The FOSSi Foundation.

WORKSHOP
BGAS-ZENO: CAPABILITY-BASED SECURE COMPARTMENTALIZATION ARCHITECTURE

Workshop Overview

Despite the numerous efforts of security researchers, memory vulnerabilities remain a top issue for modern computing systems. To address this challenge, we develop BGAS-Zeno, a new capability-based architecture. BGAS-Zeno provides a Namespace-based capability model to support globally shareable capabilities in a large-scale, multi-node system. This workshop introduces the security community to the BGAS-Zeno micro-architecture, software support ecosystem (e.g., compiler, filesystem, operating system), and physical ASIC board for full hands-on programming and demonstration experience.

Covered Technical Topics

Topics: Zeno micro-architecture security, secure execution environment, secure microkernel, formal verification of namespace semantic & security, security micro-contract, Zeno cores, memory subsystem, compressed instructions, floating point units, FPGA/ASIC prototypes, application benchmarks, Zeno compiler, OS, filesystem, among others.
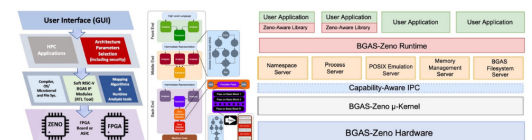
Technical Modules
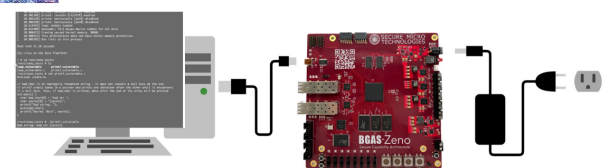
Micro-Architecture & Architecture Design
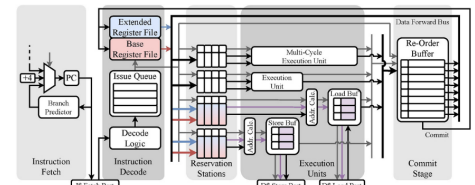
64-Bit Out-of-Order BGAS-Zeno architecture

Programming Software Ecosystem

ASIC Prototype & Programming Toolchain

LOCATION

April 20, 2024
MIT Schwarzman
College of Computing
Room 45-102