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**Software Revision**
This guide is valid for VWorks software 14.1.0 or later, until superseded.

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# Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preface</td>
<td>v</td>
</tr>
<tr>
<td>What this guide covers</td>
<td>vi</td>
</tr>
<tr>
<td>Accessing the user guides</td>
<td>viii</td>
</tr>
<tr>
<td><strong>1. About VWorks Plus</strong></td>
<td>1</td>
</tr>
<tr>
<td>Software architecture and components</td>
<td>2</td>
</tr>
<tr>
<td>21 CFR Part 11 Compliance</td>
<td>3</td>
</tr>
<tr>
<td>Workflow for VWorks Plus</td>
<td>4</td>
</tr>
<tr>
<td>Logging in to Control Panel</td>
<td>5</td>
</tr>
<tr>
<td><strong>2. Licensing the software</strong></td>
<td>7</td>
</tr>
<tr>
<td>About software licensing</td>
<td>8</td>
</tr>
<tr>
<td>About the Control Panel Licenses page</td>
<td>8</td>
</tr>
<tr>
<td>Workflow for software licensing</td>
<td>9</td>
</tr>
<tr>
<td>Prerequisites for getting a license</td>
<td>9</td>
</tr>
<tr>
<td>Getting a license</td>
<td>10</td>
</tr>
<tr>
<td>Installing your license</td>
<td>11</td>
</tr>
<tr>
<td><strong>3. Configuring the software</strong></td>
<td>13</td>
</tr>
<tr>
<td>Configuring authentication</td>
<td>14</td>
</tr>
<tr>
<td>Configuring the security policy</td>
<td>17</td>
</tr>
<tr>
<td>Configuring users, groups, and roles</td>
<td>18</td>
</tr>
<tr>
<td>Configuring VWorks project settings</td>
<td>28</td>
</tr>
<tr>
<td>Configuring an instrument</td>
<td>36</td>
</tr>
<tr>
<td>Creating a VWorks desktop shortcut and launching VWorks</td>
<td>40</td>
</tr>
<tr>
<td>About configuring automation devices in VWorks</td>
<td>42</td>
</tr>
<tr>
<td>Configuring the email server</td>
<td>43</td>
</tr>
<tr>
<td><strong>4. Using Content Browser</strong></td>
<td>45</td>
</tr>
<tr>
<td>Viewing the project structure</td>
<td>46</td>
</tr>
<tr>
<td>Editing the project structure</td>
<td>47</td>
</tr>
<tr>
<td>Restoring a previous version of a record</td>
<td>49</td>
</tr>
<tr>
<td>Viewing the Content Browser Activity Log</td>
<td>51</td>
</tr>
<tr>
<td>Using Content Browser Help system</td>
<td>52</td>
</tr>
</tbody>
</table>
Contents

5. System maintenance ................................................................. 55
Control Panel activity log and administrative reports ............................ 56
Shared Services Maintenance utility ............................................ 58
Backup and restore procedures .................................................. 59
Performing a backup ............................................................... 60
Restoring from a backup .......................................................... 66
Routine maintenance ............................................................... 67
Preface

This preface contains the following topics:

- “What this guide covers” on page vi
- “Accessing the user guides” on page viii
What this guide covers

What is covered

This guide provides administrator instructions for VWorks Plus. The guide describes the software architecture, compliance features and workflow, and provides instructions for the following:

- Generating and installing the license
- Configuring and managing the user access
- Backing up and restoring data and software
- Viewing the content in the Content Browser

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VWorks Automation Control</td>
<td>VWorks software component that you use to create the protocols that run your automation devices.</td>
</tr>
<tr>
<td>VWorks Plus</td>
<td>The compliance-enabled \textit{workstation} edition of the VWorks software. This edition includes VWorks and OpenLab Control Panel, Shared Services, Content Management, and Content Browser installed on a single computer.</td>
</tr>
<tr>
<td>VWorks Standard</td>
<td>The \textit{workstation} edition of the VWorks software that is not compliance enabled. This edition includes VWorks and OpenLab Control Panel and Shared Services installed on a single computer.</td>
</tr>
<tr>
<td>Content Management (OpenLab component)</td>
<td>The secure data storage repository for VWorks compliance-enabled editions.</td>
</tr>
<tr>
<td>Control Panel (OpenLab component)</td>
<td>The user interface for Shared Services.</td>
</tr>
<tr>
<td>Microsoft Control Panel</td>
<td>Part of the Microsoft Windows operating system.</td>
</tr>
<tr>
<td>Shared Services (OpenLab component)</td>
<td>Set of administrative services that control VWorks user access and file storage. Shared Services are accessed via the Control Panel.</td>
</tr>
</tbody>
</table>
What is new in this edition

<table>
<thead>
<tr>
<th>Feature and description</th>
<th>See…</th>
</tr>
</thead>
<tbody>
<tr>
<td>Updated the list of compliance features to include electronic signatures.</td>
<td>“21 CFR Part 11 Compliance” on page 3</td>
</tr>
<tr>
<td>Revised the VWorks groups and roles descriptions.</td>
<td>“Configuring users, groups, and roles” on page 18</td>
</tr>
<tr>
<td>Added procedures for configuring audit trail settings, electronic signature levels, and</td>
<td>“Configuring VWorks project settings” on page 28</td>
</tr>
<tr>
<td>project privileges.</td>
<td></td>
</tr>
<tr>
<td>Added descriptions and procedures for configuring a Control Panel instrument.</td>
<td>“Configuring an instrument” on page 36</td>
</tr>
<tr>
<td>Added procedures for creating a VWorks desktop shortcut and for launching VWorks from</td>
<td>“Creating a VWorks desktop shortcut and launching VWorks” on page 40</td>
</tr>
<tr>
<td>the OpenLab Control Panel.</td>
<td></td>
</tr>
<tr>
<td>Added a procedure for configuring an email server.</td>
<td>“Configuring the email server” on page 43</td>
</tr>
<tr>
<td>Added the Instruments category to the activity log and report options.</td>
<td>“Control Panel activity log and administrative reports” on page 56</td>
</tr>
</tbody>
</table>

Related guides

For information about the following VWorks-related topics, see the corresponding Agilent guide.

<table>
<thead>
<tr>
<th>For information about …</th>
<th>See…</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer requirements and software installation</td>
<td>VWorks Automation Control Installation Guide</td>
</tr>
<tr>
<td>Quick reference for the software</td>
<td>VWorks Plus Quick Reference</td>
</tr>
<tr>
<td>• Managing audit trails and record states</td>
<td>VWorks Automation Control Setup Guide</td>
</tr>
<tr>
<td>• Setting up labware definitions and liquid classes</td>
<td></td>
</tr>
<tr>
<td>• Setting up an Experiments database, if applicable</td>
<td></td>
</tr>
<tr>
<td>• Setting up an Inventory database, if applicable</td>
<td></td>
</tr>
<tr>
<td>• Migrating protocols from previous versions of the VWorks software</td>
<td></td>
</tr>
<tr>
<td>• Setting up devices</td>
<td>VWorks Automation Control User Guide</td>
</tr>
<tr>
<td>• Writing protocols and creating forms</td>
<td>VWorks Protocol Authors Quick Guide</td>
</tr>
<tr>
<td>• Running protocols</td>
<td></td>
</tr>
<tr>
<td>• Troubleshooting protocols</td>
<td></td>
</tr>
</tbody>
</table>
Preface

Accessing the user guides

Software version

This guide documents VWorks Plus 14.1 and later editions.

Accessing the user guides

About this topic

This topic describes the different formats of user information and explains how to access it for the Agilent Automation Solutions products.

Where to find user information

The user information is available in the following locations:

- **Knowledge base.** The help system for the Automation Solutions products is available from:
  - Help menu within the VWorks software: Select Help > Knowledge Base or press F1.
  - From the Windows desktop: Select Start ( ) > All Apps > Agilent Technologies > VWorks Knowledge Base.

  For guidelines on using the VWorks context-sensitive help and knowledge base features, see Using the knowledge base, below.

- **PDF files.** The PDF files of the user guides are installed with the VWorks software (C:\Program Files (x86)\Agilent Technologies\VWorks\UserGuides) and are available in the VWorks Knowledge Base.

- **Website.** You can search the online VWorks Knowledge Base or download the latest version of any PDF file from the Agilent website at www.agilent.com/chem/askb.

Accessing safety information

Safety information for the Agilent Automation Solutions devices appears in the Automation Solutions Products General Safety Guide and in the corresponding device safety guide or user guide.

You can also search the knowledge base or the PDF files for safety information.
Using the knowledge base

Knowledge base topics are displayed using web browser software such as Microsoft Edge.

Note: If you want to use Microsoft Internet Explorer to display the topics, you might have to allow local files to run active content (scripts and ActiveX controls). For instructions, see the Microsoft user documentation.

Opening the help topic for an area in the VWorks window

![Diagram of VWorks software interface]

To access the context-sensitive help feature:

1. In the main window of the VWorks software, click the help button. The pointer changes to ☰. Notice that the different icons or areas are highlighted as you move the pointer over them.
2. Click an icon or area of interest. The relevant topic or document opens.
Preface
Accessing the user guides

Features in the Knowledge Base window

1. **Contents pane.** Lists all the books and the table of contents of the books.

2. **Search.** Allows you to search the Knowledge Base (all products or selected products) using keywords.

3. **Topic area.** Displays the selected online help topic.

4. **Navigation buttons.** Enable you to navigate through the next or previous topics listed in the Contents tab.

5. **Toolbar buttons:** Enable you to:
   - Expand or collapse all the sections in a topic that has drop-down headings.
   - Print the topic.
   - Send feedback by email for a given topic.
1 About VWorks Plus

This chapter provides an overview of the VWorks Plus software. The topics are:

- "Software architecture and components" on page 2
- "21 CFR Part 11 Compliance" on page 3
- "Workflow for VWorks Plus" on page 4
- "Logging in to Control Panel" on page 5
Software architecture and components

VWorks Plus consists of components of Agilent OpenLab software and VWorks software. All the required software components are installed on a single computer that connects to an Agilent automation device or workstation.

VWorks Plus is compliance-enabled software that consists of the following primary components:

- Agilent OpenLab for VWorks
- Agilent VWorks

The following figure shows the relationships between these components.

![VWorks Plus architecture](image)

**OpenLab for VWorks components**

VWorks Plus uses the following components of the OpenLab software:

- **Control Panel** and **Shared Services**. Control Panel is the user interface for Shared Services, which are set of administrative services. A software administrator uses the Control Panel tools to configure the following:
  - User access management
  - Software licenses
  - Storage
  - Instrument and project settings, including electronic signature levels

- **Content Management** and **Content Browser**. Shared Services uses a secure storage repository, Content Management, to store VWorks files and audit trails. By default, the files are stored at:
  
  `/VWorks Projects/VWorks`

  Note: Unlike previous VWorks versions, the Windows Registry is not used for storing any records, such as labware definitions and device profiles.

  Content Browser is a user interface for Content Management. A software administrator can use Content Browser to view and edit the VWorks project structure and contents in the Content Management Repository. For example, if the current version of a VWorks file is corrupted or has been tampered, the administrator can restore a previous version of the file using the Content Browser.
VWorks component

The VWorks component provides the instrument control for the automation devices. The software provides the tools to create labware definitions and liquid classes, set up your devices, create device profiles, and create and run protocols.

The VWorks software logs audit trails for records of interest, tracks records by record state (In Development, In Validation, and Released), and performs tamper detection on the records. The software enables electronic signatures to transition records from each record state.

21 CFR Part 11 Compliance

VWorks Plus provides the following features to enable compliance with the FDA rules and guidelines for compliant electronic records and computerized systems:

- **Data security.** Physical protection of data by limiting access to the system and preventing unauthorized access.
- **Data integrity.** Protecting raw data and metadata and preventing these from unauthorized modification, and linking raw data and results to reproduce the original results at any time, for example, in an audit situation, and document each new result copy.
- **Audit traceability.** Documenting who did what to the results and when.

The following table lists the specific features.

<table>
<thead>
<tr>
<th>Table</th>
<th>Features that support compliance with 21 CFR Part 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feature</td>
<td>Description</td>
</tr>
<tr>
<td>Authentication, security policy, and user management</td>
<td>Prevents unauthorized access and unauthorized modification of records of interest. The Control Panel enables management of user access.</td>
</tr>
<tr>
<td>Content Management</td>
<td>Securely stores records of interest and audit logs.</td>
</tr>
<tr>
<td>Control Panel system activity log</td>
<td>Records events that occur during an OpenLab Control Panel session, for example, logging in, updates to users, groups or roles, updates to licenses, and so forth.</td>
</tr>
<tr>
<td>Backup and restore procedures</td>
<td>Required for disaster recovery planning to ensure data security.</td>
</tr>
<tr>
<td>Audit trails and reports</td>
<td>Provides audit traceability for records of interest, documenting who did what and when. The VWorks software provides tracking based on record states.</td>
</tr>
<tr>
<td>Record state tracking and version control</td>
<td>Tracks records that transition through development, validation and released states to ensure record integrity and traceability.</td>
</tr>
</tbody>
</table>
### Workflow for VWorks Plus

The following table provides an overall software workflow and shows which user roles may perform each task. The table has two sections:

- Tasks to initially configure the system after installation
- Ongoing tasks

<table>
<thead>
<tr>
<th>Step</th>
<th>Task</th>
<th>Role</th>
<th>See ...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial configuration and set up</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>In OpenLab Control Panel, do the following:</td>
<td>System Administrator (Everything role)</td>
<td>“Licensing the software” on page 7</td>
</tr>
<tr>
<td></td>
<td>• Install and manage software licenses.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Configure and manage user access to the software.</td>
<td>System Administrator</td>
<td>“Configuring the software” on page 13</td>
</tr>
<tr>
<td></td>
<td>• Configure project settings, including audit trail comments and electronic signature levels.</td>
<td>System Administrator or VWorks Administrator</td>
<td>“Configuring VWorks project settings” on page 28</td>
</tr>
<tr>
<td></td>
<td>• Configure instrument (VWorks computer) and create VWorks desktop shortcut.</td>
<td>System Administrator or VWorks Administrator</td>
<td>“Configuring an instrument” on page 36</td>
</tr>
<tr>
<td>2</td>
<td>Set up the VWorks software:</td>
<td>VWorks Administrator</td>
<td>VWorks Automation Control Setup Guide</td>
</tr>
<tr>
<td></td>
<td>• In VWorks, configure the compliance features, including, audit trail options and E-Signatures database setup.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• If applicable, migrate protocols from earlier VWorks versions.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
To log in to the Control Panel:

1. To start the Control Panel, click [Cp] on the Windows desktop. Alternatively, you can click All apps > Agilent Technologies > Control Panel.

2. In the Login window, enter your Login (user name) and password.
   If this is the first time to log in to Control Panel after installing the software, enter the following:
   • Login: admin
   • Password: openlab
   
   Note: After installing the software license, you will configure user accounts in Control Panel and change the password for this login.
The Control Panel window opens.
2 Licensing the software

This chapter describes how to obtain your software license. The topics are:

- "About software licensing" on page 8
- "About the Control Panel Licenses page" on page 8
- "Workflow for software licensing" on page 9
- "Prerequisites for getting a license" on page 9
- "Getting a license" on page 10
- "Installing your license" on page 11
About software licensing

About trial licenses

A trial license for the software allows you to run it for 60 days after the installation. In order to run the software after the 60-day period, you must install your license file.

License file

A license file contains your software license. You generate and download the license file in SubscribeNet. This file will be installed on the computer where the VWorks software is installed. The license file is bound to this computer, and cannot be moved to another computer without regenerating the license in SubscribeNet.

About the Control Panel Licenses page

The following figure shows the Licenses page in Control Panel.

To view the Licenses page:

1. If you have not already done so, log in to Control Panel. For details, see "Logging in to Control Panel" on page 5.
2. In the Control Panel navigation pane, click **Administration > Licenses** to display the Licenses page.

The ribbon at the top of the page includes the following controls that you can use to manage your software licenses:

- **Add License** and **Remove License**. Allows you to install and uninstall license files.
- **Copy MAC Address**. Copies the MAC address of the license server.
• **Save MAC Address.** Saves the MAC address of the license server to a text file (.txt) at the specified location.

• **Get License.** Links to the Agilent SubscribeNet Electronic Software and License Delivery web page, where you can obtain a license.

• **Change Server.** Not applicable. This feature is for systems that have a license server on a separate computer from the client software.

---

**Workflow for software licensing**

<table>
<thead>
<tr>
<th>Step</th>
<th>For this task...</th>
<th>See...</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Make sure you have met the prerequisites for getting a license.</td>
<td>“Prerequisites for getting a license” on page 9</td>
</tr>
<tr>
<td>2</td>
<td>Generate and download your license.</td>
<td>“Getting a license” on page 10</td>
</tr>
<tr>
<td>3</td>
<td>Install your license using Control Panel.</td>
<td>“Installing your license” on page 11</td>
</tr>
<tr>
<td>4</td>
<td>Restart the computer for the license to have an immediate effect.</td>
<td>–</td>
</tr>
</tbody>
</table>

---

**Prerequisites for getting a license**

**License prerequisites**

To generate, download, and install a license for your product, you will need:

- The authorization code label provided in the envelope containing your Software Entitlement Certificate.
  
  If you have not received an envelope for your product, contact your vendor or internal support.

- The URL for SubscribeNet from the Software Entitlement Certificate.

- The name of the computer (local host) where the VWorks software and the OpenLab components are running.

  *Note: If any changes are made to the computer name or domain reference after the license is installed, remove the license. A new license will need to be created in SubscribeNet, downloaded, and installed.*

- The MAC address. See the following procedure to retrieve the MAC address.

  *Note: If the network adapter that provides the MAC address used during license creation is removed from the computer, your license will no longer be valid. A new license will need to be generated with a currently available MAC on the license server.*
Retrieving your MAC address

To retrieve your MAC address:
1. In the Control Panel navigation pane, click Administration > Licenses.
2. Use the Copy MAC Address or Save MAC Address to obtain the MAC address for license generation.

Getting a license

This section describes how to generate and download your license in SubscribeNet.

- If you are a new user who has not registered with SubscribeNet, see “New SubscribeNet users” on page 10.
- If you have registered with SubscribeNet, go to “Users registered with SubscribeNet” on page 11.

New SubscribeNet users

To generate and download your license:
1. Go to https://agilent.subscribenet.com/control/agil/AgilRegisterToAccount to register the product with SubscribeNet.
   Note: If the computer where the VWorks software and the OpenLab components are installed is connected to the Internet, you can connect to this site from the Control Panel Licenses page.
2. On the registration page, enter the authorization code from the label and complete the profile information.
   Note: Required fields are marked with an asterisk (*).
   The email address you enter will become your login ID.
3. Click Submit. The system will generate and display an account name for you. SubscribeNet will send a welcome email with your login ID and password.
4 Log in to SubscribeNet using your login ID and password. 
   Note: Once you log in, you can use the online user manual link for help with any 
   questions you have.
5 Select Generate or View licenses from the left navigation bar.
6 Follow the prompts to generate your new license. 
   You will be prompted for the HOST NAME of the computer and the MAC address. 
   The host name you enter must match with the network name of the computer 
   where the VWorks Control Panel is running. Do not include any DNS suffix 
   (domain.com) references in the entered computer name.
7 When the system generates the license, view its details, and then click Download 
   License File. Save the license file to your computer and to a backup location, such 
   as a portable storage device.
   Use your login ID and password when you revisit the Agilent SubscribeNet site to 
   regenerate a license file, add new authorization codes, or further configure the 
   license for your system.

Users registered with SubscribeNet

To generate and download your license:
1 If you already have a SubscribeNet account, go to 
   https://agilent.subscribenet.com/
   Note: If you lost your SubscribeNet password, go to 
   https://agilent.subscribenet.com/control/agil/password to have it emailed to you.
2 Select the SubscribeNet account associated with this authorization code.
3 From the SubscribeNet navigation pane, select Register Authorization Code.
   This will allow you to enter your new authorization code and make available the 
   new license entitlements.
4 Follow step 5 through step 7 in the previous procedure (“New SubscribeNet users” 
   on page 10) to generate or view your new licenses.

Installing your license

You add the license to your system using Control Panel (OpenLab component).

To install your license:
1 If you have not already done so, log in to Control Panel. For details, see 
   “Logging in to Control Panel” on page 5.
2 In navigation pane, click Administration > Licenses.
3 In the ribbon, click Add License.
In the Add Licenses dialog box, select one of the following:

- **Select a license file**. Browse to and open the license file (.lic) saved from the license generation process in SubscribeNet.
- **Paste the contents of a license file**. Copy the license text from a text file and paste the copy in the provided field.

5 Click **OK**. The Licenses page in the Control Panel displays the status of installed licenses.

**IMPORTANT**

Restart the computer for the license to have an immediate effect.
3 Configuring the software

This chapter describes how to use Control Panel to configure the Shared Services for VWorks Plus.

The topics are:

- "Configuring authentication" on page 14
- "Configuring the security policy" on page 17
- "Configuring users, groups, and roles" on page 18
- "Configuring VWorks project settings" on page 28
- "Configuring an instrument" on page 36
- "Creating a VWorks desktop shortcut and launching VWorks" on page 40
- "Configuring the email server" on page 43
- "About configuring automation devices in VWorks" on page 42

Note: The Control Panel System Activity Log provides a record of the activities during each Control Panel session. For details, see "System Activity Log" on page 56.
Configuring authentication

VWorks Plus supports either Internal or Windows Domain as authentication providers. After the software installation, internal authentication is configured by default.

**IMPORTANT**
Changing the Control Panel authentication setting from Internal (default) to Windows Domain will erase any existing users and user groups. You should reinstall the VWorks software after changing the authentication setting to Windows Domain. Installing the VWorks software automatically recreates the predefined VWorks groups.

### Authentication options

**Internal (default)**
The Internal option uses OpenLab components of the VWorks Plus software to perform the authentication. You create the users and manage user access in the Control Panel, and Shared Services provides the user authentication.

Internal authentication is the only mode in which you can create new users within the OpenLab Control Panel. If you want to use internal authentication, you can proceed to “Setting the security policy parameters” on page 17.

**Windows Domain**
The Windows Domain option uses Microsoft Windows to perform the user authentication. You import the users and groups that exist in the active Windows directory into OpenLab Control Panel and then assign them to the appropriate VWorks groups or roles.

<table>
<thead>
<tr>
<th>Table</th>
<th>Workflow for Windows Domain authentication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step</td>
<td>For this task...</td>
</tr>
<tr>
<td>1</td>
<td>In OpenLab Control Panel, configure Windows Domain authentication.</td>
</tr>
<tr>
<td>2</td>
<td>Install or re-install the VWorks 14.1 software component to automatically publish the predefined VWorks user groups and roles.</td>
</tr>
<tr>
<td>3</td>
<td>In Microsoft Windows, create users and user groups and configure the Security Policy.</td>
</tr>
<tr>
<td>4</td>
<td>In OpenLab Control Panel, set up the users and user groups:</td>
</tr>
<tr>
<td></td>
<td>a Import the Windows users and user groups from Windows Domain.</td>
</tr>
<tr>
<td></td>
<td>b Assign the imported users to predefined VWorks groups. This automatically grants the appropriate instrument and project privileges.</td>
</tr>
<tr>
<td></td>
<td>c Assign any imported Windows groups to predefined VWorks roles, and also assign the appropriate instrument and project privileges.</td>
</tr>
</tbody>
</table>
Configuring Windows Domain authentication

Make sure you install or reinstall VWorks after configuring Windows Domain authentication. The VWorks installer automatically installs a predefined set of VWorks groups that contain all the required privileges for using the VWorks software.

To configure Windows Domain authentication:

1. If you have not already done so, log in to the Control Panel.
2. In the System Configuration page, click Edit System Settings in the top-left corner of the ribbon. The Edit System Settings dialog box opens.
3. Select the authentication provider Windows Domain from the list, and then click Next.

Do not change the storage type. The storage type is determined automatically based on the VWorks edition for which you have a license.

4. In the Edit System Settings dialog box, select the Windows Domain check box, click Next, and then confirm your settings.
   When complete, the Control Panel will restart.
5 Run the Agilent VWorks 14.1 installer to re-install the VWorks software. This will republish the predefined VWorks groups. The VWorks groups have all the roles and privileges required to run the VWorks software.

Note: For instructions on running the VWorks 14.1 installer, see the VWorks Automation Control 14.1 Installation Guide.
Configuring the security policy

To comply with specific standards (for example, 21 CFR Part 11), adjust the security policy as required.

- **Internal authentication.** You can set all security policy parameters in the Control Panel (OpenLab component) using the following procedure.

- **Windows Domain authentication.** You can set only the inactivity time in the Control Panel. All other parameters are defined by the Windows operating system. See the Microsoft Knowledge Base for instructions.

**IMPORTANT**

Ensure that your security policy is configured to comply with specific standards, for example, 21 CFR Part 11.

Setting the security policy parameters

_To configure the security policy in Control Panel:_

1. If you have not already done so, log in to the Control Panel.
2. In the Control Panel navigation pane, click **Administration > Security Policy.**
3. In the ribbon, click **Edit Security Policy.**
4. Edit the settings per your requirements, and then click **OK.**
5. When the restart message appears, restart Control Panel to ensure that any changes take effect.
Configuring users, groups, and roles

This section contains the following topics:

- "User groups and roles" on page 18
- "Workflow for configuring users and groups" on page 20
- "Creating a user (internal authentication)" on page 21
- "Importing Windows users (Domain authentication only)" on page 22
- "Importing Windows user groups (Domain authentication only)" on page 23
- "Assigning imported groups to roles (Domain authentication only)" on page 24
- "Changing a password (Internal authentication only)" on page 26
- "Removing users" on page 27

User groups and roles

System administrator

You configure a system administrator account in the Control Panel with all privileges (Everything role) before setting up other users. This administrator account is for a superuser who has access privileges to everything in the software.

Agilent recommends having a primary and a backup for these roles to ensure coverage in the event that the primary administrator is unavailable.

VWorks groups

The most efficient way to assign user privileges is to assign users to the predefined VWorks groups, which are automatically created when the VWorks software is installed. These VWorks groups, listed in the following table, are already associated with the corresponding VWorks roles, plus all the project and instrument privileges required to run the VWorks software.

VWorks roles

The VWorks roles listed in the table are automatically created when the VWorks software is installed. Each role defines what the users assigned with the role are allowed to view or do.

IMPORTANT

To log in to the VWorks software, you must have a role of VWorks Administrator, VWorks Technician, VWorks Operator, or VWorks Guest. In addition, privileges for an instrument and project are required.
### 3 Configuring the software

#### Configuring users, groups, and roles

<table>
<thead>
<tr>
<th>Groups</th>
<th>Roles and privileges</th>
</tr>
</thead>
<tbody>
<tr>
<td>VWorks Administrators</td>
<td><strong>VWorks Administrator role</strong></td>
</tr>
<tr>
<td></td>
<td>• Log in and log out of Control Panel and VWorks.</td>
</tr>
<tr>
<td></td>
<td>• View and manage projects or project groups</td>
</tr>
<tr>
<td></td>
<td>• Edit project content, including deleting content</td>
</tr>
<tr>
<td></td>
<td>• Manage project group access</td>
</tr>
<tr>
<td></td>
<td>• E-sign records and revoke signatures for records</td>
</tr>
<tr>
<td></td>
<td>• VWorks Administrator privileges in VWorks to</td>
</tr>
<tr>
<td></td>
<td>– Run a protocol that contains compiler errors.</td>
</tr>
<tr>
<td></td>
<td>– Delete development state records of interest.</td>
</tr>
<tr>
<td></td>
<td>– Perform all the functions of VWorks Technicians.</td>
</tr>
<tr>
<td>Instrument Administrator role</td>
<td><strong>VWorks Technician role</strong></td>
</tr>
<tr>
<td></td>
<td>• Log in and log out of Control Panel and VWorks.</td>
</tr>
<tr>
<td></td>
<td>• View projects or project groups</td>
</tr>
<tr>
<td></td>
<td>• Edit project content</td>
</tr>
<tr>
<td></td>
<td>• E-sign records and revoke signatures for records</td>
</tr>
<tr>
<td></td>
<td>• VWorks Technician privileges in VWorks to</td>
</tr>
<tr>
<td></td>
<td>– Perform all functions listed in the VWorks Tools menu.</td>
</tr>
<tr>
<td></td>
<td>– Create and save protocols.</td>
</tr>
<tr>
<td></td>
<td>– Create and edit devices using the device manager.</td>
</tr>
<tr>
<td></td>
<td>– Perform all the functions of VWorks Operators.</td>
</tr>
<tr>
<td>Instrument User role</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VWorks Technicians</th>
<th>VWorks Technician role</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Log in and log out of Control Panel and VWorks.</td>
</tr>
<tr>
<td></td>
<td>• View projects or project groups</td>
</tr>
<tr>
<td></td>
<td>• Edit project content</td>
</tr>
<tr>
<td></td>
<td>• E-sign records and revoke signatures for records</td>
</tr>
<tr>
<td></td>
<td>• VWorks Technician privileges in VWorks to</td>
</tr>
<tr>
<td></td>
<td>– Perform all functions listed in the VWorks Tools menu.</td>
</tr>
<tr>
<td></td>
<td>– Create and save protocols.</td>
</tr>
<tr>
<td></td>
<td>– Create and edit devices using the device manager.</td>
</tr>
<tr>
<td></td>
<td>– Perform all the functions of VWorks Operators.</td>
</tr>
<tr>
<td>Instrument Administrator role</td>
<td><strong>VWorks Operator role</strong></td>
</tr>
<tr>
<td></td>
<td>• Log in and log out of Control Panel and VWorks.</td>
</tr>
<tr>
<td></td>
<td>• View projects or project groups</td>
</tr>
<tr>
<td></td>
<td>• Edit project content</td>
</tr>
<tr>
<td></td>
<td>• E-sign records and revoke signatures for records</td>
</tr>
<tr>
<td></td>
<td>• VWorks Operator privileges in VWorks to</td>
</tr>
<tr>
<td></td>
<td>– Run protocols.</td>
</tr>
<tr>
<td></td>
<td>– Operate devices using diagnostics software.</td>
</tr>
<tr>
<td></td>
<td>– Access the VWorks Knowledge Base through the Help menu.</td>
</tr>
<tr>
<td></td>
<td>– Use context-sensitive help.</td>
</tr>
<tr>
<td>Instrument User role</td>
<td></td>
</tr>
</tbody>
</table>
### 3 Configuring the software

#### Configuring users, groups, and roles

**Groups**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Roles and privileges</th>
</tr>
</thead>
<tbody>
<tr>
<td>VWorks Guest</td>
<td>VWorks Guest role</td>
</tr>
<tr>
<td></td>
<td>• Log in and log out of Control Panel and VWorks.</td>
</tr>
<tr>
<td></td>
<td>• VWorks Guest privileges:</td>
</tr>
<tr>
<td></td>
<td>• Log in and log out of VWorks.</td>
</tr>
<tr>
<td></td>
<td>• Access the VWorks Knowledge Base through the Help menu.</td>
</tr>
<tr>
<td></td>
<td>• Use context-sensitive help.</td>
</tr>
</tbody>
</table>

The effect of privileges:

- If you do not have the privilege to perform a function associated with a particular menu command, the text of the command is gray.
- If you do not have the privilege to perform the functions accessed from a particular tabbed page, the tab is not visible to you.
- In some cases, if you do not have the privilege to perform an operation, when you attempt the operation you get an error message telling you that your privileges are insufficient.

**Workflow for configuring users and groups**

To create the required VWorks users:

- **Internal authentication.** You create the required users in the OpenLab Control Panel and add them to one of the VWorks groups with predefined roles. See "Creating a user (internal authentication)" on page 21.

- **Windows domain authentication.** You import the Windows domain users into Control Panel Control Panel using the following procedures:
  - "Importing Windows users (Domain authentication only)" on page 22
  - "Importing Windows user groups (Domain authentication only)" on page 23. and "Assigning imported groups to roles (Domain authentication only)" on page 24
Creating a user (internal authentication)

Use this procedure if your system uses internal authentication.

To create a new user:

1. If you have not already done so, log in to the Control Panel.
2. In the Control Panel navigation pane, click Administration > Users. The Users page appears, which displays the current list of users that have been assigned to VWorks groups.
3. In the ribbon, click Create User. The Create User dialog box opens.
4. Enter a Name (ID) and Description for the user.
5. In the General tab, enter a Password for the user and Confirm password. Note: The password length and expiration period is set under the Security policy.
6. Optional. Enter the user’s Full name, Email, and Contact Information. The full name is used in activity log entries and the welcome message at the lower right of the Control Panel.
7. Select the password options:
   - Typically, you select User must change password at next logon so that the user can set their password and keep it private.
   - To prevent the user from changing the password assigned here, select User cannot change password.
   - To set the password to never expire, select Password never expires.
   Note: To prevent the user from logging in to the VWorks software, select Account is disabled.
8. Click the Group Membership tab, select the VWorks group for this user, and click OK.
3 Configuring the software
Configuring users, groups, and roles

These predefined groups correspond to the predefined VWorks groups. For details, see “User groups and roles” on page 18.

Importing Windows users (Domain authentication only)

If you are using Windows Domain as the authentication provider, you can import users into the Control Panel and assign them to a predefined VWorks group using the following procedure.

Note: The computer must be connected to the server of the company network to import Windows users.

To import Windows users and assign them to groups:

1 In the Control Panel navigation pane, click Administration > Users. The Users page appears and displays the current list of users that have been assigned to VWorks groups.

2 In the ribbon, click Import.

3 In the Search Users dialog box, type the search string for the user name.

4 In the Search Results list, select the user you want to import, and click Add. The user is added to the Selected Users list.

5 Repeat steps 2 through 4 until you have added all the user names that you want to import, and then click OK.
6 In the Control Panel navigation pane, click Administration > Groups. The Groups page appears.

7 Select one of the four predefined VWorks Groups, and then click Edit Group on the ribbon. The Edit Group dialog box opens.

8 In the Users tab, select the check box of the user to be assigned to this group, and then click OK.

**IMPORTANT**
Do not change the roles for the predefined VWorks groups. The VWorks software requires one of the following roles: VWorks Administrator, VWorks Technician, VWorks Operator, or VWorks Guest.

**Importing Windows user groups (Domain authentication only)**

If you use Windows Domain as the authentication provider, you can import user groups from the active Windows directory. After you import the groups, you assign the groups to one of the VWorks roles.

**To import a Windows user group:**
1 In the Control Panel navigation pane, click Administration > Groups.
2 In the ribbon, click Import.
3 In the Search Groups dialog box, type the search string for the group name.
4 In the Search Results list, select the group you want to import, and click Add. The group is added to the Selected Groups list.
5 Click OK.
Assign each imported user group to a predefined VWorks role using the following procedure.

Assigning imported groups to roles (Domain authentication only)

Use the following procedure to assign VWorks roles to imported user groups.

To assign roles to an imported Windows group:

1. In the Control Panel navigation pane, click Administration > Roles. The Roles page appears.
2. Select one of the following predefined VWorks roles for the group:
   - VWorks Administrator
   - VWorks Technician
   - VWorks Operator
   - VWorks Guest

For a description of the role privileges, see "User groups and roles" on page 18.

3. In the ribbon, click Edit Role. The Edit Role dialog box opens.
4 In the Members tab, click Add user or group. The Search Users and Groups dialog box opens.

5 Type the user name in the Enter search string box, and click Search.

6 In the Search results box, select the name and click Add.

7 Click OK.

8 Repeat this procedure to assign the appropriate instrument roles, listed in the following table, for each VWorks role.

<table>
<thead>
<tr>
<th>VWorks role</th>
<th>Instrument roles</th>
</tr>
</thead>
<tbody>
<tr>
<td>VWorks Administrator</td>
<td>Instrument Administrator</td>
</tr>
<tr>
<td></td>
<td>Instrument User</td>
</tr>
</tbody>
</table>
For imported groups, you will also assign permissions for a given project and a given instrument in subsequent procedures of this guide.

### Changing a password (Internal authentication only)

#### Requirements
You may use the following procedures if:
- Your system is configured for Internal authentication
- You have Everything privileges

*Note:* Users who do not have Everything privileges may log in to change their own password, but they will have limited access to other Control Panel features.

#### Changing your password

*To change your password:*

1. In the Control Panel navigation pane, click **Administration > My Settings**.

2. In the ribbon, click **Change My Password**. The Change My Password dialog box opens.

3. Type the **Old password**, **New password**, and **Confirm new password**.

4. Click **OK**

#### Editing user data and resetting user passwords

*To edit a user’s data and reset their password:*

1. In the Control Panel navigation pane, click **Administration > Users**.

<table>
<thead>
<tr>
<th>VWorks role</th>
<th>Instrument roles</th>
</tr>
</thead>
<tbody>
<tr>
<td>VWorks Technician</td>
<td>Instrument Administrator</td>
</tr>
<tr>
<td></td>
<td>Instrument User</td>
</tr>
<tr>
<td>VWorks Operator</td>
<td>Instrument User</td>
</tr>
<tr>
<td>VWorks Guest</td>
<td>–</td>
</tr>
</tbody>
</table>
2. In the **Users** page, select the user.

3. In the ribbon, click **Edit User**. The Edit User dialog box opens.
   - In the **General** tab, you may change the user password. For example, to reset the user password:
     - Select ***Change password***.
     - Clear the remaining password check boxes, and then select **User must change password at next logon**.
   - In the **Group Membership** tab, you may change the user’s group assignment.
   - In the **Role Membership** tab, you may change the user’s role assignment.

4. Click **OK**.

**Removing users**

*To remove a user:*

1. In the Control Panel navigation pane, click **Administration > Users**.
2. In the **Users** page, select the user.
3. In the ribbon, click **Remove User**.
Configuring VWorks project settings

This section contains the following topics:

- "VWorks project" on page 28
- "Fourth-level folder restriction for legacy ECM servers" on page 28
- "Creating a project (optional)" on page 29
- "Editing the project audit trail settings" on page 31
- "Editing the project e-signature settings" on page 32
- "Assigning privileges for projects" on page 34

VWorks project

The following VWorks project is configured automatically during the VWorks software installation:

/VWorks Projects/VWorks

The VWorks project folder stores the labware entries, liquid classes, pipetting techniques, device files, protocols, forms, runsets, and other miscellaneous files for your protocols.

No additional projects are required.

Fourth-level folder restriction for legacy ECM servers

By default, VWorks restricts file saving to fourth-level folders in order to maintain compatibility with legacy OpenLab ECM 3.x servers. The legacy OpenLab ECM 3.x servers do not allow files to be saved in folders above or below the fourth level. The following figure shows an example:

/VWorks Projects/VWorks/General/Protocols/

An administrator can add additional fourth-level subfolders. For example, you might want to store a subset of protocols in a folder named MyExperiment. You can view the project structure and edit the project folders in the Content Browser.

If compatibility with legacy OpenLab ECM 3.x servers is not required, you can remove the folder restriction. To remove this folder restriction, you change the Restrict file saving to 4th level folders option in the VWorks software. For detailed instructions on setting this option and other VWorks compliance-related options, see the VWorks Automation Control Setup Guide.
Creating a project (optional)

Optionally, you can create additional projects at the same level as /VWorks Projects or as subfolders under /VWorks Projects. For example, if the users of the VWorks computer workstation are working on different VWorks projects, you can create an additional projects using the following procedure.

To create a project:

1. In the Control Panel navigation pane, click Projects.
2. In the Projects page select one of the following:
   - Projects. To create a project at the same level as /VWorks Projects.
   - VWorks Projects. To create a project under /VWorks Projects.
3. Click Create in the ribbon, and then click Create Project or click Create Project Group.
   Note: A project group is a collection of projects, for example, VWorks Projects is a project group that contains the VWorks project.
4. Specify the following in the Properties tab.
### Configuring VWorks project settings

5. Click **OK** to save the project.

6. In the **VWorks Workstation** tab, edit the project audit trail settings using the following procedure.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Type the name of the project.</td>
</tr>
<tr>
<td>Project folder path</td>
<td><strong>Click Browse</strong> to specify the path. In the Select Project Folder dialog box, specify the folder. The folder path must be at the root level of the Shared Services storage repository, for example, Content Management for VWorks Plus.</td>
</tr>
<tr>
<td>Description</td>
<td><em>Optional.</em> Type any comments about this instrument.</td>
</tr>
<tr>
<td>Application</td>
<td>Select the <strong>VWorks Workstation</strong> check box.</td>
</tr>
</tbody>
</table>
7 Edit the project signature level settings. See “Editing the project e-signature settings” on page 32.

Editing the project audit trail settings

The VWorks software can prompt for an audit comment when a user changes a record of interest. If you plan to use audit trails in the VWorks software, ensure that you specify the audit comment settings using the following procedure.

For details on records of interest and how to use the audit trails, see the VWorks Automation Control Setup Guide.

To edit the VWorks project audit trail settings:

1 In the Projects page, select the VWorks project.
2 Click Edit Project in the ribbon. In the Edit VWorks page, click the VWorks Workstation tab.
3 To enter the audit comments that a user can select in the VWorks software:
   a In the Reason to be added box, type the comment, and then click Add.
   b Repeat step a to added additional comments.
   c To edit the list of reasons, use the Delete, Move Up, and Move Down buttons.
4 Select the Prompt for reason when saving check box.
5 If applicable. Select the Allow users to type their own reason check box.

The List of reasons includes only the reasons that an administrator enters in the VWorks Workstation tab for the project. The software does not add the reasons that users are allowed to type to this list.
3 Configuring the software
Configuring VWorks project settings

Editing the project e-signature settings

The VWorks software can prompt for a signature to transition a record of interest from one state to another. If the Experiments database is configured, the software also prompts for a signature when closing an Experiment ID.

If you plan to use the electronic signature service in the VWorks software, ensure that you set the signature levels using the following procedure. A user may only revoke the electronic signature of a record if no one with a higher signing authority has signed it.

For details on how to establish a connection to the electronic signature database, see the VWorks Automation Control Setup Guide.

IMPORTANT

The Sign File feature that is available when you use the Content Browser is not supported in the VWorks software. To ensure proper tracking of signatures for VWorks records, only use the VWorks e-signatures feature.

To set signature levels:

1. In the Projects page, select the project, for example, VWorks.
2. In the ribbon, click Edit Signature Settings. The Edit Signature Settings dialog box opens.
3. In the Levels tab, set the levels:
   a. Choose the desired value from the Select the highest signature level for this project list.
   b. Optional. Edit the description of each level to reflect the names used in your project.

Note: In this case, the Author is the user who initiates the record transition or closing of an experiment ID. An Author can only sign if the Enforce signature order check box is selected and the signature levels include Author.

4. To specify the order of signatures, do one of the following:
   • If you want users to sign in any order, clear the Enforce signature order check box and continue to step 5.
   • If you want to enforce a defined order of signatures for the project, select Enforce signature order, and then define the order:
     – Click Add.
     – Select the signature Level and Meaning for each added step. Multiple signature levels can be added to each step.
• To edit the available options in the **Meanings**, click the **Meanings** tab.

Note: In the VWorks software, the **Lock results on signing** option is not valid. VWorks uses record states to lock records of interest.

5 If the **Enforce signature order** check box is cleared and you want to allow users at the same signature level to sign, select the **Allow same level signatures** check box.

6 Assign the users or groups to the signature levels:
   a Click the **Users/Groups** tab.
   b For each user or user group, double-click the corresponding entry under **Level**, and then select the signature level from the list.

7 Click **OK**.
Assigning privileges for projects

By default, the roles of users or user groups are globally set for all project groups and projects. The role settings are inherited from the root node *Projects*.

- If users are assigned to one of the predefined VWorks groups, the project privileges are already set globally. No additional project privileges are required.
- If users are part of an imported Windows group, perform the following procedure to assign global project privileges for the group.

**To assign global project privileges for an imported group:**

1. In the *Projects* page select the *Projects* icon in the navigation pane, as the following figure shows.
2. In the ribbon, click *Edit Privileges*. The Edit Privileges dialog box opens.

3. In the *Edit Privileges* dialog box, click *Add User or Group*. The Search Users and Groups dialog box opens.
4 Use the **Search Users and Groups** dialog box to add the groups for the projects. Click **OK** after you finish adding groups.

5 Click **OK** to close the Edit Privileges dialog box.
If you have multiple projects, you may assign specific users or user groups to each project or project group using the following procedure.

**To assign privileges for a specific project:**

1 In the **Projects** page, select the relevant project in the navigation pane, and then click **Edit Privileges** in the ribbon.

2 In the **Edit Privileges** dialog box, clear the **Inherit privileges from parent** check box. Click **Remove** in the confirmation message.

3 In the **Edit Privileges** dialog box, click **Add User or Group**.

4 In the **Search Users and Groups** dialog box, locate and add the users or groups for the given project. Click **OK** after you finish adding groups.
Configuring an instrument

Instrument defined

In the context of OpenLab for VWorks, an instrument is either the VWorks computer that is physically connected to an automation device, such as the Bravo Platform, or the VWorks computer that is used for creating protocols, which is not necessarily connected to an automation device.

A configured instrument and project are required to log in to the VWorks software. Typically, only one instrument is configured in OpenLab Control Panel for the VWorks software. The instrument is created and configured automatically during the VWorks installation. No additional instrument configuration is required in Control Panel for the VWorks software.

Editing instrument properties

You can use the following procedure if you want to edit the instrument properties, for example, to change the instrument name.

To edit instrument properties in Control Panel:

1. In the Control Panel, click **Instruments** in the navigation pane to display the Instruments page.
2. Select the instrument in the navigation pane, and then click **Edit Instrument**.
3. On the **Edit** page, set the following properties.
### Property | Description
--- | ---
Name | By default, the software uses the computer name. You can type a different name for the instrument. For example, if this computer controls a Bravo Platform, you might type Bravo.
**Note:** When you create a VWorks desktop shortcut, this name is used as the shortcut label.
Description | Optional. Type any comments about this instrument.
Application | VWorks Workstation (This value is fixed.)
Instrument controller | Computer name (This value is fixed.)
Instrument type | VWorksInstrDriver
Contact | Optional. Type the name or title of the contact for this instrument.
3 Configuring the software
Configuring an instrument

About configuring an instrument

When you install the VWorks software, an instrument is created and configured automatically using the name of the computer as the instrument name. No additional instrument configuration is required in Control Panel. However, if you create an additional instrument, it must be configured before it is available for use.

To configure an instrument

1. In the Control Panel Instruments page, select the instrument in the navigation pane, and click Configure Instrument in the ribbon.

2. In the VWorks Instrument Configuration dialog box, type the name of the Workstation Folder, for example, Workstation.

   The Workstation Folder stores the VWorks global option settings, the device profiles, the log activity files, and so forth that are specific to this VWorks instrument.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default project</td>
<td>Click the browse button ( ) and select a project in the Select Project dialog box, for example, VWorks Projects/ VWorks.</td>
</tr>
<tr>
<td>Always use Default project</td>
<td>Select the check box to prevent users from storing data for this instrument to a different project folder.</td>
</tr>
</tbody>
</table>
Assigning instrument privileges to imported user groups (Windows Domain)

By default, the roles of users or user groups are globally set for all instruments. The role settings are inherited from the root node **Instruments**.

- If users are assigned to one of the predefined VWorks groups, the instrument privileges are already set globally. No additional instrument privileges are required.
- If users are part of an imported Windows group, perform the following procedure to assign global instrument privileges for the group.

**To assign instrument privileges for imported user groups:**

1. In the **Instruments** page select the **Instruments** icon in the navigation pane, as the following figure shows.

2. In the ribbon, click **Edit Privileges**. The Edit Privileges dialog box opens.

3. In the **Edit Privileges** dialog box, click **Add User or Group**. The Search Users and Groups dialog box opens.
Creating a VWorks desktop shortcut and launching VWorks

The VWorks installer automatically places a VWorks shortcut on the Windows desktop. This shortcut specifies the default instrument and project when starting the VWorks software. If you have additional VWorks projects, you can use the following procedure to create additional shortcuts.

Creating a VWorks desktop shortcut

To create a VWorks desktop shortcut:

1. In the Control Panel, click Instruments to display the Instruments page.
2. Select the instrument in the navigation pane. The corresponding instrument information appears in the Instrument page.
3. If you want to create this shortcut for a specific instrument-project combination, select the Project.
   Note: If the Instrument properties specify the Always use Default project option, the project selection is already set.
   If the shortcut does not include the project selection, the software will prompt for a project selection each time the shortcut is used.
4. In the ribbon, click Create VWorks Desktop Shortcuts.
3 Configuring the software

Creating a VWorks desktop shortcut and launching VWorks

5 Notice that two shortcuts appear, one labeled online and the other offline. Delete the offline shortcut, which is not relevant to VWorks.

6 Click the online shortcut to start the VWorks software, the Control Panel login window appears.

After you enter your login credentials, the VWorks software opens. If the shortcut does not include the project, the software prompts for the project selection before the VWorks software opens.

Launching VWorks from the Instruments page

If you are already logged in to the Control Panel, you are not prompted for login credentials when you start VWorks from the Instruments page using the Launch button.

To launch VWorks from the Control Panel:

1 In the Instruments page, select the instrument.

2 Under Start Instrument, select the Project, and then click Launch.
3 Configuring the software
About configuring automation devices in VWorks

Note: If the Instrument properties specify the Always use Default project option, the project selection is already set.
The VWorks software opens.

About configuring automation devices in VWorks

To communicate with and to control automation devices, the VWorks software uses a device file, which contains the relevant devices. A device can be a robot (for example, automated liquid handler or microplate handler) or a location on the lab automation workstation that can hold a piece of labware. The following are examples of devices:

• BenchCel Microplate Handler
• Bravo Platform
• PlateLoc Sealer
• Microplate Labeler
• Labware MiniHub
• Platepad
• Waste Bin

For details on how to configure VWorks devices, see the VWorks Automation Control User Guide in the VWorks Knowledge Base.
Configuring the email server

If you want to allow the VWorks software to send email notifications, for example, when a run error occurs, the Control Panel must be connected to an email server.

Requirements

Work with your IT organization to meet these requirements.

- The computer running the VWorks software must be able to communicate with your outgoing email server (SMTP server). The email server settings must be configured in the Control Panel.
- After connecting to an email server in the Control Panel, you must also enable email notifications in the VWorks software Options dialog box. For details, see the VWorks Automation Control User Guide.

Procedure

To connect an email server to the Control Panel:

1. In the Control Panel Administration page, select System Configuration in the navigation pane, and then click Edit Email Server in the ribbon.

2. In the Edit Email Server dialog box, set the following properties.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>From Address</td>
<td>The name of a valid email account on your mail server that will be used to send the notifications.</td>
</tr>
<tr>
<td>Host</td>
<td>The URL of the mail server.</td>
</tr>
<tr>
<td>Port</td>
<td>The TCP port used for outgoing mail.</td>
</tr>
<tr>
<td>Authorization</td>
<td>The option to specify that authorization is required.</td>
</tr>
<tr>
<td>TLS</td>
<td>Transfer Layer Security connection.</td>
</tr>
<tr>
<td>User Name</td>
<td>If authorization is required, the user name.</td>
</tr>
</tbody>
</table>
### Property Description

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Password</td>
<td>If authorization is required, the password.</td>
</tr>
</tbody>
</table>

3. To send a test message, click **Test**. Enter an email address of a potential recipient and message, and then click **Send**.

4. Click **OK**.
4 Using Content Browser

This chapter provides an overview of Content Browser for VWorks Plus.

The topics are:

- “Viewing the project structure” on page 46
- “Editing the project structure” on page 47
- “Restoring a previous version of a record” on page 49
- “Viewing the Content Browser Activity Log” on page 51
- “Using Content Browser Help system” on page 52

**IMPORTANT**

The Sign File feature that is available when you use the Content Browser is not supported in the VWorks software. To ensure proper tracking of signatures for VWorks records, only use the VWorks e-signatures feature.
Viewing the project structure

To view the project structure:
1. Click All apps > Agilent Technologies > Content Browser.
2. Log in using your user name and password.
3. In the Content Browser navigation pane, click Repository > Content > VWorks Projects > VWorks to display the project structure.
Editing the project structure

**IMPORTANT**

The VWorks software either restricts or allows file saving at levels other than fourth-level folders based on the option specified in the VWorks Options dialog box. For details on this option, see the *VWorks Automation Control Setup Guide*.

Creating a subfolder in Content Browser

*To create a subfolder in the project structure:*

1. In the Content Browser navigation pane, click **Repository > Content > VWorks Projects > VWorks** to display the project structure.

2. Select the folder to which you want to add a subfolder. For example, in the following figure the Protocols folder is selected.
3 In the ribbon, click **Create > Folder**. The New Folder dialog box opens.

4 Type the information under **New Folder Details**, and then click **Save**. The new folder appears in navigation pane, as the following figure shows.
Restoring a previous version of a record

Each time you save a change to a record of interest in the VWorks software, a new version is uploaded in Content Management. If a record becomes corrupted or is tampered outside of the VWorks software, an administrator may use the following procedure to restore a previous version of the record.

To restore a previous version of a record of interest:

1. In the Content Browser navigation pane, click Repository > Content > VWorks Projects > VWorks to display the project folders. Locate the folder that contains the record of interest.

2. Locate the record and click the record link (.roiZip) to display the File Details page. In the following figure the VWorksOptions.xml.roiZip record is selected.
3 In the File Details page, scroll down to Version History > Older Versions, locate the version to be restored, and then click Download.

4 To upload the downloaded version of the record and use it as the current version, drag-and-drop the downloaded record in the corresponding project folder in the Content Browser. The figure shows the downloaded VWorksOptions.xml.roiZip file being dropped in the Options folder.
A confirmation message appears when the upload is complete. The software increments the version number of the record. For example, if version 7.0 is tampered, and you restore version 6.0, the uploaded record becomes version 8.0.

Viewing the Content Browser Activity Log

You can use the Activity Log in the Content Browser to display an overview of activities that took place during Content Browser sessions.

See the VWorks Automation Control Setup Guide for instructions on how to display an audit trail report for a record. For details on how to view the activity logs for sessions in the VWorks software, see the VWorks Automation Control User Guide.

To view the Activity Log for all items in Content Browser:

1. In Content Browser, click Activity Log in the ribbon.

To view the Activity Log for a record in Content Browser:

1. In the Content Browser navigation pane, click Repository > Content > VWorks Projects > VWorks to display the project folders.
2. Open the folder that contains the record of interest. Select the record and then click Activity Log.
Using Content Browser Help system

*Note:* Not all Content Browser features are available for VWorks users, such as the Sign File feature.

You can use the Help system available from the Content Browser ribbon to view procedures for additional features that are available to a VWorks administrator.

**To use the Content Browser Help system:**

1. In the Content Browser ribbon, click your logon name (*admin*), and then click *Help*.

2. In the Content Management Overview page, click a link to display the corresponding help topic.

3. To display help for a topic not listed on this page, type the topic name in the search box in the top right corner of this help page.
The OpenLab Help & Learning page opens and displays a list of potential matches, as the following figure shows.
This page is intentionally blank.
5 System maintenance

This chapter includes the following topics:

- “Control Panel activity log and administrative reports” on page 56
- “Shared Services Maintenance utility” on page 58
- “Backup and restore procedures” on page 59
- “Performing a backup” on page 60
- “Restoring from a backup” on page 66
- “Routine maintenance” on page 67
Control Panel activity log and administrative reports

This section describes the System Activity Log and Administrative Reports pages in the Control Panel.

For a description of the License page, see “Licensing the software” on page 7. For a description of the authentication provider, security policy, and user management, see “Configuring the software” on page 13.

System Activity Log

Note: For information on activity logs in the VWorks software, see the VWorks Automation Control User Guide.

The System Activity Log contains information on the various events associated with Shared Services. You can filter the list in order to view only events of a specific type, in a specific time range, created by a specific user, or containing a specific description.

The following types of events are recorded:

- System
- Instrument
- Project Management
- User
- Group
- Security
- License

The messages can come from other components, such as the user management, system messages, or event messages. The System Activity Log records these events irrespective of whether you have been alerted to them or not. To get more information on an event, expand the line of interest in the activity logbook viewer.

To display the System Activity Log:

In the Control Panel navigation pane, click Administration > System Activity Log.
Administrative Reports view

In the Administrative Reports view, you can additionally create and export various XML or PDF reports related to the system configuration, including:

- **Instruments Report.** Provides detailed information about configuration and access privileges for all online instruments on the system. Typically, one online instrument is configured for VWorks Plus.

- **Projects Report.** Provides detailed information about configuration and access privileges for all projects on the system.

- **Roles and Privileges Report.** Describes all roles defined on the system, including details of all privileges included in each role.

- **System Report.** Provides a consolidated view of the system, which includes all information about instrument controllers, instruments, projects, roles, users, and groups.

- **User's and Group's Role Assignment Report.** Provides an overview of all users and groups with their assigned roles.

To display the Administrative Reports view:

In the Control Panel navigation pane, click **Administration > Administrative Reports.**
Shared Services Maintenance utility

The Shared Services Maintenance utility is automatically installed with VWorks Plus to help administrators manage the system.

To open the utility:
Select Start > All Apps > Agilent Technologies > Shared Services Maintenance.
A user must have Windows administrator rights to access this utility.

Backup and Restore tab
This tab does not apply to VWorks Plus.

Windows Domain tab
In the Shared Services Maintenance utility, the Windows Domain tab is relevant if you use Windows domain authentication to identify your VWorks Plus users.
VWorks Plus must be given access to the server where these credentials are stored. In the Windows Domain tab, you specify or change the credentials that VWorks Plus will use to access your Windows domain server.
For client/server systems: This feature can only access credentials that are stored on the computer where you launched the Shared Services Maintenance program. To specify or change the Domain, User name, or Password for the Windows account that will be used to access your Windows domain server, use the Shared Services Maintenance utility that is installed on the server.

Server Settings tab
The Server Settings tab can be used to manage different server connections. VWorks Plus typically has only the connection to the local computer.
Backup and restore procedures

The VWorks Plus installation includes Backup and Restore utilities for you to use. Agilent recommends using the Backup and Restore utilities whenever possible. These backups are the only way to restore a VWorks Plus if a hardware or software failure occurs.

Agilent also recommends that you test the restore procedures to ensure that the backups are performed properly, and can be used for a restore. To do an effective restore, ensure that you have a disaster recovery plan.

The backup only reduces the amount of data loss if a catastrophic system failure occurs. Performing backups guarantees that any data that was committed at the time of the backup can be restored. Data that was queued for upload and not yet committed or was added or updated in the system after the backup was performed will not be recoverable by restoring a backup.

VWorks Plus stores files and indexes on your local file system. The location of this folder is determined when the product is installed. Other data, such as folder information, audit trails, and signatures are stored in a database.

A full backup captures a complete set of data, including database and files. An incremental backup contains changes that have occurred since the last full backup. The incremental backup process is faster than the full backup because only the changed elements are backed up.

If you are upgrading VWorks Plus, perform the following procedures on your computer after the upgrade.

Disaster recovery planning

Prepare a recovery plan for the unlikely potential of VWorks Plus becoming inoperable due to a hardware or software failure. This plan must include information and procedures for completely restoring the operating system, the software, and the data. Make sure that the disaster recovery plan has been tested and confirmed to be working.

The Disaster Recovery Plan must include the following:

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer specifications</td>
<td>CPU, memory, and hard disk configuration information</td>
</tr>
<tr>
<td>Computer identity</td>
<td>• Computer name, IP, domain, URI, and so forth</td>
</tr>
<tr>
<td></td>
<td>• Computer administrator information: user name and passwords for logging in to the server</td>
</tr>
<tr>
<td></td>
<td>• If applicable, user names and passwords for the database</td>
</tr>
<tr>
<td>Software</td>
<td>OS version and build</td>
</tr>
</tbody>
</table>
Performing a backup

Ensure the following:

- **Regular backups.** Administrators should perform periodic full backups and differential backups between the full backups. These backups are the only way to restore a system in the event of a hardware or software failure.

- **Tested procedures.** Make sure your disaster recovery plan and restore procedures are tested to confirm that the backups are sufficient to restore your system.

**Performing a backup**

Use the Backup Utility to perform immediate or scheduled backups for supported topologies. The backup captures a complete set of data, including:

- Configuration file
- Databases for Shared Services, Content Management, and Data Repository
- Solr Indexes
- Content and Archive storage locations
- Alfresco cache
- Certificate server

The signatures for completed record transitions and experiment ID closures are also included in the backup. However, the backup does not include signatures for pending record transitions or experiment ID closures.

In addition to running the Backup utility, you use the VWorks software to create backup copies of the following databases:

- Inventory database. You can export the inventory data to create a backup copy.
- Experiments database. To create backup copies, do the following:
  - Export all experiment IDs to a backup file (.expTags file).
  - Make a backup copy of any archived experiment ID files.

These databases are not backed up by the Backup utility.
Space required

The free space required for the backup procedure depends on different factors, including the system configuration, backup location, and database backup size. In the most resource-intensive case, free space should be twice as much space as is stored on-perm (local or network share) or bigger in the most demanding case. This is needed to avoid rewriting a previous successful backup with a backup that finished in the middle for any reason.

Workflow for performing backups

<table>
<thead>
<tr>
<th>Step</th>
<th>For this task...</th>
<th>See...</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>If you plan to run incremental backups, you must configure an incremental backup for PostgreSQL. You set this up before using the Agilent OpenLab Backup Utility.</td>
<td>&quot;Configuring an incremental backup for PostgreSQL&quot; on page 61</td>
</tr>
<tr>
<td>2</td>
<td>Use the Agilent OpenLab Backup Utility to configure the backup type and schedule, and to perform the backups.</td>
<td>&quot;Using Agilent OpenLab Backup Utility&quot; on page 63</td>
</tr>
</tbody>
</table>
| 3    | If applicable, periodically use the VWorks software to create backup copies of the following databases, which are not included in the backup created by the Backup utility:  
  - Inventory database. You can export the labware inventory data to create a backup copy.
  - Experiments database. To create backup copies, do the following:
    - Export all experiment IDs to a backup file (.expTags file).
    - Make a backup copy of any archived experiment ID files. | VWorks Automation Control Setup Guide |

Configuring an incremental backup for PostgreSQL

Cumulative incremental backup is a process that saves data files and objects that have been modified since the last full backup. It is a data backup technique that only updates modified data rather than the complete data.

PostgreSQL has an incremental backup strategy called Continuous Archiving. With Continuous Archiving enabled, PostgreSQL records every change made to the database files in a log. This process is called the Write Ahead Log (WAL). You can combine a file-system-level backup with a backup of the WAL files.

To recover successfully using Continuous Archiving, you need a continuous sequence of archived WAL files that extends back at least as far as the start time of your backup. Before you make your first database backup, set up and test your procedure for archiving WAL files.

To enable Continuous Archiving, you need to edit the relevant postgresql.conf files:

- Set the `wal_level` configuration parameter to `replica` or higher (by default it has a replica value)
- Set `archive_mode` to on, and specify the shell command to use in the `archive_command` configuration parameter
- Set 0 for the `archive_timeout` configuration parameter
Note: Paths in the following examples are based on a default installation of the VWorks Plus.

**To enable Continuous Archiving:**

1. In Microsoft Windows, open Services and stop the following services in the following order:
   - `olcm-postgresql-x64-11`
   - `postgresql 11.9.1 (x64)`
2. Edit the `postgresql.conf` files under the following folders:
   - For Content Management:
     - `C:\ProgramData\Agilent\PostgreSQLData-10-OLCM`
   - For Data Repository:
     - `C:\ProgramData\Agilent\OpenLab Platform\DataRepository\postgresql\11\data`
3. Remove the # in front of the following lines:
   - `wal_level = replica`
   - `archive_mode = on`
   - `archive_timeout = 0`
4. Edit the `archive_command`:
   - For Content Management:
     ```
     archive_command = 'IF exist "C:\\ProgramData\\Agilent\\Backup\\PgWalArchives\\System" (copy "%p" "C:\\ProgramData\\Agilent\\Backup\\PgWalArchives\\System\\%f") ELSE (mkdir "C:\\ProgramData\\Agilent\\Backup\\PgWalArchives\\System" && copy "%p" "C:\\ProgramData\\Agilent\\Backup\\PgWalArchives\\System\\%f")'
     ```
   - For Data Repository:
     ```
     archive_command = 'IF exist "C:\\ProgramData\\Agilent\\Backup\\PgWalArchives\\DR" (copy "%p" "C:\\ProgramData\\Agilent\\Backup\\PgWalArchives\\DR\\%f") ELSE (mkdir "C:\\ProgramData\\Agilent\\Backup\\PgWalArchives\\DR" && copy "%p" "C:\\ProgramData\\Agilent\\Backup\\PgWalArchives\\DR\\%f")'
     ```
   %p is replaced by the path name of the file to archive, while %f is replaced by only the file name. The path name is relative to the current working directory. Use %% if you need to embed an actual % character in the command.
5. Save the `postgresql.conf` files.
6. In Microsoft Windows, open Services and start the following services in the following order:
   - `olcm-postgresql-x64-11`
   - `postgresql 11.9.1 (x64)`
Using Agilent OpenLab Backup Utility

Prerequisites
System administrator privileges are required to run and execute the Backup utility.

CAUTION
Anti-virus scanning during backup can prevent successful completion of the backup. Make sure that the backup location is excluded for both regular/scheduled scans and real-time protection. If the backup location cannot be excluded from real-time protection and real-time protection cannot be turned off, it is possible the final backup tasks might not finish successfully.

If you have an anti-virus running during backup, you can verify that the backup finished successfully with these steps:

- After the backup completes, check that the backup location contains only "Current" (or "Current" and "Incremental") subfolders.
- Check that the log file corresponding to the backup time contains an entry stating "The backup has completed" at the end. Backup logs are placed in the "C:\ProgramData\Agilent\LogFiles\Backup" folder.

To use the Backup utility:

1. In Windows, go to Start > Agilent Technologies > Backup Utility. If a request for User Account Control access appears, click Yes.

   The Agilent OpenLab Backup Utility opens and the Status page displays the date and time of the latest successful backup.

   If a backup is scheduled, the page displays the current backup status and the next backup start date and time.

   If a backup is currently running, the status shows Running. If a scheduled backup has failed, the status shows Failed.

   The Last successful backup shows the date/time when the latest successful backup was taken, and its location. The link points to the backup location. It will contain information right after the first successful backup.

2. On the Backup option page, select one of the following options:
   - Set backup schedule
     Use this option as part of an automatic backup procedure. Agilent recommends scheduling automatic backups.
   - Backup now
     This option starts the backup immediately. It has no impact on a scheduled backup.

     Note: This option can be helpful for checking the correctness of the backup settings, how much disk space and how much time a single backup requires. In addition, this option can be a part of the testing of the whole recovery procedure.

3. On the Configure page, configure the settings for the selected backup option.
### System maintenance

#### Performing a backup

<table>
<thead>
<tr>
<th>Backup option</th>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set backup schedule</td>
<td>Enable the backup schedule</td>
<td>To disable automatic backups during maintenance periods, clear the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Enable backup schedule check box.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clearing the Enable backup schedule check box turns the scheduled</td>
</tr>
<tr>
<td></td>
<td></td>
<td>backup off. Be sure to enable the scheduled backups again when</td>
</tr>
<tr>
<td></td>
<td></td>
<td>maintenance is completed.</td>
</tr>
<tr>
<td>Provide the backup type</td>
<td></td>
<td>Select one of the following:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Hot backup. System remains operational during backup.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Cold backup. Requires stopping all OpenLab and VWorks operations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The Backup utility does this automatically.</td>
</tr>
<tr>
<td>Set backup schedule on</td>
<td>Specify the date for when the backup</td>
<td>The schedule time uses a 24-hour format.</td>
</tr>
<tr>
<td></td>
<td>schedule will start. The schedule</td>
<td></td>
</tr>
<tr>
<td></td>
<td>time uses a 24-hour format.</td>
<td></td>
</tr>
<tr>
<td>Full backup</td>
<td>Set the time of day and days of the</td>
<td></td>
</tr>
<tr>
<td></td>
<td>week to perform scheduled backups.</td>
<td></td>
</tr>
<tr>
<td>Incremental Backup</td>
<td>Enables incremental backups. Enter the</td>
<td>When full and incremental backups are scheduled on the same day, the</td>
</tr>
<tr>
<td></td>
<td>time and days for incremental</td>
<td>full backup will be performed. Incremental backups require that at least</td>
</tr>
<tr>
<td></td>
<td>backups.</td>
<td>one full backup is performed first.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In order to use Incremental Backup, PostgreSQL must be configured. See</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“Configuring an incremental backup for PostgreSQL” on page 61.</td>
</tr>
<tr>
<td>Backup now</td>
<td>Provide the backup type</td>
<td>Select one of the following:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Hot backup. System remains operational during backup.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Cold backup. Requires stopping all OpenLab and VWorks operations.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The Backup utility does this automatically.</td>
</tr>
</tbody>
</table>

4 On the **Backup location** page, provide a path to the local file system. Network drive is not supported.

The backup can be configured to a folder without permissions for the current Windows user. The backup executes from the System user, which allows archive of a successful backup. In this case of scheduled backup, the backup will be executed, but the current Windows user will not be able to view the results without the appropriate privileges.

5 If you scheduled a backup: On the **Notifications** page, enable and set up backup notifications.

Use a **From** address that is configured in the Control Panel. For information on how to set up email addresses, see the Control Panel online help.

Use a comma to separate multiple **To** addresses. Each address can be represented in long-form (name and email) or in short-form (only email).

Under **Subject starts with**, specify a prefix in the notification e-mail subject.

Use **Send test message** to ensure that the notification settings are correct.

6 On the **Review** page: Review your settings, and click **Apply** to start the backup or save the backup schedule.

Progress is tracked on the Processing page.

7 When backup is complete, click **Done**.

---

64 VWorks Plus Configuration and Administration Guide
Backup folders are created in the location specified when you run the Backup utility. In the event of a failed backup, the partial backup is saved in a Temp folder in your backup location.

**Backup verification**

The backup verification step verifies the backed-up data after the completion of the backup procedure. This step generates two reports. Both reports are located in the Verification subfolder.

- The VerificationReport.xml file contains the technical information about the backed-up entities such as files, their hashes, database entities, and so on. In case of restoration, this report will be used for comparison of the files and database entities.
- The VerificationReport.html report contains information about the backup, number of verified files, information about failed file verification, and database entity verification results in a human-readable view.

The verification step checks that main entities (files, database entities) are backed up properly. The number of files for verification is specified in the configuration file after backup configuration (10% by default). Files will be verified and included in the report after the backup procedure. In case of restoration, all entities which have been included in the report will be verified. Any entity (or its version) modified after the backup start time will not be included in the reports and will not be verified during the restoration procedure.

**Verification Logic**

For the verification, the following logic is used:

1. The Backup utility counts all files in Content Management and randomly takes 10% of the amount of the files. The taken percent of the files for the verification is always rounded up, for example, for 3 files 10% is 0.3, and this value rounded to 1. It is useful for a small number of files in Content Management, the tool guarantees that at least 1 file will be verified.

2. The utility takes a random version of the file for each of the chosen files. For example, if a file in Content Management has three revisions (1.0, 2.0, and 3.0), the utility will randomly take one of them.

3. The Verify procedure compares the checksum and size of backed up files with file information from Content Management. If the checksums are equal, the verification is passed. Otherwise, the verification is failed.

By default, the percentage of the verified files is set to 10. The percentage of files verified can be modified by changing the PercentFilesVerification property in the Backup section of the configuration.xml file, located in the %ProgramData%\Agilent\Installation folder. Only a user with System Administrator privileges can update this file. Acceptable values are from 1 to 100. Negative, fractional, and values above 100 are not accepted.

A new value will be applied during a backup; for **Backup now** at the Processing Page before the first step, for **Backup by schedule** when a backup is started.
Troubleshooting

The Backup utility collects logs in the %ProgramData%\Agilent\LogFiles\Backup folder. During the backup procedure, all steps are checked, and the procedure will stop on the first failed step. A link with the failed step opens the current backup log file to help identify the issue. In case of a failed backup, the partial backup is stored in a Temp folder in the backup location.

Restoring from a backup

Use the Agilent OpenLab Restore Utility to restore VWorks Plus from an existing backup if it becomes inoperable due to a hardware or software failure.

The Restore utility can restore a system from cold and hot backups created using the Agilent OpenLab Backup Utility. The restore procedure will restore only committed data captured by the successful backup procedure. Any data that was created or updated after the backup was performed are not recovered by restoring a backup.

Restoring on an existing VWork Plus computer

If you are upgrading VWorks Plus, perform the following procedure on your computer after the upgrade.

Prerequisites

- You must have System Administrator privileges to run the Restore utility.
- To successfully access the backup folder, the utility must be launched by a user with reading rights in this folder.
- Ensure that VWorks Plus is not operational during the restore process.

To run the Restore utility on an existing VWorks Plus computer:

1. Make sure that any instruments or other parts of the system are not using the system during the restore process.
2. In Windows, go to Start > Agilent Technologies > Restore Utility. If a request for User Account Control access appears, click Yes.
   The Agilent OpenLab Restore Utility opens to the Backup Location page.
3. In the Backup Location page:
   a. Select File system as the Backup Location.
      Note: AWS S3 backup location is not supported for VWorks Plus.
   b. Click the button for Backup folder, and select the folder where the backup is stored.
   c. Select Restore only for normal recovery or select Restore and Verify. Click Next.
4. On the Review page, review the settings and click Apply.
   The restore procedure progress is tracked on the Processing page.
5. When the restore procedure is complete, click Done.
   If you selected Restore and Verify you will see all normal steps plus the verification step. You can open a report by clicking Done.
Verification
When restoring to an existing VWorks Plus installation, you can verify the restoration was performed correctly. Verification reports are saved at C:\ProgramData\Agilent\Restore\Verification.
The Restore Utility collects logs in the %ProgramData%\Agilent\LogFiles\Restore folder.

Routine maintenance

About this topic
This topic assumes that you have an understanding of database management. VWorks Plus uses a PostgreSQL database, which is installed with the software. To maintain the database, you should perform the following procedure on a regular basis. The frequency depends on the usage of the system. As a guideline, you should at least do this every time you perform a full system backup.

Updating statistics for PostgreSQL database

Before you start:
Ensure that your Windows System Environment Variables Path settings include the following path in order to run a Python script:
C:\Program Files (x86)\PostgreSQL-10-OLCM\pgAdmin 4\venv\Scripts

To update the PostgreSQL database statistics:

1 Start PostgreSQL pgAdmin and connect as the database administrator.
   The default database administrator user name is postgres and the password set during installation is superadmin.

2 In the pgAdmin page that opens, select the database for which you want to update the statistics.
   Note: You may need to create a server in the pgAdmin page to display the databases. In the navigation pane, right-click Servers, and then click Create > Server to create a server.

3 Right-click the database of interest in the server, for example, DataStore, and select Maintenance.

4 In the Maintenance dialog box, click ANALYZE and click OK to analyze the database. See the following figure.
5 System maintenance
Routine maintenance

Additional maintenance for PostgreSQL database
PostgreSQL supports some additional maintenance commands that can be beneficial to helping keep your database system running smoothly. These include VACUUM and REINDEX. See the PostgreSQL documentation for additional details about these commands.

CAUTION Only apply Agilent-provided service packs or Hotfixes to your Agilent PostgreSQL server.
In this Guide

This guide provides configuration and administration instructions for the VWorks Plus edition.

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