Using New PSS/E Full-Topology Casewith PowerWorld Simulator 24 Beta Version



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Using New PSS/E Full-Topology Case



- The features described in this presentation are available in the base package of PowerWorld Simulator
 - There are many features in PowerWorld Simulator's Integrated Topology Processing Add-on that will take greater advantage of the ERCOT full-topology cases, but you can use the full-topology cases without the ITP

Opening the PSS/E Full Topology Cases

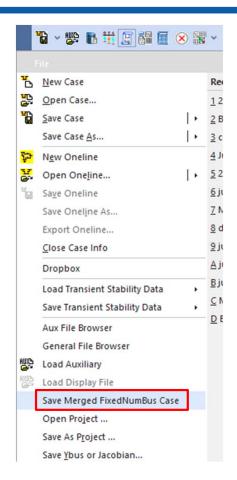


- There is nothing new here
- Simply choose File, Open Case from the main menu and choose the appropriate RAW file
- Opening PowerWorld *.aux, PSS/E *.con etc will work as normal
 - Special processing has been added for reading strings that use FixedNumBus as identifying information
 - FixedNumBus is what the PSS/E data structure calls a "Bus"
 - This data structure supports PSS/E's continued use of Fixed Numbered Buses as identifiers for other objects such as generators, load, branches, etc...
 - PowerWorld and most EMS systems use a string instead (PowerWorld calls these "labels")

Saving the PSS/E Full Topology Cases



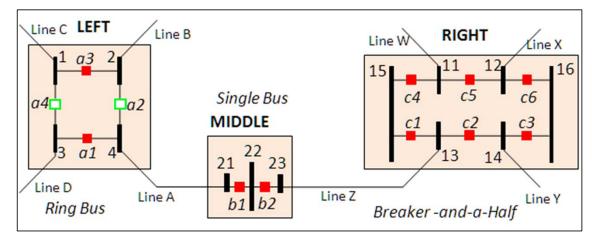
- There is nothing new here. Simply save the case
- But, for those of you who do not have the Integrated Topology Processing Add-on, we have added a special feature under the file menu
 - File > Save Merged FixedNumBus Case
 - This will merge as much of the power system inside PSS/E's "FixedNumBus" structure as possible while maintaining the power flow solution

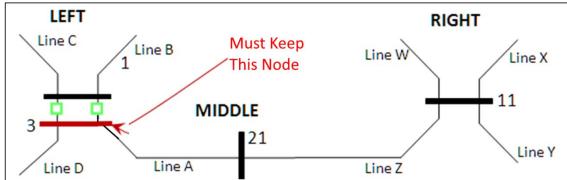


Save Merged FixedNumBus Case



- This will merge as many switching devices as possible that are "inside" each FixedNumBus
- The "PSS/E Bus" will often be split, so there are multiple electrical points with multiple voltage/angles
 - We must keep these to maintain the solution

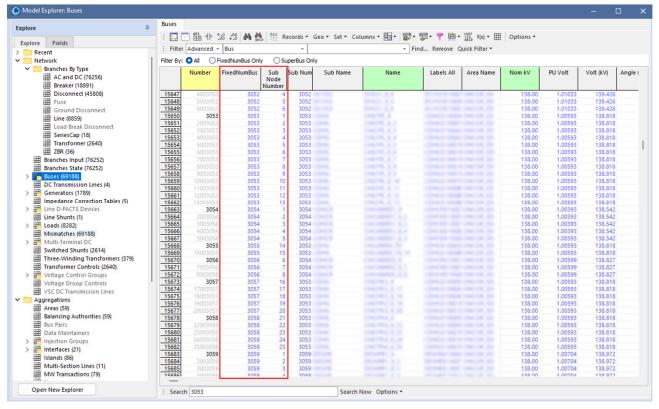




Bus Table



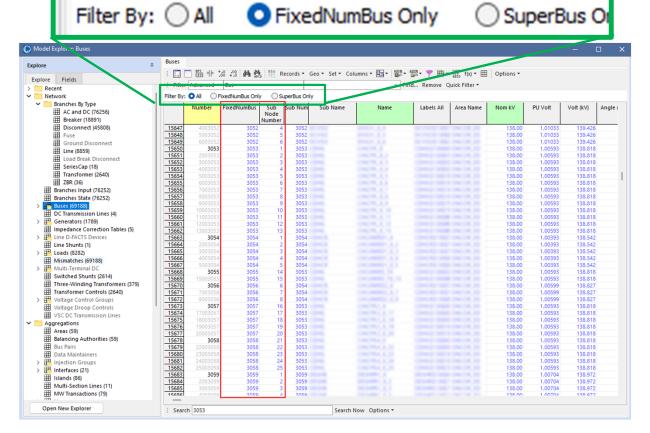
- Bus table will include all nodes, with new columns by default
 - FixedNumBus These are user defined groupings of buses from the RAW file
 - In RAW file: 1-999999
 - SubNodeNum For RAW files, within a substation all nodes must have a unique integer ID
 - In RAW file: 1 999
- When reading a RAW file, PowerWorld sets our bus number as below



PowerWorld Number = 1,000,000*SubNodeNum + FixedNumBus

Bus Table: Special "Filter By" Choices





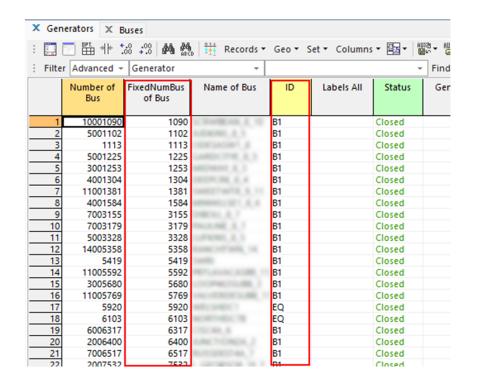
Show Only Bus objects that have been specified as a FixedNumBus

	Number	FixedNumBus	Sub Node Number	Sub Num
2163	3048	3048	- 1	3048
2164	3049	3049	4	3048
2165	3050	3050	1	3050
2166	3051	3051	4	3050
2167	3052	3052	1	3052
2168	3053	3053	1	3053
2169	3054	3054	1	3054
2170	3055	3055	14	3053
2171	3056	3056	6	3054
2172	3057	3057	16	3053
2173	3058	3058	21	3053
2174	3059	3059	1	3059
2175	3060	3060	1	3060
2176	3065	3065	1	3065
2177	3066	3066	1	3066
2178	3067	3067	1	3067
2179	3068	3068	5	3067
2180	3071	3071		
2181	3072	3072		
2182	3075	3075	1	3075
2183	3076	3076	6	3075
2184	3077	3077	1	3077
2185	3078	3078	1	3078
2186	3079	3079	1	3079
2187	3080	3080	3	2966
2188	3081	3081		

Generator, Load, Shunt Tables



- FixedNumBus = integer which points at one of the other buses in the case to be the "FixedNumBus"
- New constraint on IDs
 - Generators IDs must be unique across all buses that share the same FixedNumBus
- Same concept for Loads and SwitchedShunt objects



Chooser Dialog for Gen, Load, Shunt

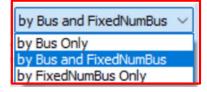


Option at top

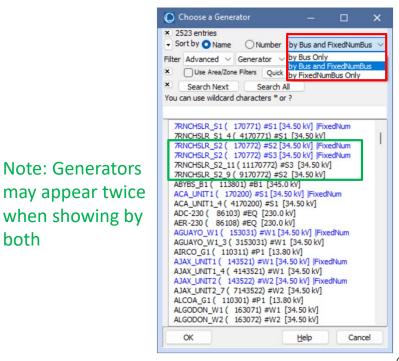
Note: Generators

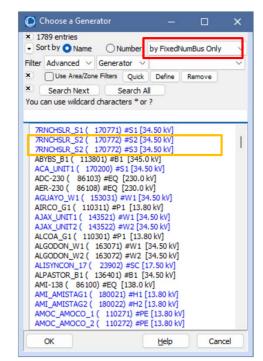
when showing by

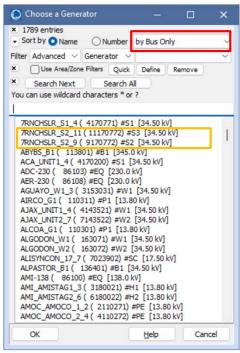
both



For FixedNumBus and Bus, we only see them identified once







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Tables for Branch (Lines, Transformers)



- Table will include new columns by default
 - From FixedNumBus
 - To FixedNumBus
- New constraint on circuit IDs
 - IDs must be unique across all branches that share the same From and To FixedNumBus

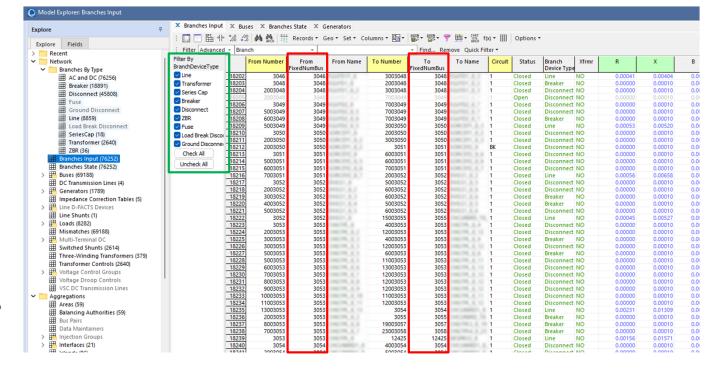
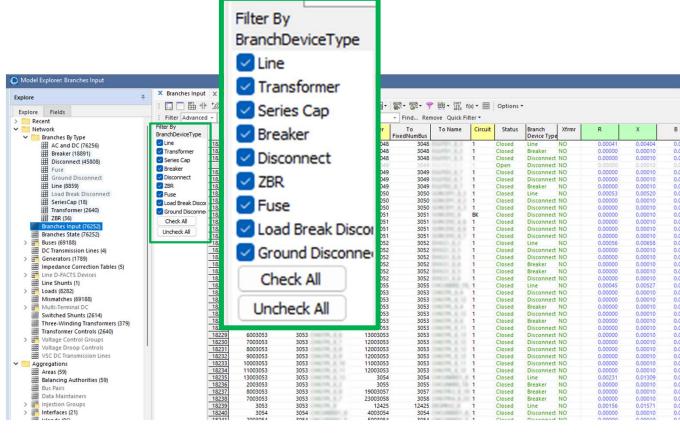


Table: Special Filter By BranchDeviceType

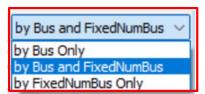
- BranchDeviceType
 has a been a field in
 PowerWorld for 15
 years
- Filtering by it is natural and easily done in the GUI now



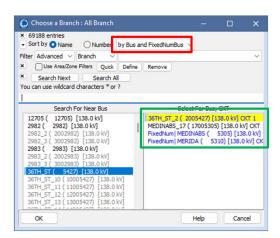
Chooser Dialog for Branch Objects

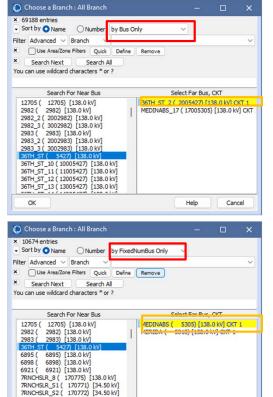


Option at top



We see BOTH entries, so branches appear multiple time





Cancel

For Bus we only see entries for explicit node Buses

For FixedNumBus we only see entries between FixedNumBus

8009001_8 (2808) [138.0 kV] 8009002_8 (2809) [138.0 kV]

Bus View Changes

"Consolidated FixedNumBus"



