

EE/CprE/SE 491 WEEKLY REPORT 9

Start Date – End Date: 04/09/2024 - 04/016/2024

Group number: 9

Project title: Multicore Operational Analysis Tooling

Client &/Advisor: Steve Vanderleest/Joe Zambreno

Team Members/Role: Alexander Bashara – Embedded Engineer, Joseph Dicklin – Hardware Design Engineer, Hankel Haldin – OS/Tooling Engineer, Anthony Manschula – Project Coordinator/Engineer

Weekly Summary:

We continued our work investigating both potential interference channels on the RockPro64's architecture as well as troubleshooting the issues we have been having with Xen's toolchain. We scheduled a time with Josh Whitehead (a Boeing engineer) for help with the Xen issues we have been experiencing. We attempted to compile Xen and its tool chain directly on the RockPro64, but this is still a work in progress.

Past week accomplishments:

In the past week, the team focused on getting to the root of the Xen issues on our RockPro64 and scheduled a meeting with one of our contacts at Boeing to help fix the issue, which should be happening in a few days. The team also put work into bringing up the Xilinx ZCU106 that we were granted access to. Unfortunately, the prebuilt image did not work as we expected, so we are going to be building a PetaLinux image from scratch that incorporates the tools we need to use this platform. Additionally, we built a new image for the RockPro64 that contains components needed to run the PERF framework, which will help us collect test results.

Pending issues:

- Debug issues running Xen toolstack on RockPro
- Experiment with Perf tools on hardware
- Build Xen for Xilinx ZCU106
- More research on resource contention points and mitigation methods
- Test PERF framework on actual hardware

Individual contributions:

<u>NAME</u>	<u>Individual Contributions</u>	<u>Hours this week</u>	<u>HOURS cumulative</u>
Alexander Bashara	Reviewed ZCU106 docs, PetaLinux work	7	65
Joseph Dicklin	Was the absolute GOAT for doing the assignments	10	64
Hankel Haldin	Trouble shooting RockPro64 Xen; Attempt to compile ARM natively on the RockPro64	9	65
Anthony Manschula	Built script to test Perf, PetaLinux work	9	68

Plans for the upcoming week:

- Work on fixing issues with Xen framework on our Linux image
- Polish base test cases
- Meet with Josh Whitehead (Boeing engineer) to troubleshoot RockPro64 issues
- Continue research on interference channels
- Expand on interference mitigation techniques
- Build new version of PetaLinux for Xilinx Ultrascale+ MPSoC

Summary of weekly advisor meeting:

Our client meeting was mostly a status update on the team's progress towards developing a set of base case test programs. We also reported our progress in investigating potential cache, main memory, and I/O interference channels on the RockPro64. Lastly, we covered the issues we experienced with getting Xen's toolchain working on the RockPro64. We also corresponded with our faculty advisor, Dr. Zambreno, for guidance in using the ZCU 106s.