Perform3D v8.0.0 Release Notes

Notice Date: 12-June-2021

This document lists changes made to Perform3D since v7.0.0, released 30-January-2018. Items marked with an asterisk (*) in the first column are more significant.

Analysis

Enhancements Implemented

*	Ticket	Description
	2122	An enhancement was made to increase the maximum number of mode shapes allowed for each analysis series from 50 to 99.
	5771	The Run/Set Up Analyses task (Analysis phase) has been enhanced so that the existing analysis lists for each analysis series will be copied to a new model created when the model is saved as a new structure (File menu > Save as a New Structure).
	5772	The Run/Set Up Analyses task (Analysis phase) has been updated so all analyses that have been run will be moved to the analysis list when using the "Delete analysis results but keep Analysis Series" settings. In previous versions, some analyses, such as Response Spectrum load cases, would not be moved to the analysis list.

Data Files

Enhancements Implemented

*	Ticket	Description
*	1893	An enhancement was made to allow earthquake records with more than 32,692 time steps to be used.
	6463	Limited support is provided for running models and viewing results when the model files are located in a local folder that is synced with OneDrive cloud storage. While this usually works well, some limitations should be noted: (1.) The model file should be located on a local drive and synced with cloud storage, not directly located on the cloud storage. Direct file reading and writing to the cloud is not supported. (2.) Adequate storage needs to be available on the local machine as well as at the synced cloud storage location. (3.) It is recommended to have administrative rights on the local machine. (4.) It is not recommended that the logins for the local machine and the cloud storage be for the same domain but different users. (5.) Internet connectivity should be fast and reliable when working with a model in a synced folder, otherwise analysis may be slow or may not complete. (6.) The same model should not be run on multiple machines that are synced to the same cloud storage location. This could result in incomplete or incorrect results. For best performance, it is recommended to run and view the model in a folder that is not synced to cloud storage, then copy the files to the synced folder later for backup and sharing. Alternatively, syncing can be paused or disconnected while the model is in use.

Database Tables

Enhancements Implemented

*	Ticket	Description
*	4238	Analysis results and performance measures can now be displayed and exported in table format, replacing the need to read results from binary files. Displayed tables can be accessed using the menu command Table > Show Tables and can be filtered and sorted. Tables can be exported in text, XML, Excel, and Access formats using the command File > Export.

*	Ticket	Description
*	4894	Tabular output can now be defined for automatic export after the analysis is compete using the command Tables > Define Automatic Tabular Output. When enabled, this will save the specified output tables in either XML, Microsoft Excel, or Microsoft Access formats. The following features are available for configuring the output tables: (1.) Table named sets can be defined using command Tables > Define Table Named Sets and can be used to specify a pre-selected set of output tables. (2.) Selection Groups can be defined in the Selection Groups section of the Select For Nodes and Elements form (Tables > Show Tables) and can be used to specify a pre-selected group of nodes and elements when the output table results are limited by selection. See also Ticket 4238 of this release for additional information about tabular output.
*	4895	An enhancement was added for automatic tabular output after analysis is complete (Tables menu > Define Automatic Tabular Output). For each tabular output file, a Table Named Set (Tables menu > Define Table Named Sets) and Table Selection Group (Tables menu > Show Tables) can be specified to limit the output contents. Multiple tabular output files can be defined. See also Ticket 4238 for more information on tabular data.

Documentation

Enhancements Implemented

*	Ticket	Description
*	3943	Help documentation is now available from within the software using the Help > Perform3D Help command. Context-sensitive topics are available by pressing the F1 key when actively using the various forms (dialogs) within the graphical user interface. The Help menu also includes access to all manuals and documentation that are included with the installations, and links to online resources for further information.

Graphics

Enhancements Implemented

*	Ticket	Description
	4618	A new menu command, Options >Set Display Options, has been added to control aspects of the model display such as whether or not to show node and element names, sizes of the objects and text, and the choice between a dark- or light-colored theme.
*	6106	Several enhancements were made to the graphical display of the model: (1.) A Dynamic Rotation button has been added to the toolbar to enable rotation of the view around the horizontal and vertical axes. (2.) The Aperture Angle can now be used to set the perspective view. Previously this was done by defining the distance ratio, which is still available. (3.) White and Black background themes have been added to the Display Options form. (4.) Options to show an extruded view of 2-node elements and to graphically display hinge locations have been added to the Display Options form.

Installation and Licensing

Enhancements Implemented

*	Ticket	Description
*	2178	The version number has been changed to v8.0.0 for a new major release. A new v8 license will be required. Note that the name of the data folder in the user Documents location has been changed from PERFORM-3D to Perform3D.
*	4234	Perform3D now utilizes cloud licensing by default, allowing access to the license by multiple users and/or from multiple machines. The number of simultaneous users corresponds to the number of licenses owned. Cloud licensing requires connection to the internet while using the software, either directly or through a proxy. Connection to a company network or VPN is not necessary. Licenses can be checked out for a limited time period to allow use while disconnected from the internet. Legacy licensing options (Standalone and Network) are still available upon request.

Results Display and Output

Enhancements Implemented

*	Ticket	Description
*	2085	An enhancement was made to allow element-force and drift results files to exceed 2 GB. In earlier versions the software would give an error condition when using the "Combinations and Envelopes" task of the Analysis Phase if files exceeded this size limit.
*	4634	An enhancement was made to allow printing of the deflected shape and mode-shape displays, including a new print preview feature.

User Interface

Enhancements Implemented

*	Ticket	Description
*	2181	A new graphical user interface has been developed to provide improved functionality and graphical clarity.
	4518	An enhancement was made to enable toolbar buttons for zoom, middle-mouse button for pan, and mouse-wheel for zoom operations in the Modal Analysis Results and Deflected Shapes tasks (Analysis Phase). The zoom in/out and pan capabilities are not available during animation. Note that printing of the display is only available when the full view is shown.
*	4619	Properties of individual nodes and elements can now be viewed by right-clicking on them when viewing the undeformed shape of the structure. This will include identification, location, geometry, assignments, and loading, as appropriate.
	5768	An enhancement was made to the component import and export feature (Component Properties task in the Build phase) so a user-defined path can be pasted in the "Read Component Properties from a File" and "Write Component Properties to a File" form. This is an alternative to the existing option to use the default folder or browse for a folder location.

Analysis

Incidents Resolved

*	Ticket	Description
*	3359	An incident was resolved where one or more of the following data might have been erroneously obtained from a different Analysis Series instead of the current one when running multiple Analysis Series in parallel: (1.) Type of load sequence (Standard or General) for Gravity and Static Pushover load cases. (2.) The operation to restore removed elements (if any) for subsequent Gravity, Static Pushover, Dynamic Earthquake, Dynamic Force, and Response Spectrum load cases with a preceding Gravity load case starting from unloaded state. This issue was timing-dependent. The affected load cases might have failed to run altogether, or they may have run using wrong Analysis Series data leading to incorrect results. The issue most frequently manifested itself by failing to restore elements removed for a gravity analysis in subsequent analyses, and consequently when it happened the invalidity of results was obvious. To ensure correctness of results, it is recommended to re-run models that have elements ignored for Gravity load cases if parallel analysis was used. Results from models with Analysis Series ran sequentially were not affected.
	3918	An incident was resolved where, when using the Upper/Lower Bound feature on an Inelastic 1D Concrete Material component without tension strength enabled, the following Upper/Lower Bound options could result in a run-time error when trying to run analysis: Effect on Deformation DU option "DU/DY", Effect on Deformation DL options "DL/DY" and "DL/DU", Effect on Deformation DX options "DX/DY" and "DX/DU", and Effect on Deformation Capacities options "DC/DY" and "DC/DU". In addition to resolving this issue, the graphs in the component form showing the effect of U/L Bound Ratios for those Upper/Lower Bound options have been updated to be consistent with the analysis behavior of the component.
*	5853	An issue was resolved where, when running analysis series in parallel, an error message "FILE ERROR - OPENING NEW FILE" could be present in the ECHO.txt file. This was a reporting issue and did not affect analysis results.
*	5963	An incident was resolved where, when certain multi-degree-of-freedom nonlinear components underwent a strain reversal between the L and R points of the backbone curve, the residual strength of the component was fixed at the level where the reversal occurred and did not drop further to the action defined for point R of the backbone curve. This issue affected the following components: (1.) P-M2-M3 Hinge, Steel Rotation Type; (2.) P-M2-M3 Hinge, Steel Curvature Type; (3.) FEMA Column, Steel Type; (4.) V2-V3 Shear Hinge, Displacement Type. This behavior was not common because load reversal when losing strength is not common in most practical models.
*	6474	An issue was resolved where the YULRX-type cyclic degradation was not being considered before the L-point when the E-P-P shape of relationship was used for the following components: (1.) FEMA Column, Steel Type; (2.) FEMA Column, Concrete Type; (3.) P-M2-M3 Hinge, Steel Rotation Type; (4.) P-M2-M3 Hinge, Concrete Rotation Type; (5.) V2-V3 Shear Hinge, Displacement Type.

Drafting and Editing

Incidents Resolved

*	Ticket	Description
*	5948	An issue was resolved where, in the Nodes task (Build Phase), the program may terminate abnormally if the polar-coordinates option was used to add a new node while in a frame view. This issue has been resolved and the option to create a new node in polar coordinates now works as intended in all views.

External Import and Export

Incidents Resolved

*	Ticket	Description
	3341	An incident was resolved where a "Column, Inelastic Fiber Section" cross-section component could not be exported with the option "Selected components of this type" if the fiber section component contains structural or monitored fibers of the type "Inelastic Steel Material, Buckling". This behavior has been corrected and "Column, Inelastic Fiber Section" cross-section components can be exported with all material components.
	4930	An Incident was resolved where the Fluid Damper and BRB compound components and the Shear Wall, Elastic Section component could not be imported to Perform3D. Additionally, the General Wall Compound Component could not be exported unless the component has both "Conventional Shear" and "Shear from Diagonal Compression" defined. This behavior has been corrected.

Graphics

Incidents Resolved

*	Ticket	Description
	5770	An incident was resolved in the Nodes task (Build phase) where, when nodes are selected in the Supports tab and the user moves to the Move tab under the Nodes tab, the selected nodes in the display would be filled with a black color and appear invisible against the black background. This issue has been resolved by clearing the node selection when leaving the Support tab. This is a user-interface issue and does not affect results.

Loading

Incidents Resolved

*	Ticket	Description
*	3158	An incident was resolved where, when element loading was applied such that two or more elements in different element groups but with identical element numbers were in listed consecutively in the loads applied for a load pattern (as listed in the ECHO file), the loads applied to those elements and the following elements could be incorrect. This issue was rare and mainly affected models where one or more element groups had only one element. When this issue occurred, the incorrect loads were reflected in the element response and model behavior, including the Resultant Applied Loads reported in the ECHO file for the load cases where the element loading was applied.

Results Display and Output

Incidents Resolved

*	Ticket	Description
	5947	An incident was resolved where, in the Deflected Shapes task (Analysis Phase), the thumbnail view of the structural response in the Plot Options group box may show a response even if no load case is chosen for display. The thumbnail view of the structural response is now cleared when switching to a new analysis series and updated when a load case is chosen for display.

Structural Model

Incidents Resolved

*	Ticket	Description
*	3412	An incident was resolved where, if a "Linear P/V/M Hinge or Release" component was used in a compound frame component, an element that the component is assigned to would always be released in torsion. The behavior is revised so a "Linear P/V/M Hinge or Release" component only releases the torsional degree-of-freedom if the torsion release is selected in the component definition. Due to this change, the results for the example model that is included with the installation of Perform3D differ slightly between previous version 7.0.0 and the present version 8.0.0.

User Interface

Incidents Resolved

*	Ticket	Description
	5769	An incident was resolved in the Nodes task (Build phase) where, when selecting nodes in the Duplicate tab and switching to the Delete tab under Nodes, the number of selected nodes was shown as zero (0) but the selected nodes were retained. The behavior has been corrected so that the number of selected nodes reflects the selection and the selected nodes will not be cleared when switching from the Duplicate to Deleted tab. The user can manually clear selected nodes using the "Clear" button. This is a user-interface issue and does not affect results.
	5790	An incident was resolved in the Drift and Deflections task (Build Phase) where, when adding a new drift and then switching to the deflection tab, the node selection in the display did not reset and prevented the user from defining a deflection with the same nodes as the previously defined drift. This was a user-interface issue and did not affect results.