Keysight
KS9900 VSA-X Software

KEYSIGHT

GETTING STARTED GUIDE

Notices

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Overview

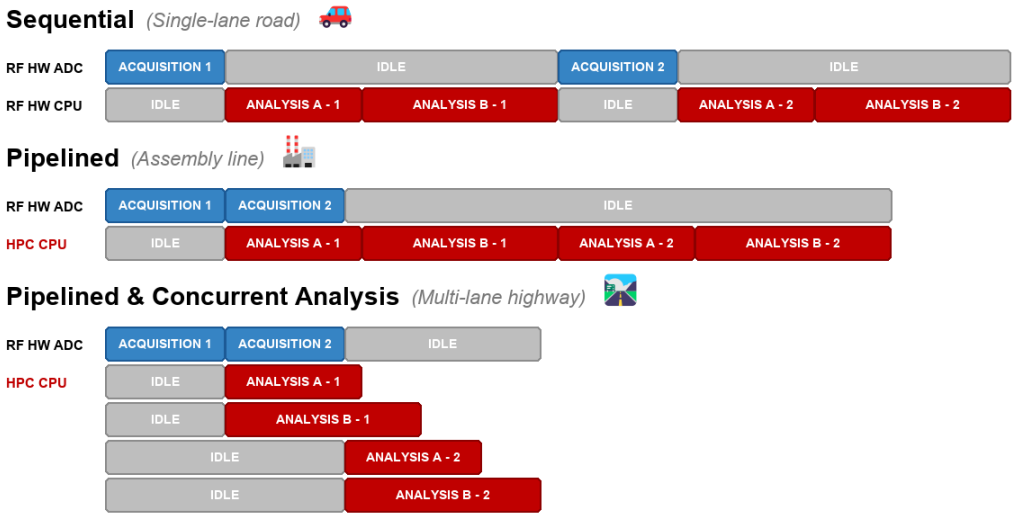
The Keysight KS9900 VSA-X software is an API-based client/server application that provides high-performance DvT and production testing based on your 89600 VSA measurements. VSA-X maximizes throughput through high-speed, pipelined, concurrent execution of measurements.

The KS9900 VSA-X software is closely integrated with 89600 VSA, enabling you to reuse your VSA R&D measurement setups for your manufacturing test environment.

- Reduced test time with Pipelined & Concurrent Testing
- Reduced test time with High-Performance Measurements
- Better workflow from R&D → DvT → Production

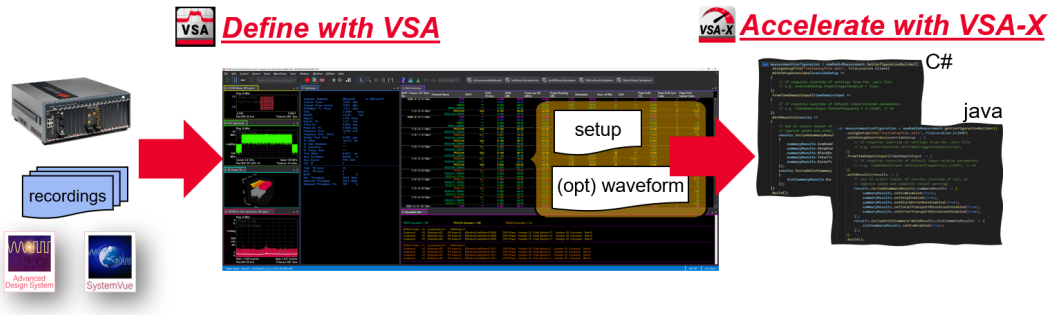
Pipelined & Concurrent Testing

Pipelined and concurrent testing maximizes resource efficiency by optimizing RF hardware asset utilization while leveraging scalable, high-performance compute resources.



VSA-X Workflow

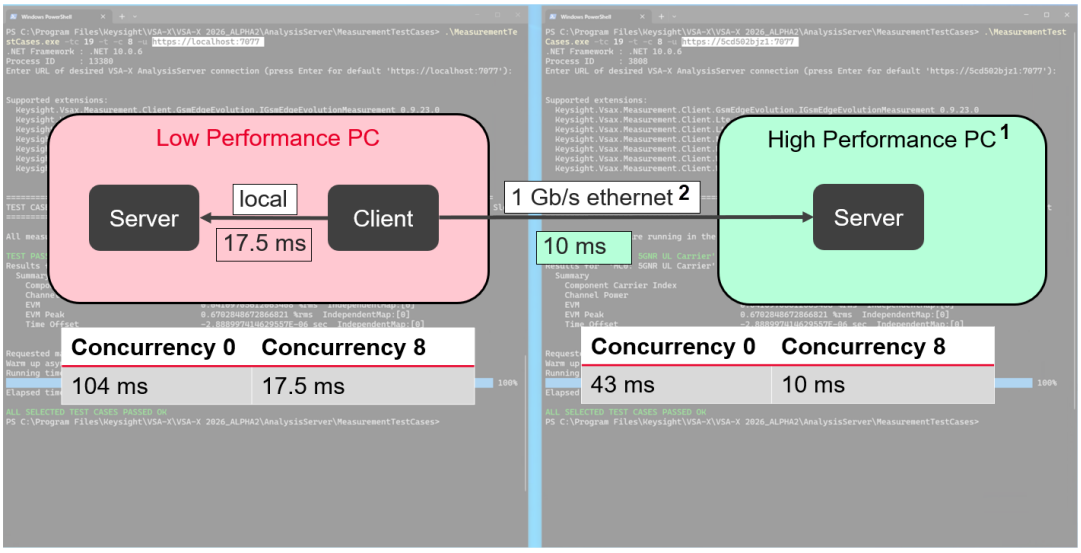
1. Create and fine-tune measurement with GUI-rich 89600 VSA (only a single copy of VSA is needed)
2. Verify Desired Results
3. Save setup (*.setx) and optional reference waveforms
4. Deploy test with high-speed VSA-X API
5. Triage in VSA and redeploy in VSA-X



NOTE You do not need multiple copies of VSA to develop for concurrent measurements in VSA-X. Licensing for concurrent VSA-X analysis for high-volume manufacturing is managed within the VSA-X model/option structure.

Client/Server Efficiency

The VSA-X client/server architecture allows you to make the most of your available PC processing resources. You can install the VSA-X server on a high-performance PC and connect to it as a client from a lower performance PC to monitor test progress. The following graphic illustrates the effect of PC performance on test times over multiple concurrencies with the server running on a low-performance PC vs. a high-performance PC.



[1] A high-powered host for the analysis server may have many more cores than the client PC, so in addition to the higher performance of a given core (i.e. the clock rate, etc.) you can run at a much higher concurrency.

[2] A faster LAN will also improve the performance for the case where the client is remote from the server.

Supported Measurements

See the Keysight KS9900 VSA-X Configuration Guide for a list of supported measurements.

Installing KS-9900 VSA-X Software

This procedure installs the KS9900 VSA-X software.

System Requirements

The software requirements to build an application using the KS9900 VSA-X client libraries depends on the intended type of application:

- For .NET 8+, the client program must target .NET8 or newer, using a corresponding .NET SDK and development environment.
- For .NET 4.8 Framework, the client program must target .NET 4.8, using a corresponding .NET Framework development environment.
- Java 11 is the baseline Java Development Kit (JDK) version required to run the Java basic and advanced examples.

A modern browser is required to connect to and view the server dashboard,

Network connectivity between the client and server is required (client programs running on the same machine as the KS9900 VSA-X application host is also supported).

NOTE By default, the KS9900 VSA-X software creates a self-signed SSL certificate used for hosted services (web dashboard and client connections). When using this certificate, browser connections will indicate an untrusted connection. To avoid browser warnings, the server can be configured to use a certificate that is trusted in the customer's IT infrastructure.

Server PC Requirements

Characteristic	Requirement
Operating system	Microsoft Windows 11 Professional or Enterprise Microsoft Windows 10 Professional, Enterprise or Education (64 bit)
CPU	A CPU with at least 16 cores is recommended for best performance*
RAM	16 GB (32 GB recommended)*
Additional drives	Network access or a USB memory device required for installation and license transfer

* VSA-X performance depends on the processing power of the PC on which it is installed.

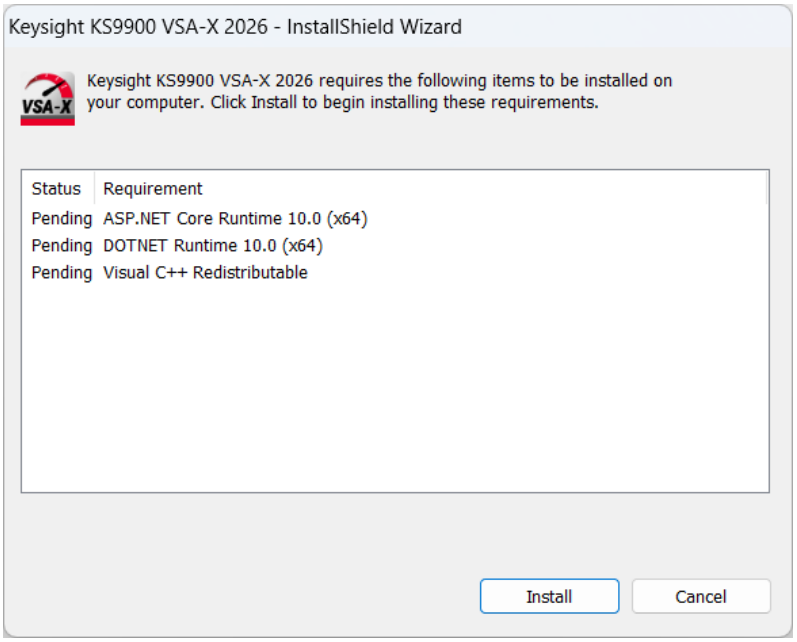
Installing KS9900 Software

To install the Keysight KS9900 software in a PC:

1. Download the KS9900 VSA-X Software at www.keysight.com\find\89600_VSAX_software.
2. Close any applications you have open.

   NOTE To install the KS9900 software, you must have administrator privileges on the computer on which you are installing the KS9900 software.

3. Launch the KS9900 VSA-X Installer as administrator. The Keysight KS9900 VSA-X Installer window will open and display a list of required items to be installed. Review the list and click **Install**.



4. Step through the InstallShield Wizard. When finished, the installer may require a system PC reboot. If this is the case, when asked, click **OK** to reboot.
5. The KS9900 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 Licensing (page 9).

Licensing

The Keysight KS9900 VSA-X software must be licensed to operate.

In general, the VSA-X software requires:

- One measurement server license (KS9900BP1A)
- Optional: One or more stackable concurrency licenses (KS9900MSxA)
- One license for each desired measurement type (KS9900*<meas_type>*A)

See the Keysight KS9900 VSA-X Configuration Guide for specific licensing information.

Installing Licenses

Installing licenses requires the following general steps:

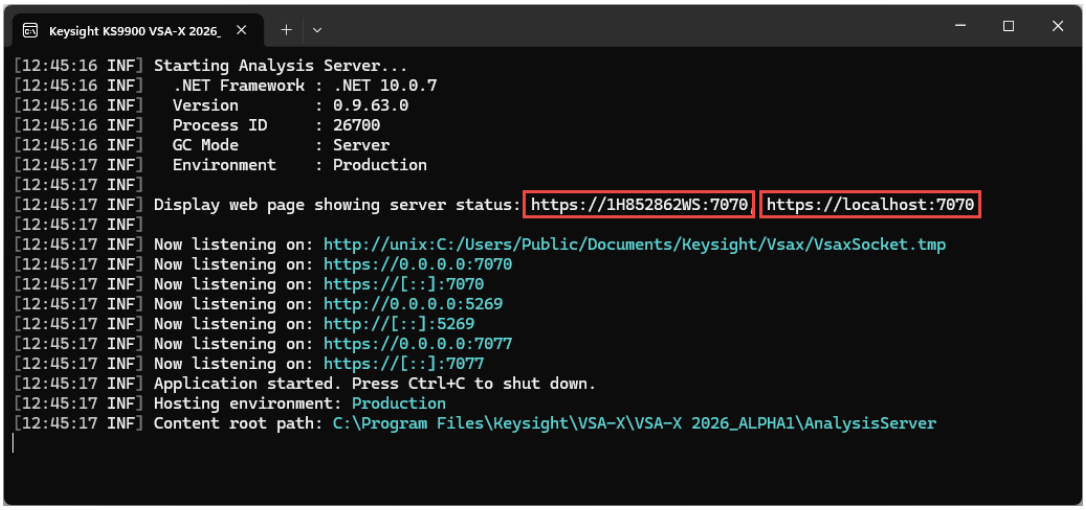
1. Redeem your licenses and obtain the license files. Follow the instructions included on the Software License Entitlement Certificate to redeem your licenses and obtain the license files. Go to the Keysight Software Manager website: http://www.keysight.com/find/softwaremanager
2. Run the Keysight Software Manager Utility version 7.8.2 or later to obtain information about the PC or instrument on which the KS9900 VSA-X is installed.
3. Install the license file using the Keysight Software Manager Utility.

Using the VSA-X and Example Programs

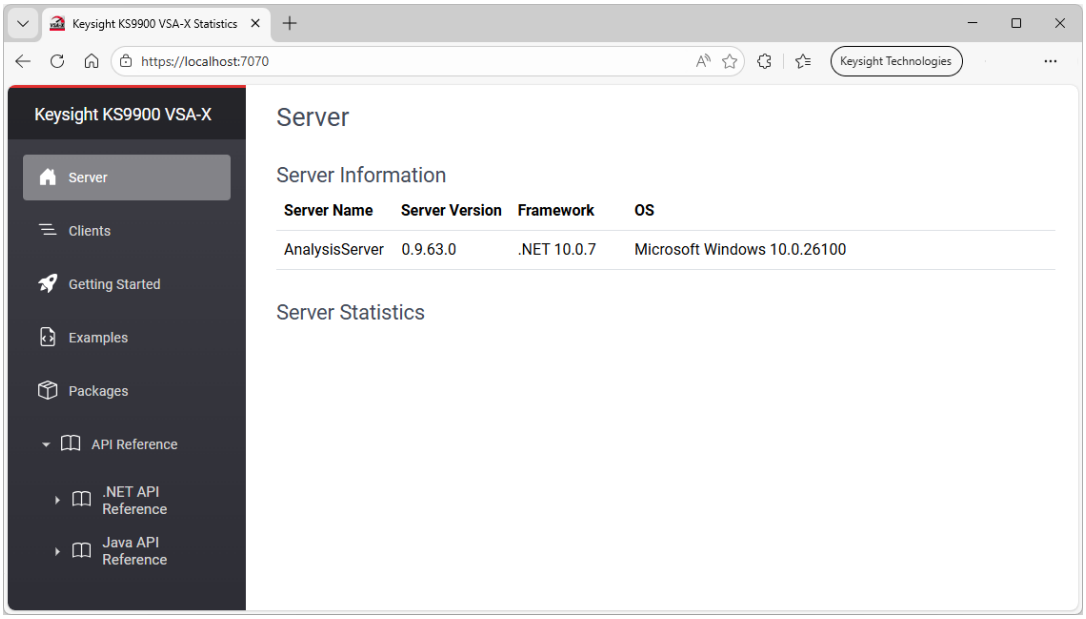
Once you have installed and licensed your Keysight KS9900 VSA-X software, it is time to start using it.

Starting Up VSA-X

Launch VSA-X Analysis Server in Windows by clicking **Start > All > Keysight KS9900 VSA-X <ReleaseVersion>**. A console window will open showing the application startup progress.



Ctrl-Click either of the links after "Display web page showing server status:" to view the Keysight KS9900 VSA-X dashboard in a browser window.



The VSA-X dashboard displays:

- **Server** - Displays a real-time summary of concurrently running measurements.
- **Clients** - Displays the currently connected clients.
- **Getting Started** - Provides information to get you going with VSA-X including how to install client NuGet packages (.NET API), add Maven dependencies (Java API), connect to a running server, and create and run a measurement using the .NET API and Java API.
- **Examples** - Provides access to and information about example programs and a convenient ulility that lets you run test case examples for each of the supported standards.
- **Packages** - Describes how to get the VSA-X client libraries.
- **API Reference** - Contains .NET API and Java API documentation for classes, interfaces, constructors, properties and methods.

Running Example Programs

You can find the supplied example programs in **C:\Program Files\Keysight\VSA-X\VSA-X <ReleaseVersion>\AnalysisServer\Examples**. You can also download the example Programs from the VSA-X dashboard's Examples tab.

VSA-X Security, Advisories and Vulnerabilities

This section contains important information relating to keeping test environments secure while using the KS9900 VSA-X Software.

Keysight complies with multinational regulations for the cybersecurity of its own products and is committed to providing information to assist you in protecting your products and solutions from external cyber threats. For more information, see:

https://www.keysight.com/us/en/about/quality-and-security/security/product-and-solution-cyber-security.html

Keysight also recommends that you secure your IT environments using appropriate third-party tools. For instruments that run the Microsoft Windows operating system, Keysight concurs with Microsoft's recommendations for ensuring that the instrument is protected:

- Get the latest critical Windows updates
- For network-connected instruments, use an internet firewall (in Keysight instruments, Windows Firewall is enabled by default)
- For network-connected instruments, use up-to-date antivirus and anti-spyware software

Keysight Corporate Information

https://www.keysight.com/us/en/contact.html

Keysight KS9900 VSA-X Product Information

Use the following product information to identify product updates and security advisories, or when reporting a vulnerability:

- *Product name*: Keysight VSA-X Xcelerate Measurement Analysis Server for High-Performance DvT and Manufacturing Test
- *Model*: KS9900
- *Version*: 2026
- *URL on Keysight.com*: www.keysight.com/find/vsax

Keysight Responsible Disclosure Program

Keysight recommends that security researchers share the details of any suspected vulnerabilities across any asset owned, controlled, or operated by Keysight (or that would reasonably impact the security of Keysight and our users) using this form:

https://www.keysight.com/us/en/contact/responsible-disclosure-program.html

Keysight Security Advisories

Visit the Product and Solution Cyber Security page for the latest Keysight security advisories:

https://www.keysight.com/us/en/about/quality-and-security/security/product-and-solution-cyber-security.html#RecentAdvisories

Report a Product Cybersecurity Issue

If you discover a cybersecurity issue that you suspect may involve Keysight's proprietary software, or third-party software supplied by Keysight as part of a product, or that may affect the operation of Keysight products, we encourage you to report it to us using this form:

https://www.keysight.com/us/en/about/quality-and-security/security/product-and-solution-cyber-security/report-a-product-cybersecurity-issue.html

Securing the VSA-X Software

Each running instance of *AnalysisServer.exe* may host many services listening on various ports and bound to various interfaces. The user should take necessary means to implement firewall rules to secure these services. The default installed applications settings are located at *C:\Program Files\Keysight\VSA-X\<VSA-X Version>\AnalysisServer\appsettings.json* and *C:\Program Files\Keysight\VSA-X\<VSA-X Version>\AnalysisServer\appsettings.Production.json*. Application settings may be configured differently from default values using the standard file or environment variable configuration mechanisms supported by ASP.NET Core.

Web Services

A web service listens on a configurable port defaulting to 7070 using HTTPS, bound to all IPv4 and IPv6 addresses. This service provides a browser accessible dashboard displaying current server activity and information along with help content and downloadable example code, and (optional) NuGet package feed for client libraries. The port is configurable through application settings at *Kestrel:Endpoints [VsaxDashboardIPv4|VsaxDashboardIPv6]:Url*. The NuGet feed may be enabled on this endpoint using the application setting *NuGetFeed* (defaults to disabled).

Analysis Server

The Analysis Server listens on configurable ports defaulting to 5269 (HTTP) and 7077 (HTTPS), bound to all IPv4 and IPv6 addresses. This service provides the fundamental measurement services API. The https endpoint requires an additional listening port at a fixed offset of 59 (defaults to 7077+59=7136). The listening ports are configurable through application settings at *Kestrel:Endpoints:{VsaxHttpIPv4|VsaxHttpIPv6|VsaxHttpsIPv4|VsaxHttpsIPv6}:Url*. The Analysis Server also listens to a localhost UDS endpoint using a default file path of *%LOCALAPPDATA%\Keysight\VSA-X\VsaxSocket.tmp*. The UDS endpoint may be disabled through assigning "false" to application setting *VsaxServer:UnixDomainSocket:Enabled*. A non-default UDS endpoint file path may be configured through application setting *Kestrel:Endpoints:UnixDomainSocket:Url*.

Other Keysight Components' Services

AnalysisServer.exe installs with, or is likely to be installed with other Keysight components which may host their own services. Users are likely to use port 4880, a

HiSLIP service hosted by *HppSupportService.exe* and bound to all IPv4 and IPv6 interfaces. Other components include:

- *agileesofd.exe*
- *AgilentLicenseService.exe*
- *HppSupportService.exe*
- *KeysightCommunicationsFabric.exe*
- *LxiMdnsResponder.exe*

Securing VSA-X – Other Considerations

Running VSA-X as an administrator is a security risk. Be safe and run VSA-X under an ordinary user account.