# Agilent TCP Relay Service

# Administrator's Guide

# Notices

## Document Information

## Copyright

## Warranty

## Technology Licenses

## Restricted Rights Legend

## 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 Administrators of the Agilent TCP Relay Service.

## 1  TCP Relay Service Overview

This chapter describes the general concepts of the Agilent TCP Relay Service

## 2  Installing the TCP Relay Service Components

This chapter gives detailed instructions on how to install the TCP Relay Service and the TCP Relay Dashboard

## 3  Using the TCP Relay Service

This chapter describes how to configure and use the TCP Relay Service.

## 4  TCP Relay Service Technical Details

This chapter describes the Functionality of the TCP Relay Service in detail.

## 5  Troubleshooting

This chapter gives some hints on solving issues with the TCP Relay Service.

# Contents

# 1 TCP Relay Service Overview

This chapter describes the general concepts of the Agilent TCP Relay Service

The Agilent TCP Relay Service allows Agilent Lab Advisor and Agilent Remote Advisor to connect to instruments that are not directly connected to the *company LAN*. In typical setups, the instrument is connected to a second network card installed in a PC called an AIC (Agilent Instrument Controller). This second network card typically uses manually defined IP-Settings to form a second *local LAN* with the connected instruments. This second IP-network (*local LAN*) is neither bridged nor routed to the *company LAN*.
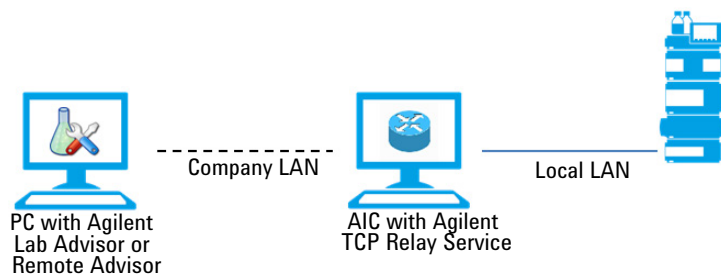


These types of setup are typical in networked laboratories where an instrument controller is installed with two network cards and applications are running on a server, but can also be used to isolate the instruments from the *company LAN* for security reasons.

# 2 Installing the TCP Relay Service Components

This chapter gives detailed instructions on how to install the TCP Relay Service and the TCP Relay Dashboard

The Agilent TCP Relay Service consists of the TCP Relay Service itself and the TCP Relay Dashboard. The TCP Relay Dashboard is a non-essential component that provides a convenient user interface for configuring the TCP Relay Service connections.

# Installing the TCP Relay Service

The Agilent TCP Relay Service is installed on the AICs that host the instruments (LCs, GCs, etc.)

If you are converting an existing Agilent Lab Advisor Relay Service to the Agilent TCP Relay Service, you can convert the Lab Advisor Relay Service configuration file (Relay.Config.txt) to the new format (Relay.Config.json).

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

**Software required**  Agilent TCP Relay Service 1.0 or later

1 To install the TCP Relay Service, navigate to the RelayServiceInstaller folder and double-click the AgilentTCPRelayService.msi file.

   The **Agilent TCP Relay Service Setup** dialog box opens.

2 Follow the on-screen instructions to complete the installation.

3 To convert an existing Agilent Lab Advisor configuration file to the new format,

   a Open the Windows local **Services** dialog box and stop the Agilent TCP Relay Service.

> **NOTE** The access path to the **Services** dialog box depends on your version of Windows.

   b Navigate to the folder containing the file Relay.Config.txt.

   c Copy the file into the Agilent TCP Relay Service folder.

   d Restart the Agilent TCP Relay Service.

   The Relay.Config.txt is converted to the correct format and renamed Relay.Config.json.

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

5 To uninstall the TCP Relay Service, open the Windows **Control Panel** and navigate to the list of installed programs. Select the **Agilent TCP Relay Service** and click **Uninstall**.

# Installing the TCP Relay Dashboard

The Agilent TCP Relay Dashboard can be installed on any PC in the *company LAN*.

**Software required**    Agilent TCP Relay Service 1.0 or later

1   To install the TCP Relay Dashboard, navigate to the RelayServiceInstaller folder and double-click the AgilentTCPRelayDashboard.msi file.

    The **Agilent TCP Relay Dashboard Setup** dialog box opens.

2   Follow the on-screen instructions to complete the installation.

3   To uninstall the TCP Relay Dashboard, open the Windows **Control Panel** and navigate to the list of installed programs. Select the **Agilent TCP Relay Dashboard** and click **Uninstall**.

# 3 Using the TCP Relay Service

This chapter describes how to configure and use the TCP Relay Service.

The Agilent TCP Relay Service running on an Instrument Controller PC does not provide its own user interface, but is controlled via the Agilent TCP Relay Dashboard application.
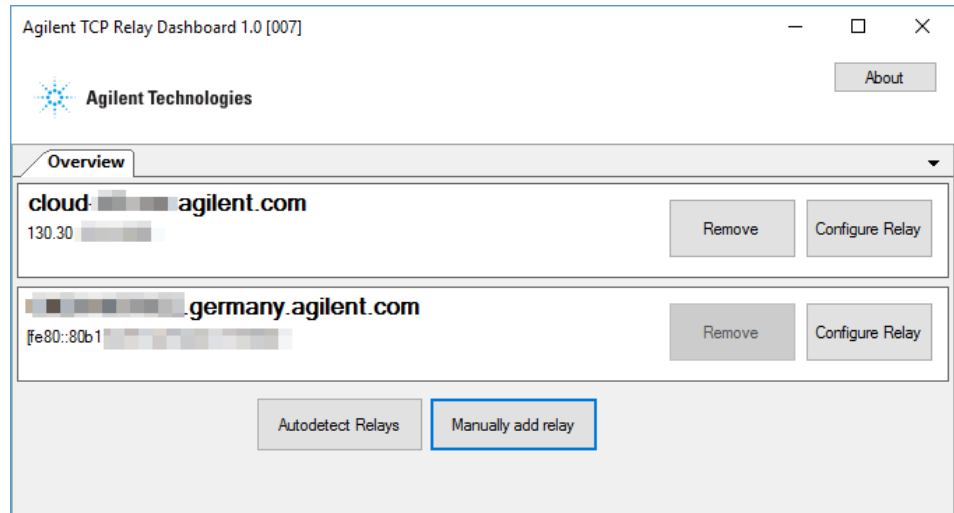


Start the TCP Relay Service Dashboard from the Windows **Start** menu:

**Start> Agilent Technologies> Agilent TCP Relay Dashboard**

When the Agilent TCP Relay Service Dashboard starts up, it polls the network for computers that are running a relay service, and automatically connects to all available relay services. The Dashboard opens at the **Overview** tab.

Use the Agilent TCP Relay Service Dashboard to add new relays, and remove and configure existing relays.

# Adding and Removing Relays

## Adding a Relay

Relays are automatically detected when the Agilent TCP Relay Dashboard is started.

For certain network configurations, automatic detection of relays may not be allowed. In such cases, the relays must be added manually.

**1** To detect a newly added relay automatically, click **Autodetect Relays** in the TCP Relay Service Dashboard **Overview** tab.

Any newly added relays that have been detected are added to the list.

**2** To add relay manually,

   **a** Click **Manually add relay**.

   The **Add new relay** dialog box is displayed.

   **b** Enter the hostname or IP address (in the *company LAN*) of the computer running the Agilent TCP Relay Service and click **OK**.

   The TCP Relay Service Dashboard tries to connect to the new relay service. If the connection is successful, the new relay is added to the list. If the connection is unsuccessful, the input field turns red, and an error icon is shown on the right. The error icon includes a tooltip that gives additional information about the connection status.

## Removing a Relay

To remove a manually added relay from the list, click **Remove** in the relay's details panel in the **Overview** tab.

**NOTE**   You cannot remove a relay that was autodetected; **Remove** is disabled for these relays.

Configuring the Relays

## Configuring the Relays

**1** In the TCP Relay Service Dashboard **Overview** tab, click **Configure** for the relay that you want to configure.

The selected relay configuration is shown in a new tab.



## Adding a New Path

A path is a forwarding rule that enables communication between the *company LAN* and the instrument.

**1** In the TCP Relay Service Dashboard **Overview** tab, click **Configure** for the relay that you want to configure. Supply the correct password if requested.

The selected relay configuration is shown in a new tab.

**2** Click **Add Path**.

A new path is added to the relay.

**3** Supply the connection details to the new path and click **Apply Configuration** to activate the new configuration on the relay.

## Applying Password Protection

You can configure a relay to require authentication by password for configuration. However, a relay that is password-protected cannot be configured using the Lab Advisor Configuration App; if you want to configure the relay using the Lab Advisor Configuration App, you cannot password-protect it.

**1** If you want to configure the relay using the Lab Advisor Configuration App, mark the **Allow configuration with old Lab Advisor App (no authentication)** check box, and leave the **Require authentication** check box cleared.

**2** If you want to password-protect the relay, mark the **Require authentication** check box and enter a password in the **Configuration password** screen.

| NOTE | When you mark **Require authentication**, the **Allow configuration with old Lab Advisor App (no authentication)** check box is deactivated. |
|------|---|

The password protection is not activated until the TCP Relay Service Dashboard is closed and reopened. The next time you try to configure the relay, you are asked to supply the password in order to open the configuration tab.

**3** Click **Apply Configuration** and click **OK** to close the confirmation dialog box.

# 4 TCP Relay Service Technical Details

This chapter describes the Functionality of the TCP Relay Service in detail.

The TCP Relay Service is designed to enable connections to Agilent instrumentation via TCP/IP across network boundaries. The Lab Advisor Relay Service is not designed to help enable connections 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 (for example, Lab Advisor) and the instrument (for example, 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 port 9068. The TCP Relay Service Dashboard is a graphical user interface for configuring the installed relay services.

Alternatively, using the Windows system administration **Services** dialog box, the Agilent TCP Relay Service service can be stopped, the relay configuration file can be modified, and the service can be restarted.

The configuration file of the relay service is stored on the relay service PC in C:\ProgramData\Agilent TCP Relay Service\Relay.Config.json. Trace files can also be found in this location. Each time the relay service is started, a new Relay.Trace0.log file is generated. The content of the Relay.Config.json file is similar to that shown below:

**NOTE**    When the TCP Relay Service is installed, if a Lab Advisor Relay Service configuration file (Relay.Config.txt) is found in the folder, it is automatically converted to the .json format.

The contents of the configuration file have the following meaning and function:

| | |
|---|---|
| **TelnetServerActive** | When **true** (default), allows configuration using the Agilent Lab Advisor Relay App |

> **NOTE**
>
> The Agilent Lab Advisor Relay App does not support authentication, so AuthentificationRequired=true is meaningless in this case.

| | |
|---|---|
| **TelnetServerPort** | Port on which the Agilent Lab Advisor Relay App is listening (default: 23) |
| **ConfigurationServerActive** | When **true** (default), allows configuration using the Agilent TCP Relay Dashboard |
| **AuthentificationPasswordHash** | Encrypted password set using the Agilent TCP Relay Dashboard |
| **AuthentificationRequired** | Whether the Agilent TCP Relay Dashboard asks for a password before you can configure the relay (**true**) |

> **NOTE**
>
> **TelnetServerActive** should be set to **false** if **AuthentificationRequired** is set to **true**.

| | |
|---|---|
| **EnableDebugLogging** | Enable (**true**) or disable (**false**, default) verbose logging in Windows Event Log and Log file |
| **TunnelDefinitions** | Configured Paths or Forward Rules:<br>**TunnelListeningPort:** Port on which the Relay Service listens for incoming connections on this Tunnel<br>**TargetHostname:** Target Host of the Tunnel (commonly an Instrument)<br>**TargetPort:** Port on the Target Host to connect to<br>**LimitIPs:** When **true**, only the IPs listed in **AllowedIPs** are allowed to use the tunnel. (default: **false**)<br>**AllowedIPs:** List of IPs allowed to use the Tunnel (for example: ["192.168.2.1", "192.168.2.136", "2001:db8:85a3:8d3::370:7348"]) |

A typical Relay Service usage is as a 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

The TCP RElay Service 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.



9101 > 192.168.10.10·
9102 > 192.168.10.20
9103 > 192.168.10.30(

Company LAN

Local LAN

PC with Agilent
Lab Advisor or
Remote Advisor

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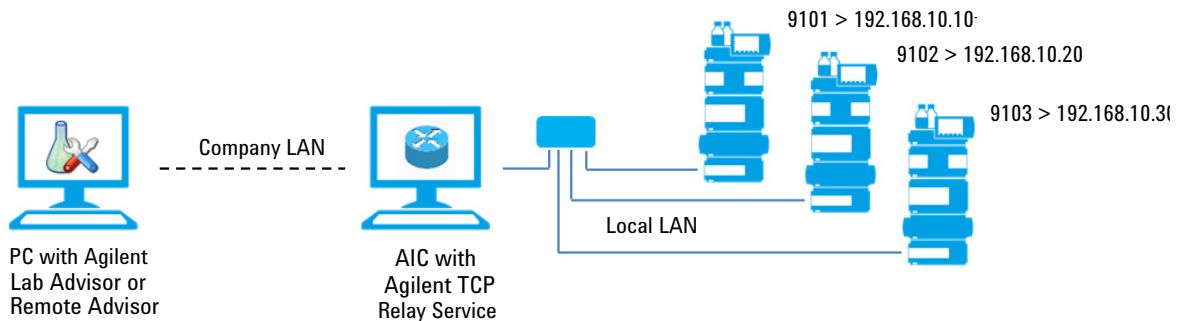
Each relay task listening to a dedicated port may start up to 10 connections. So, if Agilent Lab Advisor or Remote Advisor is started a second time from another PC, and the HPLC instrument is capable of hosting more than one connection at the same time, the relay service can serve both controllers to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

# 5 Troubleshooting

This chapter gives some hints on solving issues with the TCP Relay Service.

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.

In addition, the TCP Relay Service provides a .log file for diagnostic purposes; this is located in the same folder as the TCP Relay Service configuration file.

# Global access to service

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

# IT requirements

At some customer sites, the firewall configuration may inhibit (either partially or totally) network activity by the Agilent TCP Relay Service. In such cases, the ports defined need to be made accessible by IT for the Agilent TCP Relay Service to be able to work.

# Required Ports

The Agilent TCP Relay Service uses port 9068 to communicate with the Agilent TCP Relay Dashboard. If compatibility with an existing Agilent Lab Advisor Relay Service is required, Telnet (port 23) is used to communicate with the Lab Advisor Relay Service App. If these ports are 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 must be set up to accept the configured ports shown in the following table. This can be done with standard Windows tools, but must often be done in cooperation with the IT department.

**Table 1**    Ports required for the TCP Relay Service

| Name | Port (range) | Protocol |
| --- | --- | --- |
| Relay Service Telnet Configuration (for compatibility) | 23 | TCP |
| Relay Service Dashboard Configuration | 9068 | TCP |
| Relay Service LC Forwarding, GC Forwarding | 9100 – 9199 | TCP |
| Relay Service LCMS/GCMS single quad | 9400, 9500 | TCP |

# In This Book

This manual contains information for Administrators of the Agilent TCP Relay Service.

The manual describes the following:

- Overview
- Installation
- Using the TCP Relay Service
- Technical Details
- Troubleshooting

Agilent