PV-WAVE
by Perforce

PV-WAVE 2026.0 RELEASE NOTES

Sections

Introduction

This file contains a summary of technical changes for PV-WAVE 2026.0. For convenience, this file is provided online. A detailed list of all changes is available in the Update Notice. Documentation for the new features and keywords is available in the Online Help via the New Features link.

This document contains a brief overview of new features.

NOTE »
To take advantage of new product features and improvements, and to ensure that your product is supported, install a current version. For a list of supported product versions, along with maintenance and end-of-life (EOL) information, see https://portal.perforce.com/s/article/PV-WAVE-Maintenance-Lifecycle.

PV-WAVE 2026.0 New Features and Enhancements

- Red Hat Enterprise Linux 9 / GCC 11 is now supported.

Known Issues

- The Database Connection Toolkit is not supported on RHEL 9.

- Help does not open. This affects help launched from the HELP procedure, from Navigator's Help menu, and from any other UI element that triggers PV-WAVE's built-in help system.
- CRITICAL- or HIGH-severity CVEs discovered in various third-party libraries since PV-WAVE 2023.4 have not been addressed.

PV-WAVE 2023.4 New Features and Enhancements

- Added support for invoking optional `opi_init` and `opi_fini` functions when an option library is loaded and unloaded (respectively).
- Windows: Moved Socket and SSL_connect option library initialization and cleanup code to new `opi_init` and `opi_fini` functions to address unexpected disconnects that could occur in the networking option libraries.

PV-WAVE 2023.3 New Features and Enhancements

- All known CRITICAL severity CVEs in PV-WAVE or its dependencies have been addressed or mitigated.
- Solaris: SSL_connect no longer requires the OpenSSL library location be specified in the `LD_LIBRARY_PATH`.
- Solaris|Windows: Libxml2 has been upgraded to version 2.11.5.
- HDF5 has been upgraded to HDF5 1.8.23.
- Linux: VTK7 now uses the system TCL/TK on Linux.
- Windows: TCL/TK, used in VTK7, has been upgraded to 8.6.13.
- HDF4 has been upgraded to HDF 4.2.16-2.
- Third party dependencies in the Image and Photo options were updated:
    - Windows and Solaris: libpng upgraded to libpng 1.6.40
    - Windows and Solaris: LibTIFF upgraded to LibTIFF 4.0.9
    - Windows and Solaris: zlib upgraded to zlib 1.3
    - Solaris: libjpeg upgraded to libjpeg 8d
- Third party dependencies in the VTK7 option were updated:
    - libtommath (used by TCL) upgraded to libtommath 1.2.1
    - vtkfreetype upgraded to vtkfreetype 2.12.0
    - vtkpng upgraded to vtkpng 1.6.37
    - vtktiff upgraded to vtktiff 4.6.0
    - vtkzlib upgraded to vtkzlib 1.2.13
    - zlib (used by TCL) upgraded to zlib 1.2.13
- Microsoft Visual Studio 2019 is now supported.
- Microsoft Visual Studio 2022 is now supported.
- SSL_connect was upgraded from OpenSSL 1.1.1s to 3.0.12

PV-WAVE 2023.2 New Features and Enhancements

- Red Hat Enterprise Linux 8 / GCC 8 is now supported.
- Linux: PV-WAVE is now built with GCC, removing a dependency on the Oracle Solaris Studio Runtime.
- Linux: SSL_connect now uses a local system OpenSSL library.
- Linux: Upgraded PV-WAVE Database Connection support on Linux from Oracle 11i to 19c.

- Interapp examples leverage CMake for their build infrastructure and have been reorganized to align better with the documentation.

PV-WAVE 2023.1 New Features and Enhancements

- SSL_connect was upgraded from OpenSSL 1.1.0f to 1.1.1s
- HDF4 was upgraded from HDF 4.2r0 to 4.2.15.
    - This includes updating dependent third party libraries required by the HDF4 library.
- Windows: Socket operations have been updated to leverage the winsock2 library.
- Linux: PV-WAVE now uses a local system Open Motif library.

PV-WAVE 2017.1 New Features and Enhancements

- Linux: Linked Open Motif library updated from 2.3.6 to 2.3.8
    - Improved stability.
    - Fixed segmentation faults associated with option menus or other popup windows.
    - Improved support for other Linux distributions that are based on either the 3.10 kernel and 3.12 kernel.
- Added a system variable, `!WAIT_FOR_INPUT_IDLE` to work around high CPU consumption experienced on Windows for certain intensive plotting applications.
- General Quality Improvements
    - Fix for operating system commands executed in wavewin2.exe causing PV-WAVE MFC application to stop working.
    - Fix inconsistent alignment when printing on Linux.
    - Wave home window stays open if the license is expired until the user hits any key to continue.
- Added a system variable, `!CPR_OFFSET` to fix 64-bit compiled user-written procedures and functions containing recursive calls to the EXECUTE function from crashing when called from 32-bit PV-WAVE on Windows.

PV-WAVE 2017.0 New Features and Enhancements

- Added support for Windows Gestures in the drawing area widget.
    - PV-WAVE drawing area widgets running on a Windows touch screen can intercept, interpret and implement the following gestures:
        - Panning
        - Press and Tap
        - Zoom
        - Rotate
        - Two Finger Tap
    - Example code, with comments, for using gestures can be found in `RW_DIR\wave\demo\gestures` along with a useful README file.
    - More information is available in the PV-WAVE Online Help in the Reference Guide entry for the routine `WtAddHandler`.

- "Legacy" gestures are now supported in all Windows PV-WAVE widgets.
    - "Legacy" gestures are those in which a finger touch simulates traditional mouse input. PV-WAVE GUI applications which set up event handlers for mouse actions will automatically pick up finger touches as mouse events when run on a Windows touch screen.
    - PV-WAVE widgets which automatically accept mouse input such as scroll bars, buttons, etc. automatically respond to finger touches when run on a touch screen with no event handlers required.
- New VTK7 OPI module
    - Based on the familiar API used by the VTK OPI module
    - Supported on Windows and Linux (32 and 64-bit)
    - Improved rendering engine that uses less system memory and increases performance.
    - Optimized 3D plots and improved the quality of rendering significantly.
- Added two new system variables to modify the look and feel of Windows Widgets.
    - `!WIN_FLAT` – eliminates the default 3D appearance of Windows widgets such as buttons, text fields, etc.
    - `!WIN_NO_BORDER` – Eliminates the default borders around Windows GUI elements.
    - These new system variables are used separately or together to globally transform the appearance of existing PV-WAVE Windows widget applications into the new, flat style of Windows Metro applications.
- SSL_connect OPI is now part of the general installation
    - Was previously only available by request.
    - Listed under "Optional Toolkits" in the installation.
    - See the documentation for `SSL_CONNECT_LOAD` for more information.
- General Quality Improvements
    - Includes a fix for the annoying Windows Home Window line splitting issue.
    - Updates for the `DC_READ_FREE` routine.
        - Improved accuracy of the `Nskip` and `Nrecs` keywords when used in conjunction with the `Ignore` keyword strings `$BLANK_LINES` and `$TEXT_IN_NUMERIC`. Lines which should have been ignored were included in the `Nskip` and `Nrecs` counts, leading to incorrect output.
            - Since this is a change in behavior, you must use the two new `Ignore` keyword strings `$NRECS` and `$NSKIP` to activate the new, more accurate behavior. See the online documentation for the `DC_READ_FREE` routine for more information.
        - Added some internal tests to speed up processing of files with many ignored values.

PV-WAVE 2016.1 New Features and Enhancements

- `RELEASE_NAME` tag added to `!VERSION` system variable.
    - Allows correlation of new release name format with previous releases.
- New PHOTO OPI module
    - Based on the familiar API used by the IMAGE OPI module
    - Supported on 64-bit platforms
    - Supports larger pixel data types
    - Improved performance and error checking
    - Enhanced features
        - Read Series of images
        - Specify Region of interest (ROI) during read
    - Positions PV-WAVE for future image format additions.
- Improved JWAVE connections
    - Better recovery from Java 8 and browser security interruptions.
- Switched to CLANG compiler on macOS
    - This default macOS compiler now used for all builds.

- Updated documentation, example code and interapplication demos
    - Improved accuracy
    - Documentation example code can be run unmodified at the PV-WAVE prompt
    - Updated Interapplication demo documentation and utilities for usability and new compilers.
- Linux and macOS: Linked Motif library updated from 2.3.3 to 2.3.6
    - Improved stability and availability
    - The Linux Motif library and the source code used to create it are now included in the installation. See the Linking External Applications section of the **Installation Guide** for details.
- General quality improvements

PV-WAVE 12.0 New Features and Enhancements

- Changed Linux 32 and 64-bit compilers to Oracle Solaris Studio 12.4
    - Resolves floating point accuracy issues with the default GNU compiler.
    - A discussion of the system libraries required by this change is in the Unix/Linux Installation section of the **Installation Guide**.
    - This change required the addition of two environment variables in the `wvsetup` file. If you use a custom `wvsetup` file you must re-generate `wvsetup` using `bin/make_wvsetup` to avoid performance losses on multi-core, linux systems.
- Resolved Motif version conflicts for 64-bit Linux
    - We now statically link PV-WAVE with a custom build of OpenMotif 2.3.3
    - See the Unix/Linux Installation section of the **Installation Guide** or the Interapplication Communication for UNIX section in the **Application Developer Guide** for more details.
    - Resolved excessive refreshing of the `WwList` widget by making use of bulk changes when updating the list contents.
    - Now the default behavior of `WwSetValue` for list widgets.
    - Read the NOTE in the Online Help for `WtList` and `WwListUtils` for coding tips to avoid excessive refreshing when using these routines.
- Improved precision of the `MEDIAN` function
    - Calculations are now performed using double-precision floats.
    - Return type is converted to single-precision floats to maintain backwards compatibility with previous PV-WAVE versions. Use the `Same_type` keyword to get back different data types.
- HPGL and PCL display drivers deprecated.
    - When you use these drivers you will see a message instructing you to contact Rogue Wave support if you wish to register a request that support be continued for these drivers and to receive instructions for disabling the message.
- JWAVE Client configuration improved.
    - Better automatic discovery of server connection information.
- JWAVE Server configuration improved to allow cloud-based servers.
    - `SERVER_IP` parameter added to Manager Configuration Properties
    - Added additional, internal methods to determine correct server address.
- Promoted `SIZEOF` user library routine to standard library.
    - A handy routine to determine the size of PV-WAVE variables.
- Upgraded ImageMagick libraries used by the image module from version 3.7.3 to version 6.9.2-7.
    - Updated various embedded libraries for specific image types.
    - Improved speed when reading images.
    - Improved accuracy of color management.

    - Expanded output from `Verbose` keyword to `IMAGE_READ`.
    - The `Unmap` keyword for the `IMAGE_READ` routine is now ignored as its former behavior is now the default. See the Deprecated Routines section of the **New Features Guide** for more information.
    - The `Order` keyword for the `IMAGE_READ` and `DC_READ_TIFF` routines is now ignored as the proper image orientation can be determined from information contained in the image file. See the Deprecated Routines section of the **New Features Guide** for more information.
    - NOTE: This version of ImageMagick has been reported to contain a vulnerability related to interaction with the UNIX shell. With a fix for ImageMagick not available at this time, we disabled this functionality in the ImageMagick library used by PV-WAVE thereby eliminating the vulnerability.
- Improved handling of DICM files.
    - Improved speed when reading images.
    - Improved image tag handling.
- Improved handling of invalid data values in the `PL0T` commands.
    - Data ranges are correctly set.
    - Invalid values are properly ignored.
- Improved uninstaller on Windows platforms.
    - No longer requires Java installation.
    - Leaves fewer directories behind after uninstallation.
- General
    - Addressed multiple customer-related issues and improvements.
- Platform Updates
    - Added support for Windows 10.

Customer Support

If you have questions installing or using any PV-WAVE product, contact Perforce Technical Support.

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