Tip 1: LVS Check for Larger Gates

As some of you might have encountered, running an LVS on some of the larger gates in standard library give you LVS errors. How can that be?!

What is going on?

I have chosen the OR2X6 cell for demonstration here. Let’s look at its schematic:

As you can see, some of the MOS devices are larger than out cell layout heights (3.6µm), and therefore they are drawn as “fingereed” devices in layout. For example I have highlighted mp2 in red in both the schematic above and the layout view below:
Now this is usually ok, since our ASSURA tool is by default smart enough to realize that these are same devices. However, when we use the finger drawing of \texttt{mp0} and \texttt{mp1} devices, we end up having two physical locations for net \texttt{n1} in layout (shown above in light blue), with both sharing source/drains. This is where ASSURA’s default intelligence runs out and we need to help it.

**How to fix this?**

If we were to run an LVS check using our default setup on the \texttt{OR2X6} cell above we will get the flowing error:

```
Run: "OR2X6" has completed SUCCESSFULLY! (on eeapps01.seas.ucla.edu)

============================================================================
The LVS run "OR2X6" has completed successfully.

Compare problems were detected in 1 cells.
  1 cells had device mismatches.
  1 cells had nets mismatches.
  1 cells had parameters mismatches.
  0 cells matched

No Extraction Problems were detected.

Press "OK" to enter the LVS Debug Environment.
```

This is due to the series PMOS devices that we mentioned before. To fix this, close the ASSURA run, then invoke another by choosing \texttt{Assura > Run LVS}...
Click on **Modify avCompareRules**...
Following window will pop-up:
From the list on the left choose: `mergeSplitGate`
Check Use in Run
Choose Device type from the first drop down menu
Make sure MOS Device Type is chosen
Click +
Click Apply
Click OK to close this window

You will now go back to Run Assura LVS window and in front of Modify avCompareRules...
Should say “1 avCompare rule is set.” This is the missing intuition that Assura needed 😊

Go ahead and run the LVS now.
You should pass the LVS at this point.

I know what you are all thinking now, “We Love Cadence”, I do too.

Good luck with the remainder of your project.