Installation Guide

Keysight 89600 Software

KEYSIGHT TECHNOLOGIES

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Manual Part Number

89600-90241

Published By

Keysight Technologies, Inc.
5301 Stevens Creek Blvd.
Santa Clara, CA 95052 USA

Edition

April 2016

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Additional documentation

In addition to this *Installation Guide* (InstallationGuide.pdf), which is available on the installation DVD in the **manuals** folder, during installation by clicking **More Installation Choices > View Installation Guide**, or after you install the software in **C:\Program Files\Agilent\89600 Software *xx.y*\89600 VSA Software\Help** (where *xx.y* is the VSA version number), the following documentation is included with your software:

- A printed *89600 Quick Start Guide* is shipped with the installation DVD. It documents how to install the Keysight 89600 software and a transportable license.
- 89600 VSA Online Help is available after you install the software on your computer. The help includes reference information and tutorials on making several kinds of measurements.
- The complete documentation (PDF files) for the Keysight IO libraries is located in **C:\Program Files (x86)\Agilent\IO Libraries Suite\Manuals** (if you install the IO libraries).
- Specifications are available from the *Document Library* section of the 89600 VSA web page: http://www.keysight.com/find/89600

NOTE **To read the PDF files, you must have Acrobat Reader installed on your computer. To install the latest Acrobat Reader, go to: http://get.adobe.com/reader/**

Contents

Getting Started

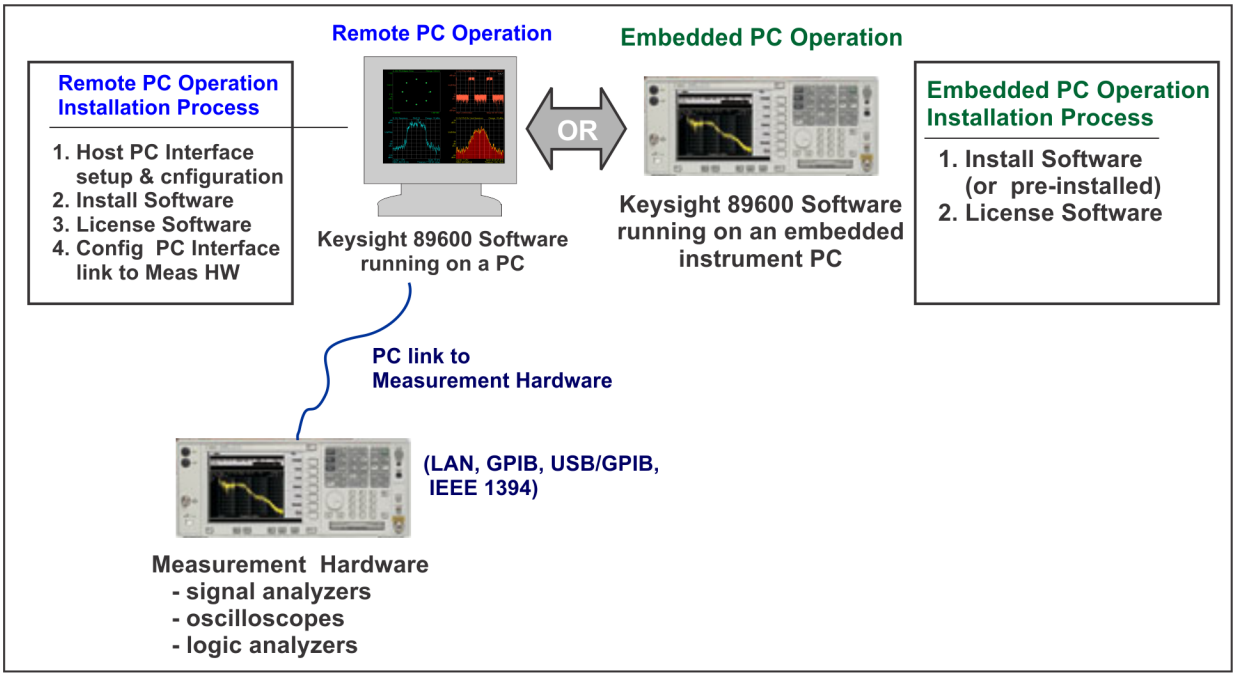
Introduction

The Keysight 89600 Software Installation Guide provides all necessary instructions to install the Keysight 89600 software, to license the software, and to configure the host PC's measurement hardware I/O Interfaces.

The Keysight 89600 software includes two applications: the Keysight 89600 VSA *Vector Signal Analysis* software and the Keysight 89600 WLA *Wireless Link Analysis* software. The software installation wizard guides you though the installation process for both applications. During the Keysight 89600 software installation, you have the option to include or exclude the 89600 VSA and WLA software installation.

Keysight 89600 Software Operating Configurations

The Host PC is the computer that will run the Keysight 89600 software. There are two 89600 software operating configurations: Remote PC Operation and Embedded PC Operation (also referred to as Embedded Instrument Operation). In a Remote PC Operation, the software runs on a standalone host PC linked to the measurement hardware via the I/O interface, such as LAN, GPIB, USB, and IEEE 1394. In an Embedded PC Operation, the 89600 software runs on a PC embedded in the measurement hardware platform such as the Keysight X-Series Analyzer, Keysight Infiniium Scope, and Keysight Logic Analyzer.



Keysight 89600 Software Installation Process: The Keysight 89600 Software includes the Keysight 89600 VSA software and Keysight 89600 WLA software.

Installation and Configuration Process

The Keysight 89600 software installation process includes the following primary steps:

1. **Setup and configure the remote PC.**

   Make sure that the host PC satisfies the 89600 software minimum PC system requirements and that the PC includes one of the supported I/O interfaces (LAN, GPIB, etc.).

   NOTE **This step is not required for Embedded PC Operation installations.**

   Go to Chapter 2 Remote PC Setup and Configuration (page 15) to setup and configure the host PC hardware including:

   a. Verify that the host PC meets the minimum hardware and software requirements.

   b. Verify that the host PC supports one of the 89600 software I/O interfaces for your measurement hardware configuration. If it does not, you must install and configure the necessary PC I/O interface hardware.

2. **Install the 89600 software.**

   The 89600 software includes two applications: the 89600 VSA software (Vector Signal Analysis software) and the 89600 WLA software (Wireless Link Analysis software). The installation wizard will guide you through the installation process. The Keysight 89600 software can be delivered via two methods: Physical DVD or eDelivery (downloaded from the Keysight 89600 software Website).

   Go to Chapter 3 Installing 89600 Software (page 21) and follow the instructions to install the Keysight 89600 software.

   IMPORTANT **If you are upgrading an existing version 14 or earlier 89600 VSA software installation that uses a Floating network license type to software version 15 or later, you must first stop the CDF server service before installing the upgrade software release, see Chapter 5, Stopping the FlexNet License Manager CDF Service (page 42).**

3. License the Keysight 89600 software.

   After installing the 89600 software you must license the software and any purchased options. There are four types of licenses: Demo, Trial, Transportable, and Floating (also referred to as a Network license).

   a. Demo License: The Demo license is provided with the 89600 software installation and allows you to use the 89600 software with limited functionality. To learn more about Demo license, go to Chapter 4 Installing Licenses (page 33).

   b. Trial License: The Trial license lets you immediately start using a fully licensed 89600 software application for a temporary trail period. When the trial period expires, you will need to purchase a valid license for continued use. To learn more about Trial license, go to Chapter 4 Installing Licenses (page 33).

   c. Transportable License: The Transportable license is used to license the Keysight 89600 software plus options to only run on the host PC. However, you do have the capability to transport the license to a different PC, making it the new host PC. To learn more about and install a Transportable license, go to Chapter 4 Installing Licenses (page 33).

   d. Floating License: The Floating or Network license provides the ability for different PC's to use a license that is stored on a network PC (or server). This provides the capability to quickly transfer a license between different PCs to run the 8900 software. You're still limited to running the 89600 software on a one PC per license basis. To learn more about and install a Floating network license, go to Chapter 5 Floating License Installation (page 41).

4. Configure the 89600 Software I/O interface.

   If you are running the 89600 software in the Remote PC Operation configuration, use this procedure to setup and configure the 89600 software to Measurement Hardware interface link (LAN, GPIB, etc.).

   NOTE **This step is not required for Embedded PC Operation installations.**

The Measurement Hardware Interface setup and configuration procedure is not the same for all types of measurement hardware. Go to the procedure that applies to your particular 89600 software measurement hardware configuration:

a. Configuring the 89600 software I/O Interface:

   This procedure applies to most measurement hardware configurations. Go to Chapter 7 Configuring IO Interfaces (page 55).

   NOTE **If your installation measurement hardware is one of the following measurement hardware platforms; Keysight Infiniium Scope, the Keysight N7100 Series analyzer, or the Keysight Logic Analyzers, skip this procedure and use the measurement hardware specific procedure.**

b. Configuring the Keysight Infiniium Windows Scope.

   When the 89600 software is connected to a Keysight Infiniium scope, go to Chapter 8 Configuring Infiniium Windows Scopes (page 67).

c. Configuring the Keysight N7109 Series analyzer.

   When the 89600 software is connected to a Keysight N7109 Series Multi-Channel Analysis System, go to Chapter 9 Configuring Keysight N7109A (page 77).

d. Configuring Keysight Logic Analyzers.

   When the 89600 software is connected to a Keysight Logic Analyzer, go to Chapter 10 Configuring Logic Analyzers (page 91).

5. Calibrate the analyzer.

   Before making measurements, you should calibrate (or align) your 89600 VSA measurement hardware configuration. Calibrating the measurement hardware will optimize measurement result accuracy. Calibration procedures are not included in this manual, refer to the 89600 VSA online help for use and operation instructions. Go to the "Calibration" help topic for information about calibrating your 89600 VSA configuration.

6. Troubleshooting any licensing problems.

   If you encounter problems with the installation or licensing process, refer to Chapter 11 Troubleshooting (page 101).

Remote PC Setup and Configuration

Introduction

This chapter only applies to the remote PC operation configuration. This contains information to setup and configure the PC including system requirements, I/O interface requirements, and the PC interface installation and setup procedure.

NOTE **If you are going to install the software in an embedded PC operation, skip this chapter and go directly to** Installing 89600 Software (page 21)**.**

- Verify your PC meets the system requirements listed in the table System Requirements (page 16).
- Verify that your PC's I/O interface meets the requirements listed in the table Required Measurement Hardware Interfaces (page 17).
- Install and configure your PC's I/O interface as directed in the procedure Install and Configure the PC I/O Interface (page 18).

System Requirements

Make sure your PC meets or exceeds the following minimum requirements, refer to the 89600 VSA Software Requirements web page.

Characteristic	Requirement
Operating system	Microsoft Windows 7 Professional, Enterprise, or Ultimate (32 bit or 64 bit) Microsoft Windows 8 Professional or Enterprise (32 bit or 64 bit)
CPU	1 GHz (>2 GHz recommended)
RAM	2 GB (4 GB recommended)
Video RAM	128 MB (512 MB recommended)
Hard disk	1 GB available
Additional drives	DVD to load the software; license transfer requires network access or a USB memory device
Interface support	LAN, GPIB, USB
Browser	Internet Explorer Version 9.0 or higher required for full context-sensitive help functionality.

Required Measurement Hardware Interfaces

Use this table to determine what type of PC and I/O interface is required for your measurement hardware. Note that you may need to install and configure more than one interface.

Measurement Hardware	Computer Type	Interface
Keysight ESA	Laptop or desktop PC	GPIB, or USB/GPIB adapter
Keysight ESA-E Series Analyzer	Laptop or desktop PC	GPIB or USB/GPIB
Keysight InfiniiVision 6000/7000 Series Oscilloscope	Laptop or desktop PC	LAN, GPIB, or USB/GPIB
Keysight Infiniium Oscilloscope	Laptop or desktop PC or embedded Windows scope	LAN, GPIB, USB/GPIB, or internal
Keysight Logic Analyzer	Laptop, desktop PC, or embedded PC	LAN, IEEE-1394 (only for 1690 Series), or internal
Keysight X-Series Signal Analyzer	Laptop, desktop PC, or embedded PC	LAN or internal**
Keysight N4010 Wireless Connectivity Test Set	Laptop or desktop PC	USB, LAN, GPIB, or USB/GPIB
Keysight PSA (used as ADC)*	Laptop or desktop PC	LAN, GPIB, USB, or USB/GPIB*
Keysight N7100 Series Multi-Channel Signal Analysis System (N7109A)	Laptop or desktop PC	LAN

* To use GPIB with the PSA, your PSA firmware must be version A.4.0 or later. With earlier firmware versions, you must use the LAN connection.

** The Keysight X-Series Signal Analyzer embedded PC configuration (89600 analyzer running in the analyzer) only supports a LAN interface between the analyzer and a Keysight Source; GPIB is not supported.

I/O interface hardware

The 89600 VSA software supports many I/O interface types including LAN, USB. GPIB, IEEE 1394, etc. However, the 89600 VSA software does not support all interface types for each of the available supported measurement hardware platforms. To use a specific type of interface, first verify that the 89600 VSA software supports the measurement hardware I/O interface. If it does support that interface and the PC does not currently support the interface, use the following procedure to install and configure the interface on the PC.

Install and Configure the PC I/O Interface

If you are using simulated measurement hardware, signal simulation software, or an embedded instrument PC installation, you do not need to install/configure an I/O interface. You can skip the remainder of this chapter and go directly to Installing 89600 Software (page 21).

1. Verify that the 89600 VSA software supports the measurement hardware I/O Interface.

   Go to Required Measurement Hardware Interfaces (page 17) table and make sure that the 89600 VSA software supports the measurement hardware I/O interface,

   - If the PC already supports the I/O interface, skip the remainder of this chapter and install the 89600 VSA software—go to Installing 89600 Software (page 21).
   - If the PC supports the I/O interface, but it is not currently installed, you will need to install and configure the I/O interface hardware on the PC—go to the next step.
   - If the 89600 VSA software does not support the measurement hardware I/O interface, you can not use the 89600 VSA software with your measurement hardware.

2. Install I/O Interface Card(s) in the PC.

   Install all necessary I/O interface card(s) in the PC per the instructions that came with the I/O interface card vendor documentation.

   National Instruments GPIB card: For a National Instruments GPIB card, be sure to install the NI 488.2 software first, then reboot your PC and install the interface card.

   NOTE **Exclude Multiple GPIB Devices:**
   If this PC controls other GPIB measurement hardware or devices, you need to exclude those devices from the 89600 identification process, see Troubleshooting Interference With Other Devices or Instruments (page 104)**.**

3. Configure the PC I/O Interface.

   Configure the I/O interface card(s) in the PC per the instructions that came with the I/O interface card vendor documentation.

   TIP You can typically use the default I/O interface hardware settings.

   NOTE GPIB: For GPIB interfaces, make sure that each measurement hardware has a unique GPIB address; multiple GPIB devices cannot use the same GPIB address.

   NOTE If the PC and measurement hardware are connected to a local internal LAN, you may need to check with your network administrator to verify that the IP addresses for the PC and measurement hardware satisfy requirements.

4. Cycle power OFF/ON on all system hardware.

   After completing the hardware I/O connections, cycle the power OFF/ON on the PC and all connected measurement hardware.

5. Next install the 89600 VSA software. Go to Installing 89600 Software (page 21).

Installing 89600 Software

Keysight 89600 Software Installation

The 89600 software installation includes software for the following applications:

- Keysight 89600 VSA software
- Keysight 89600 WLA software
- Keysight License Services

Installing the 89600 VSA Software

The 89600 VSA Software installation program has several different installation options. Which installation option you will select depends upon where you need to install the 89600 software and how you need it to operate. The two major ways that the 89600 software can operate are in Remote Operation or Embedded Operation.

For Remote Operation, install the 89600 software on a PC which connects to a measurement instrument. For Embedded Operation, install the 89600 software on an embedded PC instrument such as a Keysight X-series Analyzer, a Keysight Infiniium Oscilloscope, or a Keysight Logic Analyzer.

To install the software, use one of the following procedures:

- Installing 89600 Software in a PC (page 22)
- Installing 89600 Software in a Keysight X-Series Signal Analyzer (page 27)
- Installing 89600 Software in a Keysight Infiniium Scope (page 29)
- Installing 89600 Software in a Keysight Logic Analyzer (page 31)

Installing the 89600 WLA Software

The 89600 WLA Software allows users to analyze wireless signals, correlating control signals with the physical RF signals. The Keysight 89600 WLA Software is installed with the same installation program that installs the Keysight 89600 VSA Software. It must be installed along with the Keysight 89600 VSA Software; it cannot be installed by itself.

The Keysight 89600 WLA Software must be licensed separately from the Keysight 89600 VSA Software.

Installing 89600 Software in a PC

To install the Keysight 89600 software in a PC:

IMPORTANT **If you are upgrading an existing version 14 or earlier 89600 VSA software installation that uses a Floating license scheme to software version 15 or later, you must first stop the CDF server service before installing the upgrade software release, see Chapter 5, Stopping the FlexNet License Manager CDF Service (page 42).**

1. Windows 8 users: Follow the procedure Installing .NET Framework 3.5 on Windows 8 PCs (page 25) if you have a Windows 8 PC without Internet access.

   TIP **If you have Internet access, you can skip this step and Windows will prompt you to download and install the .NET Framework 3.5 during the 89600 software installation.**

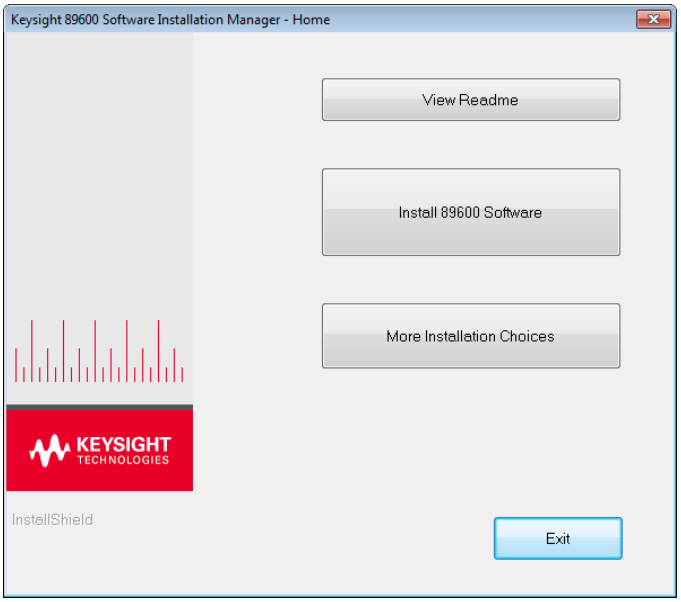
2. Close any applications you have open.

   NOTE **To install the Keysight 89600 software, you must have administrator privileges on the computer you are installing the Keysight 89600 software on.**

3. Insert the Keysight 89600 software installation DVD.
4. If the installation utility does not start automatically, navigate to the DVD drive, and double-click this file:

   autoplay.exe

5. When the Keysight 89600 Installation Manager window opens, please open and review the following sections of the Readme file (click **View Readme**).
   - Required Minimum License Version
   - Installation Information



6. After reviewing the Readme file, start the software installation by clicking **Install 89600 Software**. Step through the InstallShield Wizard and stop at the "Select Products and Features" window.
7. Select the Products and Features you want to install, click Next and continue through the InstallShield Wizard to complete the installation.

   If you are installing Keysight 89600 WLA Software, click the Keysight 89600 WLA Software option.

   NOTE **The Keysight 89600 WLA Software can only be installed along with the Keysight 89600 VSA Software. The WLA Software cannot be installed alone.**

   IMPORTANT **Windows 8: if you do not have .NET Framework 3.5 installed, a dialog will pop up during installation that will prompt you to install the .NET Framework. Please click Download and install this feature. If you do not have Internet access, you can follow the procedure** Installing .NET Framework 3.5 on Windows 8 PCs (page 25) **to install the .NET Framework from the Windows 8 Installation DVD.**

   After the 89600 software is installed, you have the choice to install hardware support. If you do not choose to install hardware support at this time, all

hardware support components are available for installation at a later time, see Adding Hardware Support (page 26).

8. If you will be using connected hardware, install the Keysight IO Libraries.

9. The installation process configures your system environment for the 89600 software applications. Some installations may required a system PC reboot. If this is the case, when asked click **OK** to reboot.

   IMPORTANT **After rebooting you will need to be logged on with administrative privileges to complete the installation.**

   NOTE **When installing from a remotely mounted DVD drive, the remote drive must be configured to reconnect at logon so that the installation files can be located after the reboot.**

10. The 89600 software installation is now complete and the software can be run. However, the software and options need to be licensed. To learn how to obtain a license, see Installing Licenses (page 33).

    TIP **The first time you install the 89600 software on Windows 8, a tile for each 89600 software shortcut will be created on the Start screen. You can right-click these tiles and remove them from the Start screen by choosing Unpin from Start; or drag to rearrange them into a group, and name the group by zooming out (click "-" at bottom right of screen) and then right-clicking the group and choosing Name group.**

Installing .NET Framework 3.5 on Windows 8 PCs

Follow this procedure to install the .NET Framework 3.5 before installing the 89600 software on Windows 8 PCs *without Internet access*.

1. Check to see if .NET Framework 3.5 is already installed.
   a. Click **Control Panel > Programs > Turn Windows features on or off**.
   b. If the **.NET Framework 3.5 (includes .NET 2.0 and 3.0)** check box is completely empty, continue with the rest of this procedure. Otherwise, skip to step 2 in Installing 89600 Software in a PC (page 22)
2. Close the **Windows Features** dialog.
3. If you have a *Windows 8 Installation DVD*, insert it into your computer or mount the ISO image.
   If you don't have a *Windows 8 Installation DVD*, use the files in the Keysight_89600_dvd installation folder.
4. Open an Administrator command prompt.
   a. Move the mouse to the lower left-hand corner of the screen.
   b. Right-click and choose **Command Prompt (Admin)**.
   c. Click **Yes** at the **User Account Control** dialog if prompted.

5. Type the following command (on a single line) and press Enter:
   `dism /online /enable-feature /featurename:NetFX3 /Source:<dot-net-location> /limitaccess`
   where <dot-net-location> is defined as:
   - `<installed drive>:\Keysight_89600_dvd\ISSetupPrerequisites\{074EE22F-2485-4FED-83D1-AAC36C3D9ED0}` or
   - `d:\sources\sxs` where d is the drive where the Windows 8 DVD is mounted.
6. Wait until the feature is installed (you will see the text: "The operation completed successfully.")
7. Restart the computer if prompted.
8. Proceed with step 2 in Installing 89600 Software in a PC (page 22)

Adding Hardware Support

This procedure shows you how to install add connected Hardware support after the 89600 software has been installed:

1. Close any applications you have open.

   NOTE **To install the Keysight 89600 software, you must have administrator privileges on the computer on which you are installing the Keysight 89600 software.**

2. Insert the Keysight 89600 software installation DVD.
3. If the installation utility does not start automatically, navigate to the DVD drive, and double-click this file:

   autoplay.exe

4. When the Keysight 89600 Installation Manager window opens, click **More Installation Choices**.
5. In the More Installation Choices window, click **Hardware Support Menu**.
6. The Hardware Support window opens. Select the components to add and continue through the InstallShield Wizard.

Installing 89600 Software in a Keysight X-Series Signal Analyzer

NOTE **Verify that the Instrument software revision (System hardkey > Show softkey > System softkey) is A.13.XX or greater.**

You can install 89600 software on your Keysight X-Series Signal Analyzer one of two different ways.

If you have an Internet connection to the X-series analyzer, you can download the Keysight 89600 software from the Keysight 89600 software home page (www.keysight.com/find/89600).

If the Keysight X-Series Analyzer does not have an Internet connection, you can install the software found on the Keysight 89600 software installation DVD. Since Keysight X-Series Signal Analyzers do not have internal DVD drives, you must use a USB-connected drive.

To install the 89600 VSA Software in this manner, you must first copy the contents of the Keysight 89600 software DVD onto the USB Drive. The Keysight 89600 software DVD is not protected or encrypted. The copy will be identical to the original DVD.

NOTE **This procedure assumes that a USB Flash Drive is being used. Other USB storage devices, such as a USB hard drive or USB DVD drive, could also be used.**

To install the 89600 VSA software in a Keysight X-Series Signal Analyzer using a USB Flash drive:

1. Insert the Keysight 89600 software DVD into a PC's DVD drive. If the Keysight 89600 Installation Manager window opens, close the installer program (click **Exit**).
2. Insert a USB Flash Drive into a USB port on the same PC in which the Keysight 89600 software DVD is loaded.
3. Use Windows Explorer to copy the contents of the Keysight 89600 software DVD onto the USB Flash Drive.
4. Connect a USB keyboard and mouse to the analyzer.

   NOTE **To install the Keysight 89600 software on the analyzer, you need to have administrator privileges. Press Ctrl - Alt - Delete, then click Log Off.... Log back in as the Administrator. Depending on your instrument's installed Windows OS image version, the default administrator password is either `agilent4u` or `Keysight4u!`.**

5. Insert the USB Flash Drive into an available USB port on the analyzer.

6. Open Windows Explorer and navigate to the USB drive.
7. Double-click **autoplay.EXE**
8. When the Keysight 89600 Installation Manager window opens, please read the Readme information.
9. After you read the Readme file, close it, then click **Install 89600 VSA**. Continue through the InstallShield Wizard until you reach the **Select Products and Features** window.
10. Select the features you want to install, then continue through the InstallShield Wizard to complete the installation.
11. When the installation is complete, exit the Installation Manager.
12. Start the X-Series analyzer application: Double-click the **LaunchXSA** icon on the Windows desktop.
13. After the X-Series analyzer finishes booting up, start the Keysight 89600 software:
    - UXA - Press the Spectrum Analyzer [N] Swept SA tab, then press the 89600 VSA button to launch the VSA software.
    - All other X-Series signal analyzers - Press the **Mode** hardkey, then press the **More** softkey until the **89601 VSA** softkey appears. Press the **89601 VSA** softkey followed by the **Start 89601B** softkey to launch the VSA software).

Next the software and options need to be licensed. To learn how to obtain a license, see Installing Licenses (page 33).

Installing 89600 Software in a Keysight Infiniium Scope

IMPORTANT **Embedded operation with the 89600 is not recommended for the Infiniium 8000 and 80000 Series scopes.**

Many Infiniium oscilloscopes provide an open Microsoft Windows 7 operating system that enables you to install other applications. You can install and operate the 89600 Vector Signal Analysis software on these scopes.

If you have an Internet connection to the Keysight Infiniium scope, you can download the Keysight 89600 software from the Keysight 89600 software home page (www.keysight.com/find/89600).

If the Keysight Infiniium scope does not have an Internet connection, you can install the software found on the Keysight 89600 software installation DVD.

Some Keysight Infiniium scopes have no DVD drive, so for these scopes you must use a USB drive. If you are installing from a USB drive, you must copy the contents of the Keysight 89600 software DVD onto the USB Drive. The Keysight 89600 software DVD is not protected or encrypted. The copy will be identical to the original DVD.

NOTE **This procedure assumes that a USB Flash Drive is being used. Other USB storage devices, such as a USB hard drive or USB DVD drive, could also be used.**

To install the 89600 VSA and 89600 WLA software in a Windows 7 scope:

1. Increase the scope's virtual memory to at least 1 GB as follows:
    a. Minimize the scope application.
    b. Navigate to: **Control Panel > Administrative Tools** (double-click) **> Computer Management** (double-click) > **Computer Management (Local)** (right-click) **> Properties > Advanced** (tab)> **Performance Settings** (button) **> Virtual Memory - Change** (button) to display the Virtual Memory dialog screen.
    c. Set Initial Size (MB) and Maximum Size (MB) to 1000 MB (or more if you have sufficient Space Available), then click **Set > OK > OK** (reboot message) **> OK > OK**.
    d. When the *System Settings Change* dialog appears, click **Yes** to restart the computer.
2. Insert the Keysight 89600 software installation DVD into the scope's DVD drive. If your scope does not have a DVD drive, use the following procedure:
    a. Insert the Keysight 89600 software DVD into a PC's DVD drive. If the Keysight 89600 Installation Manager window opens, close the installer program (click Exit).
    b. Insert a USB Flash Drive into a USB port on the same PC that the Keysight 89600 software DVD is in.

c. Copy the contents of the Keysight 89600 software DVD onto the USB Flash Drive.

d. Connect a USB keyboard and mouse to the scope.

NOTE **To install the Keysight 89600 software on the scope, you need to have administrator privileges. Press Ctrl - Alt - Delete, then click Log Off... and log back in as the Administrator.**

e. Insert the USB Flash Drive into an available USB port.

f. Open Windows Explorer and navigate to the USB drive.

g. Double-click **autoplay.EXE** to bring up the Keysight 89600 Installation Manager.

3. When the Keysight 89600 Installation Manager window opens, please read the Readme information.
4. After you read the Readme file, close it then click **Install 89600 VSA**. Continue through the InstallShield Wizard until you reach the **Select Products and Features** window.
5. Select the features you want to install, then continue through the InstallShield Wizard to complete the installation.
6. When the installation is complete, exit the Installation Manager.
7. Start the 89600 VSA. Click **Start > Programs > Keysight 89600 VSA *xx.y* > Keysight 89600 VSA *xx.y***.

   ...where *xx.y* is the VSA version number.

Next the software and options need to be licensed. To learn how to obtain a license, see Installing Licenses (page 33).

Installing 89600 Software in a Keysight Logic Analyzer

The first step is to decide where you want to install the 89600 VSA software. For information on logic analyzer configurations, see Configurations (page 92).

If the logic analyzer has an Internet connection, you can download the Keysight 89600 software from the Keysight 89600 software home page (www.keysight.com/find/89600).

You can also install the software from the Keysight 89600 software installation DVD. Since not all Keysight logic analyzers have a DVD drive, you can use a USB drive. The first step is to copy the contents of the Keysight 89600 software DVD onto the USB Drive. The Keysight 89600 software DVD is not protected or encrypted. The copy will be identical to the original DVD.

NOTE **This procedure assumes that a USB Flash Drive is being used. Other USB storage devices, such as a USB hard drive or USB DVD drive, could also be used.**

To install the 89600 VSA and 89600 WLA software in a logic analyzer:

1. Insert the Keysight 89600 software DVD into the logic analyzer's DVD drive. If your logic analyzer does not have a DVD drive, use the following procedure:
    a. Insert the Keysight 89600 software DVD into a PC's DVD drive. If the Keysight 89600 Installation Manager window opens, close the installer program (click Exit).
    b. Insert a USB Flash Drive into a USB port on the same PC that the Keysight 89600 software DVD is in.
    c. Copy the contents of the Keysight 89600 software DVD onto the USB Flash Drive.
    d. Connect a USB keyboard and mouse to the analyzer.

        NOTE **To install the Keysight 89600 software on the logic analyzer, you need to log on with administrator privileges.**

    e. Insert the USB Flash Drive into an available USB port on the analyzer.
    f. Open Windows Explorer and navigate to the USB drive.
    g. Double-click **autoplay.EXE** to bring up the Keysight 89600 Installation Manager.
2. When the Keysight 89600 Installation Manager window opens, please read the Readme information.
3. After you read the Readme file, close it then click **Install 89600 VSA**. Continue through the InstallShield Wizard until you reach the *Select Products and Features* window.

4. Select the features you want to install, then continue through the InstallShield Wizard to complete the installation.
5. When the installation is complete, exit the Installation Manager.

NOTE **When installing the 89600 VSA in a logic analyzer mainframe, Hardware support is disabled. This prevents using disk space for unnecessary components that are not needed when the 89600 VSA software is installed in a logic analyzer.**

6. Start the 89600 VSA. Click **Start > (All) Programs > Keysight 89600 VSA *xx.y* > Keysight 89600 VSA *xx.y*** (where *xx.y* is the VSA version number).

Next, the software and its options must be licensed. To learn how to obtain a license, see Installing Licenses (page 33).

Installing Licenses

License Overview

The 89600 software must be licensed to operate in a useful manner. The 89600 software has four types of licenses: Demo, Trial, Transportable, and Floating. The Demo license is installed with the 89600 software; installing one of the other licenses requires three general steps:

1. Running the Keysight License Manager to obtain information about the PC or instrument on which the 89600 is installed.
2. Contacting Keysight Technologies, Inc., to receive a license file.
3. Installing the license file using the Keysight License Manager.

Transferring an Installed License

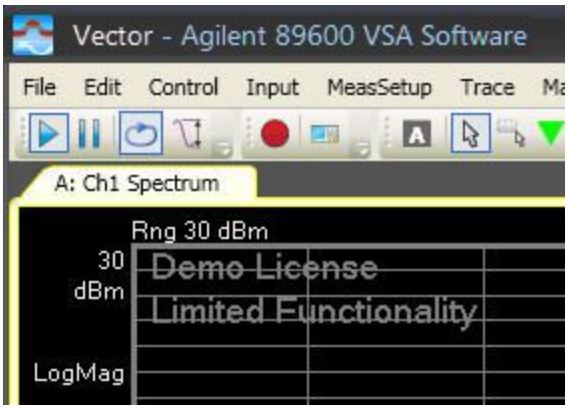
There are additional steps required to transfer an installed license from one PC or instrument to another.

- Demo:
  The Demo license is automatically installed when the VSA software is installed. Using the Demo license, the VSA accepts signals only from the simulated input or from the example time capture signals (recordings) provided with the product. Example signal files are located in the following directory:

  C:\Program Files\Agilent\89600 Software xx.y\89600 VSA Software\Help\Signals

  ...where *xx.y* is the VSA version number.

  When you are using a Demo license, the trace shows a "Demo License, Limited Functionality" message:



  NOTE **If you have an option 200 license installed and only the Demo license is being used, see** Troubleshooting Licensing Problems (page 101)**.**

- Trial:
  The Trial license enables all 89600 VSA software options for a temporary 30 day trial period. This license provides time for you to purchase, redeem, and install a permanent license (either a Transportable or Floating license) while continuing to use a fully licensed VSA. It also allows users who have not purchased the software to use "try out" the VSA for the temporary trial period. To install a Trial license, perform the steps in Trial License (page 35).
- Transportable:
  The Transportable license must be installed on the same PC that runs the 89600 software. However, the license can be moved from one PC to another. To install a Transportable license, perform the steps in Transportable License (page 37).

- Floating or Network:
  Floating licenses provide the ability for multiple client PCs to use a common license that is stored on a network license server. This is in contrast to the Transportable license that is a PC based license, one license per PC.
  Also called a concurrent license, floating licenses are bound to the host ID of the license server, but are used by any Client PC running the 89600 software with network access to the server (as long as the number of concurrent client users does not exceed the number of granted licenses.)
  To install, setup, and configure a Floating License Server and Client PC, go to Floating License Installation (page 41).

Trial License

This section documents how to obtain and install a Trial license for your 89600 software. The Trial License provides a fully licensed 89600 VSA software for a temporary 30 day trial period. This gives you time to purchase, redeem, and install a permanent license, either a Transportable license or a Floating license, while continuing to use the 89600 VSA software.

When the Trial period expires, the 89600 Software license either reverts back to a Demo license or to any prior installed valid license; either a Transportable license or a Floating license.

NOTE **You will only be granted one Trial license per license Host ID.**

Obtaining a Trial License

To enable a Trial license, you must obtain your PC's Host ID, then go to Keysight's online License Manager and redeem the trial license.

Finding Your PC's Host ID

To obtain the License Service Host ID for the PC on which you have installed Keysight 89600 software, follow these steps:

1. Open the Keysight License Service dialog box
   a. Right-click the Keysight License Service program icon in the Windows desktop Toolbar (if the program icon is hidden, click the "Show hidden icons" button on the right side of the toolbar.)
   b. Select **About Keysight License Service**.

2. Use the Copy button to copy the PC Host ID into the Windows clipboard.

NOTE **For some Measurement Hardware (instruments), the Host IDs consist of a Keysight instrument model number and serial number. On desktop or laptop PCs, and some instruments, the default model number is PCSERNO.**

Getting the Trial License

Go to the Keysight 89601B VSA website at http://www.keysight.com/find/89601B, select the **Software Trials & Licenses** tab, then follow the instructions to obtain a Trial license.

- You must provide contact information.
- The requested Host ID is available from the Keysight License Manager as described above. If you are accessing the website from the same PC that the VSA software is installed, you can simply **copy and paste** the Host ID into the website form.
- You will only be granted one Trial license per license Host ID.

Installing a License

To install the license file, *drag-and-drop* the license file onto your computer or instrument's connection in the Keysight License Manager's list of connections. See the *Add a New License* section of the Keysight License Manager Help for more ways to install the license (click the "**?**" icon to from within the Keysight License Manager to open the help file, or click **Start > (All) Programs > Keysight License Manager > Keysight License Manager Help**).

NOTE **The install operation can take up to 40 seconds to complete.**

When the license file is successfully installed, the installed licenses that are available are listed in the Keysight License Manager's main license view area. Make sure your licensed options and features are shown.

Transportable License

This section describes the steps to obtain and install a Transportable license. The Transportable license enables the 89600 software and options that you have purchased. The license must be installed on the same PC that runs the 89600 software. However, the license can be transferred from one PC to another PC. Transferring the license requires the Keysight License Manager to communicate with the Keysight Software Manager website.

To obtain and install a Transportable license:

1. Purchase an 89600 Software Transportable License.
2. Receive a Software License Entitlement Certificate.
   After purchasing a Transportable License, you will receive a Software License Entitlement Certificate.
3. Redeem the License.
   As described in Redeeming a Transportable License (page 37), the *Software License Entitlement Certificate* provides instructions to redeem your license.
4. Install the License file.
   As described in Installing a Transportable License (page 38), after providing the required information, the Keysight Software Manager website will email a License file (*.lic*) to you. Install the license file on the same PC that runs the 89600 software.
5. Activate the License.
   After installing the license, you need to restart the VSA software to activate the license.

NOTE **The term PC refers to any computer or instrument (such as analyzers and oscilloscopes) running the 89600 software.**

Redeeming a Transportable License

After purchasing a Transportable License, you will receive a Software License Entitlement Certificate. You will need information from the certificate to redeem and activate a license. To redeem a Transportable license, follow these steps:

1. Collect the Software License Entitlement Certificates for all 89600 VSA software options that you have purchased. The Software License Entitlement Certificates are either emailed to you or are included with the *89600 VSA Software Installation Materials* envelope (printed on gray parchment).
2. Obtain the Host identification information (Host ID). Use the Keysight License Service utility or Keysight License Manager to obtain the *Host ID*.

a. Open the **About Keysight License Service** utility, right click the "**Keysight License Service** icon in the Windows desktop notification area (lower right side of the Windows Task bar) and select **About Keysight License Service**.

b. Click the **Copy** button to the right of the Host ID box. The Host ID information is copied into the Windows clipboard.

3. Redeem your licenses and obtain the license files.

   Follow the instructions included on the *Software License Entitlement Certificate* to redeem your licenses and obtain the license files. Go to the *Keysight Software Manager* website:

   http://www.keysight.com/find/softwaremanager

   - First time access will require you to register.

     IMPORTANT **Remember your user password. The password is required for future access to manage your licenses.**

   - You will need the *Keysight Order Number* and *Keysight Certificate Number* located on the top of your *Software License Entitlement Certificate*.

4. Install License File(s): Check your email for the license file(s) and then install the license file(s) on the PC – go to Installing a Transportable License (page 38).

Installing a Transportable License

Installing the license file is necessary to license the 89600 VSA software. After completing Redeeming a Transportable License (page 37), you will receive a Keysight email containing your license file for the redeemed Entitlement Certificates. Follow these steps to install the license files on the PC:

1. Copy the email attachment "*.lic*" to a folder on your PC, connected hard drive, or USB storage device.
2. Start the Keysight License Manager: click **Utilities > Licenses > Status > Keysight License Manager** or double clicking the Keysight License Service icon .
3. To install the license file, *drag-and-drop* the license file onto your computer or instrument's connection in the Keysight License Manager's list of connections. See the *Add a New License* section of the Keysight License Manager Help for more ways to install the license (click the "**?**" icon to from within the Keysight License Manager to open the help file, or click **Start > (All) Programs > Keysight License Manager > Keysight License Manager Help**).

   NOTE **The install operation can take up to 40 seconds to complete.**

   When the license file is successfully installed, the installed transportable licenses that are available are listed in the Keysight License Manager's main license view area. Make sure your licensed options and features are shown.

4. After installing the license file, verify that the Options are licensed for use by the Keysight VSA software. Start the Keysight 89600 VSA software, open the VSA *Licenses Options* dialog (click **Utilities > Licenses > Options**) and verify the options are correctly licensed (*Yes* in the On column).

"On" Column	License Status
Yes	Option is licensed for use.
--	Dash indicates that the license option has not been selected for use by the VSA. To include an option, open the "Select License Options" system utility and select (check) the options that you want to include in the VSA measurement capability (click **Start > (All) Programs/All apps > Keysight 89600 Software xx.y > System Utilities > Select License Options**, where *xx.y* is the VSA version number). The VSA must be closed and restarted to incorporate the changes.
No	Option is not licensed for use.

Transporting a Transportable License

The Transportable license is a license that can be moved from one PC to different PC. This allows you to use one license to run the 89600 Software on different PC's. However, only one PC at a time can use a single license.

Installing the license file is necessary to license the 89600 VSA software. After completing Redeeming a Transportable License (page 37), you will receive a Keysight email containing your license file for the redeemed Entitlement Certificates.

There are three procedures procedures for transporting a license. The procedure you choose depends on the way your systems are configured:

- Online (recommended) - Uses the Keysight License Manager site to move a license between Internet-connected systems.
- Offline - For cases where one or both systems are not connected to the Internet.
- Manual - (For specialized environments that may have file copying restrictions only) Transfer a license by entering information manually.

These procedures are detailed in the *Transporting (Moving) Licenses* section of the Keysight License Manager Help (click the "**?**" icon to from within the Keysight License Manager to open the help file, or click **Start > (All) Programs > Keysight License Manager > Keysight License Manager Help**).

Floating License Installation

Overview

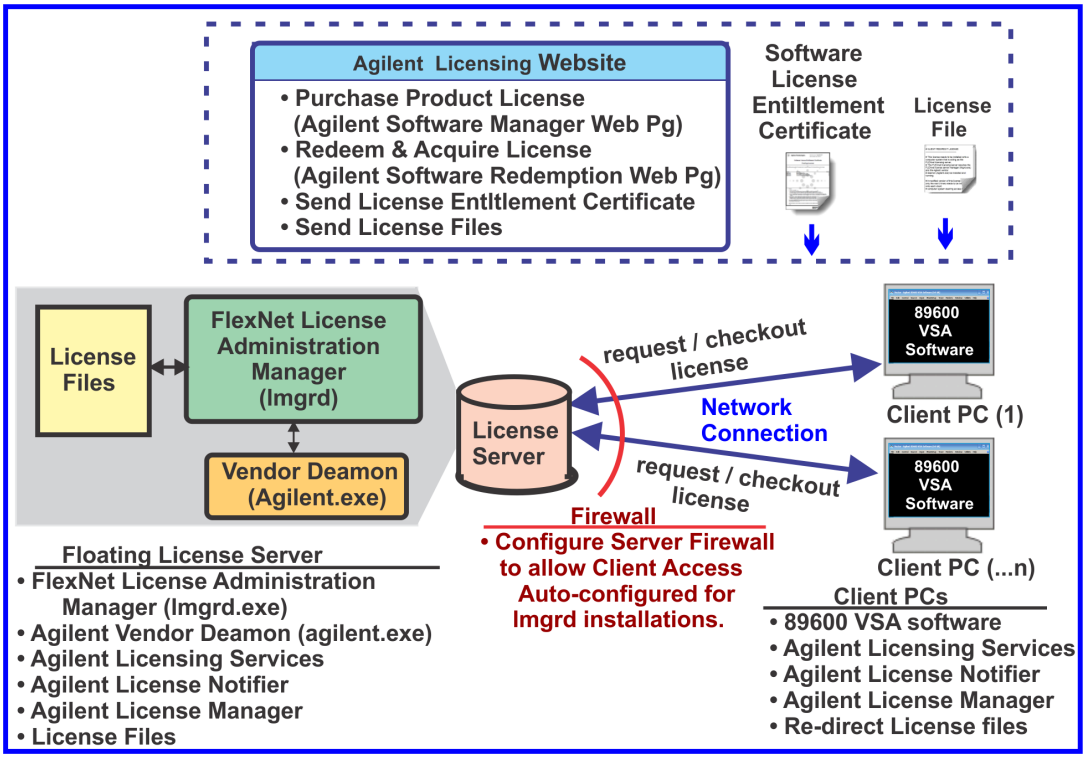
This chapter describes the procedure for installing the 89600 software Floating License System, which includes the License Server and Client setup and configuration.

Floating licenses provide the ability for multiple client PCs to use a common license that is stored on a network license server. This is in contrast to the Transportable license that is a PC based license, one license per PC. Also called a concurrent license, floating licenses are bound to the host ID of the license server, but are used by any Client computer running the 89600 software with network access to the server (as long as the number of concurrent client users does not exceed the number of granted licenses.) Floating licenses provide the ability to use one license on different PCs (Instruments).

The client PC or instrument requests a license from the server to run the 89600 VSA software. If a license is available, the server will allocate the license to the client.

Keysight Floating License System Overview

Keysight 89600 floating license administration requires a PC running the license server that manages license allocation to client PCs running the 89600 VSA software. The license server tracks the number of licenses checked out and the number of licenses still available for use. The client PCs request licenses from the license server to run the 89600 VSA software. If licenses are available, the license server will allocate licenses to the client PC.



Agilent Floating License System Overview

Using Floating licenses

The *Using Floating License* section provides additional information about understanding and using floating licenses. See Using Floating Licenses (page 52).

Stopping the FlexNet License Manager CDF Service

Stop the FlexNet License Manager CDF Service before installing the Keysight 89600 VSA software. See Make sure that the FlexNet License Manager CDF service (version 14 or earlier) is stopped. (page 45).

Selecting Client PC licensed options and features

Use the *Select License Options* utility to specify which licensed options and features you want the Client PC to use. See Selecting Licensed Options (Using the Select License

Options Utility) (page 52).

Floating License Renewal Information

While floating licenses are perpetual, licensing is renewed every 550 days to give the customer an opportunity to change their server or host ID if needed through their Keysight Software Manager (KSM) profile. Email notification is received one month prior to license expiration with instructions, which is all completed through their KSM profile.

Troubleshooting

The *Troubleshooting* topic helps solve floating license installation problems. See Troubleshooting Floating Licenses (page 52).

System Requirements

The Keysight floating license solution supports the following Windows platforms:

PC Architecture	Processor Type	Operating System
Microsoft Windows 32-bit	x86	Windows Server 2003 R2 Standard Edition, Windows Vista with SP1 (or greater), Windows 7 (all versions)
Microsoft Windows 64-bit	x64	Windows Server 2008 SP2 Standard Edition, Windows Vista with SP1 (or greater), Windows 7 (all versions)
Note: Other Windows platforms and versions may work but have not been explicitly tested		

Floating License Installation

This procedure installs the 89600 VSA software Floating License system.

To ensure a successful installation, perform the installation process in the following sequence:

1. Install Keysight Licensing Services on the License Server. See Installing Keysight Licensing Services on the License Server (page 44).

   IMPORTANT **For version 15 upgrades from version 14 and earlier installations, you must STOP the licensing service before installing the version 15 89600 VSA software. See** Make sure that the FlexNet License Manager CDF service (version 14 or earlier) is stopped. (page 45)**.**

2. Redeeming Floating Licenses (obtain license files). See Redeeming Floating Licenses (page 46).
3. Configure and Start the License Server. See Configuring and Starting the License Server (page 47).
4. Install and set up the Client PC license. See Client PC Floating license Installation and Setup (page 50).

Installing Keysight Licensing Services on the License Server

This procedure installs the Keysight Licensing Services on the License Server computer. The Keysight 89600 software *Licensing Services* performs the following tasks:

- Installs lmgrd.exe and lmtools.exe software
- Installs the Vendor Daemon (agilent.exe)
- Installs the Keysight License Manager (KLM)
- Installs the Keysight License Service (provides the Server PC Host ID)
- Configures the Windows firewall for lmgrd.exe

Start Installation

To install the Keysight Licensing Service, use the following steps:

1. **Make sure that the *FlexNet License Manager CDF service* (version 14 or earlier) is stopped**.

   Halt the FlexNet Licensing Manager CDF Service. This step is necessary only if there is an existing 89600 VSA software version 14 or earlier floating license installation and you are upgrading to version 15 and later.

   NOTE **There may be an installation error message ".....agilent.exe is LOCKED" shown if you do not stop the FlexNet License Manager CDF service when installing a version 14 to 15 or later upgrade software installation.**

   a. Run the **lmtools.exe** utility (89600 VSA software version 14 or earlier) by clicking: **C:\Program Files(x86)\Agilent\CDF\bin\lmtools.exe**
   b. Click the **Start/Stop/Record** tab > **Stop Service**.

2. Run the Keysight 89600 VSA software installation. When the Keysight 89600 Software Installation Manager "**Home**" window opens, click the **Install 89600 Software** button.

   NOTE **It is recommended that you open and review the "Readme" file for the latest 89600 VSA software installation notes, click the View Readme button on the installer "Home" window.**

3. Stop the Install Wizard at the **Select Products and Features** window.
   a. For a dedicated license server computer installation (a computer that functions only as the license server and does not concurrently run the 89600 VSA software), install only the "**Licensing Services**" product.

      In the **Select Products and Features** window, select only the **Licensing Services** product and clear all other product/feature install options. Click **Next** to continue with the installation process.

      NOTE **On a dedicated license server, you only need to install "Licensing Services" product**

   b. For a multi-use license server computer installation (a computer that functions both as the license server and concurrently runs the 89600 VSA software), install both the Keysight 89600 VSA Software and Licensing Services product option.

      In the **Select Products and Features** window, select the **Keysight 89600 VSA Software** and **Licensing Services** product install options. Click **Next** to continue with the installation process.

4. Stop at the Install Wizard **Select Hardware Support** window.

a. For a dedicated license server computer installation, you do not need to install Hardware Support.

   In the **Select Hardware Support** window, select the **Do not install hardware support** option and click **Next** to continue the installation.

b. For a multi-use license server computer installation, it is recommended that you install Hardware Support.

   In the **Select Hardware Support** window, select the **Hardware Support Menu (recommended)** option and click **Next** to continue the installation.

The next step is to redeem your 89600 VSA software licenses and to install the license files. To redeem your license, see Redeeming Floating Licenses (page 46).

Redeeming Floating Licenses

This procedure describes how to redeem floating licenses, obtain the license files, and install the floating license files onto the license server computer. The license server computer is the host computer where the original redeemed license files are installed.

NOTE **Before redeeming a floating server license, you must install the Keysight Licensing Services on the Server computer. See** Installing Keysight Licensing Services on the License Server (page 44)**.**

1. Obtain your *Software License Entitlement Certificate(s)*.

   After purchasing the 89600 VSA software floating product licenses, Keysight will send you a *Software License Entitlement Certificate* for all 89600 software and options that you have purchased. The *Software License Entitlement Certificate* provides the *Keysight Order Number* and *Keysight Certificate Number* that you will need to redeem and activate the licenses.

2. Obtain the Host identification information (Host ID). Use the Keysight License Service utility or Keysight License Manager to obtain the *Host ID*.

   a. Open the **About Keysight License Service** utility, right click the **Keysight License Service** icon in the Windows desktop notification area (lower right side of the Windows Task bar) and select **About Keysight License Service**.

   b. Click the **Copy** button to the right of the Host ID box. The Host ID information is copied into the Windows clipboard.

3. Redeem your licenses and obtain the license files.

   Follow the instructions included on the *Software License Entitlement Certificate* to redeem your licenses and obtain the license files. Go to the *Keysight Software Manager* website:

   http://www.keysight.com/find/softwaremanager

- First time access will require you to register.

  IMPORTANT **Remember your user password. The password is required for future access to manage your licenses.**

- You will need the *Keysight Order Number* and *Keysight Certificate Number* located on the top of your *Software License Entitlement Certificate*.

Next, go to the "Configure and Start the License Server" procedure, Configuring and Starting the License Server (page 47).

Configuring and Starting the License Server

This procedure configures and starts the floating license server and provides instructions to add new license files to an existing version 15 and later 89600 VSA software license server installation.

You must have received your floating license files before you start this procedure.

NOTE **Only "floating" license file types (i.e. not transportable license types) can be used with the floating license server applications.**

Perform the installation procedure for your particular floating license installation configuration and requirement:

- Upgrade License Server Installation

  Perform this procedure when you are upgrading an existing version 14 or earlier 89600 VSA software license server installation to a version 15 or later 89600 software installation:

  Upgrade License Server Installation (page 47)

- New License Server Installation

  Perform this procedure when this is a new 89600 VSA software license server installation:

  New License Server Installation (page 49)

- Adding Floating License Server Files

  Perform this procedure to add floating license files to an existing version 15 or later 89600 VSA software license server installation:

  Adding Floating License Server Files (page 50)

Upgrade License Server Installation

Beginning with 89600 VSA software version 15 and later, the installed location of the files lmgrd.exe, lmtools, and vendor daemon "agilent.exe" has changed. Following this procedure configures the license service to use the new folder locations for the lmgrd.exe, the license files, and the debug log files.

Perform this procedure when you are upgrading from an existing version 14 or earlier installation to a newer version 15 or later 89600 VSA software installation.

Start installation:

1. Stop the "FlexNet License Manager CDF" service.
   a. Use the lmtools utility to stop the floating license service:

      Open and Run the **lmtools** utility:

      - For version 14 or earlier 89600 VSA installations, lmtools is located in the following folder:

        "**C:\Program Files(x86)\Agilent\CDF\bin** and click **lmtools.exe**"
      - For version 15 or later 89600 VSA software installations, lmtools is located in the following folder:

        "**C:\Program Files(x86)\Agilent\ACCL\Licensing\bin**and click **lmtools.exe**"

   b. Click the **Start/Stop/Reread** tab and select **Stop Service**.
2. Copy and save the new floating license files to folder:
   "**C:\Program Files\Agilent\licensing**"
3. Run the **lmtools** utility:
   "**C:\Program Files(x86)\Agilent\ACCL\Licensing\bin** and click **lmtools.exe**"
4. Click the **Config Services** tab and configure the **FlexNet license service** parameters to use the new folder paths for the various service files:
   a. Select the correct **Service Name**; In the **Service Name** parameter. Select the previously configured license service for the 89600 VSA (e.g., "FlexNet License Manager CDF").
   b. Change the lmgrd path "**Path to the lmgrd.exe file**" to:
   "**C:\Program Files(x86)\Agilent\ACCL\Licensing\bin\lmgrd.exe**"
   c. Verify the floating license file path "**Path to the license file**":
   "**C:\Program Files\Agilent\licensing**"
   d. Specify the debug log file; "**Path to the debug log file**" to:
   "**C:\Program Files(x86)\Agilent\ACCL\Licensing\bin\flex.log**"
   e. Click **Save Service**.
5. Start the service, click the **Start/Stop/Reread** tab and click **Start Server**.
6. Verify the status of the license server, click the **Config Services** tab then click **View Log**. Verify that the licenses in the log file window are correct. Click **Close Log** to close the log file window.
7. To view the licenses in the Keysight License Manager (KLM), click the refresh button.

TIP For more information about the FLEXnet License Tools, open the *FLEXnet License Administrator Guide* from the Keysight License Manager (ALM) Help menu.

Next, set up and configure the floating license Client PCs. Go to Client PC Floating license Installation and Setup (page 50).

New License Server Installation

Use this license server installation procedure when this is a new "first-time" installation of the 89600 VSA software version 15 or later.

1. Copy and save the new floating license files to:
   "**C:\Program Files\Agilent\licensing**"
2. Run **lmtools** utility:
   "**C:\Program Files (x86)\Agilent\ACCL\Licensing\bin\lmtools.exe**"

   TIP For more information about the FLEXnet License Tools, open the *FLEXnet License Administrator Guide* from the Keysight License Manager (ALM) Help menu.

3. Click the Config Services tab and specify the following information to configure a new FlexNet floating license service:
   a. Specify the Service Name. In the **Service Name** parameter, clear the field and specify: "**FlexNet License Manager ACCL**" as the service name.
   b. Specify the lmgrd.exe path. In the "**Path to the lmgrd.exe file**" parameter specify:
      "**C:\Program Files (x86)\Agilent\ACCL\Licensing\bin\lmgrd.exe**"
   c. Specify the floating license file path. In the "**Path to the license file**" parameter, specify the new floating license file path:
      "**C:\Program Files\Agilent\licensing**"

      NOTE Do not include the license file name (*.lic) in the path.

   d. Specify the debug log file path. In the "**Path to the debug log file**" parameter specify:
      "**C:\Program Files (x86)\Agilent\ACCL\Licensing\bin\flex.log**"
   e. Select the **Use Services** check box.
   f. Select the **Start Server at Power Up** check box.
   g. Save the service configuration. Click **Save Service** button.
4. Start the license service. Click the **Start/Stop/Reread** tab and click **Start Server**
5. Verify the status of the license server. Click the **Config Services** tab, and click **View Log**. Verify that your floating licenses are listed in the debug log file. If not, repeat the process and make sure the license service paths are correct. Click **Close Log** button to close the debug log file.
6. To view the licenses in the Keysight License Manager (KLM), click the refresh button.

Next, set up and configure the floating license Client PCs, go to Client PC Floating license Installation and Setup (page 50).

Adding Floating License Server Files

Perform this procedure to add floating license files onto the license server for an existing 89600 VSA software (version 15 or later) installation.

1. Copy new floating license files to:
   "**C:\Program Files\Agilent\licensing**"
2. Run **lmtools** utility:
   "**C:\Program Files (x86)\Agilent\ACCL\Licensing\bin\lmtools.exe**"

   TIP For more information about the FLEXnet License Tools, open the *FLEXnet License Administrator Guide* from the Keysight License Manager (ALM) Help menu.

3. Refresh the license server. Click the **Start/Stop/Reread** tab, select the previously configured license service (e.g. “FlexNet License Manager ACCL”) and click **ReRead License File**.
4. Verify the status of the license server. Click the **Config Services** tab, and click **View Log**. Verify that your floating licenses are listed in the debug log file. If not, repeat the process and make sure the license service paths are correct etc. Click **Close Log** button to close the debug log file.
5. To view the licenses in the Keysight License Manager (KLM), click the refresh button.

Next, set up and configure the floating license Client PCs. Go to Client PC Floating license Installation and Setup (page 50).

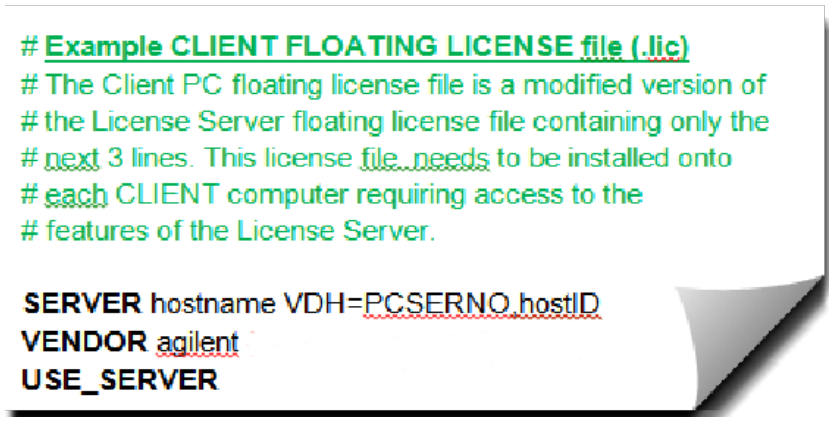
Client PC Floating license Installation and Setup

Follow this procedure to install, configure, and set up the floating license Client PCs.

1. If you have not installed the 89600 VSA software, install the Keysight 89600 software on the Client PC. The default software installation installs the 89600 VSA software and Keysight Licensing Services.
2. Create the Client floating license files.

   The Client floating license files are used to redirect licensing requests to the license server. Only one Client floating license file needs to be created. This Client floating license file is copied and re-used by each Client PC.

   a. Make a copy of the original license server floating license file. Remove all line entries except keep these three lines modified as directed.
      1. "**SERVER**" line: Keep original text.
      2. "**VENDOR**" line:
      3. "**USE_SERVER**" line: Keep original text.



NOTE **Different Server & Client PC Domain**
If the Client PC is in a different domain than the server computer, then use the server computer's full domain name in the "SERVER" line (e.g., if the SERVER Host name is mycomputer, change the name to mycomputer.mycompany.com)

3. Install the Client floating license files
   a. Start the Keysight License Manager by double clicking the **Keysight License Service** icon or click **Start > (All) Programs/All apps > Keysight License Manager > Keysight License Manager**.
   b. To install the license file, *drag-and-drop* the license file onto your computer or instrument's connection in the Keysight License Manager's list of connections. See the Keysight License Manager Help for more ways to install license files (click the "**?**" icon to from within the Keysight License Manager to open the help file, or click **Start > (All) Programs > Keysight License Manager > Keysight License Manager Help**).

      NOTE **The install operation can take up to 40 seconds to complete. Different license file types (Floating, Transportable, etc.) can coexist on the same computer.**

4. Verify that the Client PC configuration is correct
   To view the licenses in the Keysight License Manager (KLM), click the refresh button.
5. To learn more about using the 89600 VSA software with floating licenses, see:
   - Selecting Licensed Options (Using the Select License Options Utility) (page 52)
   - Keysight Floating License System Overview (page 42)
   - Troubleshooting Floating Licenses (page 52)

Using Floating Licenses

Selecting Licensed Options
(Using the *Select License Options* Utility)

The 89600 VSA software includes a *Select License Options* utility that enables you to selectively license only the options that you want run with the current instance of the 89600 VSA software. By default, the 89600 VSA software will acquire licenses for all currently available licensed options on the server. By selecting only the licenses you need, you free up floating licenses for other floating license enabled users (Client PCs).

All possible license options are listed in the **Select License Options** dialog box. However, you will only be able to acquire licenses that have been purchased and installed on the license server.

Follow these steps to select only the licenses you need:

1. Run the *Select License Options* utility, click **Start > (All) Programs/All apps > Keysight 89600 VSA *xx.y* > System Utilities > Select License Options** (where *xx.y* is the VSA version number).
2. Select the options that you want to license and clear the options you do not want to license. After you make license option changes, save the changes, by clicking the **OK** button to save the changes and close the *Select License Options* utility.
3. Restart the 89600 VSA software to activate the licenses you selected.

Troubleshooting Floating Licenses

For more information about other troubleshooting issues, see Troubleshooting (page 101)

Floating License Server and Client PC Problems

Common causes of floating license failures includes:

- Attempting to redeem a granted floating license option being used by another Client PC.
- Attempting to connect to a floating license server that is not operational, or to which you have lost connectivity.
- Attempting to use a floating license server that is improperly configured. For example, the floating license file does not match the server host ID in use.

Firewall Problems and Configuring Exceptions

If your instrument or PC has a firewall installed and enabled, your system administrator may need to allow certain executables and/or a limited range of port numbers to go through the firewall. Regardless of the type of firewall you are using, always allow the following executables from Keysight to communicate through the firewall: *AgilentLicenseService*, *Keysight License Manager*, and *AgilentLicenseNotifier*.

In addition, as of the ACCL Licensing 4.5 release, you must explicitly open TCP ports 8000, 8001, and 8020 because they are now managed by the operating system rather than the licensing executables. To configure a Windows Firewall:

1. Click the Windows **Start** menu, then **Control Panel**, then **Windows Firewall**.
2. In the left pane, click **Allow a program or feature through Windows Firewall**.
3. Click **Change Settings**. You may need to provide an administrator password or provide confirmation for this action.
4. Select the programs to allow, including:
   - *AgilentLicenseService*
   - *Keysight License Manager*
   - *AgilentLicenseNotifier*
5. Select the network locations (private and/or public networks) on which you want to allow communication for each program.
6. Select the TCP ports to allow:
   - 8000
   - 8001
   - 8020
7. Click **OK** to save the settings.

For other third-party firewalls, refer to your firewall's documentation for information on how to allow programs and open ports.

NOTE **The Keysight License Manager (KLM) also uses Port 80 outbound for license transport.**

Configuring IO Interfaces

Introduction

This chapter provides instructions for configuring your computer to communicate with hardware via IEEE-1394, LAN, USB/GPIB, USB, or GPIB interfaces.

If your measurement hardware is one of the following, skip this chapter and follow the instructions specific for your measurement hardware:

- Configuring Infiniium Windows Scopes (page 67)
- Configuring Keysight N7109A (page 77)
- Configuring Logic Analyzers (page 91)

NOTE **Do not configure more than one interface to point to a single instrument, either from a single computer or from multiple computers. For example, if your instrument is on a LAN, do not point to it from two computers simultaneously.**

Perform the procedures for each interface type as directed below:

- LAN: For LAN interface, start on Configuring the LAN interface (page 56).
- USB/GPIB: For USB/GPIB interface, start on Configuring the USB/GPIB Interface (page 61).
- GPIB: For GPIB interface, start on Configuring the GPIB Interface (page 63).
- USB: For USB interface, start on Configuring the USB Interface (page 65).

Configuring the LAN interface

Use this procedure to configure the LAN interface for all instruments except the following:

- Keysight Infiniium oscilloscope: If your measurement hardware is a Keysight Infiniium oscilloscope, skip this chapter and follow the instructions in the Configuring Infiniium Windows Scopes (page 67).
- Keysight Logic Analyzer: If your measurement hardware is a Keysight Logic Analyzer, skip this chapter and follow the instructions in Connecting to a Network (page 94) and 89600 I/O Connections (page 95).
- Keysight N7100 Series: If your measurement hardware is a Keysight N7100 Series, skip this chapter and follow the instructions in Configuring Keysight N7109A (page 77).

For more information about LAN interfaces, see the *Connectivity Guide* section in the Keysight IO Libraries Suite Help. You can find this when you click on the**Keysight IO Libraries Suite** icon in the task bar and then select **Documentation > IO Libraries Help**.

You must ensure that the IP addresses for your computer and measurement hardware are compatible, then configure the LAN interface. The IP address consists of 4 groups of numbers separated by periods (for example, 192.168.0.10).

NOTE **To configure the IP addresses on the PC and instrument, you must be logged in as Administrator.**

The instrument can be accessed over your Local Area Network or by directly connecting it to your PC using a LAN cable. The preferred connection configuration is to place the instrument on your Local Area Network. Use the direct connection configuration if you do not have a Local Area Network or if you need to operate in isolation.

To configure your LAN interface:

1. Set the IP address on the instrument, using the appropriate set of instructions:
   - Instrument IP address when your computer is connected to a Local Area Network (see: Instrument IP Address for a Local Area Network Configuration (page 57)).

     or:
   - Instrument IP address for an instrument that is directly connected to the computer (see: Instrument IP Address for a Direct Cable Connection (page 58)).
2. Run Connection Expert (see: Run Connection Expert (page 60)).

Instrument IP Address for a Local Area Network Configuration

This section provides information on setting the instrument IP address when your computer is on a Local Area Network.

To set the instrument IP address for a LAN configuration:

1. If your computer is connected to a Local Area Network, have your network administrator assign an IP address for your instrument hardware that will work with your computer. (The network administrator can also tell you if you need to set Subnet Masks.)
   If your Local Area Network is DNS/DHCP based, you do not need to set an IP address since it will be automatically assigned. If this is the case, skip to step 2.
   a. Set the IP address on the measurement hardware.
      - PSA: On the PSA, press **System > Config IO > IP address,** type the new address using the number keypad, and press **Enter**.
      - X-Series Signal Analyzer: On the analyzer, press **System > Show > System** (for UXA, press the gear icon then **System > Show System**) to find the IP address. To change the IP address, refer to the LAN Interface configuration documentation provided with the analyzer.
      - Series 6000/7000 Oscilloscopes: On the *Series 6000A/7000A* Oscilloscopes, verify the I/O Controller is set to LAN. If it is not set to LAN, press **Utility > I/O > Controller XX** (where XX is either GPIB, LAN or USB), use the Entry knob labeled with a circular arrow to point the screen arrow to LAN, and press the Controller button. For the *Series 6000L* Oscilloscopes, see scope documentation.
   b. Click in the Subnet Mask box.
      Accept the default numbers that appear for the subnet mask.
      Click **OK** and close all dialog boxes.
   c. If you are prompted to reboot your computer, do so now.
2. Be sure that both the instrument and your computer are connected to the LAN.
3. Cycle power on the measurement hardware.
4. Continue with Run Connection Expert (page 60).

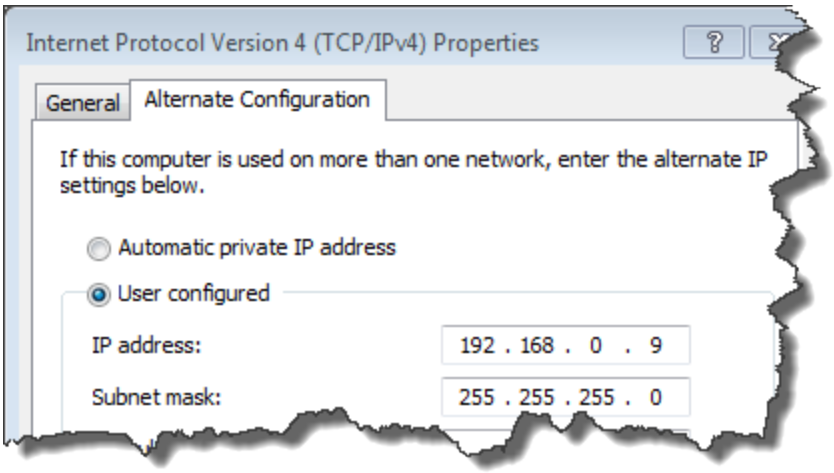
Instrument IP Address for a Direct Cable Connection

This section provides information on setting the instrument IP address when your computer is connected to the instrument using a direct cable connection.

To set the IP address for a direct cable connection

NOTE **For X-Series Analyzers with software version A.11.xx or earlier, you cannot directly connect the analyzer and PC. You can either put the analyzer and PC on a DNS/DHCP-based LAN or update the software on the analyzer to A.12.00 or newer.**

1. On the PC running the Keysight 89600 VSA software, set the Alternate Configuration for the appropriate LAN port to a user configured IP address and mask (for example, 192.168.0.9/255.255.255.0):
   a. Windows 7 and 8: From the Control Panel, click **View network status and tasks**, right click the connection that needs an alternate IP address configuration (e.g., Local Area Connection), then select **Properties**.
   b. In the **Properties** dialog box, on the **Networking** tab, scroll down and select **Internet Protocol Version 4 (TCP/IP v4)** then click the **Properties** button.
   c. Select the **Alternate Configuration** tab, then select **User configured**, enter a fixed IP address and Subnet mask (for example, 192.168.0.9/255.255.255.0). Click **OK** then click **Close**.

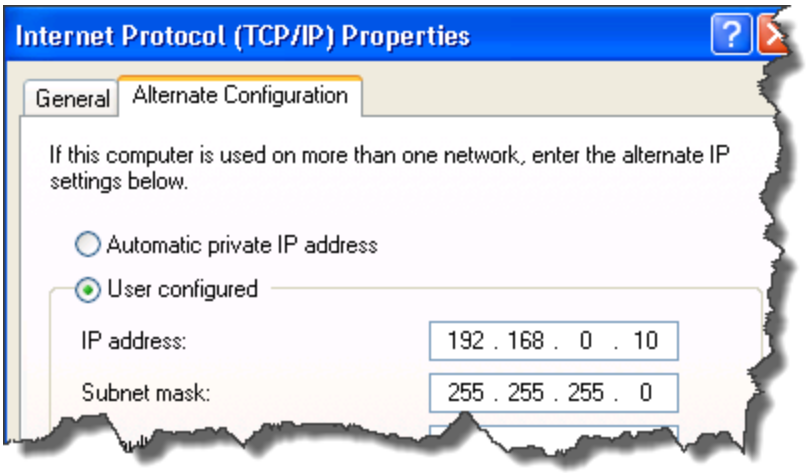


2. Set the instrument's Alternate Configuration for the LAN port to a user configured IP address and subnet mask (for example, 192.168.0.10/255.255.255.0):
   a. Windows 7: From the Control Panel, click **View network status and task**, right click **Local Area Connection**, then select **Properties**.

      Windows 8: From the Control Panel, click **View network status and task**, click **Ethernet**, then select **Properties**.

b. In the **Properties** dialog box, on the **Networking** tab, scroll down and select **Internet Protocol Version 4 (TCP/IP v4)** then click the **Properties** button.

c. Select the **Alternate Configuration** tab, then select **User configured**, set the IP address on the instrument so that the first 3 sections of the IP address are the same as the PC's IP address and the last section is different than the PC's. (For example, if the computer IP address is 192.168.0.9, set the hardware IP address to 192.168.0.10.) enter an IP address and Subnet mask (for example, 192.168.0.10/255.255.255.0). Click **OK** then click **Close**.



3. For X-Series analyzers, if the instrument is currently connected to a network with a DNS server, release the DNS entry by executing the following commands on the instrument (from a command prompt window):

   ipconfig /release *

   ipconfig /flushdns

4. Disconnect the instrument from the corporate LAN cable and connect a LAN cable between the instrument and the PC running the Keysight 89600 VSA software.

5. For X-Series analyzers, execute the following command:

   ipconfig /renew

   (this may take a while until it times out trying to talk to the DNS/DHCP servers)

6. For X-Series analyzers, enter the following command (from a command prompt window) on the PC running the Keysight 89600 VSA software:

   ipconfig /flushdns

7. Cycle power on the measurement hardware.

8. Continue with Run Connection Expert (page 60).

Run Connection Expert

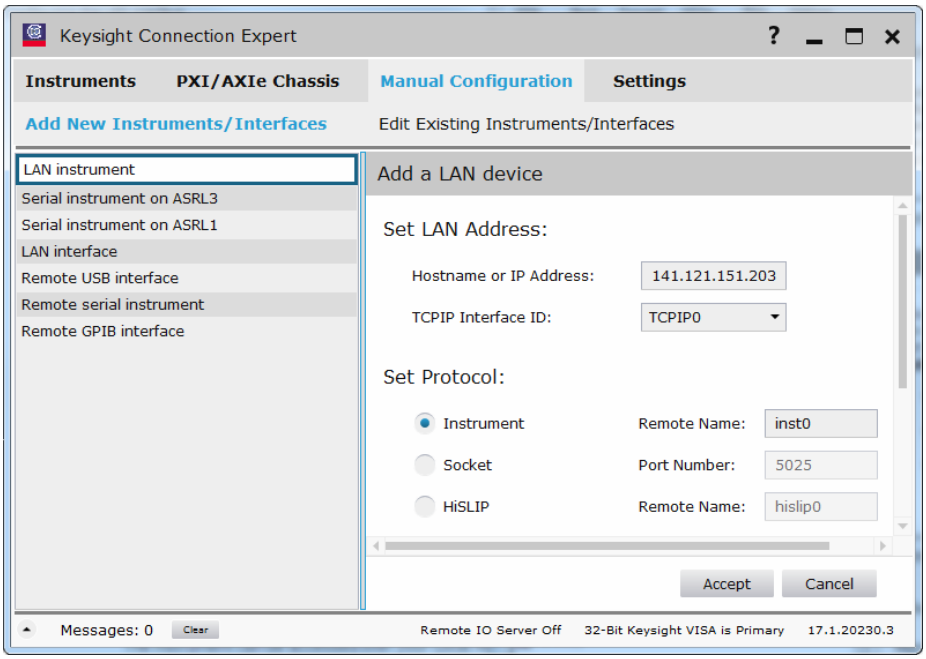
1. Run the Keysight IO Libraries Suite Connection Expert tool.

   Click the **Keysight IO Libraries Suite** icon in the Windows application task bar, then click **Connection Expert**.

2. Auto-scan/Rescan will automatically detect many (but not all) LAN instruments on your local LAN subnet. If an instrument is not automatically discovered, you must manually add the instrument:

   a. Click on the **Manual Configuration** tab (Add New Instruments/Interfaces and Lan instrument are selected by default).

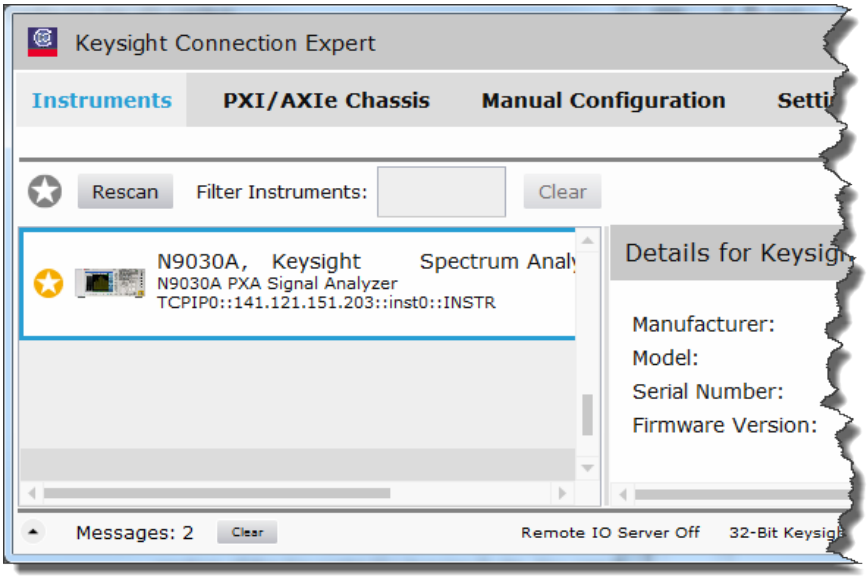
   b. In the Add a LAN device panel, enter the instrument's hostname or IP address and protocol type. See the Keysight IO Libraries Help or your instrument's documentation for information on configuring your instrument's LAN address.



   c. Click **Accept**. Connection Expert will automatically configure the interface and instruments and assign names and other default configuration settings.

3. To verify that the computer recognized the instrument, click the **Instruments**

tab. Connection Expert will list all instruments and their addresses.



NOTE The VSA software will only look for instruments that are marked as favorite in Connection Expert, indicated by a gold star. If a LAN instrument is found via Auto-scan/Rescan, the instrument will not be marked as a favorite. If you add the instrument manually, the instrument will be marked as a favorite. You can change the favorite status by clicking on the star.

NOTE If you set up a LAN connection, then switch off or disconnect the hardware, the 89600 software looks for the hardware when it is started. This slows down startup. To speed up the 89600 software startup, use Connection Expert to remove the LAN setup or choose to ignore the instrument.

NOTE When the 89600 software locates an instrument, it locks onto the instrument so only the 89600 software can communicate with it. This prevents Keysight IO Libraries from any communication with these instruments. You can disconnect the instrument by selecting **Control** > **Disconnect** in the VSA software. Select Rescan in Connection Expert to restore communication between Connection Expert and the instrument.

Configuring the USB/GPIB Interface

Use this procedure is to configure the USB/GPIB interface for all measurement hardware except the Keysight Infiniium oscilloscope. If your measurement hardware

.

For details on setting up the 82357 USB/GPIB Interface, see the *82357 USB/GPIB User's Guide*.

To configure the USB/GPIB interface:

1. Plug the 82357 USB cable into a USB port on your PC. Do not connect to your GPIB instrument at this time.
2. Observe the 3 LEDs on the E8237. Initially, only the red FAIL LED should be on. After the Found New Hardware Wizard runs, all 3 LEDs should be ON. If any LED is off after 20 seconds, stop this procedure and refer to the *82357 USB/GPIB User's Guide* for information.
3. If the **Keysight 82357 USB/GPIB Interface Detected** dialog box appears, click **OK** or **Accept**. (If you want to change any of the settings, refer to the *82357 USB/GPIB User's Guide* for instructions.)
4. Connect one or more instruments to the GPIB connector on the 82357.

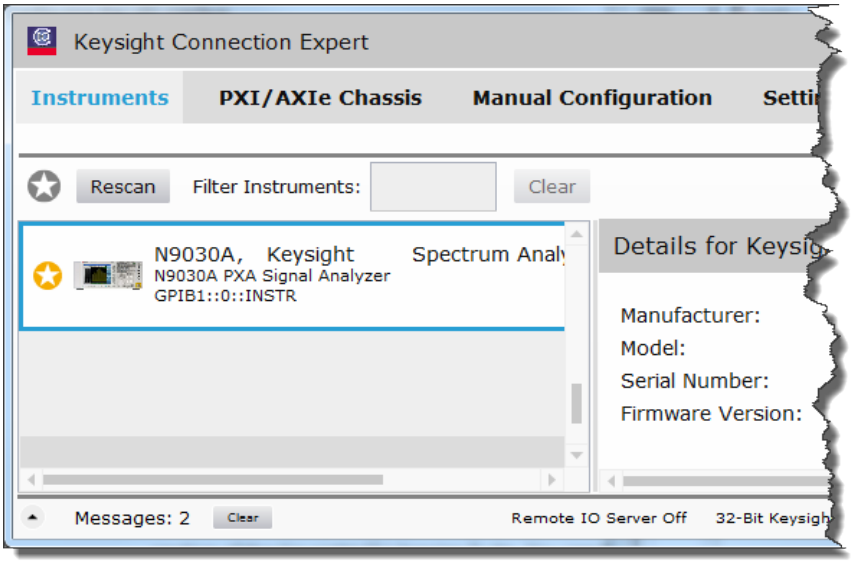
NOTE

On the *Series 6000A/7000A* Oscilloscopes, verify the I/O Controller is set to GPIB. If it is not set to GPIB, press **Utility > I/O > Controller *XX*** (where *XX* is either GPIB, LAN, or USB), use the Entry knob labeled with a circular arrow to point the screen arrow to **LAN**, and press the **Controller** button.
For the *Series 6000L* Oscilloscopes, see scope documentation.

Run Connection Expert

1. Run the Keysight IO Libraries Suite Connection Expert tool.
   Click the **Keysight IO Libraries Suite** icon in the Windows application task bar, then click **Connection Expert**.
2. Auto-scan/Rescan will automatically discover all connected GPIB instruments. If an instrument is not automatically discovered, you may manually add the instrument by clicking Manual Configuration > GPIB instrument and entering the GPIB ID and address information.
3. To verify that the computer recognized the instrument, click the **Instruments**

tab. Connection Expert will list all instruments and their addresses.



NOTE When the 89600 software locates an instrument, it locks onto the instrument so only the 89600 software can communicate with it. This prevents Keysight IO Libraries from any communication with these instruments. You can disconnect the instrument by selecting **Control > Disconnect** in the VSA software. Select Rescan in Connection Expert to restore communication between Connection Expert and the instrument.

Configuring the GPIB Interface

Use this procedure to configure the GPIB interface for all measurement hardware except the Keysight Infiniium oscilloscope. If your measurement hardware is a Keysight Infiniium oscilloscope, skip this chapter and follow the instructions in Configuring Infiniium Windows Scopes (page 67).

NOTE This chapter guides you through the specific setup required to get your computer and instrument configured properly. For more detailed information on IO configuration, refer to the documentation for the IO Libraries Suite (click the **Keysight IO Libraries Suite** icon in the task bar and then select **Documentation > IO Libraries Help**).

For more information about GPIB interfaces, see the *Connectivity Guide* section in the Keysight IO Libraries Suite Help. You can find this when you click on the**Keysight IO Libraries Suite** icon in the task bar and then select **Documentation > IO Libraries Help**.

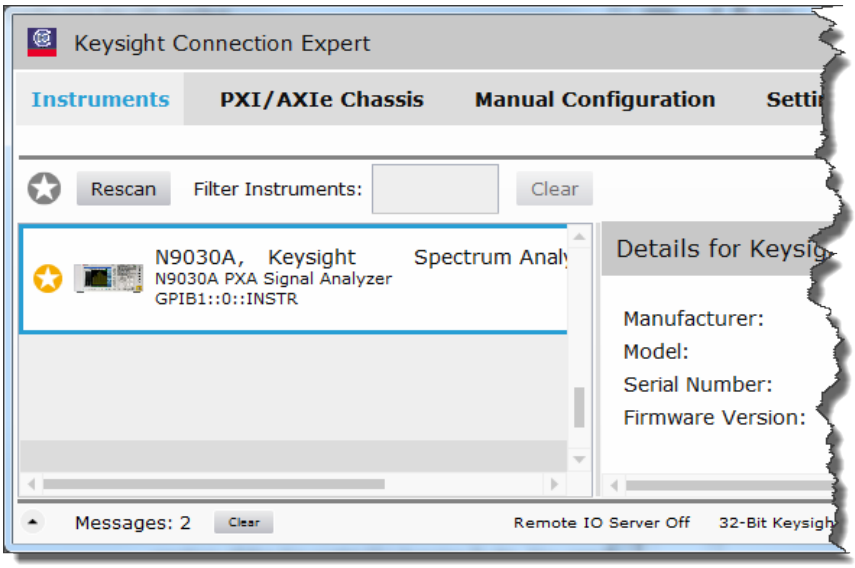
To configure the GPIB interface:

1. If you are configuring a GPIB connection for measurement hardware that is currently configured as a LAN connection on this computer, you must first remove the LAN configuration. After you have removed the LAN configuration, cycle the power on the hardware before continuing with the GPIB configuration.
2. Connect your GPIB instruments to the computer's GPIB interface. Power on the PC and the instruments.

NOTE On the *Series 6000A/7000A* Oscilloscopes, verify the I/O Controller is set to GPIB. If it is not set to GPIB, press **Utility** > **I/O** > **Controller *XX*** (where *XX* is either GPIB, LAN, or USB), use the Entry knob labeled with a circular arrow to point the screen arrow to **LAN**, and press the **Controller** button.
For the *Series 6000L* Oscilloscopes, see scope documentation.

Run Connection Expert

1. Run the Keysight IO Libraries Suite Connection Expert tool.
   Click the **Keysight IO Libraries Suite** icon in the Windows application task bar, then click **Connection Expert**.
2. Auto-scan/Rescan will automatically discover all connected GPIB instruments. If an instrument is not automatically discovered, you may manually add the instrument by clicking Manual Configuration > GPIB instrument and entering the GPIB ID and address information.
3. To verify that the computer recognized the instrument, click the **Instruments** tab. Connection Expert will list all instruments and their addresses.



NOTE When the 89600 software locates an instrument, it locks onto the instrument so only the 89600 software can communicate with it. This prevents Keysight IO Libraries from any communication with

NOTE these instruments. You can disconnect the instrument by selecting **Control > Disconnect** in the VSA software. Select Rescan in Connection Expert to restore communication between Connection Expert and the instrument.

Configuring the USB Interface

Use this procedure to configure USB interfaces except the Keysight 82357 USB/GPIB Interface. If you are using the Keysight 82357 USB/GPIB Interface, go to Configuring the USB/GPIB Interface (page 61).

The instructions in this section assume that the USB interface is installed in your PC and is working.

NOTE **This chapter guides you through the specific setup required to get your computer and instrument configured properly. For more detailed information on IO configuration, refer to the documentation for the IO Libraries Suite (click the Keysight IO Libraries Suite icon in the task bar and then select Documentation > IO Libraries Help).**

To configure the USB interface:

Connect your USB instruments to the USB interface in the computer. Power on the PC and the instruments.

On the *Series 6000A/7000A* Oscilloscopes, verify the I/O Controller is set to USB. If it is not set to USB, click **Utility > I/O > Controller *XX*** (where *XX* is either GPIB, LAN or USB), use the Entry knob labeled with a circular arrow to point the screen arrow to **USB** and click the **Controller** button. For the Series 6000L Oscilloscopes, see scope documentation.

Run Connection Expert

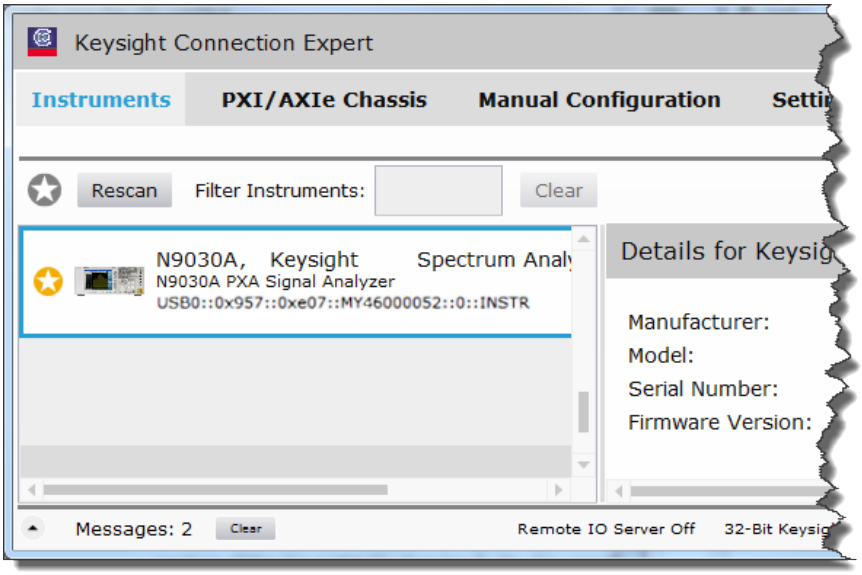
1. Run the Keysight IO Libraries Suite Connection Expert tool.

   Click the **Keysight IO Libraries Suite** icon in the Windows application task bar, then click **Connection Expert**.

2. Auto-scan/Rescan will automatically discover all connected USB instruments. Because there are no configurable parameters on a USB interface, a USB instrument is not manually configurable. You can, however, configure a remote USB interface, which is a device on a LAN that provides connectivity to instruments via USB. To manually add a remote USB interface, click Manual Configuration > Remote USB interface and enter the USB information and remote device's hostname or IP address.

3. To verify that the computer recognized the instrument, click the **Instruments**

tab. Connection Expert will list all instruments and their addresses.



NOTE When the 89600 software locates an instrument, it locks onto the instrument so only the 89600 software can communicate with it. This prevents Keysight IO Libraries from any communication with these instruments. You can disconnect the instrument by selecting **Control** > **Disconnect** in the VSA software. Select Rescan in Connection Expert to restore communication between Connection Expert and the instrument.

Configuring Infiniium Windows Scopes

Introduction

This chapter describes how to configure Keysight Infiniium scopes. The chapter includes networking information for configuring Keysight Infiniium scopes, running the Windows 7 operating system, and a corresponding PC running the VSA software.

Refer to Application Note 5990-6819EN (Infiniium Oscilloscopes with 89600 VSA Software) for a list of supported Keysight Infiniium scopes and the required infiniium firmware revisions.

NOTE **If you are installing the VSA software directly in the Keysight Infiniium scope (Windows 7), see:** Installing 89600 Software in a Keysight Infiniium Scope (page 29)**.**

Before configuring your Infiniium scope, be sure you have installed the VSA software on the PC you are using with the scope.

For any connection type, there are up to three possible steps:

1. Configure Infiniium Networking
   - Configuring Windows Infiniium Networking for Non-DHCP Network (page 69)
   - Configuring Windows Infiniium Networking for DHCP Network (page 69)
   - Configuring Windows Infiniium Networking with a Direct Cable Connection (page 70)
2. Configure PC Networking
   - Configuring PC Networking for a Direct Cable Connection (page 71)
3. Configure Keysight IO Config Software for GPIB and LAN
   - Configuring PC Keysight IO Config for GPIB Connection (page 71)
   - Configuring PC's Keysight IO Config for LAN Connection (page 72)

   See Summary of Connection Types (page 68) for additional information in determining the sections you need to complete based on your connection type. Check with your network administrator to determine your network type.

Summary of Connection Types

Connection Type	Infiniium Networking	PC Networking	PC Keysight IO Config Software
GPIB to GPIB	N/A	N/A	Configuring PC Keysight IO Config for GPIB Connection (page 71)
USB to GPIB	N/A	N/A	Configuring the USB/GPIB Interface (page 74)
LAN using a direct cable connection	Configuring Windows Infiniium Networking with a Direct Cable Connection (page 70)	Configuring PC Networking for a Direct Cable Connection (page 71)	Configuring PC's Keysight IO Config for LAN Connection (page 72)
LAN with DHCP	Configuring Windows Infiniium Networking for DHCP Network (page 69)	N/A	Configuring PC's Keysight IO Config for LAN Connection (page 72)
LAN without DHCP	Configuring Windows Infiniium Networking for Non-DHCP Network (page 69)	N/A	Configuring PC's Keysight IO Config for LAN Connection (page 72)

Configuring Windows Infiniium Networking for Non-DHCP Network

Complete the following procedure to configure your Windows 7 Infiniium scope for networking via a non-DHCP (Dynamic Host Configuration Protocol) network.

To configure Windows Infiniium networking for a non-DHCP network:

1. You will need an IP Address, Gateway Address and a Subnet Mask from your Network Administrator.
2. On your Infiniium, quit the scope application if it is running.
3. Open the **Control Panel**. Open **Network Connections**. (If you are in Category view, click Network and Internet Connections and then select Network Connections.)
4. Click **Local Area Connection** and then **Properties** to display the Local Area Connection Properties dialog box.
5. Select **Internet Protocol (TCP/IP)** on the connection list and click **Properties** to display the Internet Protocol (TCP/IP) Properties dialog box.
6. Select **Use the following IP address** and enter the IP Address, Subnet mask, and Default gateway address provided by your Network Administrator.
7. Click **OK** in the Internet Protocol (TCP/IP) Properties dialog box.
8. Click **OK** in the Local Area Connection Properties dialog box. If Windows prompts you to reboot your Infiniium, click **Yes**. If not, close all open dialog boxes.
9. After the Infiniium reboots, the instrument is ready for LAN control over the LAN interface. Go to Configuring PC's Keysight IO Config for LAN Connection (page 72).

Configuring Windows Infiniium Networking for DHCP Network

If your network provider uses DHCP Windows will automatically retrieve a dynamic IP Address from the DHCP server. No configuration for the Infiniium is necessary. Continue to Configuring PC's Keysight IO Config for LAN Connection (page 72).

Configuring Windows Infiniium Networking with a Direct Cable Connection

Complete the following procedure to configure Windows Infiniium Networking with a direct cable connection.

NOTE **If you are using an older PC that does not have Auto-MDIX capability, you will need to use a crossover cable.**

To configure Windows Infiniium networking with a direct cable connection:

1. You need to create IP Addresses for both the Infiniium and your PC. Both addresses must have the first 3 sections the same and the last one different. For example, the PC IP address can be 192.168.0.9 and the Infiniium IP address 192.168.0.10.
2. On your Infiniium, quit the scope application if it is running.
3. Open the **Control Panel**. Open **Network Connections.** (If you are in Category view, click **Network and Internet Connections** and then select **Network Connection**.)
4. Right-click **Local Area Connection** and then **Properties** to display the Local Area Connection Properties dialog box.
5. Select **Internet Protocol (TCP/IP)** from the connection list and click **Properties** to display the Internet Protocol (TCP/IP) Properties dialog screen.
6. Select the Alternate Configuration tab, then select **User configured** and enter the IP address for the Infiniium you created in step 1 (192.168.0.10 in this example), and type a subnet mask of 255.255.255.0.
7. Click **OK** in the Internet Protocol (TCP/IP) Properties dialog box.
8. Click **OK** in the Local Area Connection Properties dialog box. If Windows prompts you to reboot your Infiniium, click **Yes**. If not, close all open dialog boxes.
9. After the Infiniium reboots, the instrument is ready for LAN control over the LAN interface. Continue to Configuring PC Networking for a Direct Cable Connection (page 71).

Configuring PC Networking for a Direct Cable Connection

Complete the following procedure to configure a PC for a direct cable connection.

To configure PC networking for a direct cable connection:

1. On your PC, open the **Control Panel**.
2. For Windows 7 and 8, click **View network status and tasks** > **Connections:** > ***(your network connection)*** > **Properties**.

   This displays the Local Area Connection Properties dialog box.
3. For Windows 7 and 8, select **Internet Protocol Version 4** and click **Properties**.

   This displays the Internet Protocol (TCP/IP or Version 4) Properties dialog screen.
4. Select the *Alternate Configuration* tab, then select **User configured** and enter the IP Address for the PC you created in step 1 of Configuring Windows Infiniium Networking with a Direct Cable Connection (page 70) (this example uses 192.168.0.9.), and enter a subnet mask of 255.255.255.0.
5. Click **OK** in the Internet Protocol (TCP/IP or Version 4) Properties dialog box.
6. Click **OK** or **Close** in the Connection Properties dialog box. If Windows prompts you to reboot your PC, click **Yes**. If not, close any open dialog boxes.
7. After your PC reboots, the PC is ready for setting up the Keysight IO Config software. Go to Configuring PC's Keysight IO Config for LAN Connection (page 72).

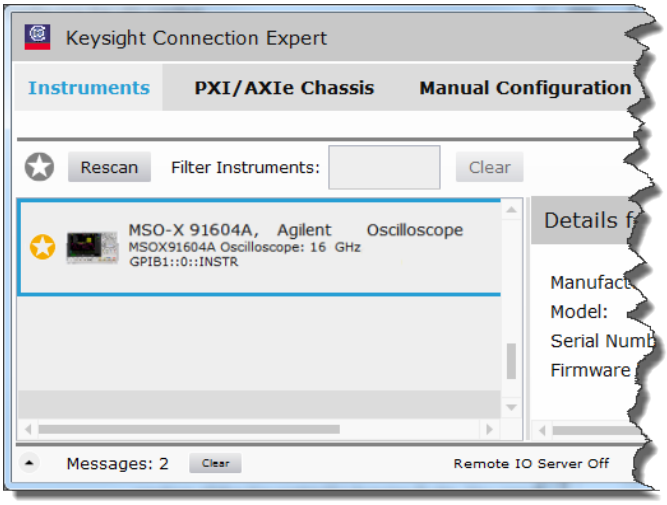
Configuring PC Keysight IO Config for GPIB Connection

The VSA Software will automatically install the Keysight IO Libraries Suite on your PC if they are not already installed. These instructions assume that your computer has a GPIB card installed and operable.

To configure PC Keysight IP Config for a GPIB connection:

1. On the PC with the 89600 software, click the **Keysight IO Libraries Suite** icon in the Windows application task bar, then click **Connection Expert**.
2. Connection Expert's auto-scan feature will automatically discover all connected GPIB instruments. If an instrument is not automatically discovered, you may manually add the instrument by clicking Manual Configuration > GPIB instrument and entering the GPIB ID and address information.
3. To verify that the computer recognized the instrument, click the **Instruments**

tab. Connection Expert will list all instruments and their addresses.



NOTE Connection Expert will not find the Infiniium scope if the scope application is not running.

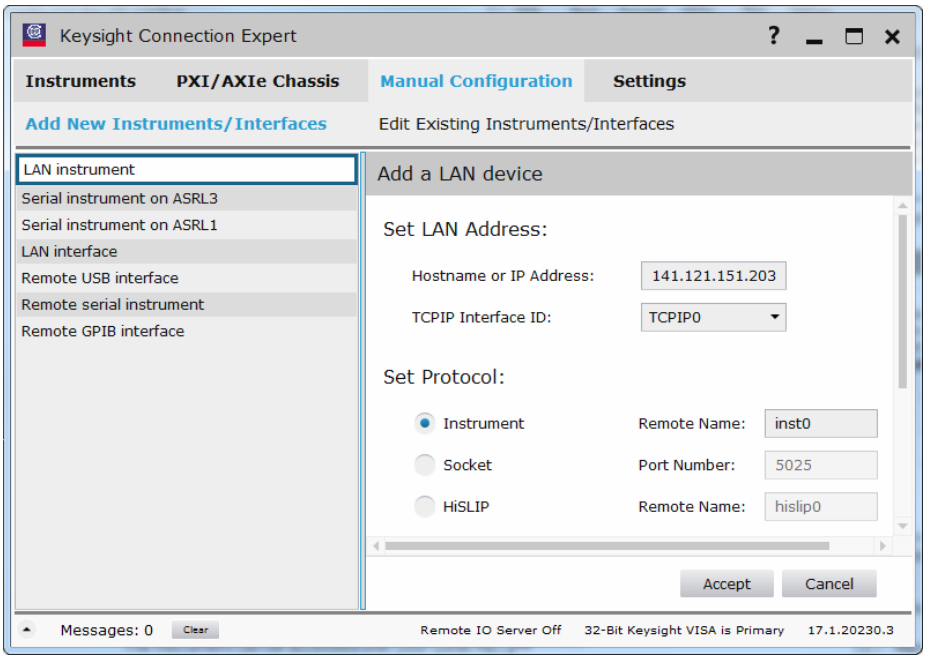
NOTE When the 89600 software locates an instrument, it locks onto the instrument so only the 89600 software can communicate with it. This prevents Keysight IO Libraries from any communication with these instruments. You can disconnect the instrument by selecting **Control** > **Disconnect** in the VSA software. Select Rescan in Connection Expert to restore communication between Connection Expert and the instrument.

Configuring PC's Keysight IO Config for LAN Connection

The VSA Software automatically installs the Keysight IO Libraries Suite on your PC if they are not already installed.

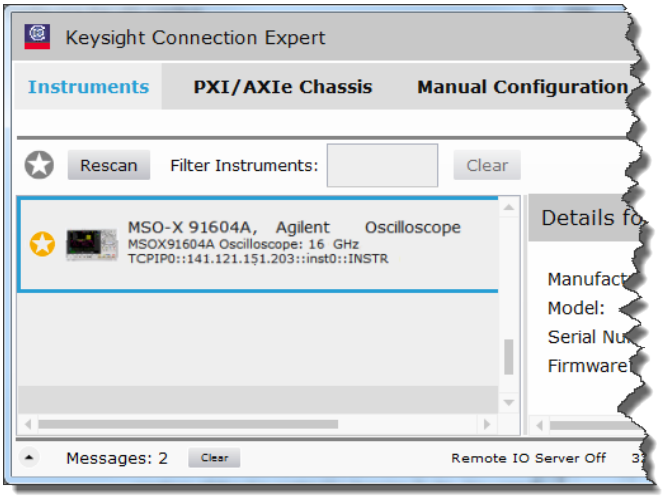
To configure PC Keysight IO Config for a LAN connection:

1. On the PC with the 89600 software, click the **Keysight IO Libraries Suite** icon in the Windows application task bar, then click **Connection Expert**.
2. Auto-scan/Rescan will automatically detect many (but not all) LAN instruments on your local LAN subnet. If an instrument is not automatically discovered, you must manually add the instrument:
    a. Click on the **Manual Configuration** tab (Add New Instruments/Interfaces and Lan instrument are selected by default).
    b. In the Add a LAN device panel, enter the instrument's hostname or IP address and protocol type. See the Keysight IO Libraries Help or your instrument's documentation for information on configuring your instrument's LAN address.



c. Click **Accept**. Connection Expert will automatically configure the interface and instruments and assign names and other default configuration settings.

3. To verify that the computer recognized the instrument, click the **Instruments** tab. Connection Expert will list all instruments and their addresses.



NOTE The VSA software will only look for instruments that are marked as favorite in Connection Expert, indicated by a gold star. If a LAN instrument is found via Auto-scan/Rescan, the instrument will not be marked as a favorite. If you add the instrument manually, the instrument will be marked as a favorite. You can change the favorite status by clicking on the star.

NOTE Connection Expert can not find the Infiniium scope if the scope application is not running.

NOTE When the 89600 software locates an instrument, it locks onto the instrument so only the 89600 software can communicate with it. This prevents Keysight IO Libraries from any communication with these instruments. You can disconnect the instrument by selecting **Control > Disconnect** in the VSA software. Select Rescan in Connection Expert to restore communication between Connection Expert and the instrument.

Configuring the USB/GPIB Interface

Use this procedure is to configure the USB/GPIB interface for the Keysight Infiniium oscilloscope. For details on setting up the 82357 USB/GPIB Interface, see the *82357 USB/GPIB User's Guide*.

To configure the USB/GPIB interface:

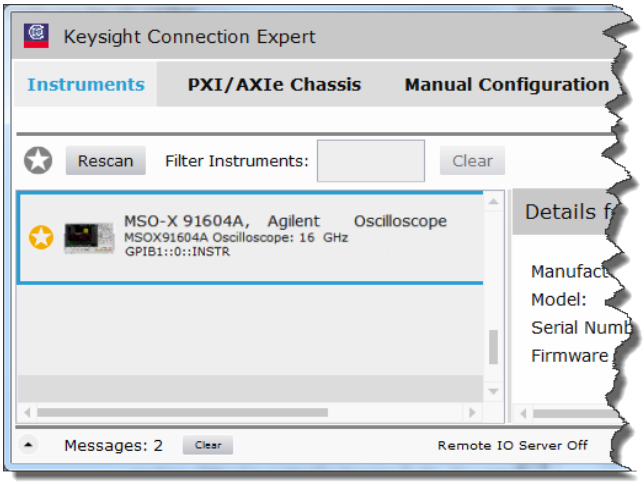
1. Plug the 82357 USB cable into a USB port on your PC. Do not connect to your GPIB instrument at this time.
2. Observe the 3 LEDs on the E8237. Initially, only the red FAIL LED should be on. After the Found New Hardware Wizard runs, all 3 LEDs should be ON. If any LED is off after 20 seconds, stop this procedure and refer to the *82357 USB/GPIB User's Guide* for information.
3. If the **Keysight 82357 USB/GPIB Interface Detected** dialog box appears, click **OK** or **Accept**. (If you want to change any of the settings, refer to the *82357 USB/GPIB User's Guide* for instructions.)
4. Connect one or more instruments to the GPIB connector on the 82357.

Run Connection Expert

1. Run the Keysight IO Libraries Suite Connection Expert tool.

   Click the **Keysight IO Libraries Suite** icon in the Windows application task bar, then click **Connection Expert**.
2. Auto-scan/Rescan will automatically discover all connected GPIB instruments. If an instrument is not automatically discovered, you may manually add the instrument by clicking Manual Configuration > GPIB instrument and entering the GPIB ID and address information.
3. To verify that the computer recognized the instrument, click the **Instruments**

tab. Connection Expert will list all instruments and their addresses.



NOTE Connection Expert will not find the Infiniium scope if the scope application is not running.

NOTE When the 89600 software locates an instrument, it locks onto the instrument so only the 89600 software can communicate with it. This prevents Keysight IO Libraries from any communication with these instruments. You can disconnect the instrument by selecting **Control** > **Disconnect** in the VSA software. Select Rescan in Connection Expert to restore communication between Connection Expert and the instrument.

Configuring Keysight N7109A

Introduction

The Keysight N7109A Multi-Channel Signal Analysis System is a modular hardware system that

- Keysight N7109A Multi-Channel Signal Analysis System

Keysight N7109A Multi-Channel Signal Analysis System Mainframe and Peripheral Modules:

The Keysight N7109A Multi-Channel Signal Analysis System consists of a mainframe and peripheral modules.

- Keysight N7125A Mainframe is an air-cooled 21-slot chassis that provides rugged and modular packaging for 3U Rack Unit size Keysight N7109A Multi-Channel Signal Analysis System peripheral modules.
- Keysight N7140A CPU Module is a single-slot module used as a Slot-1 System Controller or as a DSP Module in Slots 2 to 18.
- Keysight N7145A FPGA Processing Module is a single-slot, multi-purpose digital signal processing (DSP) module with hardware that consists primarily of a Virtex-5 FPGA, on-board SD and QDR RAM, along with external connections for LVDS and RS-232. This module comes with an FPGA image that supports different T&M applications such as MIMO.
- Keysight N7130A Option 062 V/UHF 2-Channel Receiver Module, 20 MHz to 6 GHz is a 2-slot, dual-channel receiver + ADC, capable of providing 40 MHz IF bandwidth from 20 MHz to 6 GHz. The V/UHF 2-Channel Receiver Module has a built-in analog-to-digital converter (ADC) that is capable of independent or multi-module phase-coherent operation.

NOTE **You can view and download the latest information for the Keysight N7109A Multi-Channel Signal Analysis System at** http://www.keysight.com/find/N7109A.

Software Configuration with Keysight N7109A

This section presents an overview of the process for installing and configuring the Keysight 89600 VSA software that supports Keysight N7109A Multi-Channel Signal Analysis System configurations.

If the Keysight N7109A Multi-Channel Signal Analysis System was integrated at the factory, it is ready to operate with the Keysight 89600 VSA software.

No software needs to be installed on the personal computer or the Slot-1 System Controller.

To configure hardware, refer to the *Keysight N7109A Multi-Channel Signal Analysis System Installation and Configuration Guide* (p/n N7109A-90001).

Connect Instruments to VSA Software

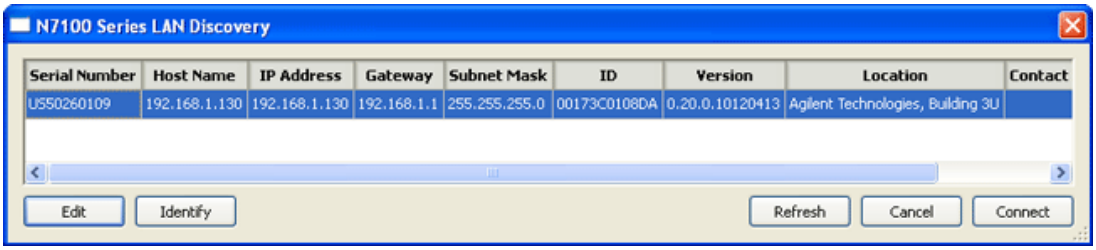
You can connect the Keysight N7109A Multi-Channel Signal Analysis System to the VSA using the one of the following procedures:

- Connect to an Instrument on a DHCP Network (page 78)
- Using Diagnostics & Configuration to Connect, Find, and Identify (page 80)

NOTE **If there is an error in any of the steps of these procedures, refer to Troubleshooting (page 87).**

Connect to an Instrument on a DHCP Network

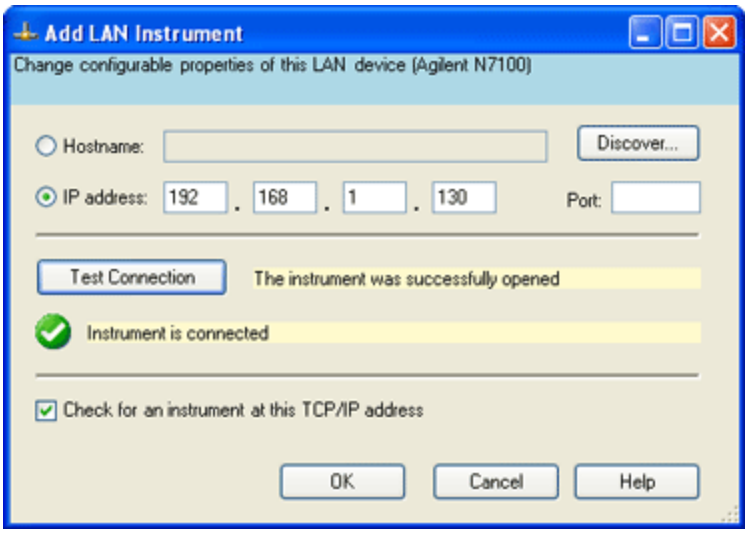
1. Click **Start > (All) Programs/All apps > Keysight 89600 VSA *xx.y* > Hardware Utilities > N7100 Series > VSA IO Connections** (where *xx.y* is the VSA version number).
2. Click **Add Instrument**.
3. Select the **Keysight N7109A** instrument then click **OK**.
4. Click **Discover**.
5. From the displayed list on the *N7109A Multi-Channel Signal Analysis System LAN Discovery* dialog box, select an instrument, then click **Identify**.



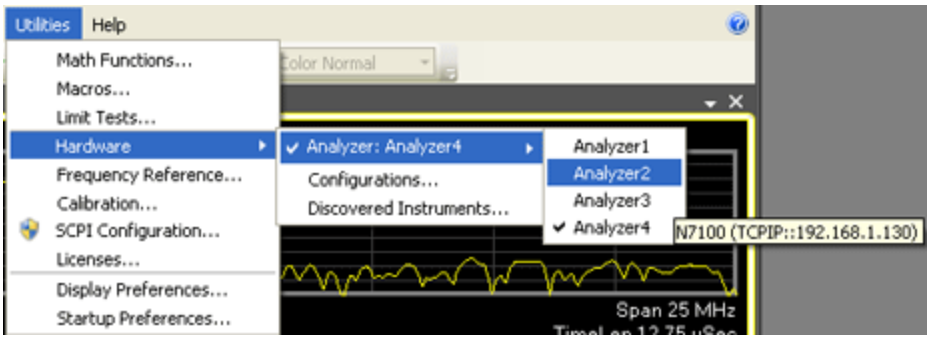
An LED on the N7109A Multi-Channel Signal Analysis System instrument blinks for ten seconds to indicate communication and then turns solid green indicating

normal operation. On the Keysight N7109A Multi-Channel Signal Analysis System, the LED can only be viewed by opening the front cover; the LED is then viewable on the front, bottom, left corner.

6. On the *Add LAN Instrument* dialog box:
   a. Select **IP Address**.
   b. Enter the IP Address as shown in the *N7109A Multi-Channel Signal Analysis System LAN Discovery* dialog box for the identified instrument.
   c. Click **Test Connection**.
   If the instrument is successfully connected, a message similar to the following is displayed along with a green check mark.



   d. Click **OK** to check for an instrument at this TCP/IP address.
7. Click **Start > (All) Programs/All apps > Keysight 89600 VSA *xx.y* > Keysight 89600 VSA *xx.y***(where *xx.y* is the VSA version number).
8. Click **Utilities > Hardware > Analyzer** and move the cursor to hover over the various analyzer selections in the drop-down list.
9. Select the Analyzer that displays as the N7109A analyzer. (In this example, Analyzer2 is the N7109A, but it could be different depending on the equipment in your system.



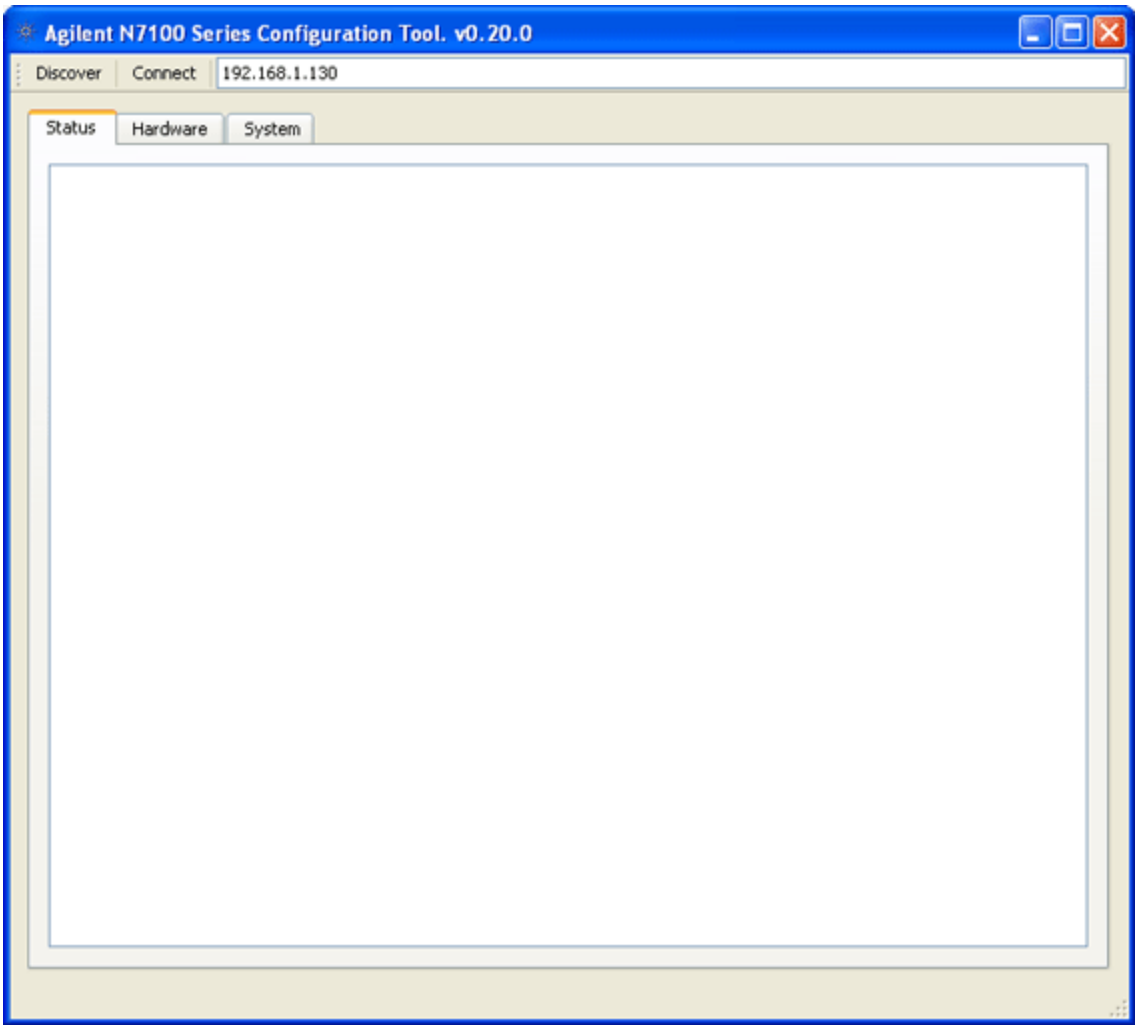
10. If there is no N7109A Analyzer selection:
    a. Click **Utilities > Hardware > Configurations.**
    b. Click **Add new configuration**. (This is the green plus sign on the left of the dialog box.)
    c. In the New Hardware Configuration window, select **Keysight N7109A Analyzer**, then select **">"** to move it under Configuration. Select an instrument to use.
    d. Enter a unique name for your analyzer and click **OK**. This makes it easier to find your instrument when making future connections.
    e. Click **Utilities > Hardware > Analyzer** and move the cursor to hover over the various analyzer selections in the drop-down list.
    f. Select the Analyzer that displays as the N7109A analyzer. (In this example, Analyzer2 is the N7109A, but it could be different depending on the equipment in your system.)
11. At this point, the Keysight N7109A Multi-Channel Signal Analysis System hardware should be communicating with the Keysight 89600 VSA software and can be used to perform measurements.

Using Diagnostics & Configuration to Connect, Find, and Identify

This section describes how to use the Diagnostics & Configuration selection to connect, find, and identify an instrument.

NOTE **Ensure that the Keysight 89600 VSA software is closed before running any tests.**

Click **Start > (All) Programs/All apps > Keysight 89600 VSA *xx.y* > Hardware Utilities > N7100 Series > N7109 Configuration** (where *xx.y* is the VSA version number). If you have never connected to an instrument, the **N7109A Multi-Channel Signal Analysis System LAN Discovery** window opens and you need to click **Cancel** to display the *Keysight N7109A Multi-Channel Signal Analysis System Configuration Tool*.



- Connecting to Instruments (Connect) (page 81)
- Finding Instruments (Discover) (page 81)
- Identifying Instruments (page 82)
- Status Tab (page 83)
- Hardware Tab (page 83)
- System Tab (page 85)
- Configuring LAN Settings for a Selected Device (page 86)

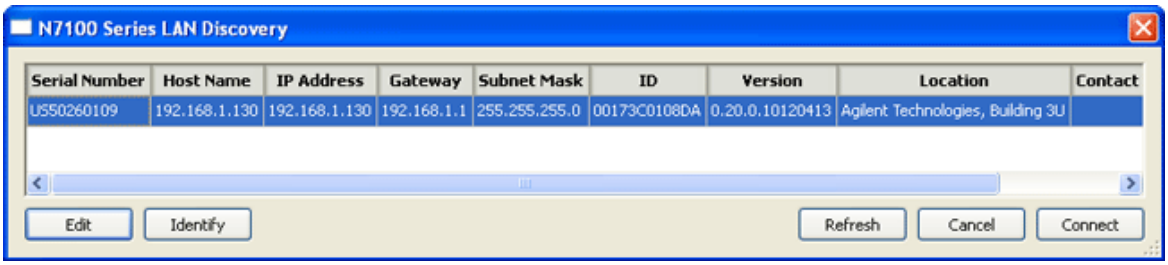
Connecting to Instruments (Connect)

If the currently displayed IP Address is correct, click **Connect** and the device with the currently displayed IP address is connected.

Finding Instruments (Discover)

Click **Discover** and the N7109A Multi-Channel Signal Analysis System LAN Discovery tool searches the local LAN connection looking for devices and DHCP servers.

A list of the devices that it finds are then displayed.



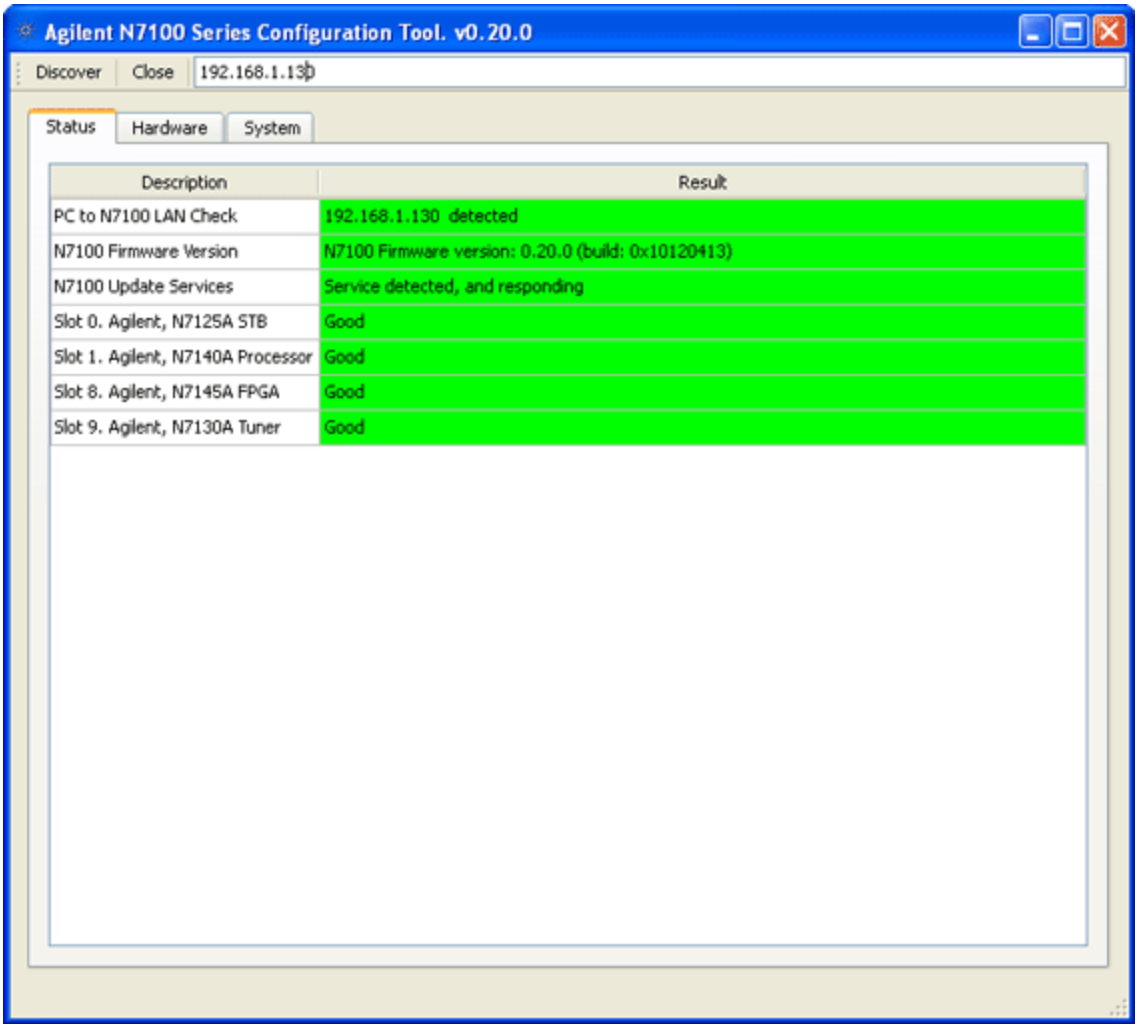
Identifying Instruments

From the displayed list, select an instrument, then click **Identify**.

An LED on the device should blink to indicate communication.

On the Keysight N7109A Multi-Channel Signal Analysis System, the LED can only be viewed by opening the front cover; the LED is then viewable on the front, bottom, left corner.

Status Tab



Clicking **Connect** will test out the connections to the Keysight N7109A Multi-Channel Signal Analysis System from your personal computer and check the startup state of the hardware.

- If all boxes are not green, you must resolve the problem.
- If the problem is with a hardware module, more information can be found on the Hardware Tab (page 83) and System Tab (page 85).

Hardware Tab

Update Temperatures - use to update the temperature readings of each of the modules in the system and to display the new reading in the Temperature column.

Module Name - displays the name of the Keysight product

Slot / ID - displays the slot number position of the Keysight product

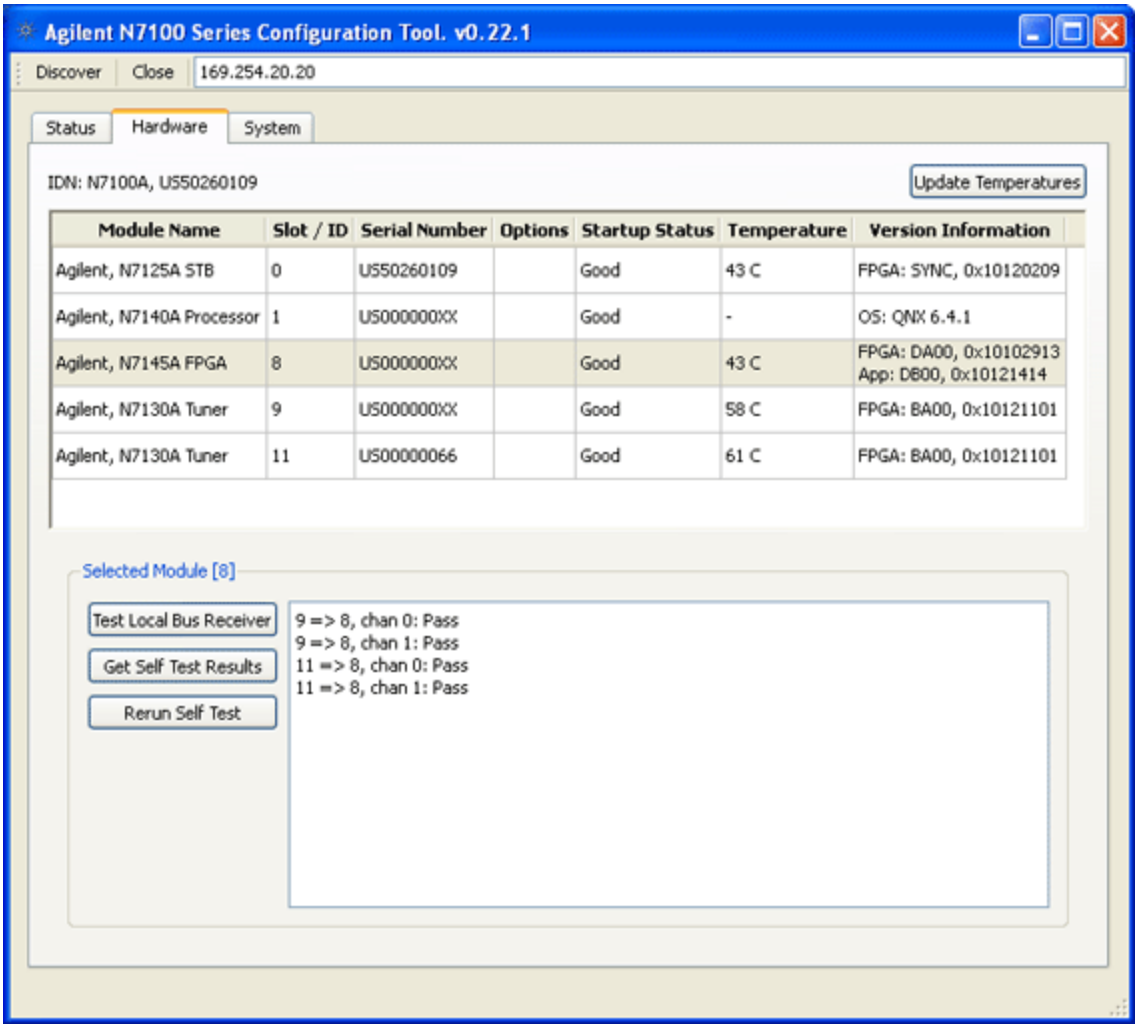
Serial Number - displays the serial number of the Keysight product

Options - displays the options of the Keysight product

Startup Status - displays the status of the Keysight product after it runs a self-test

Temperature - displays the last measured temperature of the Keysight product; it is updated by selecting Update Temperatures.

Version Information - displays the version of FPGA code being used by the Keysight product



NOTE **The Keysight 89600 VSA software must be closed before running any tests because it accesses the same local bus lanes that are used by the following test routines.**

Test Local Bus Receiver - displays the results of testing the local bus. For example, in a configuration select the N7145A FPGA Processing Module from the list of hardware and click **Test Local Bus Receiver**.

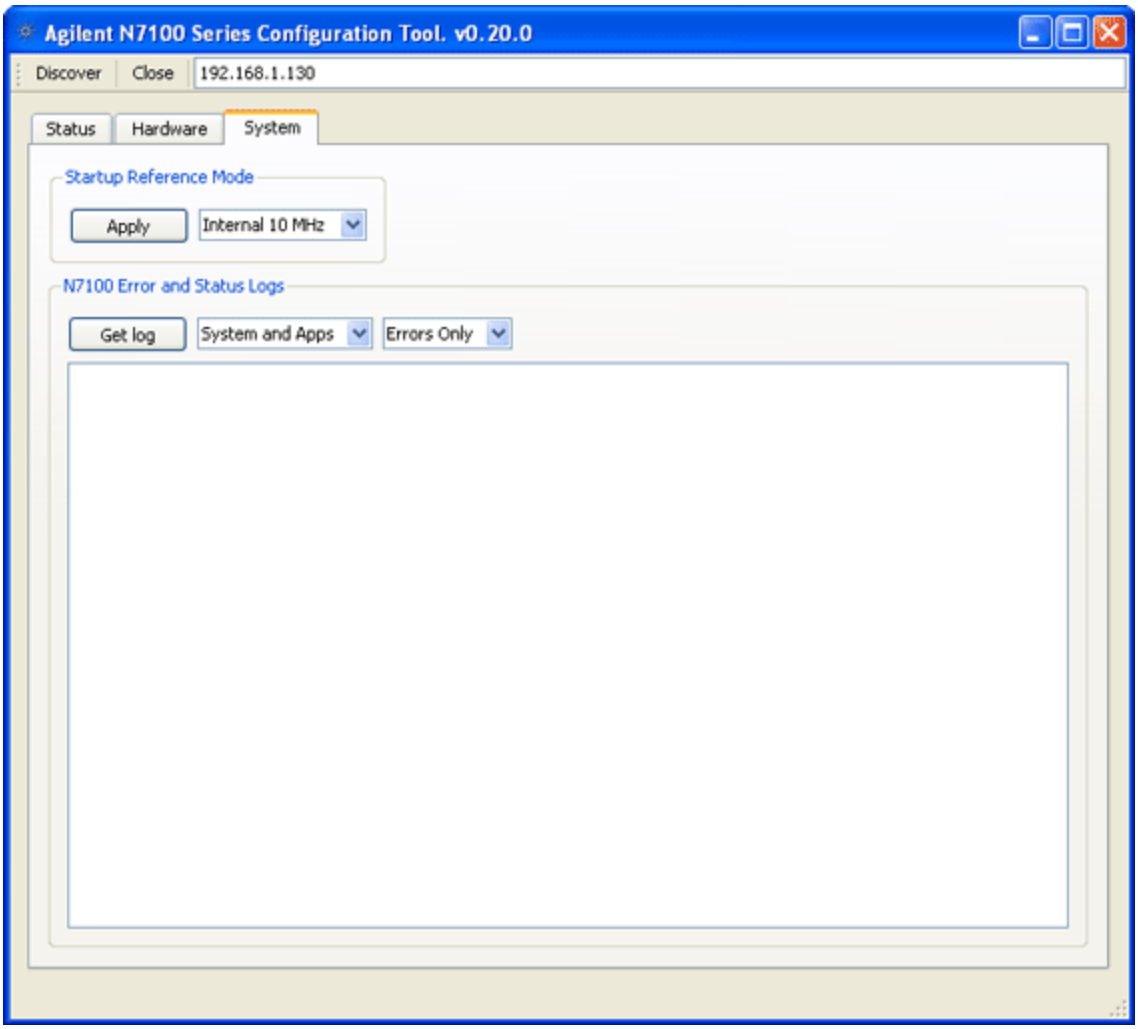
In the previous figure, note that the N7145A FPGA Processing Module is in Slot-8. The results displayed by clicking this button as 9=>8, chan 0:Pass and 9=>8, chan 1:Pass indicates that data transferred properly from channel 0 and channel 1 of the V/UHF 2-Channel Receiver Module positioned in Slot-8. Also, 11=>8, chan 0:Pass and 11=>8,

chan 1:Pass indicates that data transferred properly from channel 0 and channel 1 of the V/UHF 2-Channel Receiver Module positioned in Slot-11.

Get Self Test Results - displays the results from the last self test.

Rerun Self Test - reruns the self test and displays (overwrites) the results of any previous self test results.

System Tab



Startup Reference Mode

- Internal 10 MHz (Default Setting) - use for the Keysight N7109A Multi-Channel Signal Analysis System.

Instrument Logs

- Get Log - use to retrieve the instrument log. The information that is returned is dependent on the selections of the drop-down menus.
- System and Apps / System Only / Apps Only - use to select the type of entries to be displayed from the instrument log. You can include both system and application entries, only system entries, or only application entries.

- All / Errors Only - use to select either All entries or only Error entries are to be displayed from the instrument log.

Configuring LAN Settings for a Selected Device

Overview of DHCP Networking

- Router - a specialized computer (that acts as a Default Gateway), running software that enables data to move from one network to another.
- Internet Host - a machine/application connected to the Internet that has an Internet Protocol address (IP address).
- IP Address - a group of four numbers, with each group separated by a period (dotted-decimal notation), that is used to uniquely identify every device on a network (such as the Internet). IP addresses must be unique on the network in which they exist.
- DHCP - Dynamic Host Configuration Protocol is a client-server set of rules created to enable the dynamic assignment of IP addresses to devices. DHCP reduces the work required by network administrators and prevents IP address conflicts caused by two devices trying to use the same IP address.
- DHCP Client - is an Internet host using DHCP to obtain configuration parameters such as an IP address.
- DHCP Server - is an Internet host that returns configuration parameters to DHCP Clients. The DHCP Server has a pool of IP addresses from which it draws addresses and then leases them to each DHCP Client device as it boots up and connects to the network. The DHCP Server leases the IP addresses for a period of time set by the network administrator. During the period of the lease, the DHCP Server will not assign that IP address to any other device. When the lease expires, the DHCP Client must either renew the lease or release the IP address.

To configure LAN settings, click **Edit** on the N7109A Multi-Channel Signal Analysis System LAN Discovery dialog box.

NOTE **In order to change the IP Address Mode, the Keysight N7109A Multi-Channel Signal Analysis System must be rebooted when the *IP Address Mode* is changed!**

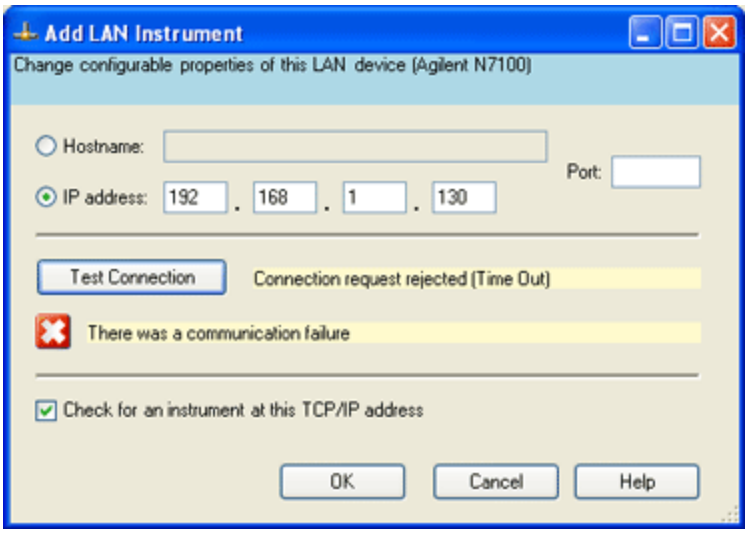
IP Address Mode

- DHCP with Auto IP Fallback - (Default Setting). In this IP address mode, a DHCP Server is used to assign IP addresses to each device.
  - If a DHCP Server is not found, it switches (falls back) to Auto IP.
- Auto IP - Without a DHCP Server, the device will use Auto IP.
  Auto IP is a client-server set of rules created to enable the automatic assignment of IP addresses to devices that are not using a DHCP server. Auto IP is not the same as DHCP, but also prevents IP address conflicts caused by two devices trying to use the same IP address.

- Static IP - Care must be used when setting a device to Static IP because a device may be set to an IP address that conflicts with another device at the same IP address. It is highly recommended that you contact your network administrator before setting a device to a Static IP address.
- Hostname - a hostname is an alias for the IP Address. It is assigned to a computer and is used in place of the IP Address - this may make it easier for humans. A computer connected to the Internet may or may not have a hostname, but it must have an IP Address.
- IP Address - a group of four numbers, with each group separated by a period (dotted-decimal notation), that is used to uniquely identify every device on a network (such as the Internet). IP addresses must be unique on the network in which they exist.
- Subnet Mask - are used to segment IP addresses from one large network into many smaller ones.
- Default Gateway - a specialized computer (your local Router), connected to more than one network, running software that allows a device to move data from one network to another. It is used to forward the data from the interface it receives data on, to another interface that retransmits the received data onto another interface serving another network.
  The default gateway is typically the IP address of the local router connected to the local network.
- Location - this field may be left empty. It can be used to enter a description of where the device is physically located.
- Contact - this field may be left empty. It can be used to enter the name or phone number of the device owner.

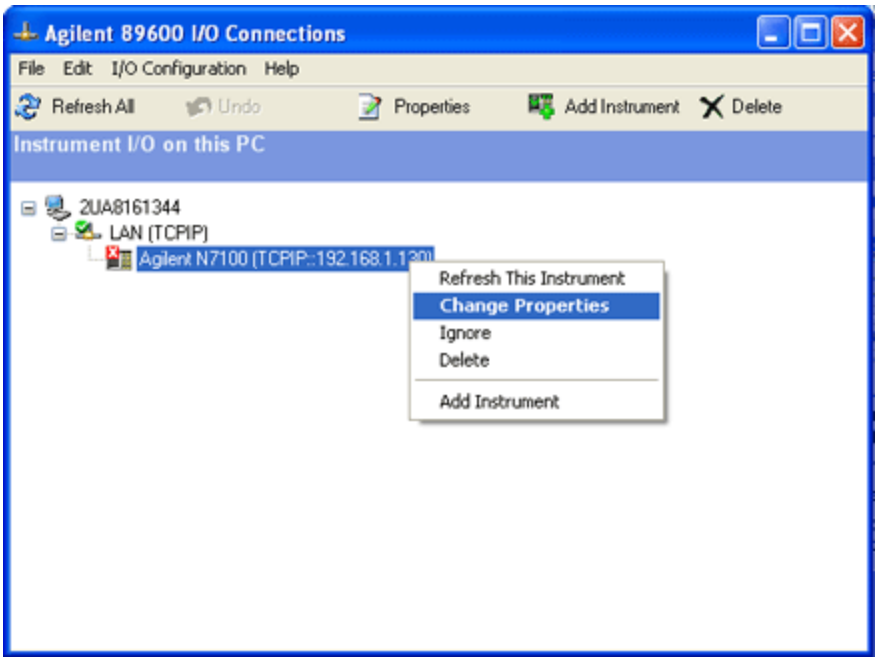
Troubleshooting

If there is a problem with *Test Connection*, a message similar to the following is displayed along with a red X mark.



Verify that you entered a valid IP address and try again. You may need to contact your network administrator for a list of valid IP addresses.

If there is a problem when clicking **OK** to check for an instrument at the TCP/IP address, a message similar to the following is displayed.



- To correct the problem, point the cursor to the problem instrument with a red X, right-click the mouse to expose a drop-down menu, and click **Change Properties**.
- Verify that you entered a valid IP address and try again. You may need to contact your network administrator for a list of valid IP addresses.

If there is a problem when starting the VSA software.

- The VSA software cannot communicate with the hardware that was added and is warning that it is going to start in Simulation mode.
- Verify that all cable connections are still made, power is on, and that you entered a valid IP address and try again. See Connect Instruments to VSA Software (page 78).

Configuring Logic Analyzers

Introduction

This chapter contains information related to the Keysight 89600 VSA's link to selected Keysight Logic Analyzers.

The 89600 VSA can capture and analyze time series data on a digital bus using either a Keysight 1680, 1690, 16800, or 16900 series Logic Analyzer as a data source. The Keysight 1680, 1690, 16800, and 16900 series Logic Analyzers all use the same Logic Analyzer software. The Logic Analyzer link to the 89600 VSA is available with Logic Analyzer software revision 5.51 and higher.

Configurations

16900 Series Logic Analyzers

The 16900 series Logic Analyzer application runs on any PC running Windows 7. The PC can be embedded in the 16900 series Logic Analyzer mainframe, or the PC can be connected to the Logic Analyzer mainframe via a LAN.

The 16900 series Logic Analyzer application can be configured to run online or offline. The online configuration acquires data from a digital device using the measurement hardware in the Logic Analyzer mainframe. The offline configuration uses data previously recorded and saved by the Logic Analyzer. Offline analysis does not require a connection to the Logic Analyzer mainframe.

The 89600 VSA application runs on any PC running Windows 7 or Windows 8. The 89600 VSA application runs on either the 16900 series Logic Analyzer mainframe or on a separate PC. The 89600 VSA works with the 16900 series Logic Analyzer whether the 16900 series Logic Analyzer is online or offline.

Configurations for linking the Keysight 16900 series Logic Analyzer to the Keysight 89600 VSA are:

- Logic Analyzer application and VSA application both running on the Logic Analyzer mainframe. From a speed standpoint, this is generally the highest performance configuration.
- Logic Analyzer application running on the Logic Analyzer mainframe. VSA application running on a separate PC. The VSA application communicates with the Logic Analyzer via the LAN interface.

  NOTE **The PC and the Logic Analyzer mainframe must both be members of the same domain or workgroup. If the PC and the Logic Analyzer are members of the same workgroup, you must log on to both the PC and the Logic Analyzer using the same user name.**

- Logic Analyzer application and VSA application both running on the same PC. The Logic Analyzer application communicates with the Logic Analyzer mainframe via the LAN interface.

1680 and 16800 Series Logic Analyzers

The 1680 and 16800 series Logic Analyzer application runs on any PC running Windows 7. The PC can be embedded in the 1680 or 16800 series Logic Analyzer mainframe, or the PC can be connected to the Logic Analyzer mainframe via a LAN.

The 1680 and 16800 series Logic Analyzer application can be configured to run online or offline. The online configuration acquires data from a digital device using the measurement hardware in the Logic Analyzer mainframe. The offline configuration

uses data previously recorded and saved by the Logic Analyzer. Offline analysis does not require a connection to the Logic Analyzer mainframe.

The 89600 VSA application runs on any PC running Windows 7 or Windows 8. The 89600 VSA application runs on either the 1680 or 16800 series Logic Analyzer mainframe or on a separate PC. The 89600 VSA works with the 1680 or 16800 series Logic Analyzer whether the 1680 or 16800 series Logic Analyzer is online or offline.

Configurations for linking the Keysight 1680 or 16800 series Logic Analyzer to the Keysight 89600 VSA are:

- Logic Analyzer application and VSA application both running on the Logic Analyzer mainframe. From a speed standpoint, this is generally the highest performance configuration.
- Logic Analyzer application running on the Logic Analyzer mainframe. VSA application running on a separate PC. The VSA application communicates with the Logic Analyzer via a LAN interface.

  NOTE **The PC and the Logic Analyzer mainframe must both be members of the same domain or workgroup. If the PC and the Logic Analyzer are members of the same workgroup, you must log on to both the PC and the Logic Analyzer using the same user name.**

- Logic Analyzer application and VSA application both running on the same PC. The Logic Analyzer application communicates with the Logic Analyzer mainframe via a LAN interface.

1690 Series Logic Analyzers

The 1690 series Logic Analyzer application runs on any PC running Windows 7.

NOTE **Unlike the 1680, 16800, and 16900 series Logic Analyzers, the 1690 series Logic Analyzer does not have an embedded PC in the Logic Analyzer mainframe.**

The 1690 series Logic Analyzer mainframe must be connected to a PC via an IEEE 1394 Firewire interface.

The 1690 series Logic Analyzer application can be configured to run online or offline. The online configuration acquires data from a digital device using the measurement hardware in the Logic Analyzer mainframe. The offline configuration uses data previously recorded and saved by the Logic Analyzer. Offline analysis does not require a connection to the Logic Analyzer mainframe.

The 89600 VSA application runs on any PC running Windows 7 or Windows 8. The 89600 VSA application works with the 1690 series Logic Analyzer whether it is online or offline.

Configurations for linking a Keysight 1690 series Logic Analyzer to a Keysight 89600 VSA are:

- Logic Analyzer application and VSA application both running on the same PC. The Logic Analyzer application communicates with the Logic Analyzer mainframe via the IEEE 1394 interface. From a speed standpoint, this is generally the highest performance configuration.
- Logic Analyzer application and VSA application running on separate PCs. The Logic Analyzer application communicates with the Logic Analyzer mainframe via the IEEE 1394 interface. The VSA application communicates with the Logic Analyzer application via the LAN interface.

  NOTE **The two PC's must be members of the same domain or workgroup. If the PC's are members of the same workgroup, you must log on to both PC's using the same user name.**

Connecting to a Network

If either the Logic Analyzer application or the VSA application requires access to the Logic Analyzer mainframe via a LAN, you must:

- Configure the Logic Analyzer mainframe firewall to enable applications to access it.
- Set up a direct LAN connection between the host computer and the Logic Analyzer mainframe using a LAN cable or set up the Logic Analyzer mainframe to communicate via your intranet.

  NOTE **If you are using an older PC that does not have Auto-MDIX capability, you will need to use a crossover cable when setting up a direct LAN connections.**

- Install the Logic Analyzer COM Automation client software on your remote computer.

  NOTE **The PC and the Logic Analyzer mainframe must both be members of the same domain or workgroup. If the PC and the Logic Analyzer are members of the same workgroup, you must log on to both the PC and the Logic Analyzer using the same user name.**

Follow the instructions in the Logic Analyzer help topic "Setting Up for COM Automation" to properly set up your network connection and configure the firewall. To access the "Setting Up for COM Automation" information, start the Logic Analyzer application and click **Help > Help Topics > COM Automation > Setting Up for COM Automation**.

The preferred method for installing the Logic Analyzer COM Automation client software is to install the Logic Analyzer software on the remote computer. Installing the Logic Analyzer software automatically installs the COM Automation client. This

gives you the benefit of having Logic Analyzer offline analysis capability and the COM Automation client set up on each computer you use to link to the Logic Analyzer. For a free copy of the latest Logic Analyzer software, go to *http://www.keysight.com/find/logic*.

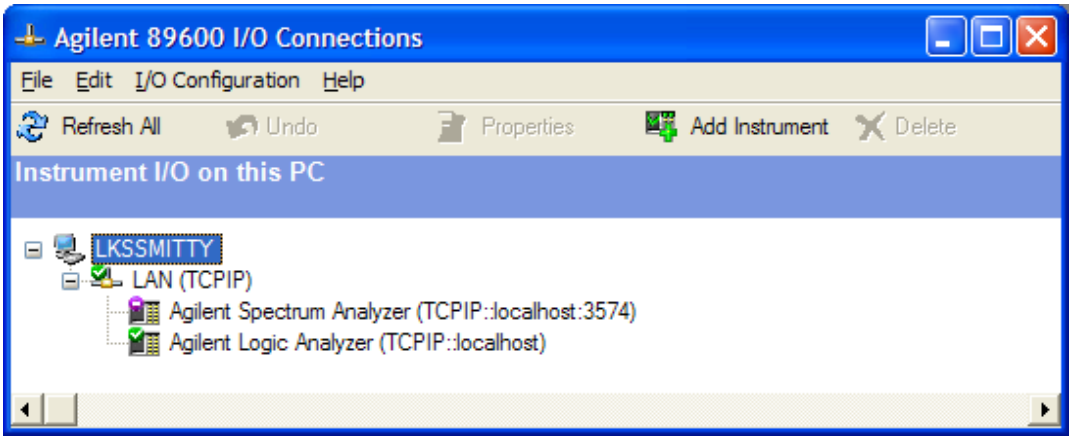
If you would prefer to not install the Logic Analyzer software on your remote computer, you can install just the Logic Analyzer COM Automation client software. The Logic Analyzer COM Automation client software is available on any system that has the Logic Analyzer software installed. The file name is SetupLACOM.exe. The file is located at `C:\Program Files\Agilent Technologies\Logic Analyzer\SetupLACOM.exe`. For additional information on installing the Logic Analyzer COM Automation client software, refer to "Setting Up for COM Automation" in the Logic Analyzer online help.

For information on configuring the 89600 VSA LAN interface, see Configuring the LAN interface (page 56).

89600 I/O Connections

Keysight 89600 I/O Connections is a software utility that helps you to quickly connect and configure your LAN-connected Logic Analyzer instruments, verify operation, and troubleshoot connectivity problems. The 89600 I/O Connections software is installed with the 89600 VSA software. To start the 89600 I/O Connections utility, click **Start > (All) Programs/All apps > Keysight 89600 VSA *xx.y* > Hardware Utilities > Logic Analyzer > VSA IO Connections** (where *xx.y* is the VSA version number).

An explorer pane appears when you start the 89600 I/O Connections utility. The explorer pane is a graphical representation of your test system and its status. The following screen shot is of an 89600 I/O Connections explorer pane.



Adding an Instrument

You can use the Keysight 89600 I/O Connections utility to add an instrument in any of the following ways.

- Click **Add Instrument** on the toolbar.
- Right-click anywhere in the Explorer Pane, then click **Add Instrument**.
- From the menu bar, click **I/O Configuration > Add Instrument**.

When the *Add Instrument* dialog box appears, select **Keysight Logic Analyzer** and click **OK**.

When the *Add LAN Instrument* dialog box appears, configure your Logic Analyzer in one of the following ways.

- If you know the hostname of the Logic Analyzer, select **Hostname** and enter the Logic Analyzer hostname.
- If you know the IP address of the Logic analyzer, select **IP address** and enter the IP address of the Logic analyzer.

Click **Test Connection**, verify the connection works and click **OK**.

For additional information on the Keysight 89600 I/O Connections utility, refer to the 89600 VSA online help. To get access to the online help, start the 89600 VSA application, then click **Help > Show Help**. Information about the Keysight 89600 IO Connections is located under **Measurement Platforms > Measurement Hardware > IO Connections for Logic Analyzers and Spectrum Analyzers**.

Configuring M9391A & M9393A PXIe Analyzers

Introduction

Included in the installation software for the M9391A and M9393A PXIe Vector Signal Analyzer is the Keysight 89600 VSA software role specific to those instruments. A role is a set of DLL files that operate as an interface between the 89600 VSA software and acquisition hardware and is also referred to as the hardware extension.

NOTE **You must purchase 89600 VSA Software Option SSA to use the 89600 VSA software's "Power Spectrum" measurement with the M9391A or M9393A PXIe analyzer.**

NOTE **Installation software and product documentation for the M9391A and M9393A is available online at http://www.keysight.com/find/M9391A and http://www.keysight.com/find/M9393A.**

The M9391A/M9393A role files, as well as an integration utility, are installed along with other M9391A/M9393A program files. The M9391A/M9393A installer runs the integration utility which detects if 89600 VSA software is installed and, if so, copies the role files into the program files for each compatible version of 89600 VSA.

IMPORTANT **If you install the 89600 VSA software AFTER you install the M9391A/M9393A drivers, you must run the 89600 VSA Integration utility to install the M9391A/M9393A role into the 89600 VSA Program Files. You can access the 89600 VSA Integration utility from the Windows Start menu by clicking Start > All Programs > Keysight > M9391 (or M9393) > 89600 VSA Integration.**

A role DLL implements several software interfaces. The interfaces have methods for acquiring measurement hardware, setting acquisition parameters, querying data and querying hardware status. Presence of the role allows 89600 VSA software to detect and configure modules for an M9391A and M9393A receiver. The 89600 VSA's Hardware Configurations dialog is used to specify which PXI modules form an instrument.

Installing 89600 VSA Software and Instrument Drivers

To use the Keysight 89600 Series VSA Software, you must install the software and then create a connection between the software and the hardware configuration that is your M9391A or M9393A PXI Vector Signal Analyzer. The steps below show you how to install the 89600 VSA software. The section that follows shows you how to create the connection between software and hardware.

1. Follow the instructions provided with your M9391A/M9393A instrument to install the 89600 VSA software in the instrument's embedded controller or on an external PC connected to the instrument via a PCIe cable.

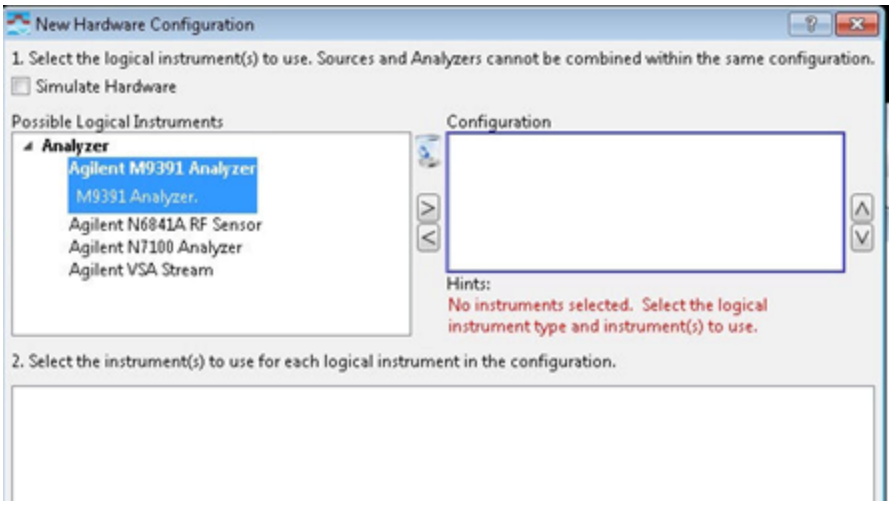
   When installing the 89600 VSA software, make sure you also install the Keysight IO Libraries. For details, see *Adding Hardware Support* in Installing 89600 Software (page 21).
2. Run the M9391A/M9393A installer to install the M9391A/M9393A hardware driver.

NOTE **The M9391A/M9393A installer detects the 89600 VSA software and installs the appropriate role files.**

Creating a New PXIe VSA Instrument

To create a new M9391A or M9393A PXIe VSA instrument, perform the following steps:

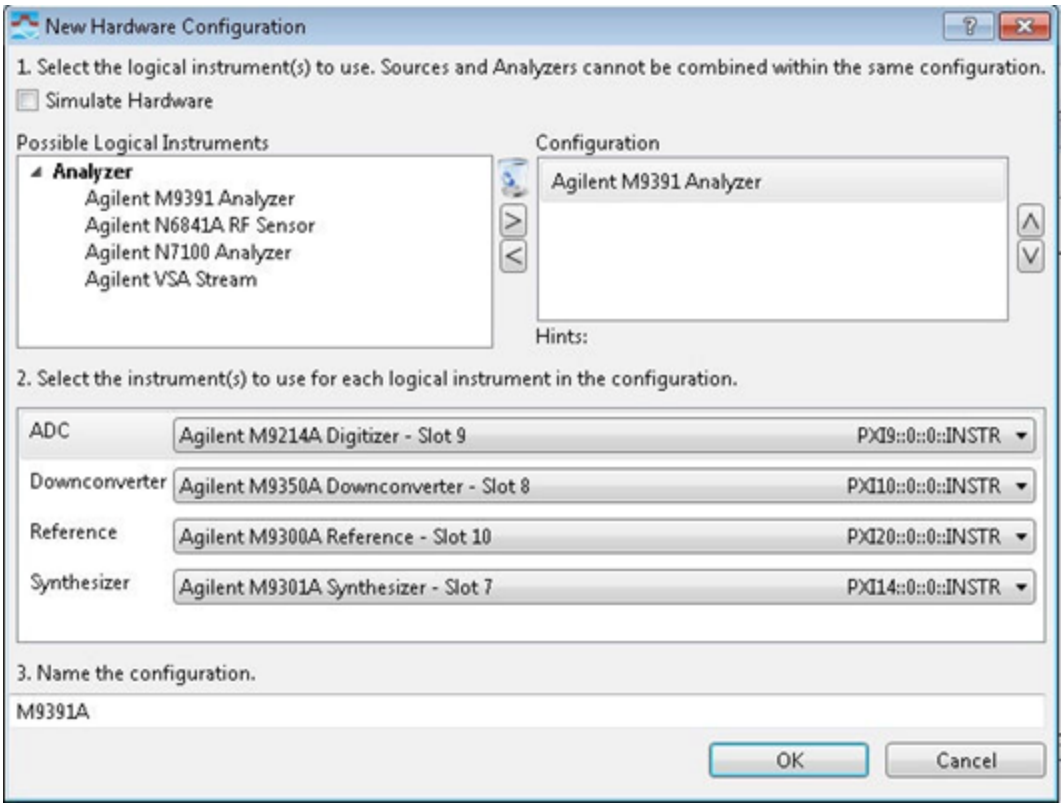
1. Run the 89600 VSA Software.
2. Open the "New Hardware Configuration" window.
   a. Click **Utilities > Hardware > Configurations**.
   b. Click  to display the **New Hardware Configuration** dialog box.
3. In the **New Hardware Configuration** window:
   a. Under the first section, **1. Select the logical instruments to use.**, select the Keysight M9391A or M9393A Analyzer entry and click  to copy the entry to the "Configuration" window.



TIP If you don't see the M9391A or M9393A in this menu, run the 89600 VSA Integration utility as described earlier in this topic. If, after running that utility you still don't see the M9391A or M9393A, run the Keysight Connection Expert and click Refresh All.

b. Under the next section, **2. Select the instrument(s) to use for each logical instrument in the configuration,** select the modules that make up your M9391A or M9393A PXI VSA instrument, as demonstrated in the image below.

   If you have more than one instrument in your PXIe mainframe, be careful to select the correct modules for your instrument. You may need to click the drop-down arrows and select modules different than those selected for you.



c. In the final section, **3. Name the configuration**, enter a name for your new configuration.
d. Click **OK** to save your new configuration.

4. If you have more than one instrument configured to run with your 89600 VSA software, click **Utilities > Hardware > Analyzer** and select the instrument you want to use for your measurement.
5. Click **Current Analyzer Configuration** and select your new configuration.
6. Begin making measurements

Troubleshooting

Troubleshooting Licensing Problems

Installing Incorrect License Version Level

If you have an option 200 license installed but only the Demo license is being used, you should check that your license meets the minimum license version that is required by the software.

To check that your license meets the minimum license version requirement:

1. Start the 89600 VSA. Click **Start > (All) Programs/All apps > Keysight 89600 VSA xx.y > Keysight 89600 VSA *xx.y*** (where *xx.y* is the VSA version number)
2. View the *Minimum License Version Required*. Click **Utilities > Licenses > Status** tab.
3. View the *Version* number of your installed option 200 license. Click **Keysight License Manager** from the License window.
4. If the 89601B option 200 software *Version* number listed in the Keysight License Manager is less than the *Minimum License Version Required* number listed in the License Status tab, then you need a new license to run this software. For example, if the installed license is version 2011.0101 and the minimum license version required is 2011.0701, then you need to order a subscription renewal product.

Common Floating License Failures

This is a list of common causes of floating license failures.

- Attempting to redeem a granted floating license option being used by another Client PC.
- Attempting to connect to a floating license server that is not operational, or to which you have lost connectivity.
- Attempting to use a floating license server that is improperly configured. For example, the floating license file does not match the server host ID in use.

Troubleshooting a Lost Connection to the Network License Server

This information only applies to systems that use a floating license server and a floating license Client.

If, two to three minutes after starting the 89600 VSA software, a License Warning message window appears that says that the VSA software is about to lose, or has lost, its connection to the network license server, the licensing software may have encountered a firewall incompatibility. Every two to three minutes, the 89600 VSA software connects to the license server to check the Floating license status. Some third party firewall applications treat this as a port scan attack and will lock out the Client. This problem can be fixed by turning off any third party firewall software that resides on the server. This is not an issue with the Windows firewall.

Troubleshooting a LAN Interface Problem

If the 89600 software cannot find your measurement hardware, the problem may be in the LAN interface.

To troubleshoot the LAN interface:

1. Close all 89600 applications. To verify that all applications are closed, run Task Manager.
    a. Right click an empty space in the task bar or press Alt-Ctrl-Delete.
    b. Click **Task Manager > Applications.**
    c. If there are any *89600* applications listed, highlight them and click **End Task.**
    d. Click the **Processes** tab.
    e. If there are any *Agilent.SA.Vsa.*.EXE* processes in the list, highlight them and click **End Task.**

2. Confirm that your PC can communicate with the instrument.
    a. Open a Command Prompt window: click **Start > (All) Programs/All Apps > Accessories** or **Windows System) > Command Prompt.**
    b. Type **ping** *hostname* and press **Enter**, where *hostname* is the IP address or hostname for the instrument. (For instructions on finding the IP address or hostname, see Instrument IP Address for a Direct Cable Connection (page 58).)

       If you are successful, continue with step 3 If you are not successful, continue with the next sub-step.
    c. Make sure that the PC is on and the LAN cable is connected to the PC and the instrument.
    d. If you are connecting directly from the PC to the instrument, verify that you are using a crossover LAN cable.
    e. Turn the instrument power off, then back on.
    f. Verify that the subnet mask is set appropriately. For detailed instructions, see: Instrument IP Address for a Direct Cable Connection (page 58).
3. Confirm that VISA Assistant can find and communicate with the LAN instrument.
4. After you have confirmed that Interactive IO can find the instrument, verify that Interactive IO can send a SCPI query (if the instrument supports SCPI).
    a. Restart Interactive IO if necessary.
    b. Click **Connect** and check the resource name.
    c. Click **Send & Read**.
    d. If there is an error or an incorrect response, try sending a device clear first. Click **Device Clear**. If this does not help, cycle power on the instrument and try step c. again.
5. Start an 89600 application. Look for any error dialog boxes at startup stating that the instrument does not have the proper options or firmware.
6. Verify that the instrument is in the list under **Utilities > Hardware > Configurations.**

LAN Interface Problem With an Infiniium Oscilloscope

If you are having trouble communicating directly over the LAN with an Infiniium Oscilloscope, check that the M libraries on the scope are configured correctly (Click **Start > (All) Programs/All apps > Keysight IO Libraries Suite > Connection Expert**).

M libraries configuration

VISA Name	SICL Name
GPIB0	hpib7
GPIB1	inst0
TCPIP0	lan

To configure the M libraries (Windows firewall must be off):

1. On the Infiniium scope, minimize the scope application. Click **Start > (All) Programs/All apps > Keysight IO Libraries Suite > Connection Expert**.
2. Select Internal Instrument in the *Instrument I/O on this PC* and click **Change properties**. Set the following parameters: SICL Interface ID - hpib7, VISA Interface ID - GPIB0, and Logical unit - 7. Press **OK**.
3. Select Internal Instrument in the *Instrument I/O on this PC* and click **Change properties** again. Set the following parameters: SICL Interface ID - inst0, VISA Interface ID - GPIB1, and Logical unit - 8. Press **OK**.
4. Select TCPIP in the *Instrument I/O on this PC* and click **Change properties**. Set the following parameters: SICL Interface ID - lan, VISA Interface ID - TCPIP0, Logical unit - 30 and Default Protocol - Auto. Press **OK**.
5. Select n/a LAN Server in the *Instrument I/O on this PC* and click **Change properties**. Click the **Defaults** button and press **OK**.
6. Close the Connection Expert dialog box.

You must reboot the scope after closing the Connection Expert dialog box.

Troubleshooting Interference With Other Devices or Instruments

When you start an 89600 VSA, the software attempts to identify other instruments and devices connected to the computer. This can cause the following problems:

- Instruments and devices get reset when you start the 89600 VSA even if the instrument/device is not controlled by 89600.
- Errors occur on instruments or devices not controlled by 89600 when you start the 89600 VSA.

To eliminate these problems, instruct the 89600 software to exclude specific devices from the identification process by creating VsaVisaConfig.txt file. To do this, edit the VsaVisaTemplate.txt file and save as a VsaVisaConfig.txt file.

1. Open the VsaVisaConfig.txt file:

   ```
   32 bit: C:\Program Files\Agilent\89600 Software xx.y\89600 VSA Software\VsaComponents\x86\VsaVisaTemplate.txt
   ```

   or

   ```
   64 bit: C:\Program Files\Agilent\89600 Software xx.y\89600 VSA Software\VsaComponents\x64\VsaVisaTemplate.txt
   ```

   ...where *xx.y* is the VSA version number
2. Modify the file to list the addresses of the devices you want to exclude, then save the file as VsaVisaConfig.txt file in the same folder location.

Troubleshooting the Display Driver

This section provides display driver troubleshooting information.

Symptom

The symbol location shape, such as the dots, on the constellation trace displays do not show properly.

Possible Cause

The display driver may not be functioning properly.

Solution

Use this procedure to correct the display driver:

1. Update the display driver:
   Contact your PC manufacturer to see if a newer version of the display driver is available. If there is, update the driver and verify if the problem is fixed.
2. Reconfigure the display driver settings:
   If the latest display driver does not fix the problem, try decreasing the hardware acceleration.

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Edition 1, April 2016

89600-90241

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