

Strong Isolation, Verification, and Control in Future Public Clouds

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Abstract

Public clouds provide an affordable option for computer resources without the large initial investment of hardware. Although the option of physically renting hardware resources introduces a one-way trust relationship with the public cloud provider. Historically tenants processing confidential data are left out of the majority of public clouds. BU is exploring private enclaves using both software and hardware resources which can provide tenants with a new method of gaining a secure computing environment. The introduction of “bump-in-the-wire” FPGAs allow for the opportunity to leverage existing security designs as a means to provide cloud access to entities such as government, financial institutions, or healthcare providers. In this talk we will introduce a design utilizing FPGA-enhanced cloud environments to provide a new hardware method of securing data traffic between tenant and private enclave. There will be an emphasis on low cost, dynamic, and evolving cloud architectures which can adapt to future tenant needs and changes made by cloud providers.

Speaker Bio

Rushi Patel is a second year PhD Student under advisor Professor Herbordt working in the CaaS Lab at Boston University. Our group research focus is the involvement of FPGAs for application acceleration and special use cases. Currently, my focus has been on the inclusion of FPGAs in public clouds as a means to provide tenant and administrator acceleration as well as a unique method of security using a Bump-in-the-Wire interface.