

Getting to Work with OpenPiton

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<http://openpiton.org>



Introduction

What to download?

- RTL, scripts, documentation, cross-compiler, FPGA disk images & FPGA bit files:
 - Grab the latest from <http://openpiton.org>
- Linux kernel for OS development:
 - <https://github.com/PrincetonUniversity/piton-linux>
- Hypervisor:
 - <https://github.com/PrincetonUniversity/piton-sw>

Environment setup - Tools

- OS: Ubuntu 16.04, Springdale (Red Hat) 6.6
- VCS: vcs_mx_L-2016.06
- Vivado: 2015.4
- Synopsys Design Compiler: syn_I-2013.12-SP4
- Synopsys IC Compiler: icc_I-2013.12-SP4

- All other tool versions are listed on <http://openpiton.org>

Environment setup - Paths

1. Source required tool scripts
 - VCS, Vivado, etc
2. `$PITON_ROOT`
 - Should point to the root directory of your piton install
3. `$PITON_ROOT/piton/piton_settings.bash`
 - Source before running any simulations

Where is everything?

\$PITON_ROOT

- `piton/`
 - Aliased to `$DV_ROOT`
 - Home to RTL, tools, assembly tests
- `build/`
 - Aliased to `$MODEL_DIR`
 - Temporary build files, files from FPGA flow
- `docs/`
 - Documentation as seen on <http://openpiton.org>

piton/

- `design/`
 - Top level of the RTL module tree
 - Structure follows verilog module hierarchy
- `tools/`
 - Home to all simulation, synthesis, fpga tools
- `verif/`
 - Location for all verification-related files

Useful Paths

- **Where's the RTL?**
 - `piton/design/*/rtl/`
- **Where are the assembly test cases?**
 - `piton/verif/diag/assembly/`
- **Where are the module-agnostic backend scripts?**
 - **FPGA:** `piton/tools/src/proto/`
 - **ASIC:** `piton/tools/synopsys/`
- **Where are the module-specific backend scripts?**
 - **FPGA:** `piton/design/*/xilinx/`
 - **ASIC:** `piton/design/*/synopsys/script/`

What can I do with OpenPiton?

- Simulation
- ASIC Synthesis & Backend
- FPGA Synthesis & Backend
- Validation
- Configuration
- OS/Hypervisor Development

Documentation

- Microarchitecture Specification
 - Specification of uncore microarchitecture
- Simulation Manual
 - How to use, add to simulation infrastructure
- Synthesis and Back-end Manual
 - Details infrastructure, how to run flows, porting
- FPGA Prototype Manual
 - Details infrastructure, implementation, porting