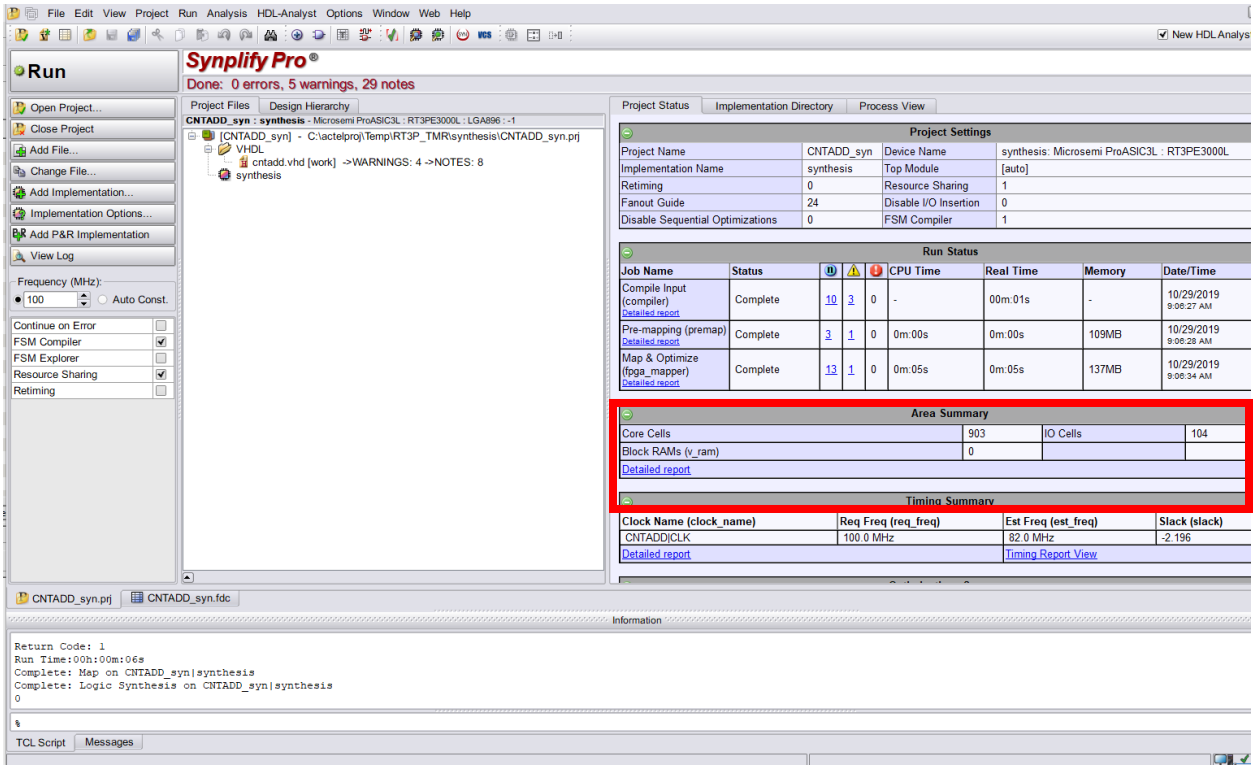
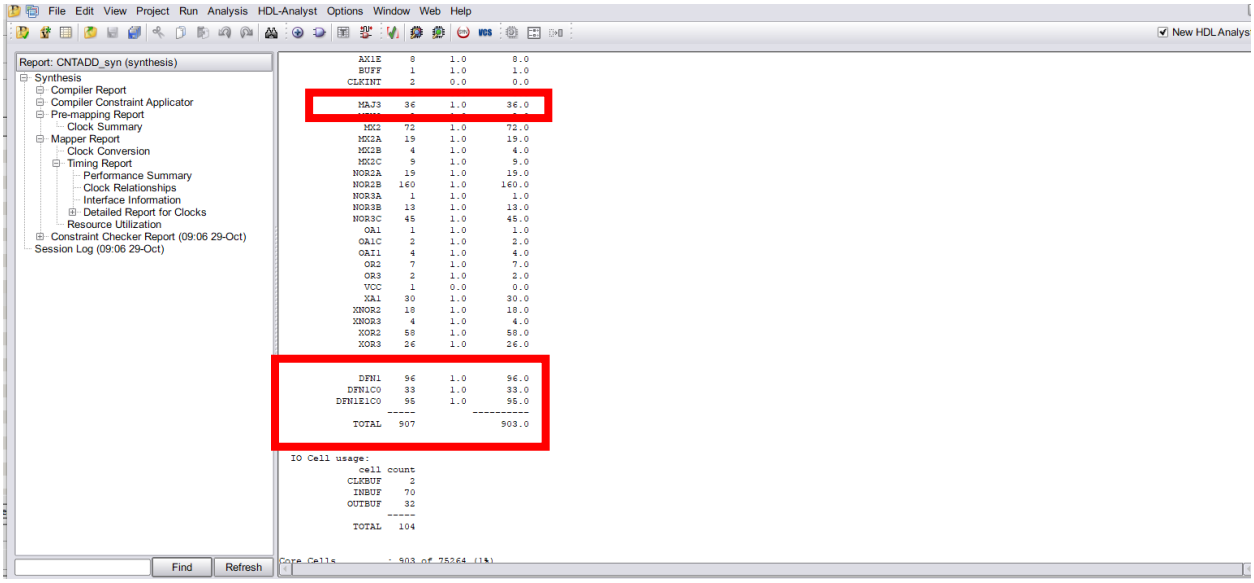
Libero V11.2SP2 Implementing TMR (globally) in A3P and RT3P devices

Create your Libero Project as normal and when ready to implement the TMR'd version of the design follow these steps.

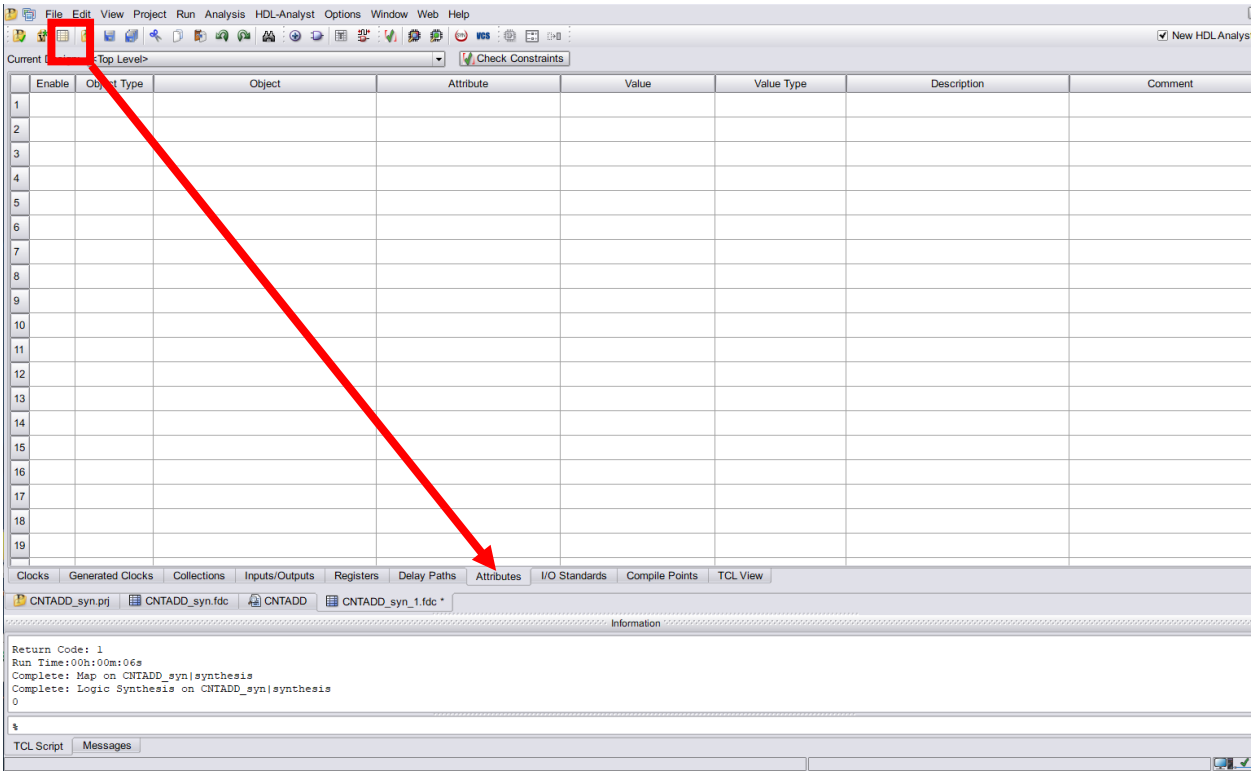
Open Synthesis Interactively to bring up the Synplify Pro GUI. Run the design first to get a base line utilization of the logic within your design.



You can further analyze your logic utilization and register usage by examining the Log file looking at the Core Cell Usage section as shown below:



Now in the Synplify Pro GUI click on the SCOPE (Synplify Constraints Editor window) to bring up the constraints editor shown below. Select the Attributes Tab at the bottom

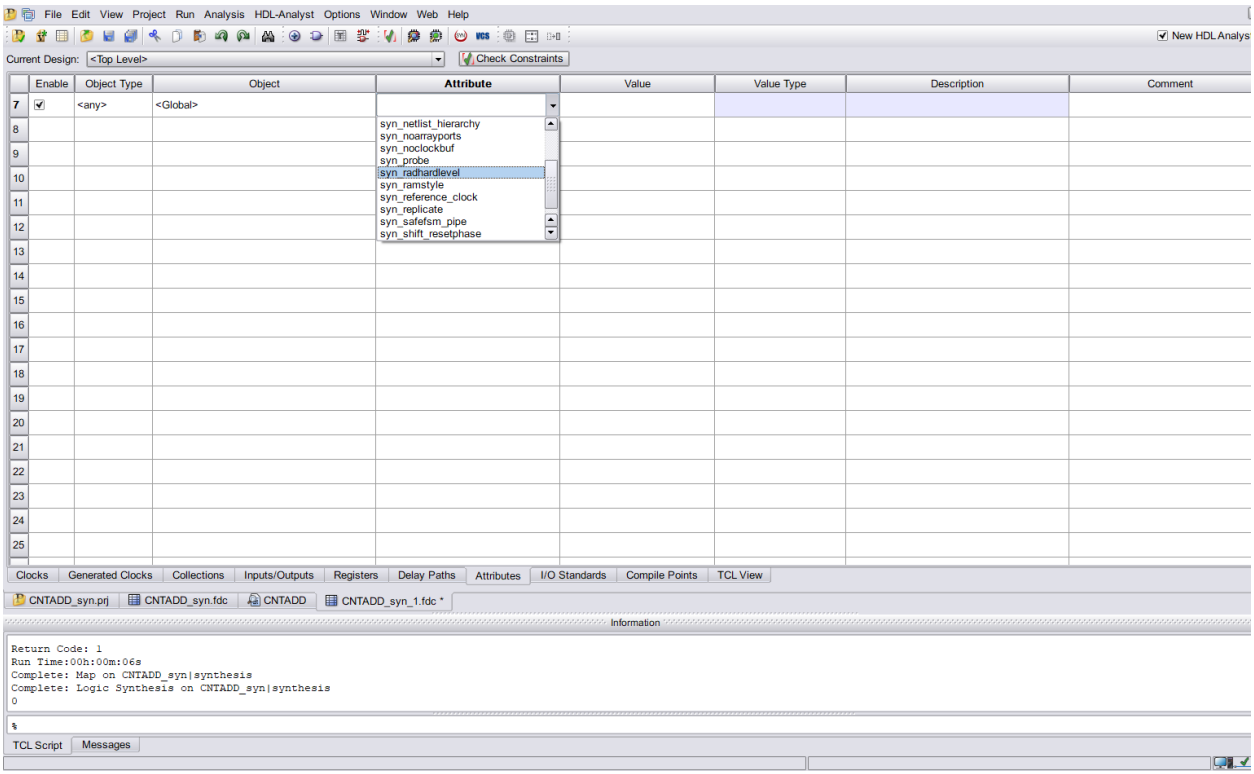


Next in the Object Column you can either type <global> or go to the far right hand side of the cell (just left of the cell dividing line and double left mouse click to bring up the various “objects” in the design. In

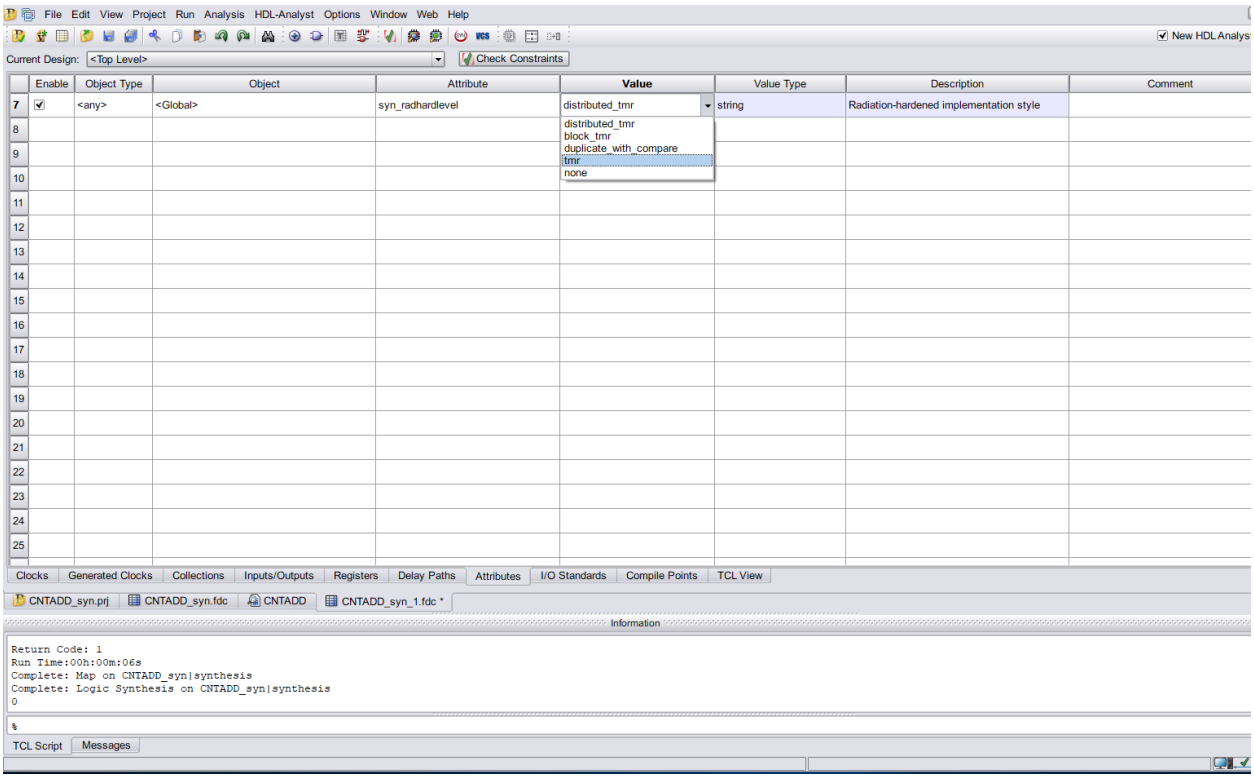
this case, I'm wanting to TMR everything but you could individually select critical elements such as statemachines etc.

Now here is the magic 😊

In the Attribute Cell in the row you selected global type "syn_radhardlevel" and hit return. The line should populate the Value, Value Type and Description cells as shown below.

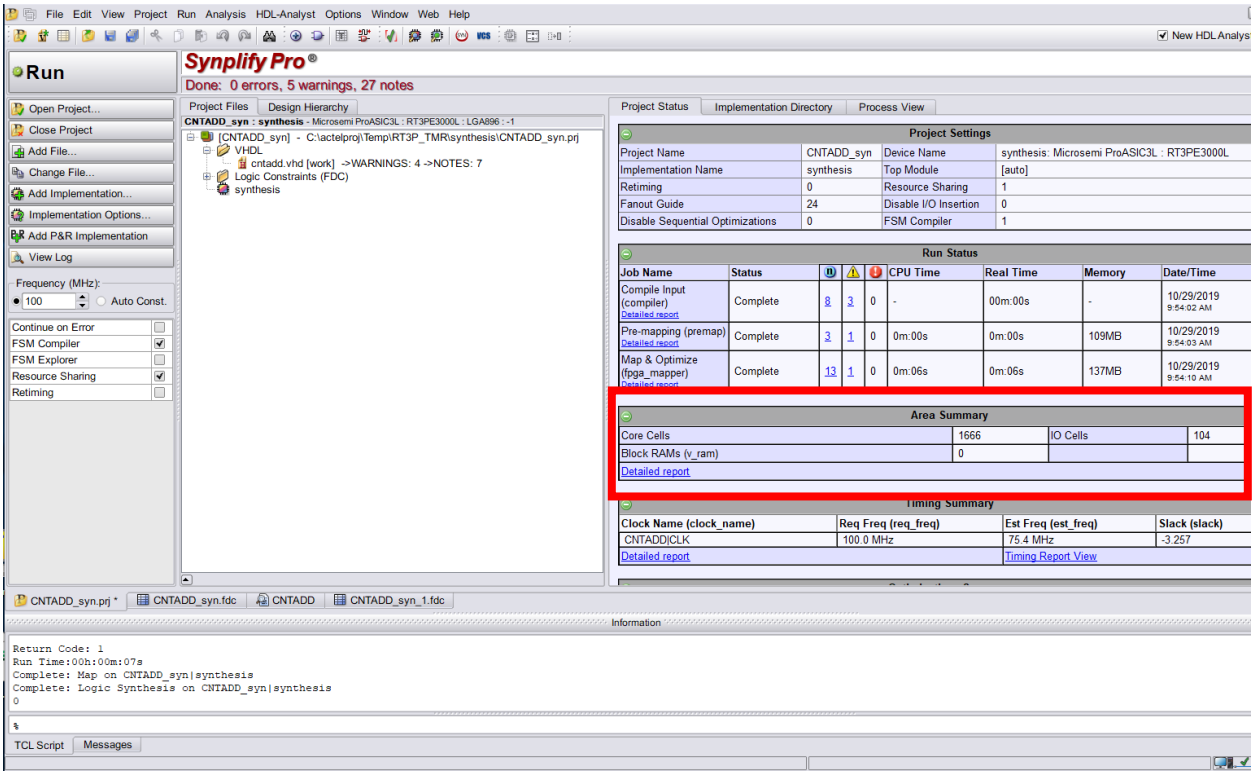


Note: For some families the syn_radhardlevel does not appear in the drop down. You can simply type "syn_radhardlevel" hit the return and the line should populate and give you options for TMR in the value window.

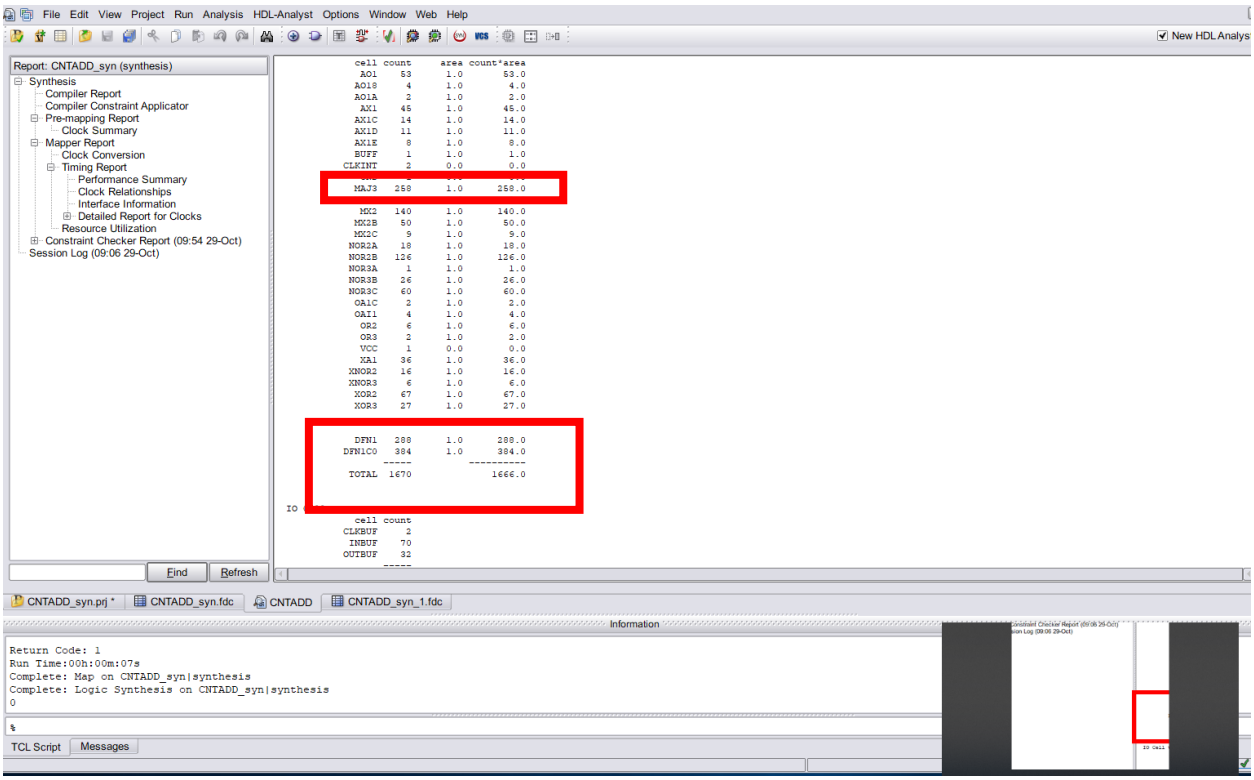


When finished with the TMR selections select save and when prompted to add to the project select yes.

Return to the main project page and select run. Now you can see the registers show 3x usage and the LUTs (MAJ3 voter) show a dramatic increase as well.



Looking again at the synthesis report for Core Cell Usage



Some additional information.

It appears that the Block_TMR and Distributed_TMR are Synplify Premier options and did not seem to do any mitigation within this particular design so possibly I did not set it up correctly for those options or they are not allowed in Synplify Pro.

Distributed TMR is used to triplicate blocks of logic with internal voters and (TMR) vote the output of those 3 logic blocks.

Block_TMR is used when you have a block of logic that cannot be internally modified (think maybe IP etc) so that block is then triplicated and the output of those 3 blocks is voted.