Quick Start Guidance Tutorial
NASH Synthesis and Place&Route

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Outline

- Access the files
- Directories
- Synthesis
- Place and Route

Access the files

Connect to the server through ssh:

```
ssh username@163.143.94.123
```

Copy the source files to your home directory

```
cp -r /home/share/Maatar-NASH-2024-06-14/ ~/Maatar-NASH-2024-06-14
```

Change your directory to the copied folder

```
cd~/Maatar-NASH-2024-06-14
```

Directories

- MACRO: SRAM cell generated using OpenRAM (Libraries)

- RTL: the RTL source code (the Verilog source code for the design)

- SYN: Synthesizing scripts and output reports

- PNR: Place and Route scripts and output reports

Synthesis

- How to run synthesis:

1) Open a terminal and navigate to the SYN directory

2) Source the cad.sh file

3) Start genus tool

4) Run the synthesis script depending on the design you want to synthesize (2x2 design in this case)

NOTE: you can synthesis different designs by choosing different scripts or creating your own script

Synthesis

- All commands to run synthesis:

```
cd SYN
source ~/.cad.sh
genus -legacy_ui
source script/genus_syn.tcl
```

- Synthesis reports and output files
- The synthesis reports are generated in the SYN/reports directory
- The synthesized netlist is generated in the `SYN/output_files` directory
- The constraints file is generated in the `SYN/output_files` directory

Place&Route

- How to run P&R:

1) Open a terminal and navigate to the PNR directory

2) Copy the synthesized netlist and constraints file from the SYN/output_files directory to the PNR/input_files directory (in case you have new synthesized design)

3) Create a working (work) directory for the P&R and change to that directory

4) Source the cad.sh file

5) Start innovus tool

6) Run the PNR script depending on the design you want to synthesize (2x2 design in this case)

7) After the P&R is done, you can generate the more reports depending on your needs

NOTE: you can perform the P&R for different designs by choosing different scripts or creating your own script

Place&Route

- All commands to run synthesis:

```
cd PNR
mkdir work && cd work
source ~/.cad.sh
innovus
source ../new_scripts/LAYER_2x2.tcl
```

- Post-P&R reports and output files

1- The output netlist is generated in the PNR/output_files directory

2- The P&R reports are generated in the PNR/work/reports directory

2- To extract the power and area reports, you can run the power_area_report.tcl script

NOTE: The 5x5 P&R script includes the power and area report extraction