Keysight PathWave BenchVue Lab Management and Control Solution

Providing Efficient and Centralized Lab Control for Educators

Introduction

Hands-on learning using real, industry-standard bench instruments is one of the most valuable experiences universities and teaching institutes can offer students, ensuring that the next generation of engineers get practical knowledge using the same industry-grade equipment that they would use when they graduate and are out in the industry. But with dozens of test benches, each equipped with multiple instruments, educators managing an engineering lab must spend significant amounts of time manually setting up test benches, configuring and updating the firmware for the instruments, and tracking the lab's assets for calibration and repair.

Now, with Keysight PW9111EDU PathWave BenchVue Lab Management and Control Solution, educators can spend less time on manual set up and tracking and focus on what really matters – providing high-quality teaching. This solution is built upon the PathWave BenchVue software platform, leveraging its strengths such as easy control, data capture, logging and report generation, all without requiring programming. Consisting of the LAN-based PathWave BenchVue Lab apps and the BV9001B BenchVue Complete Control Collection, Keysight PathWave BenchVue Lab Management and Control Solution is a lab management solution that not only provides centralized control for educators to seamlessly connect and monitor all the instruments within lab, but also serves as a powerful teaching tool for instruction laboratories

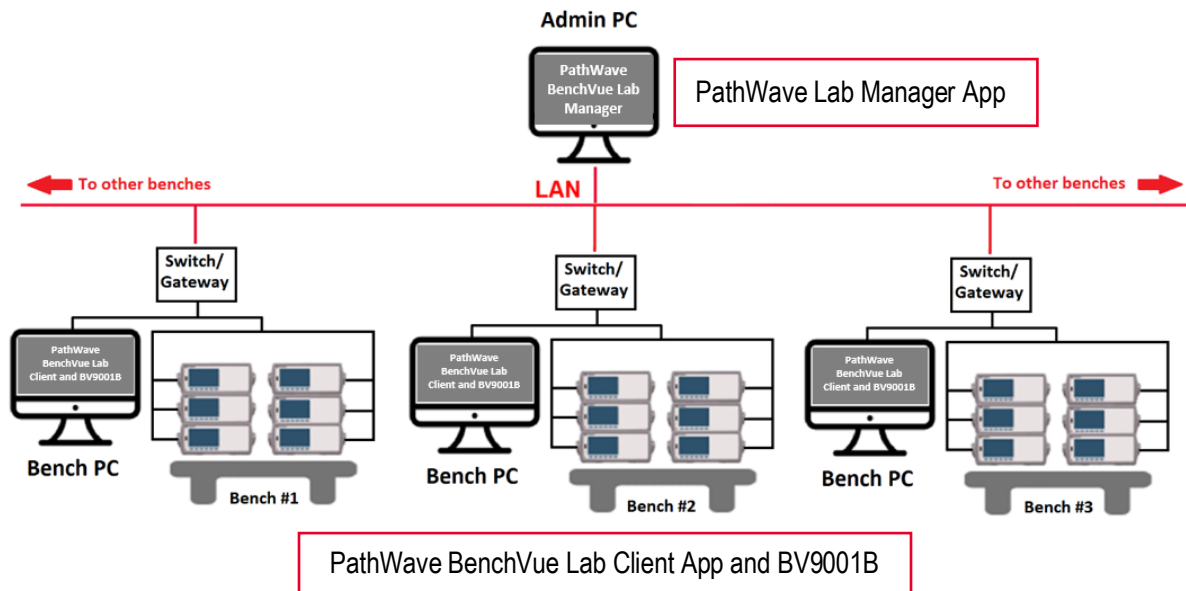# Contents

Instrument Lab Management (simplified)

Figure 1. Different components of the PW9111EDU in a typical lab setup
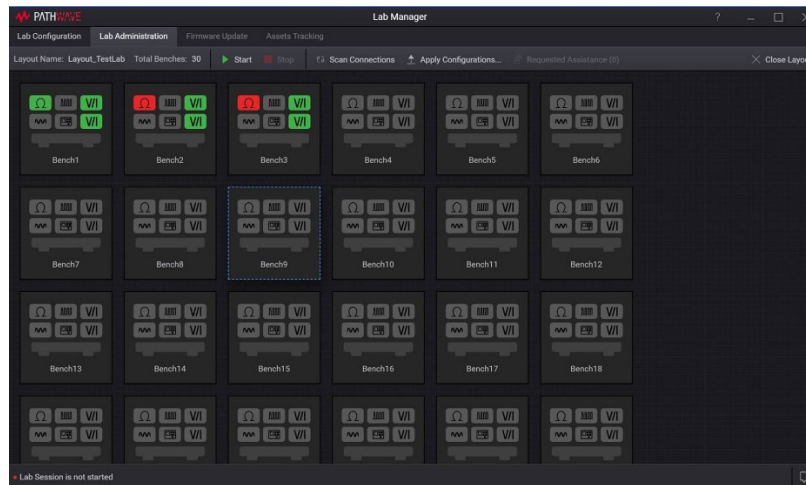
PW9111EDU PathWave BenchVue Lab Management and Control Solution consists of the PathWave BenchVue Lab and BV9001B Complete Control Collection.

- PathWave BenchVue Lab
    - Manager App - acts as the main software application installed on the lab administrator's PC for centralized control, monitoring and management
    - Client App - runs on test bench PCs and connects all the instruments at individual test benches. This app links readily to the Manager app.

- BV9001B Complete Control Collection
    - Contains the following apps to control unique instrument types: Data acquisition, digital multimeter, electric load, FieldFox handheld analyzer, function generator, network analyzer, oscilloscope, power meter, power supply, signal generator and spectrum analyzer, and universal counter
    - Test Flow feature – enables users to build automated test sequence blocks from multiple instruments with a drag-and-drop interface, without requiring programming
    - Extensive data trace and measurement logging capabilities, with report generation
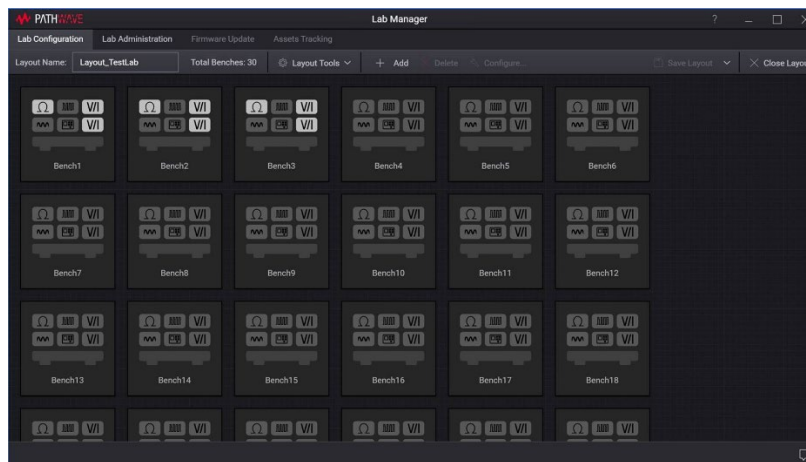
Key Features

PathWave BenchVue Lab Management and Control Solution provide several core lab features.

Lab Administrator

Lab Administrator provides a quick overview of the current instrument's connection status, so the lecturer or lab manager can monitor the condition of the lab. This feature allows them to easily identify which instrument, and on which bench, that is not correctly connected.

Lab Configuration

The Lab Configuration tab allows educators to have custom benches arrangement to configure the lab layout, number of benches, type and number of instruments, and name of the benches accordingly to mimic the actual lab physical bench position. Maximum six instruments supported per bench.

There are two options to configure the lab layout - either manually or by importing from a CSV file. Multiple lab layouts can be saved and exported for easy interchange, to allow flexibility for different classes sharing a lab.

Multiple instruments control, data log, analysis and automation

BenchVue Complete Control Collection provides dedicated apps for twelve Keysight instrument families and supports several hundred instruments, with the list continuing to grow. These apps allow users to easily log and export data and images in a few clicks for faster analysis, and then quickly create automated test sequences with minimal instrument knowledge. They also support data log and print screen capability and allows users to visualize and automate multiple instruments simultaneously.

Prerequisite to use BenchVue Test Flow is to have all the instruments apps running inside legacy BenchVue platform.

Benefits for using PathWave BenchVue Lab Management and Control Solution

- **Streamline and simplify lab management, saving lab administrators and educators time and freeing them to focus on teaching**

  PathWave BenchVue Lab provides overview connection statuses of all instruments and allows administrators to configure the measurement settings of all instruments at once, all from a single admin PC.

- **Enhance the learning experience of students by utilizing this solution as an education lab teaching software platform**

  The PathWave BenchVue instrument control apps allow users to easily control, analyze and measure. Full desktop and application sharing allow for easy remote monitoring and student assistance in the test lab. And with the PathWave BenchVue Lab Client App installed at each test bench computer, students can easily control instruments, log data and screen shots, and automatically join lab sessions.

- **Easily integrate the solution into the existing lab setup**

  This solution supports over hundreds Keysight test and measurement instruments and will also connect to non-Keysight test instruments that are compliant with the VISA connection protocol. Together with an intuitive GUI and the ability to import CSV files, PathWave BenchVue Lab enables educators to quickly set up and configure large labs.

- **Save on investment**

  Educators can take advantage of the license bundling the PathWave BenchVue Lab Management and Control Collection provides, which includes:

  - One PathWave BenchVue Lab Manager app license
  - 50 PathWave BenchVue Lab Client app licenses
  - 50 BenchVue Complete Control Collection network licenses

System Installation and Requirements

System requirements
PathWave BenchVue Lab Manager and Lab Client
Computer Operating System • Windows 10 – 64-bit (versions 1809 or later)
Computer Hardware Requirements • Processor: Intel Core i5 (or equivalent) • RAM: 8 GB • Display Resolution: 1366 x 768 minimum
BenchVue Education Control Collection
Computer operating system • Windows 10 – 32-bit and 64-bit (Professional, Enterprise, Education, Home versions) • Windows 8 – 32-bit and 64-bit (Professional, Enterprise, Core versions) • Windows 7 – SP1 and later, 32-bit and 64-bit (Professional, Enterprise, Ultimate, Home Basic, Home Premium versions)
Computer hardware requirements • Processor: 1 GHz or faster (2 GHz or greater recommended) • RAM: 1 GB for 32-bit or 2 GB for 64-bit (3 GB or greater recommended) • Display Resolution:1280x1024 minimum for single instrument view (higher resolution recommended for multiple instrument view) Note: An Internet connection is required when installing the BenchVue application and updates from the Keysight web site or an FTP site. An Internet connection is not required when installing from a DVD. Administrator privileges are required when installing BenchVue.
Data exports • For data exports to Microsoft Excel and Microsoft Word, BenchVue supports Microsoft Office 2003 and later.
PathWave BenchVue Lab setup requirements • All instruments MUST be connected to the administrator PC via LAN, either directly or through a bench PC, so that the Manager App can connect, configure and monitor the instrument status. • It is recommended to install the Client App at test bench PCs (or student laptops). Remote instrument status monitoring, ability to send instrument state file and other features will be available. • Recommended USB connection between test bench PCs and instruments

System requirements

Supported instruments

For PathWave BenchVue Lab

- Support up to 100 benches, each bench supports a maximum of 6 instruments.
- Supported Keysight instrument family for state file sending: Oscilloscope, power supply, digital multimeter and function generator
- For Non-Keysight Instruments that comply with IEEE-488 standards, user is able to check the connectivity status of the instruments, but not for sending state file to the instruments. Able to send the configuration as SCPI command in text form to instrument provided the instrument must be able to work with SCPI commands.

For BV9001B BenchVue Complete Control Collection

Note: For Keysight Instruments, users can refer to the following link to view the list of supported instruments: www.keysight.com/find/benchvueinstruments

Supported interfaces

For PathWave BenchVue Lab

- LAN connection (Wired LAN recommended)

For BV9001B BenchVue Complete Control Collection

- USB, LAN, GPIB, and RS-232 (not supported on all instruments). Requires Keysight IO Libraries Suite v16.0 or later.

Ordering Information

Solution number	Description
PW9111EDU	PathWave BenchVue Lab Management and Control Solution • 1x PathWave BenchVue Lab Manager App, transportable license • 50x PathWave BenchVue Lab Client App, network licenses • 1 x BV9001B BenchVue Complete Control Collection consists 50 network licenses, which cover control collection apps Note: PW9111EDU offers 3 license terms: • 12 Months • 24 Months • Perpetual

Customer will receive two license certificates after purchasing the PathWave BenchVue Lab Management and Control Solution:

- PathWave BenchVue Lab Manager App
- PathWave BenchVue Lab Client App (included under same certificate with BV9001B)
- BV9001B BenchVue Complete Control Collection

PW9111EDU – License Types and Terms

Model number	Description	
PW9112EDU (Perpetual)	R-X5Y-004-D/ R-X6Y-004-L	Transportable Lab Manager App with 12 months software support
	R-X5Y-002-B/ R-X6Y-002-L	Floating Education Control Collection with 12 months software support
PW9112EDU (12-months Subscription)	R-X4Y-004-L	Transportable Lab Manager App, 12-month subscription based with software support
	R-X4Y-002-L	Floating Education Control Collection, 12-month subscription based with software support
PW9112EDU (24-months Subscription)	R-X4Y-004-X	Transportable Lab Manager App, 24-month subscription based with software support
	R-X4Y-002-X	Floating Education Control Collection, 24-month subscription based with software support

Further Information

Please visit our solution page for more information http://www.keysight.com/find/PW9111EDU

Learn more at: www.keysight.com

For more information on Keysight Technologies' products, applications or services, please contact your local Keysight office. The complete list is available at: www.keysight.com/find/contactus

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