

Chapter 04 - OpenROAD first run - TRAINING - Advanced

Course authors (Git file)



- 1 Build an external example
- 2 Examine the results



“masked AES” from the HEP Alliance

Task: Clone the design

- Clone the masked AES design from Github.
- Use the tutorial from the HEP Alliance Repository:

<https://github.com/HEP-Alliance/masked-aes-tapeout>

- In a nutshell (clone via https):

```
1 | git clone https://github.com/HEP-Alliance/masked-aes-tapeout.git <ORFS-Root>/flow/designs/ihp-sg13g2/masked_aes
```



Makefile

Task: Enable the design

- Navigate to the `/flow` folder
- Edit the Makefile:
 - Uncomment the line with your chosen `DESIGN_CONFIG` from `ihp-sg13g2`. In this case the cloned `masked_aes`:

```
1 | DESIGN_CONFIG=./designs/ihp-sg13g2/masked_aes/config.mk
```

- Re-comment the previous uncommented line with `DESIGN_CONFIG`.
- The line with the default design does not need to be commented. This only applies when no previous line with `DESIGN_CONFIG` is set.



Run

Task: Run ORFS with the design

- Run `make` from inside the `/flow` folder.



Success

- The chosen design should finish after a while and a lot of console output with a table (time/memory) like this:

```
1 | Log                               Elapsed seconds Peak Memory/MB
```

CONGRATS! Your design got build to a GDS!



The flow steps

Task: Match the shell output

- Scroll the shell output from the command to the (successfull) end,
- Identify the flow steps in the shell output
- Try to match your findings to the flow steps and flow components from chapter 2
- Can you identify single open-source tools in the output of the flow? Name the ones you identified.



The GDS

Task: Examine the GDS

- See the GDS with the command `make gui_final`

Task: Save an image from the GDS

- In the TCL console at the bottom of the GUI:
 - `save_image <imagename>.png`
 - Find the saved image in your directories.

