

**EE/CprE/SE 491 WEEKLY REPORT 6**

**Start Date – End Date: 03/05/2024 - 03/19/2024**

**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**

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**Weekly Summary:** During this report period, we focused on researching resource contention points in detail for our hardware platform, as well as potential avenues that would allow us to mitigate the performance effects seen because of the contention. Additionally, we were successful in booting a Linux image built with the Yocto framework on our hardware.

**Past week accomplishments:** Gained insight on resource contention points on our hardware platform. We also gained familiarity with the Yocto framework and how it is configured and used to build Linux images for embedded hardware. We successfully booted a Linux image that was built with the framework and has proper hardware support for our board. We were also able to build a Linux image containing the Xen hypervisor and toolstack, however it does not appear to be entirely functional, so we will need to debug that before we can call it a complete success.

**Pending issues:**

- Debug issues running Xen toolstack on our image
- Refine Yocto build script for Xen
- Develop base test cases for both CPU and memory bandwidth interference
- Begin testing Xen hypervisor on x86 while finishing bringing up on our ARM hardware
- More research on resource contention points and mitigation methods

**Individual contributions:**

<u>NAME</u>	<u>Individual Contributions</u>	<u>Hours this week</u>	<u>HOURS cumulative</u>
Alexander Bashara	Cache Interference generation and mitigation	7	38
Joseph Dicklin	Researched I/O interference generation	5	36
Hankel Haldin	X86 Xen Hypervisor install / configure, multicore interference channel research	6	38
Anthony Manschula	Building and booting Xen on hardware	7	44

**Plans for the upcoming week:**

- Flesh out the cross-compiling setup so that we can develop in parallel
- Work on fixing issues with Xen framework on our Linux image
- Develop base test cases as mentioned above
- Test Xen on x86
- Continue research on resource contention

**Summary of weekly advisor meeting:** On 3/8, the team met with Boeing to discuss our progress, and the success that we had with building and booting a Linux image for our hardware using Yocto. We also presented our findings regarding resource contention points for the purposes of this project. They liked our progress and mentioned that they'd like us to continue our research into our selected areas and report with some additional details this Friday (3/22).