



Pointwise V16.02 Release Notes

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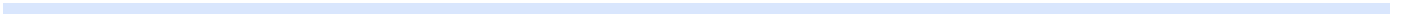
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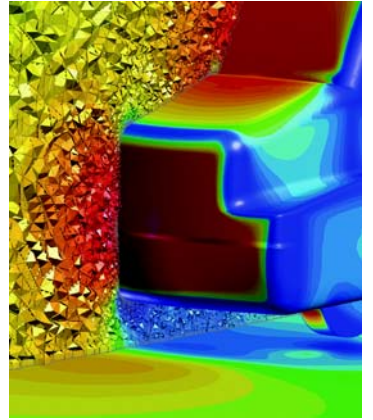
Release Notes

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Release Notes



1.2 Pointwise Release Notes

Overview

Pointwise is our new, next-generation of meshing software. It combines the meshing techniques developed over 23 years in Gridgen with a new graphical user interface that reduces the effort needed to create grids. Gridgen users will find that although the user interface is different, many of the underlying techniques are the same.

Graphical User Interface

Pointwise's GUI has replaced Gridgen's nested menus with a flat menu-driven interface that includes customizable toolbars for access to frequently used commands.

Pointwise uses a noun-verb interaction model. The entities to be operated on (nouns) are first picked, and then the action to be performed on them (verb) is selected. After the action is completed the entities remain selected so that further commands can be applied immediately.

Selection in Pointwise follows the standard Left Mouse Button (LMB) convention with the additional abilities to use **Ctrl**+LMB for additive selection and **Shift**+LMB for range selection.

Selection in Pointwise is heterogeneous; different types of entities can be selected simultaneously (e.g. both connectors and domains). Some commands operate on multiple entity types and some only operate on the selected entities that are of a particular type. Selected entities that are not applicable for the command are ignored.

Image manipulation in Pointwise is done by mouse movement in conjunction with:

- Panning - **Ctrl** + Right Mouse button
- Zooming - Middle Mouse button
- Rotating - **Shift** + Right Mouse button

Over the next several months additional capabilities will be added to Pointwise, both its GUI and the core meshing technologies, until it is ready to replace Gridgen.

New Features for V16.00

Although the GUI is the obvious new feature in Pointwise, several major new features have also been added. These new features include:

- Multi-level undo and redo with ability to revert to states stored in a history list. The number of undo levels is user configurable.
- Automatic assembly of connectors into domains. The selected connectors will be assembled into a domain or domains if possible.
- Automatic assembly of connectors, domains, or combinations of connectors and domains into blocks. The selected entities will be assembled into a block or blocks if possible.
- Support for 64-bit hardware.

Several other features in Pointwise are new relative to Gridgen.

- Support for VRML 2 files.
 - Simultaneous transformation of grid and database entities.
 - The ability to change the orientation of domains.
 - Naming for all entity types.
 - Improved CGNS support, including import.
 - Shell intersections.
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- DB curve drawing and connector drawing are now identical, including the ability to create multi-segment database curves.
 - Native Mac/Intel port.

New Features for V16.01

The following is a listing of the new features found in Pointwise V16.01:

- The ability to layer grid entities within the Layer Manager panel
 - A new boundary condition has been added to the elliptic solver for blocks. A floating boundary condition can be applied to interfaces shared by blocks so that they are treated as internal grid lines when the solver is running.
 - Anisotropic meshes from Gridgen V15.13 imported into Pointwise will now have all anisotropic tetrahedra recombined into prisms when exported to CGNS. The recombination includes both complete and incomplete layers of anisotropic tetrahedra.
 - Export of VRML V2.0 files
 - Import of UCD grid files
 - Four new selection commands - Toggle Selection, Select Adjacent, Select All Adjacent, and Angle Limit.
 - Rotational extrusion for domains and blocks.
 - New versions of the extrusion tools for Normal, Translate, and Path extrusions
 - A new version of the distribution tools
 - The Orient command for database curves, surfaces, connectors, domains, and blocks.
 - Linear and Orthogonal TFI Methods for domains in the grid solver.
 - The Rotation Point for the Display window can now be set either by clicking in the Display window or by specifying an XYZ point.
 - The ability to copy dimension, scaled distributions, or spacings from a string of subconnectors to another subconnector
 - The Paste command now has an option for modifying the distribution of a pasted entity before saving it.
 - Break points are available for use with connector distributions.
 - Database curves, surfaces, and shell intersection curve joining
 - The ability to create exact 180 degree circular curves
 - The **Alt+RMB** accelerator to obtain a point's XYZ coordinates and the distance between it and the last point selected.
 - Connectors may now be split at their control points.
 - Shell surfaces can be intersected with each other.
 - The ability to specify the bending angle within which an entity is considered adjacent using the *Angle Limit* command
 - Connectors and database curves smoothing using C1 curve approximation with the Edit, Smooth command.
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- The ability to edit the slope of bezier curves in the Edit, Curve command
- The display of tangent lines to conics is shown whenever creating or modifying a conic curve.
- Boundary conditions are exported along with the grid for FV-UNS.
- A new command within the Attributes panel that allows you to quickly apply rainbow colors to the selected entities
- More feedback on entities highlighted in the List panel or Display window is shown in the Status bar.

New Features for V16.02

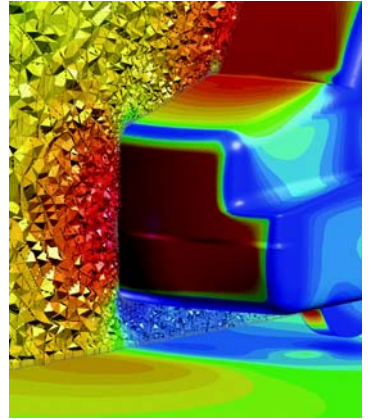
The following is a listing of the new features found in Pointwise V16.02:

- Twenty-five mesh quality metrics can be computed and displayed using the Examine command. New capabilities relative to Gridgen include drag and drop cutting planes, interactive probing of individual cells, a movable and resizable color bar, and several new options for the graphical display. Automated mesh quality monitoring is available using Rules, a top-down means of gauging global mesh quality relative to user-defined limits.
 - Computationally two-dimensional blocks consisting entirely of domains can now be created, their axes oriented, CAE boundary conditions set, and CAE files exported.
 - Native interfaces to the following CFD solvers were added: OVERFLOW, GUST, TEAM, ADPAC, INCA V2, VSAERO, COMO, CFDShip-Iowa, CRUNCH, PHOENICS, DTNS, FANS, FALCON, FDNS/UNIC, Splitflow, CNSFV, NCC, NPARC, and TACOMA.
 - The Glyph2 Reference Manual and the Glyph2 command manual pages are now available for use. The Glyph2 Reference Manual is included in each Pointwise installation in the doc/ directory. The Glyph2 command manual pages can be found online at <http://www.pointwise.com/glyph2>.
 - Axis selection is now performed consistently and with a variety of choices for all commands that require an axis such as Revolve.
 - A fourth circle creation mode was added to Draw Curves. This new mode lets you create a circle from a point at the end of the arc, the circle center, and the angle to be swept by the arc.
 - Coons patch surfaces can now be created in the database. This surface type is very useful for filling small holes or covering missing features. Using an algorithm similar to Gridgen's, Coons patches are created simply by picking the edge curves around the perimeter of the area to be filled.
 - Fillet surfaces can now be created in the database. Known as polyconic surfaces in Gridgen, fillets are useful for smoothly blending intersecting geometry.
 - The ability to create point entities in the database has been added.
 - The ability to create linear sweep surfaces in the database has been added.
 - Unstructured domains can be created by diagonalizing the quads in a structured domain.
 - Rotating the image in the Display window with the keyboard or mouse automatically saves the so-called Dynamic View. The user can then quickly restore the dynamic view after recalling any of the 6 built-in or 6 user-defined views.
 - Unstructured domains can now be joined.
 - Least squares fitting of a connector's grid points is now available. When importing grids directly, this is a valuable feature to reducing a connector to a more easily editable shape.
 - The spline command (Fit in Gridgen) is now available for use in converting linear or bilinear database geometry into smooth cubics.
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- A new Mouse Style choice has been added to the Preferences command. Choosing Gridgen style makes the mouse buttons for panning, zooming, and rotating the image work just like Gridgen. You can also apply Gridgen's Left Pick option.
 - The Solve command now lets you select a mix of entity types (domains and blocks, structured and unstructured). In this case, a panel will appear from which you choose which solver to run.
 - Entering coordinate data now leaves the XYZ widget highlighted for ease in entering the next point.
 - As part of a joint effort with Gridgen V15.13, Pointwise can be used to recover more prisms from an anisotropic tetrahedral mesh than Gridgen resulting in up to 40% fewer total cells in the mesh.
 - A tolerance can be set for joining database entities.
 - Commands that provide for modal selection now employ a 1-button interface rather than two separate buttons for starting and stopping the selection mode.
 - **Shift+Ctrl**+MMB (middle mouse button) can be used to get a point's location or measure the distance between two points. This was available in V16.01 as **Alt**+RMB but there were key conflicts on non-Windows platforms. In order to make this change, we also changed the manner in which the zoom box worked. While pressing **Shift**+MMB, sweeping down performs a zoom-in and sweeping up performs a zoom-out.
 - A native interface to the OpenFOAM CFD solver is now available.
 - The status bar now indicates the difference between unconstrained and constrained spacing constraints when they are selected.
 - The multigrid algorithm for the structured block solver now incorporates threads to spread the computations over multiple CPUs/cores on Windows computers, increasing the speed of the solver.
 - Buttons for the unstructured solver's Refine and Decimate features are now available on the toolbar.
 - A new selection preference has been added to the Preferences command. The default behavior for selection is for it to be exclusive; the mouse button selects the entity clicked on and unselects everything else. This behavior is modified by pressing **Ctrl** in addition to the mouse button so that selection is additive; the mouse button selects the entity clicked and does not change the selection status of anything else. The new preference lets you make the unmodified behavior of the mouse additive in the same manner that Gridgen worked.
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Resolved Issues



2.2 Pointwise Release Notes

Pointwise V16.02 Release 3

The below listing is provided as a reference for issues that were fixed in Pointwise V16.02 R3:

- SPR 11689** - Changing the dimensions of a domain that was constrained to a database surface with a singularity caused issues with the domains TFI.
- SPR 11684** - For a particular anisotropic grid, Pointwise was unable to extract prisms during CGNS export.
- SPR 11655** - Exporting the transition duct tutorial file from Pointwise to Gridgen caused issues with domain connectors.
- SPR 11624** - Importing a particular database file into Pointwise caused it to exit prematurely.
- SPR 11601** - Exporting a particular database file to Gridgen caused Pointwise to exit prematurely.
- SPR 11546** - Structured blocks created in an earlier version of Pointwise were being reported as left-handed in the Edit, Orient command even though they were right-handed.
- SPR 11545** - Exporting a particular grid to CFD++ caused Pointwise to exit prematurely.
- SPR 11511** - Exporting a particular grid to CGNS caused Pointwise to exit prematurely.
- SPR 11456** - A block extrusion containing poles contained improper marching directions at the pole.
- SPR 11423** - Intersecting two shell entities was resulting in 0 intersection curves.

Pointwise V16.02 Release 2

The below listing is provided as a reference for issues that were fixed in Pointwise V16.02 R2:

- SPR 11396** - Setting all block faces to a Floating boundary condition caused a grid to diverge when run through the grid solver.
- SPR 11327** - Changing the CAE solver after reloading a project file was preventing boundary condition physical types from being changed.
- SPR 11299** - A translational block extrusion was generating negative volumes and Jacobians erroneously.
- SPR 11242** - Pointwise's installer package was only placing the Pointwise shortcut icon in the Start, Programs folder of the user who installed it instead of all users.
- SPR 11232** - CGNS Export with anisotropic cell recombination enabled was failing for a specific grid.
- SPR 11172** - The positive skew Jacobian stop criteria for extrusion was working improperly for an extrusion face in which multiple domains met at a pole.
- SPR 11141** - Dimensioning a connector caused it to come off its prescribed database surface.
- SPR 10782** - Extruding domains hyperbolically was creating duplicate connectors and nodes in a grid.
- SPR 10765** - Connectors created automatically on a particular database surface were not being joined when the connector join option was toggled on.
- SPR 10105** - Importing a large Gridgen restart file into Pointwise never completed due to tolerancing issues within the file.

Pointwise V16.02 Release 1

The below listing is provided as a reference for issues that were fixed in Pointwise V16.02 R1:

- SPR 11154** - Opening a file in Pointwise when a project was already in work failed to trigger the Append mode for adding the data to the existing workspace.
 - SPR 11098** - Exporting a particular block to Fluent caused Pointwise to exit prematurely.
 - SPR 11095** - Pointwise exited prematurely after joining two connectors.
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- SPR 11071** - The grid solver was not releasing memory properly when a solved structured block was initialized.
 - SPR 11031** - On a collection of database constrained domains, setting the floating boundary condition in the grid solver caused issues with domain quality.
 - SPR 11015** - Exporting a project to Gridgen causing an internal error within Pointwise.
 - SPR 11013** - Pointwise exited prematurely after importing a project file.
 - SPR 10999** - Importing a particular domain into Pointwise corrupted part of the domain.
 - SPR 10980** - For a particular Gridgen database file imported into Pointwise, the pcurve database entities were missing.
 - SPR 10958** - For STAR-CD export, the Volume Condition ID was not being set properly.
 - SPR 10900** - The Jacobian examination results for a single structured block differed between Pointwise and Gridgen.
 - SPR 10896** - Splitting a connector caused its associated domain's initialization to change.
 - SPR 10895** - Export of an unstructured block with boundary conditions to FV-UNS resulted in an output file missing the appropriate flags in front of the boundary condition names.
 - SPR 10880** - Joining a particular set of connectors caused Pointwise to exit prematurely.
 - SPR 10855** - Splitting a domain created in Gridgen caused corruption within the resulting domains.
 - SPR 10775** - Single and double precision ASCII PLOT3D export was writing identical files.
 - SPR 10739** - Pointwise was unable to import a particular PLOT3D file.
 - SPR 9982** - Initializing an unstructured block failed in Pointwise.
 - SPR 9385** - Pointwise performance for certain tasks was reported to be slower than Gridgen.

Pointwise V16.01 Release 3

The below listing is provided as a reference for issues that were fixed in Pointwise V16.01 R3:

- SPR 10846** - The numbers appended to BC descriptions for ANSYS Fluent and ANSYS CFX export files were changing when slight modifications were made to the grid.
- SPR 10808** - Copying a database constrained connector resulted in a new connector with a database curve type.
- SPR 10794** - Unstructured mesh node merging resulted in a singular connector that was not removed automatically forming a highly skewed cell.
- SPR 10735** - Special connector topology caused the Float boundary condition in the structured block solver to fail with an error.
- SPR 10651** - When modifying the distribution of grid points along a connector in an extruded block, the shape of the connector changed.
- SPR 10529** - Splitting a database curve and then connector by picking the same database point failed in an exception.

Pointwise V16.01 Release 2

The below listing is provided as a reference for issues that were fixed in Pointwise V16.01 R2:

- SPR 10526** - For a particular grid, export of a block to Cobalt failed.
 - SPR 10506** - Using the floating boundary condition for the interior edges of two database constrained domains resulted in a poor grid when the grid solver was run.
 - SPR 10437** - A structured mesh exported from V16.00 developed topology issues when imported into V16.01 R1.
 - SPR 10403** - For a particular grid, export to Gridgen failed with an exception.
 - SPR 10402** - A collection of database constrained extruded domains that were copied and pasted developed corruption in the copied versions.
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SPR 10341 - A set of grids were seen to lose their solver selection and their boundary conditions when exported to Gridgen from V16.01 R1.

SPR 10321 - A fault in the way the shared nodes between connectors were being handled during extrusion was preventing the application of step suppression in the extrusion.

SPR 10230 - Exporting a grid from Pointwise to Gridgen failed with an exception.

Pointwise V16.01 Release 1

The below listing is provided as a reference for issues that were fixed in Pointwise V16.01 R1:

SPR 10047 - Boundary and Volume Condition names set in Gridgen were not importing correctly into Pointwise.

SPR 9997 - Pointwise becomes unresponsive when using the Ctrl+C and Ctrl+V accelerators for a particular grid.

SPR 9995 - The Paste panel did not appear when using the Ctrl+A, Ctrl+X, Ctrl+V accelerators in combination for a set of blocks.

SPR 9962 - Translating a mixture of database and grid entities did not work properly for a particular project.

SPR 9900 - Changing the dimension of a particular structured block caused the block to empty.

SPR 9864 - Export of an empty block to Gridgen caused Pointwise to exit.

SPR 9863 - A Gridgen file was not imported properly into Pointwise.

SPR 9786 - A database consisting of trimmed surfaces could not be intersected with a plane.

SPR 9746 - A Gridgen file could not be imported into Pointwise due to an issue with importing the tolerances.

SPR 9736 - Export of a large grid to the CGNS CAE caused Pointwise to become unresponsive.

SPR 9691 - Importing a set of Gridgen native database and grid files into Pointwise, then re-exporting them to Gridgen resulted in Pointwise becoming unresponsive.

SPR 9644 - The import of a VRML file caused an uncaught exception in Pointwise.

SPR 9642 - Creating domains on shell database entities resulted in poorly created domains.

SPR 9637 - Adding domains to a block face in Create, Assemble Special caused Pointwise to become unresponsive.

SPR 9435 - The import of a Gridgen .dba file caused Pointwise to exit due to faulty trimmed surfaces.

SPR 9410 - The import of a Plot3D file failed due to the presence of a pole in the topology.

SPR 9383 - Connectors imported from a particular Gridgen restart file were not the correct shape.

SPR 9381 - Export of database entities to a Gridgen composite database file caused displacement of some entities.

SPR 9359 - Ansys CFX export was missing options for binary and single precision.

SPR 9349 - The solver and boundary conditions set in Gridgen restart files was not being imported into Pointwise.

SPR 9336 - Import of a Gridgen V15.06 restart file produced error messages as well as uncaught exceptions.

SPR 9316 - Export to Gridgen was causing an uncaught exception for a particular database and grid.

SPR 9301 - The Ctrl+D accelerator was unavailable in the Set BC panel.

SPR 9237 - Running the grid solver was causing points on a domain to pull off its associated database.

SPR 9231 - Exporting a grid to Gridgen from Pointwise caused some of the grids connectors to lose their database associativity.

SPR 9214 - Export of a certain grid to FV-UNS resulted in an incorrectly formatted FV-UNS file.

SPR 9199 - A problem was encountered with the tolerances used in hyperbolic extrusion of a block with an extremely small initial step size.

SPR 9197 - Exporting a Pointwise file to Gridgen caused an uncaught exception error.

SPR 9126 - A Gridgen restart file exported from Gridgen failed to import into Pointwise with its associated database composite file.

SPR 9108 - In the Quick Installation Guide, instructions for setting up a machine to access a distant license server were missing.

SPR 8770 - During import of a segment file, a problematic segment caused Pointwise to fail to import any segment from the file.

SPR 7771 - The error message that was appearing for expired license files needed clarification.

SPR 7676 - When performing prism extrusion for a particular grid, the resulting extrusion proceeded too slowly.

SPR 6910 - When dragging some toolbars around the interface, other toolbars were not updating correctly.

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