# What's New in PSCAD v4.5.2

(*since v4.5.1*)

PSCAD

Deficiency Fixes:

1. **Nodes Generated by Meters are No Longer Counted When Validating Project Size for Licensed Edition**: A new node counting algorithm has been added, which does not consider superfluous nodes generated by the use of ammeters and multi-meters (#4547).
2. **Branch Search**: The ability to search for network branches according to number has been added to the search utility (#912).
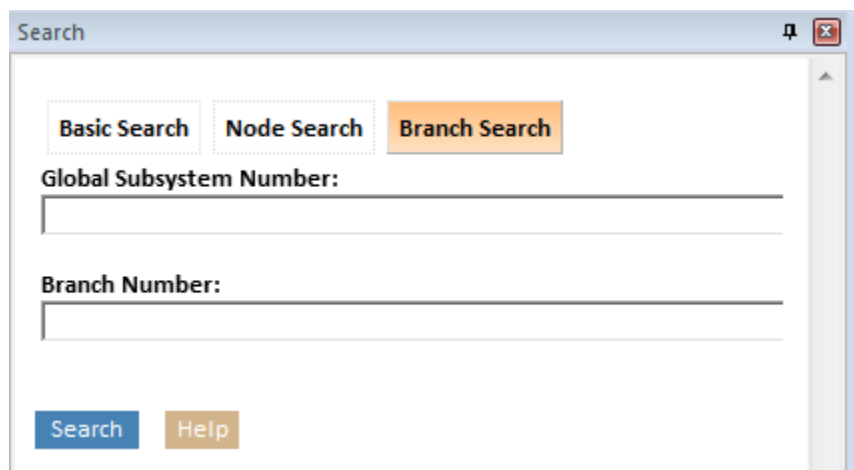
3. **Option to Create a New Definition Only**: An option was provided to the component wizard to allow for the creation of a component definition, without a corresponding instance (#4430).
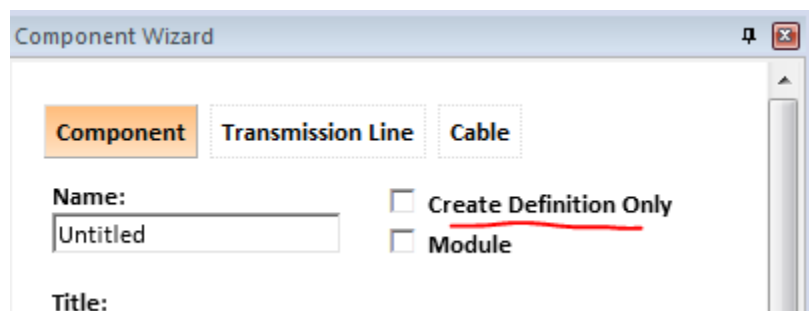
4. **'Copy with Dependents' Will Now Include Custom Definitions**: When copying module hierarchies using the 'Copy with Dependents' feature, custom component definitions will now be included in the list of dependent definitions. In past versions, these components were left out (#4376).

5. **Create Folder if One Does Not Exist:** When creating a new case or library project, PSCAD will now offer to create a new folder if the folder specified does not exist (#4640).

6. **Virtual Wires Filter**: A virtual wires filter has been added to the canvas settings dialog. Actual signal names can be entered into this field to limit what virtual wires are drawn. The field allows the user to specify one or more comma separated signal names to display. An empty field will assume default behaviour and include all wires; or an asterisk (*) can be inserted in the list to include all, without the need to delete the signal list. This helps immensely in tracking down paths for specific signals (#2008).

7. **Canvas Lock**: A canvas lock has been added to ensure components effecting the simulation cannot be moved or dragged during the simulation. This lock is only applied during runtime, and is only applied to module instances located in a running project (#1597).

8. **Component Animation and Multiple Module Instances**: An animation interface compatible with multiple instance modules has now been implemented. As an example, take a multiple instance module with a breaker inside it. The state of this breaker can be different in each module instance. PSCAD now updates the animation state on the next plot step; so the animation state will be shown properly when switching between instance views. Note however that once the runtime is complete, the animation state will no longer be updated when switching instance views (#3017).

Bug Fixes:

1. Fixed crash problem related to deleting parameters in the parameter editor (#4469).
2. Table parameter row deletion functionality has been improved (#4473).
3. Parameter descriptions will now update immediately in the parameter form editor, upon enter key pressed or cell exit (#4471).
4. A node mapping error has been fixed related specifically to using inter-project, multiple instance modules that contain a hierarchy of three or more levels (#4511).
5. The dialog warning of no output channels in a project has been moved from the build to the runtime process. It will now only pop-up if you attempt to run the project (#4510).
6. Blackbox now uses the black-boxed definition name instead of the source module name for naming Fortran and compiled files, as well as subroutine names. This ensures that black-boxed components can be used along with their source module in the same project. Also, long definition names are handled properly (#4564).
7. Fixed display issue pertaining to output channel curves when used in inter-namespace modules. Only curves for a particular module instance are displayed within that module instance (#4131).

8. Blackbox now adds a call to EMTDC intrinsic function 'COMPONENT_ID' so that if errors are generated navigation will lead to the proper component (#4565).
9. The application no longer crashes when attempting to re-run a case with an unsuccessful build. This problem was only occurring in specific projects, and was due to an improper netlist creation (#4521).
10. PSCAD no longer continues to the linking phase if errors are generated during build. An unsuccessful build flag was not being checked (#4556).
11. It is no longer possible to delete the top-level module definition (normally 'Main') in a project (#4413).
12. Fixed unhandled exception involving empty scenarios by improving error handling (#4580).
13. Projects will now start from a snapshot file properly when that file is external to the temporary folder (#4563).
14. The snapshot file is now given a generic name 'input_snap' when copied to the temporary folder for processing. This avoids potential snapshot file overwrite if the external snapshot file has the same name as one existing in the temporary folder (#3141).
15. The 'Create Compiled Library (*.lib)' feature is now functioning properly (#4548).
16. Components will no longer disappear when box selected, following a ctrl + left mouse drag (#4500).
17. Found and fixed a 'crash on exit' bug. This turned out to be a simple problem with object deletion during the destruction sequence on exit (#4600/4577).
18. Undo/redo now handles the movement of single components about the canvas properly (#4624).
19. A namespace is now properly pre-pended on tower and ground components that are part of transmission line or cable components (#4502).
20. A namespace is now properly pre-pended to the definition name on instances of transmission lines and cables that do not have a namespace assigned. This occurs only when older projects are imported or loaded (#4501).
21. All component creation menu points have been changed to simply a direct access to the component wizard pane (#4541).
22. The component wizard now properly names new t-lines and cables. By default, a new segment and definition name are set to whatever is entered in the wizard name field (#4646).
23. New components created using the component wizard will now appear, attached to the mouse pointer, in the centre of the schematic canvas. This is meant to alleviate improper usage of component wizard, especially in new users (#4603).
24. Output files are no longer overwritten when the user selects to not overwrite. Previously, output files were overwritten regardless whether or not the user select 'yes' or 'no' in the corresponding dialog (#4656).
25. Plotted curves are no longer visible in definition view (#4631).
26. Curves no longer stop being plotted when plot step is changed during runtime (#4622).
27. The project context menu (right-click menu) in the workspace is no longer delayed for several seconds when opened for very large projects (#4497).

28. The RTP/COMTRADE recorder icon is now displayed properly when viewing definition runtime objects (part of the definition context menu in the workspace primary window) (#4576).
29. The project namespace is now displayed properly in the workspace secondary window, according to the 'Namespace' display application option (#4574).
30. Module navigation is once again possible following two name changes to its definition (#4669).
31. The Re-Map References no longer uses a partial string when querying definition names. This resolves a problem in re-referencing definitions with different names that contain the same sub-string (#4672).
32. Search results that require navigation to the station-level canvas are now ignored (#4668).
33. The temporary folder is no longer included in the folder access tracking following the build of a project (#4643).
34. Definition post-linking has been enhanced to work more consistently. Post-linking is the ability to link instances to definitions if their library project is loaded after the case project where they reside (#4683).
35. Components are no longer selectable while in zoom rectangle mode (#4649).
36. Ribbon refresh button will no refresh workspace secondary window (in addition to the 'F5' key) (#4650)
37. The project is now selectable if viewing a definition schematic canvas in the workspace primary window (#4581).
38. Blackboxed component instances now assume the sequence number of their source module. This is necessary to avoid problems when blackboxing within modules with manual sequence ordering enabled (#4685).
39. Wire mode pen cursor no longer flickers between pen and mouse pointer icon when in use (#4445).
40. New projects now appear in the recent projects list after being unloaded using 'unload all' (#4644).
41. Spaces are no longer inserted between relative path entries in the project settings link tab 'additional binaries' field – this used to occur when the case was reloaded, and when the project settings dialog was closed and reopened (#4686).
42. Undo/Redo now functions properly following a navigation to and from the graphic canvas of a component definition (#4437).
43. The unit converter now functions properly when referencing module definitions that are stored in an external library project (#4659).
44. The number of curve traces displayed in a graph will now by default, match the dimension of the signal to which its corresponding output channel is connected (#4670).
45. Unload all projects no longer crashes PSCAD if and when the user has elected to always start the session with a brand new workspace (#4695).
46. Component definitions graphic objects can now be placed back into their original position, once they have been dragged away (#4662).
47. Control interface position in control panel will now save correctly. Previously, newly added control interfaces would appear on the far right side of the panel after reload of the project, even if original placed on the left side (#3408).

48. Global substitutions are now kept synchronized between top-level module definition and instance. Previously, a global substitution instance parameter would become orphaned from its definition if the global substitution was deleted (#4691).
49. The compiler now checks to ensure that new components added to page modules with manual sequence ordering enabled are given a valid (i.e. non-zero) sequence number. Invalid sequence numbers resulted in the inability to process feedback paths (#4677).
50. The last two columns in the search results pane no longer fully collapse when the pane width is adjusted horizontally (#4696).
51. Modifications to all runtime object types are now detected when switching scenarios. Previously, only changes to slider interfaces were detected by the scenario manager (#4697).
52. Graph bounds are now maintained when a graph frame is copied and pasted (#4621).
53. The ability to delete the global substitutions category in the top-level module has now been disabled (#4690).
54. The scenario manager no longer asks if you want to save changes to a particular scenario when selecting that same one from the scenario list (#4700).
55. It is no longer possible to paste a definitions list, generated by the 'copy with dependents' feature, to a project that already contains one or more definitions matching the name of any of the definitions being pasted (#4692).
56. The 'Output' folder in the files tree now properly displays any generated output (*.out) files generated by the project (#4705).
57. A graph frame no longer gets created on left mouse button release following component drag. This was a rare bug that would occur in specific situations (#4709).
58. The node/data type field in the component wizard no longer resets when the port type field is adjusted (#4706).
59. Newly copied controls interface no longer gets corrupted following a switch to the base scenario (#4699).
60. PSCAD will no longer crash if the build button is pressed while in the linking phase. The build button is no longer enabled during linking (#4717).
61. The instance name for external module definitions is now displayed properly in the workspace hierarchy tree. Also, transmission lines and cables are now shown as such when they appear in sub-page modules (#4712).
62. Boolean and table-type global substitution values will now reset to default properly on demand (#4368).
63. Changes to rows or columns in table parameters will now synch properly across multiple instances based on the same definition (#4472).
64. PSCAD no longer saves changes to modified projects and workspaces on close without prompt (#4582).
65. Workspace pane splitter is now refreshed properly when adjusted. Previously, graphical artifacts would remain on the splitter itself when it was moved (#4711).
66. Parameter variables can now be used in computations when their value is given by a global substitution, and the component instance resides within an external module (#4722).

67. The table-type parameter will now allow rows to be added following edit of the columns attribute (#4720).
68. Global substitutions now function properly when substituted inside external module definitions, whose instances are used in multiple projects (#4060).
69. The PSCAD compiler now checks to ensure that signals being exported from a module have the same data type as their corresponding output port or parameter. Unmatched data types were found to cause inconsistent behaviour in Fortran compilers (#4620).
70. It is no longer possible to unload a case project that is included as part of a running simulation set (#4734).
71. Animated graphics are now updated properly when used within multiple instance modules. Previously, all displayed graphics were overwritten by the last module called. Now the graphics are updated on the next plot step following a view switch from one instance to another (#2999).
72. It is no longer possible to create multiple categories of the same name in the parameter editor (#4704).
73. Resizing the schematic canvas to a smaller size is no longer allowed if existing components will appear off canvas as a result (#4439).
74. PSCAD no longer spuriously crashes when navigating from the search results pane (#4749).
75. Signals sourced from constant tags are now declared in both EMTDC BEGIN subroutines. Previously, they were only declared in DSDYN_BEGIN, resulting in annoying 'undeclared signal' warnings (#4748).
76. PSCAD will now stop gracefully on detection of non-unique ids in a project. Previously this exceedingly rare situation would result in a crash (#4770).
77. Help links are now fixed for various master library components (#4754).
78. PSCAD no longer crashes when building a project that contains remote transmission line end interfaces connected directly to ground (#4790).
79. Alerts from EMTDC, indicating there is an important runtime message, are once again being issued to the build message table (#4787).
80. A limit has been added to the component wizard to ensure port names are 31 characters or less. Long port names were found to cause program instability. (#4775).
81. A limit has been added to the component wizard to ensure definition name is 31 characters or less (#4761).
82. A limit has been added to ensure scenario names are a maximum of 31 characters or less (#4760).
83. The scenario manager now issues an error message if attempting to create a scenario when no control objects exist in the project (#4759).
84. The subsystem splitting algorithm no longer fails to properly map when modules possess multiple ports virtually connected to multiple subsystems (#4741).
85. PSCAD will now issue an error message if a t-line or cable segment remote end is directly connected to ground. Failure to detect this situation was causing a crash (#4790).
86. All runtime messages coming though the socket from EMTDC are now properly sent to the build messages table. The exception is messages with a call id set to 0. Messages coming from standard output (usually user written PRINT statements) will now properly appear in the

Runtime Messages window: Duplicate messages of this type are now limited as specified in the workspace options. (#4787).

87. The mechanism used to block duplicate messages bombarding the runtime messages pane now works properly (#4795).
88. The error message produced when a module port with a zero dimension is encountered is now more clear (#4789).
89. An error message is now issued when the user attempts to exceed the maximum project count in a workspace (limit of 32 projects) (#4757).
90. Component computations expression failures now specify a variable name in the properties viewer, so as to make it easier to track the source (#3177).

Master Library

Bug Fixes:

1. All constant tags have been modified to ensure then are coded in the BEGIN section. This will ensure that these components are runtime configurable (#4568).
2. Internal outputs of 3p-3w auto-transformer now output all phase values for magnetizing current and flux (#4593).
3. The EXCAC7B exciter component now initializes properly (#4617).
4. Data continuity checks are now applied in the surge arrester model when set to user-defined input. Successive x,y points must increase in magnitude and decrease in slope (#4618).
5. The 3p-3w auto-transformer no longer gives different results when compared to an equivalent bank of 1p-3w auto transformers. The order of parameters was incorrect in the auto-transformer, resulting in the user entering the wrong data. Also, the no-load loss computation in the 3p model was not taken into account in the L-L to L-G conversion (#4703).
6. The multiple-run component no longer allows variable data in parameters used in computations. These parameters have been changed to literal type (#4681).

EMTDC

Bug Fixes:

1. Preprocessor options are now set in the 'emtdc.cfg' file when using the Compaq Visual Fortran 6 compiler (#4613/#4612).