Agilent Lab Advisor

IT Administrator's Guide

Agilent Technologies
Notices

© Agilent Technologies, Inc. 2016

No part of this manual may be reproduced in any form or by any means (including electronic storage and retrieval or translation into a foreign language) without prior agreement and written consent from Agilent Technologies, Inc. as governed by United States and international copyright laws.

Manual Part Number
M8550-90011

Edition
11/2016

Printed in Germany
Agilent Technologies
Hewlett-Packard-Strasse 8
76337 Waldbronn

Warranty

The material contained in this document is provided “as is,” and is subject to being changed, without notice, in future editions. Further, to the maximum extent permitted by applicable law, Agilent disclaims all warranties, either express or implied, with regard to this manual and any information contained herein, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. Agilent shall not be liable for errors or for incidental or consequential damages in connection with the furnishing, use, or performance of this document or of any information contained herein. Should Agilent and the user have a separate written agreement with warranty terms covering the material in this document that conflict with these terms, the warranty terms in the separate agreement shall control.

Technology Licenses

The hardware and/or software described in this document are furnished under a license and may be used or copied only in accordance with the terms of such license.

Restricted Rights Legend

If software is for use in the performance of a U.S. Government prime contract or subcontract, Software is delivered and licensed as “Commercial computer software” as defined in DFAR 252.227-7014 (June 1995), or as a “commercial item” as defined in FAR 2.101(a) or as “Restricted computer software” as defined in FAR 52.227-19 (June 1987) or any equivalent agency regulation or contract clause. Use, duplication or disclosure of Software is subject to Agilent Technologies’ standard commercial license terms, and non-DOD Departments and Agencies of the U.S. Government will receive no greater than Restricted Rights as defined in FAR 52.227-19(c)(1-2) (June 1987). U.S. Government users will receive no greater than Limited Rights as defined in FAR 52.227-14 (June 1987) or DFAR 252.227-7015 (b)(2) (November 1995), as applicable in any technical data.

Safety Notices

CAUTION

A CAUTION notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a CAUTION notice until the indicated conditions are fully understood and met.

WARNING

A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.
In This Guide

This manual contains information for IT Administrators of the Agilent Lab Advisor.

1 Server Installation

This chapter describes how to install the Agilent Lab Advisor on a Windows Server 2008 or Windows Server 2012 system.

2 Relay Service Overview

This chapter describes the general concepts of the Relay Service as applied in Agilent Lab Advisor.

3 Agilent TCP Relay Service

This chapter introduces the Agilent TCP Relay Service.

4 Staying with the Lab Advisor Relay Service

This chapter describes in detail the installation and use of the Lab Advisor Relay Service.
This chapter describes how to install the Agilent Lab Advisor on a Windows Server 2008 or Windows Server 2012 system.
You can install Lab Advisor on a Windows Server 2008 or Windows Server 2012 system and make it available for use on client systems.

1. Install Lab Advisor on the Windows Server 2008 or 2012 PC as described in the section *Hard Drive Installation* of the *Agilent Lab Advisor User Manual*.

2. Install the role **Remote Desktop Services** on the Windows Server 2008 or 2012 server.

3. Publish the Lab Advisor installation on the Windows Server 2008 or 2012 server.


5. Distribute the RDP file to all client systems.
2 Relay Service Overview

This chapter describes the general concepts of the Relay Service as applied in Agilent Lab Advisor.
The Relay Service (Agilent TCP Relay Service or Agilent Lab Advisor Relay Service) enables the Lab Advisor software to connect to instruments that are located on a network with a different subnet. This is 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 a large amount of data, and therefore needs to be separated from the company network.
3
Agilent TCP Relay Service

This chapter introduces the Agilent TCP Relay Service.
Agilent TCP Relay Service

Agilent Lab Advisor revision B.02.09 and later is supplied with the Agilent TCP Relay Service, which replaces the Agilent Lab Advisor Relay Service. The TCP Relay Service has wider applicability than the Lab Advisor Relay Service, and provides a simplified user interface and password security. For full details of the Agilent TCP Relay Service, see the *Agilent TCP Relay Service Administrator's Guide*.

The Lab Advisor Relay Service User Interface is still delivered as part of Lab Advisor B.02.09, and you can continue to use it with the Agilent TCP Relay Service. Activate the Lab Advisor Relay Service User Interface as described in “Activating the Relay Service Configuration App” on page 14.

You can also use the Agilent TCP Relay Service with a mixture of the TCP Relay Service Dashboard and the Lab Advisor Relay Service User Interface. However, if you want to continue to use the Lab Advisor Relay Service User Interface, you must ensure not to activate the password security feature of the TCP Relay Service Dashboard. See the *Agilent TCP Relay Service Administrator's Guide* for details.

The Lab Advisor Relay Service can be used with Lab Advisor B.02.09 and later. If you want to continue using the Lab Advisor Relay Service, you can do so with no loss of functionality. If you need to add new nodes to your network, install the Lab Advisor Relay Service using the installation media from a previous revision of Lab Advisor.
4

Staying with the Lab Advisor Relay Service

Installing the Lab Advisor Relay Service 12
Activating the Relay Service Configuration App 14
Using the Lab Advisor Relay Service 15
  Configuring the Lab Advisor Relay Service 15
  Adding a Relay 17
  Adding a Connection 18
  Testing an Instrument Connection 19
  Documenting the Configured Relays 21
  Export and Import Configurations 23
  Relay Terminal 23
Relay Service Technical Details 27
Troubleshooting 30
  Global access to service 30
  Speed of connection 30
  IT requirements 30
  Required ports 30
  Firewalls 31

This chapter describes in detail the installation and use of the Lab Advisor Relay Service.
Installing the Lab Advisor Relay Service

**Hardware required**  Instrument Controller PC with two Network cards installed.

**Software required**  Agilent Lab Advisor B.02.05 or higher

1. To install the Service, double-click the RelayService.msi file in the RelayServiceInstaller folder and follow the instructions.

   **NOTE**  If you are installing the Lab Advisor Relay Service on Lab Advisor B.02.09 or later, you need to get the RelayService.msi file from the installation media of a previous revision of Lab Advisor, for example, B.02.08.

2. To upgrade the Lab Advisor Relay Service, first uninstall the previous revision, then double-click the RelayService.msi file as described in Step 1. The configuration of the service will not be affected by the update.

3. To uninstall the Lab Advisor Relay Service, open the Add/Remove programs tool in the Control Panel of Windows. Navigate to the Agilent Lab Advisor Relay Service and click Uninstall.
Installing the Lab Advisor Relay Service
Activating the Relay Service Configuration App

The Agilent Lab Advisor Relay Service Configuration App provides a convenient user interface for configuring the Agilent Relay Service. The App is installed automatically with revision B.02.05 and later. It is activated by adding the key CAC22-222MB-3KNAP-F33ZU.

1. In the Global Tasks section of the Navigation Panel, click Configuration.
   
   The Configuration screen is displayed.

2. Click Licenses to navigate to the Configuration - Licenses screen.

3. In the License Key field, type the following license key:
   CAC22-222MB-3KNAP-F33ZU.

4. Click Add to add the license key to the list of valid licenses and activate the Relay Service Configuration App.
Using the Lab Advisor Relay Service

The Agilent Lab Advisor Relay Service running on an Instrument Controller PC does not have its own user interface, but is controlled via an App screen in an Agilent Lab Advisor installation.

Configuring the Lab Advisor Relay Service

1. To configure the Agilent Lab Advisor Relay Service, open the Lab Advisor software, then click **Apps** in the Navigation panel and select **Lab Advisor Relay Service** in the Apps screen.

   The Advisor Relay Service Dashboard is displayed.
1. Symbolizes the computer on which the Lab Advisor including the Agilent Lab Advisor Relay Service App is installed

2. Symbolizes the Instrument Controller PC on which the Agilent Lab Advisor Relay Service is installed

3. Deletes this Relay from the Lab Advisor configuration (not the Relay itself)

4. Tests all connections configured for the Relay
Adding a Relay

1. To add a new Relay, click Add Relay.
The **Add Relay** dialog box is displayed.

2. Enter the IP address or Hostname of the Instrument Controller PC in the **IP Address/Hostname** field and click **OK**.

If the Service is up and running on the Instrument Controller PC, and the Lab Advisor is capable of communicating with it, the Relay connection shows a line of green arrows.

**Adding a Connection**

1. To add an instrument connection, click **Add Connection**.
2 Enter the port number to be used. The software automatically suggests a new port in the 91xx range.

3 Enter the IP address or host name of the instrument and click apply Configuration.

If the service has been successfully updated, it shows a blue line of arrows. This does not indicate that the connection is working, but merely that it has been successfully transferred to the Relay.

**Testing an Instrument Connection**

A connection test is available to test a configured connection all the way from the currently installed Lab Advisor, through the Instrument controller PC, to the instrument.

1 To test a single connection, click at the right of the connection display.

The **Connection Test** dialog box is displayed, where you can start the connection test.
2 Click **Test Connection** in the **Connection Test** dialog box.

The connection test returns a passed/failed statement. If the connection test passes, it also lists the devices found, with type and serial number, so that you can verify that it is connecting the correct system.

You can also click **Copy IP Address to Clipboard** to copy the instrument address to the clipboard for use during setup of the instrument in the **System Overview** of the Lab Advisor.

**NOTE**

*Test all* carries out a connection test on all available connections and returns a passed/failed statement (and, if successful, a list of devices) for each one.
Documenting the Configured Relays

1. To document the configured Relays and the tests that have been performed, click **Print Report**.

   ![](image1.png)

   The **Print Relay Report** dialog box is displayed.

2. Mark the check boxes against the Relays that should be reported. Additionally, you can specify that the report should contain a signature line.

3. Click **Print**.

   The report is generated. The report contains the following information:
   - Lab Advisor revision
   - Relay address
   - Relay Service status
   - Hostname of instrument controller PC
   - Relay Service revision
If you want to generate a list of the Relays with the configured connections, mark the **Print Service Configuration Information** check box.

This also adds information of any connection test results that have been performed.

The generated report contains additional detailed information about the configured Relays and their connections.
Export and Import Configurations

If a large number of instruments and/or relays are to be setup on multiple Lab Advisor installations, it is possible to distribute the setup information via a CSV export/import function in the Lab Advisor Relay Service App.

The format of the table in the CSV file is as follows:

<table>
<thead>
<tr>
<th>Instrument Controller IP Address</th>
<th>Instrument Controller Name</th>
<th>Port</th>
<th>Instrument IP Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>134.40.29.83</td>
<td>LABADVISORRELAY</td>
<td>9100</td>
<td>192.168.254.11</td>
</tr>
<tr>
<td>134.40.29.83</td>
<td>LABADVISORRELAY</td>
<td>9101</td>
<td>rr1c1</td>
</tr>
<tr>
<td>134.40.29.83</td>
<td>LABADVISORRELAY</td>
<td>9102</td>
<td>rr1c2</td>
</tr>
<tr>
<td>134.40.29.83</td>
<td>LABADVISORRELAY</td>
<td>9103</td>
<td>npi060224</td>
</tr>
<tr>
<td>134.40.29.83</td>
<td>LABADVISORRELAY</td>
<td>9104</td>
<td>134.40.27.55</td>
</tr>
</tbody>
</table>

The CSV import function imports only the instrument controller IP Address/Hostname. The relay configuration is retrieved from the relay as soon as the connection is established.

Relay Terminal

For advanced usage and troubleshooting of the Lab Advisor Relay Service, the Relay Terminal offers direct communication with the Service. It is a command-line-based window that allows specified commands to be sent, and information to be received or actions executed.

1. To start the Relay Terminal, click **Relay Terminal**.

   The Relay Terminal window is displayed.
2 In the Relay Terminal window select the IP address or Hostname of the Instrument Controller PC that the service is installed on. A list of possible actions is displayed.
3 Enter the command for the required action according to following table and click **Enter**.

<table>
<thead>
<tr>
<th>Command</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>m</td>
<td>Returns the service host machine name</td>
</tr>
<tr>
<td>i</td>
<td>Returns the service host installation directory</td>
</tr>
<tr>
<td>j</td>
<td>Returns the service host data directory</td>
</tr>
<tr>
<td>k</td>
<td>Returns the service revision</td>
</tr>
<tr>
<td>l</td>
<td>Returns the time when the service was started</td>
</tr>
<tr>
<td>S</td>
<td>Restarts the service manually</td>
</tr>
<tr>
<td>/</td>
<td>Returns the relay’s status (more slashes, for example ///, give more details)</td>
</tr>
<tr>
<td>R</td>
<td>Stops and restarts the relays</td>
</tr>
<tr>
<td>t</td>
<td>Creates and writes trace file</td>
</tr>
<tr>
<td>n</td>
<td>Stops tracing to trace file</td>
</tr>
<tr>
<td>T</td>
<td>Starting tracing session via telnet</td>
</tr>
</tbody>
</table>
## Staying with the Lab Advisor Relay Service

### Using the Lab Advisor Relay Service

<table>
<thead>
<tr>
<th>Command</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Stops tracing via telnet</td>
</tr>
<tr>
<td>d</td>
<td>Dump configuration</td>
</tr>
<tr>
<td>d#</td>
<td>Dump historic trace file where # = [1..2]</td>
</tr>
<tr>
<td>e</td>
<td>Exit current connection</td>
</tr>
<tr>
<td>?</td>
<td>List of possible actions</td>
</tr>
</tbody>
</table>
Relay Service Technical Details

The Lab Advisor Relay Service is designed to enable connections to Agilent HPLC instrumentation using the LICOP protocol via TCP/IP across network boundaries.

The Lab Advisor Relay Service is not designed to help enable connections
• to any devices other than Agilent instrumentation using the LICOP protocol
• via serial port, USB or similar

Technically, the relay service waits by default for an incoming connection request by another network client on port 9100 through any network adapter of the PC on which it is installed. The connection is accepted, and another connection is requested to the local LAN address 192.168.254.11 on port 9100. Once this local connection is established with the HPLC system, all data packets from the client are handed over to the second connection to the instrument and vice versa. This relayed connection between the controller (i.e. Lab Advisor) and the instrument (i.e. Agilent 1290 HPLC Series) is transparent for both connection partners. Neither the controller nor the instrument can distinguish between a direct and a relayed connection except for the higher network latency time and the IP address mismatch for the controller between the connection address to the relay PC and the real IP address configured with the instrument, reported for example by the Lab Advisor System Report for the HPLC instrument.

The relay service can be configured through the Telnet port 23. The Lab Advisor Relay Service Configuration App is a graphical user interface for configuring the installed relay services in Lab Advisor.

Alternatively, using the command prompt, the service can be stopped, the relay configuration file can be modified, and the service can be restarted.
Note that the command prompt must be started by a user with administrator rights.

The configuration file of the relay service is stored on the relay service PC in `C:\ProgramData\Agilent Lab Advisor Relay Service\Relay.Config.txt`. Trace files can also be found in the location; each time the relay service is started, a new `Relay.Trace0.log` file is generated. The content of the `Relay.Config.txt` file is, by default as shown below:

Whenever the relay service starts, it reads from the configuration file and accepts the number of the first line as its configuration port. So, if the Telnet port is used for other purposes on the relay service PC, another port can be specified. Note that the firewall of the PC must allow TCP communication through the specified port. The configuration of the relay service in the Lab Advisor Relay Service configuration app must specify the new port. So, for example, instead of configuring `AIC_PC01`, the address `AIC_PC01:1234` must be specified.

The second line of the configuration file contains another port number for a broadcast listener for UDP communication. This feature is currently not used within Lab Advisor. However, the second line must specify a valid number to successfully start the relay service. Do not modify this line of the file.
All following lines define *relay tasks*. In the given example, which is the default for a newly installed relay service, the task listens for an incoming connection request on port 9100, and relays all communication to the local network address 192.168.254.11.

Typical Relay Service usage is as relay for, for example, three HPLC instruments in a local network of a PC that controls both instruments but has no Lab Advisor installed. This is often the case for an AIC (Agilent Instrument Control) PC in an Agilent OpenLAB environment. If the local network addresses are 192.168.10.10 for the first HPLC instrument, 192.168.10.20 for the second HPLC instrument and 192.168.10.30 for the third HPLC instrument, and the network address of the AIC PC is the hostname `AIC_PC01`, the relay service needs to be configured for three relay tasks:

- 9101 > 192.168.10.10
- 9102 > 192.168.10.20
- 9103 > 192.168.10.30

Lab Advisor needs to configure the three LCs as `AIC_PC01:9101`, `AIC_PC01:9102` and `AIC_PC01:9103` in order to connect to them from another PC that is not attached to the local network of the AIC PC.

Each relay task listening to a dedicated port may start up to 10 connections. So, if Agilent Lab Advisor is started a second time from another PC, and the HPLC instrument is capable of hosting more than one connection at the same time, the relay service can serve both controllers to establish connections to the instrument.
Troubleshooting

For troubleshooting purpose, the Microsoft Event Viewer provides information about the actions and events generated by the Lab Advisor Relay Service, and this information can be exported for remote assistance.

Global access to service

The Lab Advisor Relay Service can be configured from any Lab Advisor installation with the Relay Service App installed. This leads to the possibility that the ports get reconfigured by any of the installed Lab Advisor Relay Service Apps and thereby other Lab Advisor installations are no longer able to connect to an instrument, or it connects to a different instrument.

Speed of connection

When an instrument is connected using port forwarding, the distance the information packages need to travel is doubled, leading to more than twice the delay time for the connection to be established in Lab Advisor.

IT requirements

At some customer sites, port forwarding is either not allowed or only partially allowed by the IT organization. In these cases, the ports defined need to be made accessible by IT for the Lab Advisor Relay Service to be able to work.

Required ports

The Lab Advisor Relay Service uses the Telnet (port 23) to communicate with the Lab Advisor Relay Service App. If this port is occupied by any other
program on the Instrument Controller PC, the communication will be impeded.

**Firewalls**

If a Firewall is activated on the Instrument Controller PC, it needs to be setup to accept the configured ports (i.e. port 23 and 91xx). This can be done with standard Windows tools, but must often be done in cooperation with the IT department.
## Index

### A
- **add connection** 18
- **add relay** 17, 17

### C
- **connection test** 19
- **csv file** 17, 23

### D
- **delete relay** 16

### E
- **export** 23

### H
- **host name** 19

### I
- **import** 23
- **instrument controller** 8
- **IP address** 19

### L
- **license** 14

### N
- **network** 8

### P
- **port forwarding service** 8
- **port number** 19
- **print report** 21

### R
- **relay service**
  - **activating** 14
  - **configuration** 15
  - **installation** 12
  - **uninstallation** 12
  - **upgrade** 12
- **relay terminal** 23
- **relay report** 17, 21

### S
- **server installation** 6

### T
- **TCP Relay Service** 10
- **test connection** 19
In This Book

This manual contains information for IT Administrators of the Agilent Lab Advisor.  
The manual describes the following:

• Server Installation
• Relay Service Overview
• Agilent TCP Relay Service
• Lab Advisor Relay Service