

FIELDVIEW

What's New in FieldView 13.1

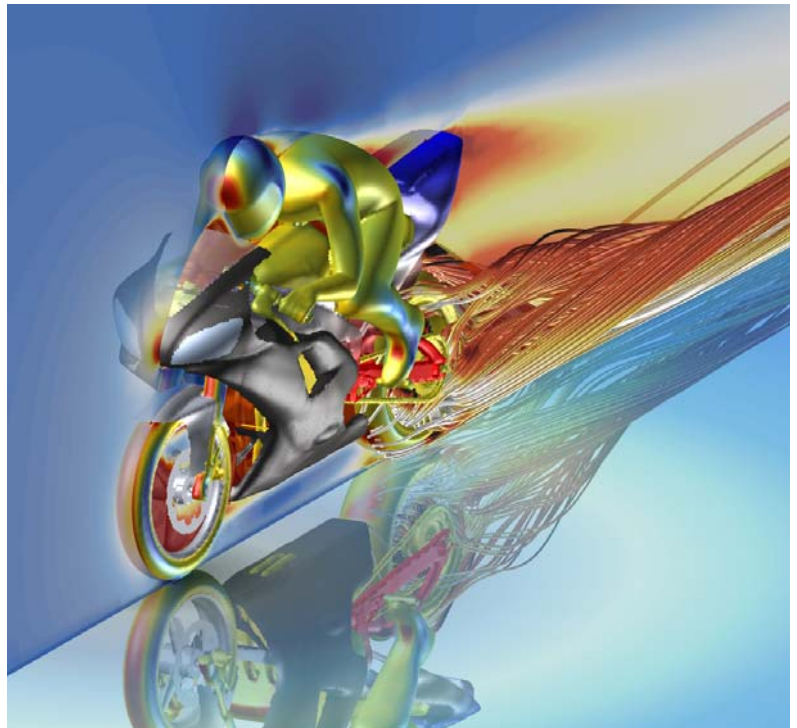
FieldView 13.1 is a point release delivering brand new features based on your **FieldView 13** feedback. Significant performance enhancements are delivered to continue to drive your CFD productivity.

SUMMARY OF NEW FEATURES

- **Direct reader for OpenFOAM results, no repartitioning needed**
- **Increase your dataset sampling & probing speeds by up to 200X**
- **Run FieldView interactively on remote LINUX systems with or without X-displays**
- **Use one XDB per timestep for a 4X to 7X speedup in transient data management**
- **Read parallel partitioned data with improved ease and flexibility**
- **Create animations of time-sequential datasets with a single click**
- **Avoid losing work with backup restart files on exit**
- **Easily read PLOT3D/OVERFLOW-2 data with format & attribute auto-detection**
- **Automate mirrored and rotational dataset duplication using FVX & Scripts**
- **View FieldView Help documents with any PDF Viewer**

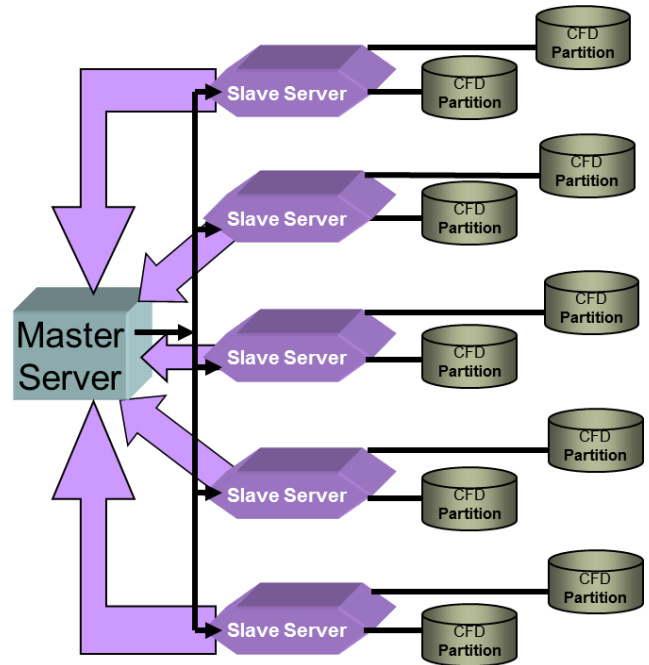
Direct OpenFOAM Reader

Our direct reader for OpenFOAM data can read either reconstructed or decomposed (partitioned) data with no need to repartition or export the data. ASCII, binary or gzip compressed formats are automatically recognized. Arbitrary polyhedral elements are handled natively and are not tetrahedralized. As a result, cutting planes will not have holes and streamlines trajectories will be continuous across all grids. Support for moving mesh problems is also available. Other standard **FieldView** features like streamline wall marking to prevent streamlines from passing through solid walls and optimization for fast and accurate interpolation of standard cell types (hex, tet, pyramid & prism) are included. And, full support has been provided for FVX and RESTARTS, enabling full automation for batch operation with OpenFOAM results.



Partition merging for PFPR

It is now possible with **FieldView** Parallel to read more than one partition of a multiple partition dataset with each parallel slave process. This improvement makes the task of postprocessing partitioned file parallel (PFPR) data for hundreds of grids possible with any **FieldView** Parallel license. This capability is available for all file formats that support partition file parallel reading, including the new OpenFOAM direct reader.



Improved WIND, FLOW3D & Plug-in Readers

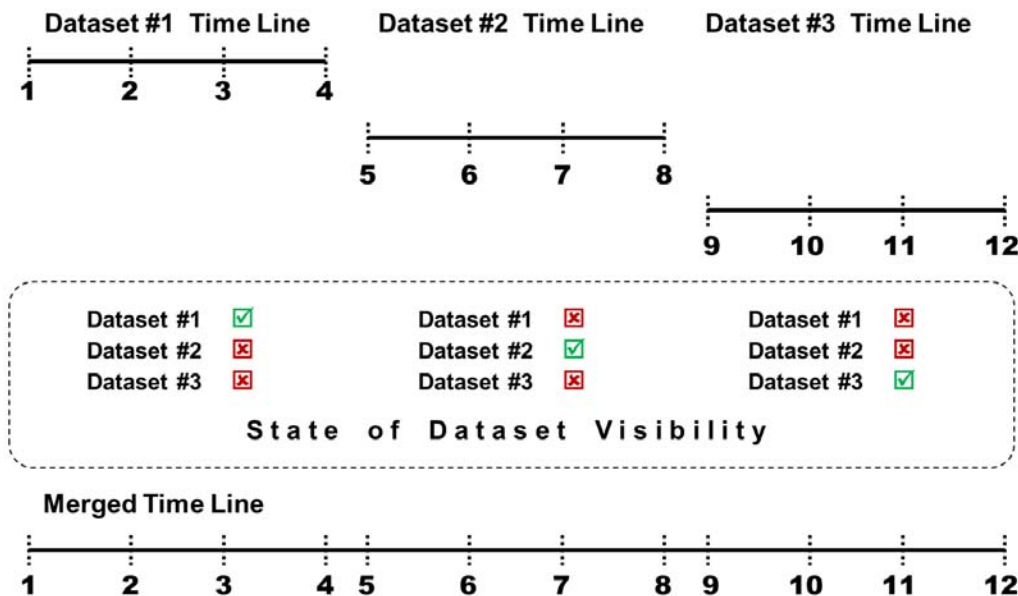
Two changes have been made to our plug-in readers. First, the NPARC/WIND structured reader has been converted from a built-in to a plug-in reader. It is now possible to add the newly developed NPARC Alliance plug-in for the WIND-US unstructured reader. This change offers unprecedented flexibility for postprocessing data generated from all WIND solver codes, including the latest Version 3 release.

Second, our plug-in readers are modified to now support optimization for cartesian grids, improving read times and lowering memory requirements at the same time. The direct FLOW3D readers for animation and restart data have been rebuilt using this optimization, delivering performance improvements as a result.

Transient Data Improvements

It is now possible to recognize a series of XDB files, each containing a single timestep, as a transient sequence. This allows you to create XDBs while your transient solver is running, post-processing what you have at any given time. For datasets with many timesteps, XDB files can become large when all the timesteps are saved to a single file. By saving XDBs, one timestep per file, the time to sweep a transient XDB series is reduced by 4X to 7X.

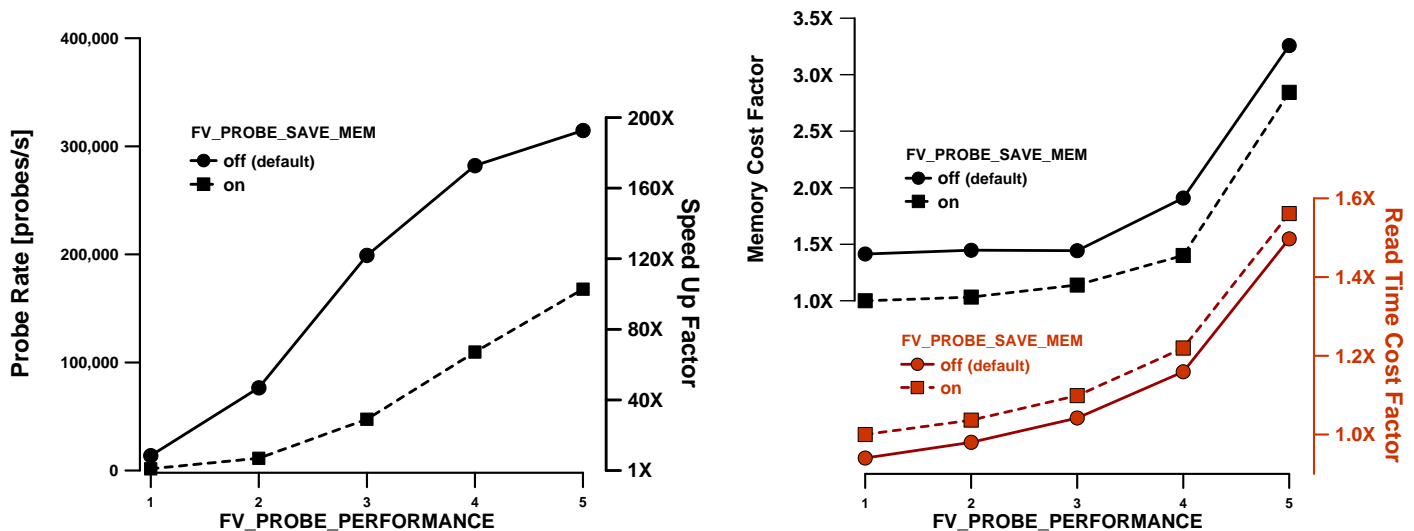
When working with transient data, it is sometimes helpful to manage datasets with timesteps grouped into time sub-ranges, as shown at left. For data saved this way, turning the visibility of a time sub-range on or off based on its solution time for a transient sweep across all three datasets is done with a single button on the Transient Data Controls panel. This setting, with full support for automation, makes saving



transient animations easy. Finally, it is possible to fix the axis range and tick mark spacing independently for transient 2D plotting. This turns off plot axes auto-ranging during transient sweeps.

Probe Performance Improvements

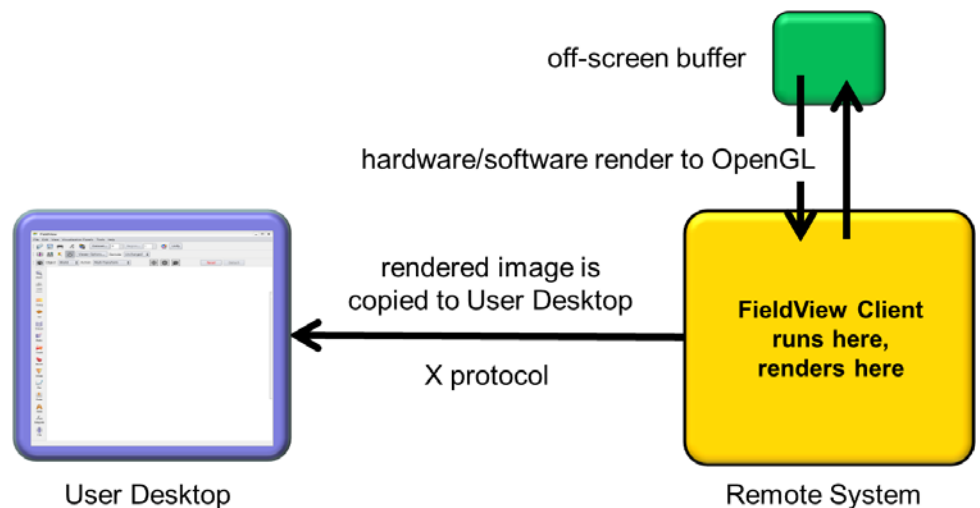
Probing operations in **FieldView** are designed to balance performance benefits against memory costs. In this release, we deliver higher performance automatically tuned to your available memory resources. Point probing, dataset sampling, streamline & streakline calculation and automated streamline seeding are just some of the features where performance is dramatically improved. Further **FieldView** performance optimization for your specific environment is made possible with two adjustable settings. One controls performance directly, while the other offers the ability to save memory.



Results on a case study containing 100M cells for an XDB dataset sampling operation, run on a system with 32GB RAM, are presented above. At full optimization, over 300,000 probes per second were achieved, delivering a nearly 200X speed up factor for only a 3.5X memory cost and a 1.5X read time cost compared to **FieldView** 13.

Improvements to FieldView Remote Operation

The high performance rendering changes delivered with **FieldView** 13 required a robust, GL context and as a result the X Windows transport of the graphics window was no longer possible. To overcome this limitation, a mode of operation equivalent to our former '-x' mode is now provided. This restores the ability to run **FieldView** from a remote system, displaying to a user desktop. There are two implementations for remote



operation. One is based on remote hardware rendering; the other is based on remote software rendering. X protocols are still needed to run **FieldView** in this way. Notably, **FieldView** runs well with screen scraper applications such as HP Remote Graphics Software (RGS).

Viewing PDF Help Documents

Your **FieldView** documentation is primarily composed of PDF files. On WINDOWS systems, Adobe® Acrobat® is widely available, and **FieldView** is designed to work with this PDF Viewer only. On LINUX systems there are several PDF Viewer options. Here, **FieldView** will automatically look for one of several standard PDF viewers, like Adobe® Acrobat® (or acroread), Evince, Kpdf or Xpdf, or let you pick your the PDF viewer of your choice.

Other Important Improvements

- The **FieldView for MAC** port, featuring the native Cocoa interface, joins the **FieldView 13** family, complete with our high speed, multi threaded graphics and new GUI.
- On exit from an interactive **FieldView** session, a complete **backup restart** is automatically saved, thereby helping you to avoid losing work.
- Our highest performance **Stereo Viewing** implementation to date seamlessly leverages the speed of XDB data import, the ability to animate streamlines while moving your model with multi-threaded graphics, and smooth interactive feel delivered through sweep caching.
- **Magenta** coloring of surfaces with out of range **Inf/Nan values** is now enabled.
- A new **SCRIPT** command, **DUPLICATION**, has been added to automate the mirror and rotational duplication dataset operations.
- Reading PLOT3D and OVERFLOW-2 datasets is made easier with **auto-detection** of file formats and attributes. This feature also works with FVX.
- The **FieldView GUI fonts** can be resized (up to 200% larger) making them easier to read.
- Interactive **performance** has been improved for 3D presentation rendered vectors by a factor of **4X**. Performance for 2D vectors has also been improved. There is a known problem with large memory requirements for this type of display which will be addressed in a subsequent release.
- A new **tutorial** has been added to demonstrate **how to create XDBs**, and use them with dataset sampling for dataset comparisons.
- The limit for **title** annotations has been increased to **512** characters.
- **File selectors** now have **filters** for known **FieldView** file extensions, such as .fvp for particle paths, and .fv, .uns or .fvuns for **FieldView** unstructured data files.
- The look of **2D plots** has improved, with better line quality, less white space around the borders, and automatic re-coloring of the 2D plot axes and annotation to provide maximum contrast when the background color is changed.
- **Legends** can now be scaled smaller, and fixes to appearance and placement for older restarts are added.

