which is started from the Data Share App.
With the Review Client you can, in addition to looking at configured systems, also combine devices from different Systems into a Customized System to allow cross system comparison of Data. This might be helpful to survey usage of components, find problematic systems or to locate systems not utilized efficiently.
The Review Client needs a number of licenses corresponding to the number of modules hosted on the Upload share. Deleting a System from the System Overview will not free usable licenses.

The number of licenses entered in the normal Lab Advisor installation is reused in the Review client, so that the maximum of uploaded modules may not exceed the number of modules supported by the installed license. To review 10 modules on the upload share a 10 module license is required.
Example 1:

A Lab Advisor installation on the Instrument Controller PC is connected to a network and can use the synchronize functionality to upload data to a system specific folder. This can be used as a backup solution and the Review Client can, by accessing the Share folder, be used to look at the Systems separately. The Installation starting the Review Client needs licenses for the highest number of modules in a folder.
Example 2:

Each Portable Lab Advisor collects its user specific instruments information to its own Folder on a common network, which may also be used for back-up. By changing the Share folder in the Review Client a look into each separate user's data is possible. The Installation starting the Review Client needs licenses for the highest number of modules in a folder.
Example 3:

Multiple Portable Lab Advisor installations upload their Data to the same Folder. Each Portable Lab Advisor will be up to date and a Review Client will have the opportunity to watch the entire data pool. The Installation starting the Review Client needs licenses for all uploaded modules.
The Diagnostic Catalog provides a complete list of tests, tools, calibrations and buttons for each supported device and for each Product level.

With double clicking the individual Tests or Tools, the online help for the procedure will start in a separate window. A short description is available in the lower part of the screen.
In the Diagnostic Catalog an overview option can be selected to create a representation of the differences between the Basic and the Advanced versions of the software.

<table>
<thead>
<tr>
<th>Overview option</th>
<th>Product Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced</td>
<td></td>
</tr>
<tr>
<td>Overview</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tests</th>
<th>Basic</th>
<th>Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sampler Leak Test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calibrations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transport Alignment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tools</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diagnostic Buffers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Module Info</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintenance Positions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Injector Steps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Controls</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drive Needle To Seat</td>
<td></td>
<td>Advanced</td>
</tr>
<tr>
<td>Drive Needle To Waste</td>
<td></td>
<td>Advanced</td>
</tr>
<tr>
<td>Drive needle to blocked seat</td>
<td></td>
<td>Advanced</td>
</tr>
<tr>
<td>Clear Error</td>
<td>Basic</td>
<td>Advanced</td>
</tr>
<tr>
<td>Sampler Reset</td>
<td>Basic</td>
<td>Advanced</td>
</tr>
<tr>
<td>40 ul</td>
<td>Basic</td>
<td>Advanced</td>
</tr>
<tr>
<td>100 ul</td>
<td>Basic</td>
<td>Advanced</td>
</tr>
<tr>
<td>Identify Module</td>
<td>Basic</td>
<td>Advanced</td>
</tr>
<tr>
<td>Set Injection Volume (inclusion)</td>
<td></td>
<td>Advanced</td>
</tr>
<tr>
<td>Set Vol position</td>
<td></td>
<td>Advanced</td>
</tr>
<tr>
<td>Either head exchanges left (C)</td>
<td></td>
<td>Advanced</td>
</tr>
</tbody>
</table>
The Agilent Lab Advisor Relay Service enables the Lab Advisor software to connect instruments that are located on a network with a different subnet. This is being achieved by installing and using a Port Forwarding Service located on a PC equipped with two network cards. One network card is responsible for each of the separate networks. These types of setup are typical in networked laboratories where an instrument controller is installed with two network cards and applications are running on a server, but can also occur if instrumentation is being addressed that produces large amount of data and therefore needs to be separated from the company network.

A detailed description of the installation, configuration and operation of the Lab Advisor Relay Service and the Lab Advisor Relay Service Dashboard can be found in the Lab Advisor IT Administrator’s Guide.
7. Firmware Update

- Updating the Firmware
The device internal software called firmware (FW) can be updated by using the Lab Advisor software.

The Firmware Update screen will list all systems configured from the System Overview screen. From these systems the devices can be updated individually or the entire system can be updated at once. It is also possible to update multiple systems at once. To start the FW update procedure, in the Global Screens of the Navigation panel select the Firmware Update tab.
8. Logs and results

- Logs and Results screen
The Logs & Results screen presents data collected from the devices configured and helps to review the systems or devices. The data presented includes:

- Test results
- Error information
- FW revision and updates
- EMF changes
- Maintenance log entries

Each Log line is showing the Module identifier (Type and Serial number), type of information, description and a Time stamp. If the Traceability feature is in use, User generated data is logged with User name in the Description field.
For easy overview the Logs & Results screen includes a Filter that allows filtering on System, Device, Source or Time. Multiple selections are supported for Devices and Source and can be selected by keeping the Ctrl key pressed while clicking the data required in the filter.
There are two possible modes in which to operate the Logs & Results screen.

Default mode is the Device view, which lists the devices by System and presents the information per device. If selecting the Time view the data is presented and sorted by Time stamp. This allows for a System wide overview of the sequence of Data.
It is possible to write a Log entry to the device, to be stored on the device main board. To do this, press the Add Log Entry button.

The information written to the device may be no longer than 50 characters and could typically be Maintenance log data.
9. Service and Diagnostics

• Tests, Tools and Calibrations
Service & Diagnostics screen hosts the procedures (Tests, Tools and Calibrations) of the Lab Advisor software. To select a procedure, select the device and then select the procedure from the list.

**Tests:**
Tests are procedures that will result in a Passed/Failed statement, so the results of the test are compared with predefined limits. The Pump Pressure Test is an example of a test.

**Calibrations**
If calculations internally in the devices need to be corrected, calibration procedures normally take care of this. An example of a calibration is the Detector Wavelength Calibration. If operating in a controlled environment, this type of procedure might need to be verified. This would typically be done with a System Suitability Test.

**Tools**
Tools are procedures that have a supporting function and that do not produce a Passed/Failed statement when finishing.
10. Instrument Control

- Instrument Control screen
- Basic Instrument Control screen
The Instrument Control screen allows users to control a connected system, without having to have a CDS running. This might be helpful in complex diagnostic situations, where the build in diagnostic tests does not give a definite answer.

The Instrument Control of the Basic Version only provides limited functionality, whereas the Advanced Version brings a full set of controls and a freely configurable Signal Plot.
The Reply Panel of the Instrument Control displays any replies generated from the device, to verify if the Control used was accepted.

It will only show the last three replies. In order to get a complete history of replies, click the “Save Session Results” button in the Action Panel.

The information can now be found in the Logs & Results screen of the software.
Each Device is displayed separately in the Control Panel, and will provide information about actual values.

If a device has several actual values to display, there will be a “more” link that gives access to these values.
By expanding the “Controls” a complete set of buttons becomes available, that provides extensive control possibilities of the device.

This includes set points, control, special commands and module information’s.
Signal Plot

The Signal Plot is used for monitoring certain functionality of a system in real time. Combined with the Controls it can provide very valuable information for experienced users, troubleshooting the system. It can also be used to perform certain tasks and monitor when these tasks are finished, saving time.

The Signals you want to monitor are setup by clicking the Signal Configuration button in the Action panel.

This will open a window with all available signals for the system. To select a signal, tick mark it and press the OK button.
Signal Plot

The signals selected will now be visible in the Signal Plot, starting in Lanes Mode. This mode divides the available area of the window between the numbers of signals configured. This leaves each signal with a limited size in the window, but all are easy to differentiate and each scale are shown on the left side of the plot.
Signal Plot

It is possible to select other scaling parameters by right clicking the signal window and select the “Auto Scaling” menu item. This will present the scaling options available.

With the use of the mouse pointer, it is also possible to scroll directly on the scales. Click the scale you want to change and use the wheel to change the scale.

By pressing down the scroll wheel you can also change the placement of the scale by moving the mouse up or down.
Signal Plot

Alternatively you can enter a fixed scale window by double-clicking the scale. This will open an additional window where you can enter the scale size and/or the lower starting point of the scale.
In the Basic Version of Lab Advisor, the Instrument Control screen provides

- only a limited set of controls
- no Signal Plot
- no Device Actuals.
11. Early Maintenance Feedback

- Using EMF’s
- Basic EMF’s
Early Maintenance Feedback - Using EMFs

Agilent Technologies LC Instrumentation supports the Early Maintenance Feature (EMF) since the introduction of the 1100 system in 1995 and continues to support this feature.

EMF helps keeping usage and utilization in focus and allows for usage based maintenance, reducing maintenance costs.

<table>
<thead>
<tr>
<th>Component</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Needle Into Blocked Seat Counter</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Needle Into Seat Counter</td>
<td>1192</td>
<td>3%</td>
</tr>
<tr>
<td>Needle Wash Pump On-Time</td>
<td>1.51h</td>
<td>0%</td>
</tr>
<tr>
<td>Injection Valve Switches</td>
<td>2428</td>
<td>4%</td>
</tr>
</tbody>
</table>
The EMF counters can be read and reset with both the Basic and the Advanced versions of the software, but in addition the Advanced version allows activating and setting limits. The software provides Agilent recommended limits.

These limits were determined by measurements using standard laboratory conditions.

They don’t take any application, user or site specific conditions into account and might need to be adjusted based on experience to give maximum lifetime of system components.
The Basic version of Lab Advisor only provides a limited support for EMF. The actual value of the counters and the limits are displayed numerically and if a counter is passing the limit it is possible to reset it.

<table>
<thead>
<tr>
<th></th>
<th>G4226A</th>
<th>1290 ALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial #</td>
<td>DE93000560</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Counter Description</th>
<th>Value</th>
<th>Unit</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Needle Into Blocked Seat Counter</td>
<td>0</td>
<td>Count</td>
<td>1000</td>
</tr>
<tr>
<td>Needle Into Seat Counter</td>
<td>1192</td>
<td>Count</td>
<td>30000</td>
</tr>
<tr>
<td>Needle Wash Pump On-Time</td>
<td>1.53</td>
<td>h</td>
<td>3000</td>
</tr>
<tr>
<td>Injection Valve Switches</td>
<td>2428</td>
<td>Count</td>
<td>60000</td>
</tr>
</tbody>
</table>

12. System Report

• Creating a System Report
The Lab Advisor System Report screen is providing a system wide overview of the devices in the system. The information in the System Report includes:

- Lab Advisor software information’s
- Contact information
- PC information (optional)
- System configuration
- Logbook
- EMF counters
- Test Results
- Device Actuals (optional)

The information included in the System Report can be used for documenting the system or for sharing diagnostic information with a Remote engineer, in case of troubleshooting the system.
When entering the System Report screen, initial information can be included for Report name, Contact information, Company, Log entries, PC information and Instrument Actuals.

Contact and Company information can be helpful if the report is send to a Remote engineer in a troubleshooting process, for easy and precise identification.

The Logs & Result information stored by each individual device might be extensive and in order to reduce the amount of data, it is possible to filter the amount of data based on time.