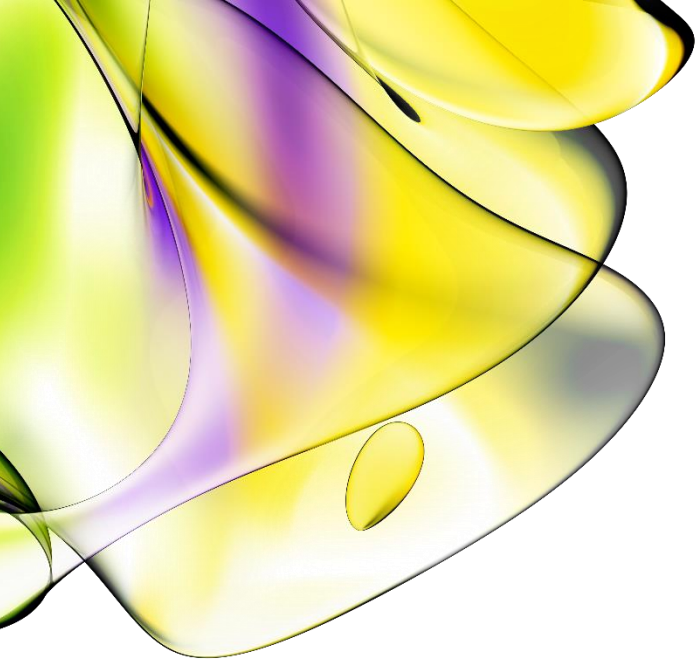


Revvity Signals VitroVivo™ 3.5.0

New User Installation Orientation

Powered by Spotfire®

Last Updated: March 19, 2024

Table of Contents

1. Introduction

This document outlines the pre-installation steps for Signals VitroVivo™ and points to the documentation and components of the software. Signals Image Artist™ is a separately sold software for High Content Screening data analysis, feeding its results into Signals VitroVivo. At the end of this document, an overview of how to install Signals Image Artist is provided in addition to Signals VitroVivo.

Signals VitroVivo is a full-featured, end-to-end data processing, storage, and reporting system for life science research and as such has several parts to the overall solution. Because science is broad and complex, it is essentially impossible to have a “one-size-fits-all” installation. The purpose of this document is to help orient a new customer to our solution, summarize each component, and provide the high-level steps to ensure your implementation is as efficient as possible.

There are four Spotfire® clients capable of deploying Signals VitroVivo:

- **Spotfire® Analyst** – a desktop application used for ad hoc analysis, building graphs, filtering, linking tables, and creating applications to be consumed in the Web Clients.
- **Spotfire® Business Author** – a web-based client used for interactive applications/dashboards configured in Analyst to perform ad hoc visual analysis in a web browser.
- **Spotfire® Consumer** – a web-based client used for interactive applications/dashboards configured in Analyst.
- **Spotfire® Enterprise Player (available as part of Consumer License)** – a desktop application used for interactive applications/dashboards configured in Analyst.

1.1 Who Should Read this Document?

- Power users to understand the high-level architecture of the individual components mapped to use cases.
- Software managers to understand how the different components interact to support different use cases.
- IT administrators to get a basic overview of the installation sequence and how the components scale.

1.2 License Inclusions

Your Signals VitroVivo license includes the licenses and associated downloadable files for Signals VitroVivo™, Signals Inventa™ and Lead Discovery Premium™, as well as Spotfire® Server, Analyst and Statistics Service. Each software comes with specific system requirements, which should be understood and fulfilled before the installation process. They are outlined in the respective documentation as detailed below.

2. List of Goods

All components are downloadable installation files and documentation files from Revvity’s Flexera system and can be found at https://revvitysignals.flexnetoperations.com/. To navigate to the downloadable files log into Flexera and from the main page / Home, review the Product List that details your eligible downloads. If you do not have credentials, please contact our support team at https://support.revvitysignals.com.

2.1 Spotfire®

Access the following Spotfire® download folders from the Flexera sidebar, **Downloads > List Downloads**:

- Spotfire® Analyst
- Spotfire® Server
- Spotfire® Statistics Services

To understand the underlying Spotfire® environment please first read the “Getting Started” section of the guide, *Spotfire® Server and Environment - Installation and Administration*. This can be found in the Spotfire® Server folder on Flexera. It also outlines a basic installation process to give you a first impression of what is needed. Filename: *SPOT_sfire_server_X.X.X_installation.pdf.*

Additional information on Spotfire® is available on the https://community.spotfire.com website.

A summary of a possible deployment structure with some requirement suggestions are listed in the table below:

Machine (VM)	Name	CPUs (Cores)*	RAM (GB)*	Storage (GB)*	OS Requirement	
M1	Spotfire Server	4	16	100	Linux or Windows	
M2	Spotfire NodeManager (Web Player)	6	48	120	Linux or Windows (Windows preferred)	
M3	Spotfire Analyst	4	8	60	Windows Only	Usually, the user’s computer
M4	Calculations Explorer Metastore Service	2	4	20	Linux (Docker)	RAM requirement is minimal, can co-exist with another server, e.g., SF Server.
M5	Database Server (PostgreSQL)	4	16	120	Linux or Windows, possibly Docker	Can co-exist with another server, e.g., SF Server, if enough RAM present
M6	Statistics Services (running VV with WebPlayer)	4	8		Linux or Windows	Can co-exist with another server, e.g., SF Server, if enough RAM present

*****Resources required are an example of a medium sized installation.

Please inform the Revvity Informatics support team if you do not have access to these goods.

2.2 Signals VitroVivo Installation Overview

The actual features and functionality of Signals VitroVivo are implemented in software packages. These packages are bundled into a distribution, which must be deployed on the Spotfire® Server as well as some Windows or Linux server systems.

The steps required for installing Signals VitroVivo are:

1. Signals VitroVivo Apps Spotfire® extensions packages deployment and configuration [*]
2. Signals VitroVivo Apps Spotfire® extensions licenses setup [*]
3. Signals VitroVivo input file formats and Apps Workflows storage configuration [*]
4. Deploying the Signals VitroVivo Metastore Service (requires Linux server sudo access if deployed in Linux)
5. Calculations Explorer Spotfire® Extension deployment and configuration [*]

[*] Requires Spotfire® administration privileges.

The Signals VitroVivo release goods package includes the following items:

File Name	Description
Signals VitroVivo Apps Spotfire® Distribution Files (SDNs)	
`Signals-VitroVivo.sdn`	The Spotfire® SDN of Signals Apps
Files for Signals VitroVivo Metastore Service	

`docker-compose-linux-<version>.tar.gz`
`docker-compose-linux-ssl-<version>.tar.gz`
`image-<version>.tar.gz`
	The tar.gz file which contains the files necessary to bootstrap the Signals VitroVivo Metastore includes:
	• .env: The directory-level environment variable settings file, this file will be loaded when docker-compose starts the services defined within the docker-compose.yml file
	• docker-compose.yml: The YAML configuration file for the docker-compose command line to start the Docker containers for Signals VitroVivo Metastore Services

Note: Remember to substitute the `<version>` with the appropriate value according to the file name of the package during the following installation and deployment process.

Note: Review the installation prerequisites in the Installation guide. In particular, Signals Inventa is a prerequisite for the VitroVivo .sdn deployment.

Note: Support for Metastore in Windows systems has been deprecated.

2.3 Downloading Signals VitroVivo from Flexera

From the Flexera sidebar select **Downloads > List Downloads** and select *Revvity Signals VitroVivo*. By default, the *New Versions* tab is opened. Note that all currently available point fixes with Installer and Documentation will be included.

The following table lists all installers and documentation files for the different components of Signals VitroVivo:

File	Components and Role
VitroVivo v3.X.X_Installers OnPrem VitroVivo v3.X.X_Documentation OnPrem	These files hold the Spotfire®-based components primarily used for the processing of data from raw instrument files to final experimental results. In addition, these files provide installation instructions for setting up the microservice for storing shared experiment-related information like file import templates, plate maps, etc. These files are required for ***all*** usage scenarios of Signals VitroVivo.
SignalsInventa 3.X installer SignalsInventa 3.X documentation	These files hold the instructions for installing the experimental data storage layer in Signals Research called *Signals Data Factory* and the Spotfire®-based components related to storing and retrieving data from this layer and are required for all scenarios described below. These files hold the instructions and installers for the Spotfire®-based analytics capabilities for visualizing integrated chemistry or biologics products with all experimental results (Lead Discovery Premium). These are used for performing advanced Structure-Activity Relationship or Sequence-Activity Relationship analyses. These files are required for Scenario 3 (but may benefit Scenario 2).
Signals Notebook Spotfire Addin 1.1 Installer SignalsNotebook_SpotfireAddin_1.1_installer.zip	These files are required for the integration with Signals Notebook

Please inform the Revvity Signals Support team if you do not have access to these goods.

Lead Discovery Premium is adding many life-science research relevant visualizations to Spotfire® that both chemists and biologists will benefit from. Lead Discovery Premium comes with its own installation guide, providing an excellent overview on how to deploy it on the Spotfire® Server. The pdf is included in the SignalsInventa 3.X documentation zip folder.

Please ask our support team if you have any questions about the installation process or how it maps to your specific IT landscape.

3. Orientation and Starting Points

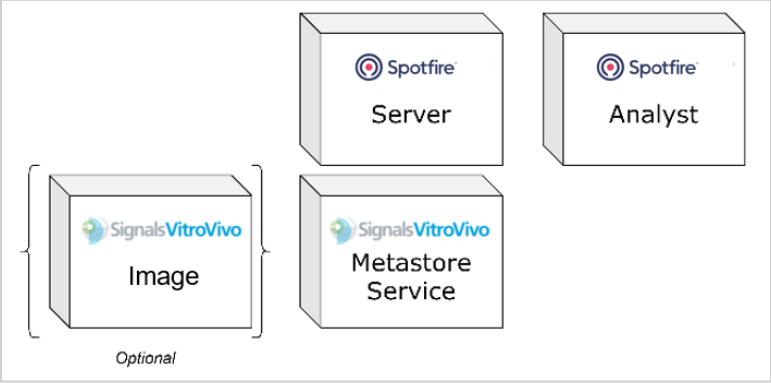
Below are three high-level scenarios that are most common among Signals VitroVivo customers:

1. Experimental data processing only
2. Experimental data processing, storage, and cross-experiment analysis
3. Experimental data processing, storage, and cross-experiment ***SAR*** analysis

3.1 Scenario 1: Experimental Data Processing Only

This scenario applies to users who are mainly focused on using Signals VitroVivo to process data and only need the Spotfire®-based Apps and Workflows.

The components requiring installation are diagrammed below:



The document titled *Revvity Signals VitroVivo 3.X.X Installation Guide* and *Revvity Signals Inventa v3.X Installation Guide* describe this process.

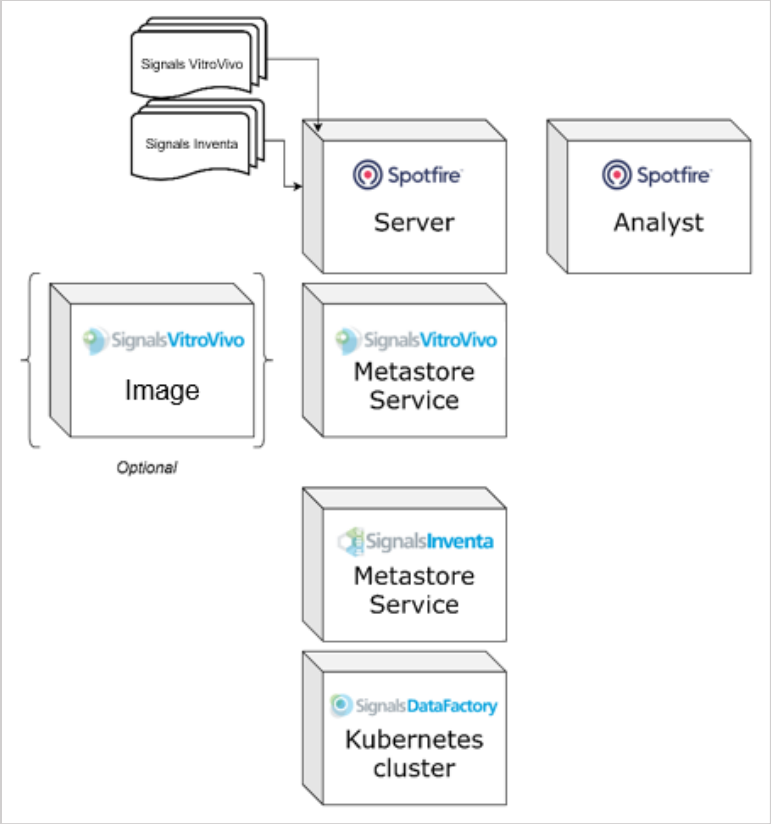
The high-level steps of this scenario are:

#	Step
1	Install Spotfire® Server
2	Install Signals VitroVivo Metastore Service
3	Install Signals VitroVivo Spotfire® add-ins (Inventa and VitroVivo)
4	(Optional) Install Signals Image Artist
5	Configure Spotfire® Preferences for Signals VitroVivo

3.2 Scenario 2: Experimental Data Processing, Storage and Cross-Experiment Analysis

This scenario applies to users who need to process and store data, such that they can create, store, and retrieve assay results and other measurements easily across different experiments and projects.

The components requiring installation are diagrammed below:



The documents titled *Revvity Signals VitroVivo 3.X.X Installation Guide* and *Revvity Signals Inventa v3.X Installation Guide* describe this process. Note that because this scenario involves the storage of critical data, the infrastructure requirements are more substantial. The Signals Data Factory is built to scale elegantly as an organization grows, starting with a 1-node or 3-node cluster and then growing by adding additional nodes to the cluster over time.

The high-level steps of this process are:

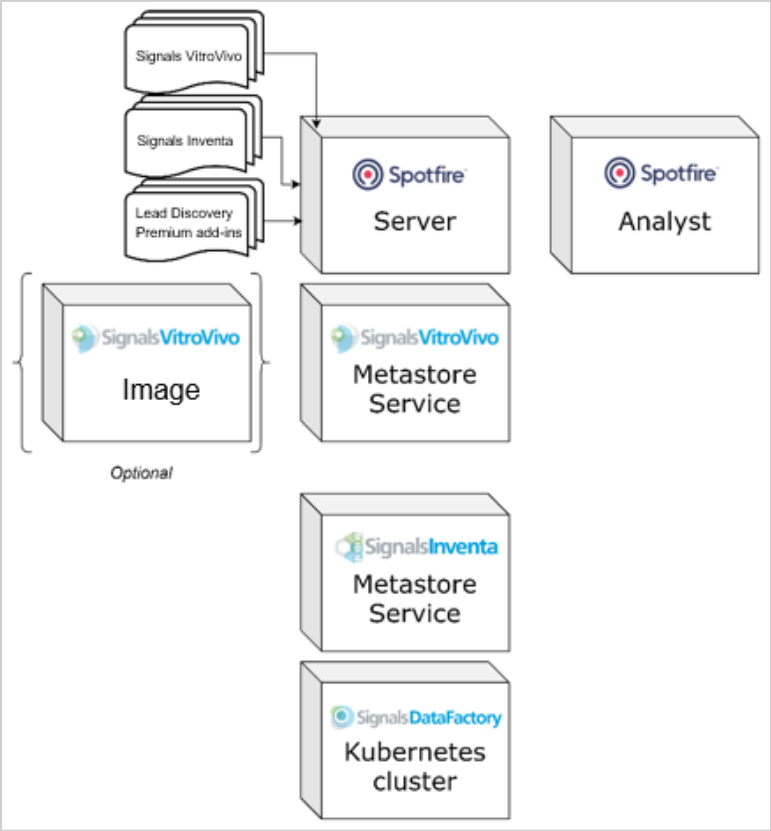
#	Step
1	Install Spotfire® Server
2	Install Signals VitroVivo Metastore Service
3	Install Signals VitroVivo Spotfire® add-ins (Inventa and VitroVivo)
4	(Optional) Install Signals Image Artist
5	Install Signals Data Factory on a Kubernetes cluster

6	Install Signals Inventa Metastore Service
7	Configure Spotfire® Preferences for Signals VitroVivo and Signals Inventa

3.3 Scenario 3: Experimental Data Processing, Storage and Cross-Experiment SAR Analysis

This scenario applies to users who need a fully integrated suite of capabilities for generating and fielding a variety of data and require help to interpret results in the context of larger scientific objectives of a project. This scenario is very similar to Scenario 2 but includes additional Spotfire® visualization and analytics capabilities.

The components requiring installation are diagrammed below:



The documents titled *Revvity VitroVivo 3.X.X Installation Guide*, *Revvity Signals Inventa v3.X Installation Guide* and *Revvity Lead Discovery Premium X.X Installation Guide* describe this process. Note that because this scenario involves the storage of critical data, the infrastructure requirements are more substantial. The Signals Data Factory is built to scale elegantly as an organization grows, starting with a 1-node or 3-node cluster and then growing by adding additional nodes to the cluster over time.

The high-level steps of this process are:

#	Step
1	Install Spotfire® Server

2	Install Signals VitroVivo Metastore Service
3	Install Signals VitroVivo Spotfire® add-ins (Inventa and VitroVivo)
4	(Optional) Install Signals Image Artist
5	Install Signals Data Factory on a Kubernetes cluster
6	Install Signals Inventa Metastore Service
7	Install Lead Discovery Premium Spotfire® add-ins
8	Configure Spotfire® Preferences for Signals VitroVivo, Signals Inventa and Lead Discovery Premium

4. Signals Image Artist

Signals Image Artist is a standalone software from Revvity to manage and analyze images from High Content Screening experiments. It is a second-generation universal high-volume image data storage and analysis system that brings fast, secure access to images from a wide range of sources and is instrument agnostic. The Signals Image Artist system lets scientists access, view, annotate, and measure images from their web browser. The system is easy to use and can serve multiple users simultaneously, making it perfect for any size user base from an individual lab to an entire organization. Scalability of the system is ensured by its native High Performance Computing cluster option.

The Signals Image Artist application requires Docker to run. Therefore the operating system must be compatible with Docker.

For more detailed information about hardware and software requirements, please check the *Signals Image Artist's System Recommendations* document.

To install Signals Image Artist together with Signals VitroVivo for secondary analysis ensure that end users of Signals VitroVivo can connect to the server of Signals Image Artist, please check the *Signals Image Artist Installation and Administration* guide.