



# Thunderlane

Virtualization Research Platform

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## Virtualization Research Platform

### OVERVIEW

Thunderlane is a platform intended for proving new research concepts in hypervisor architectures and implementations that will enable more robust, secure and performant virtualization solutions for the future. Thunderlane defines a new computing model that dissolves the boundary between hypervisor and operating system and leverages state-of-the-art software diversity techniques. In concert, these capabilities provide unparalleled resistance against reverse-engineering, and ensure the reliability and security of application and system software. Thunderlane leverages the open source Bareflank Hypervisor SDK to demonstrate new security features for a variety of use cases, including software guards (AFRL ISSE Guard) and cross-domain filters (DARPA SHARE).

### Thunderlane-Enabled Research

#### Binary Diversification

Reduce attack surface through compile time, load time and run time code randomization

#### Tighter Coupling of Software & Hardware

Generate software intrinsics from machine-parsable CPU specifications

#### Hardware Assumption Verification

Compare CPU implementation against abstract specification

#### Modern Programming Safety Features

Develop using C++17, and transpile C based dependencies into Rust

### KEY BENEFITS

- **Simple Deployment:** Transform an operating system into a virtual machine while it is already running.
- **Versatility:** Supports a variety of devices and platforms, including ARM and Intel, using Windows or Linux.
- **Seamless Performance:** Realize a near-native user experience through tight integration with host operating system components.
- **Integrate Anywhere:** Liberal licensing allows users to easily integrate with any commercial software without forcing others to expose their proprietary code.



### FOR MORE INFORMATION

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### About Assured Information Security (AIS)

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