

INTEL MELTDOWN



The Meltdown attack against Intel and other processor manufacturers have forced many organizations to choose between security and performance and affects computers as old as a decade.

Get the facts and learn how to protect your company.

PROBLEM OVERVIEW

- » Google researchers uncovered a hardware bug that affects all Intel processors made in the past decade.
- » Redhat and Microsoft have said the impact of released patches can incur up to a 20% performance penalty.
- » Intel has now confirmed that patches released are themselves buggy contributing to random reboots and other unpredictable behavior.
- » The SEC and DOJ have been requested to investigate insider trading against Intel executives.
- » At least 8 lawsuits have been filed.
- » Some patches are rendering Microsoft computers unbootable.
- » Google released a proof of concept against KVM that is now actively attacking in the wild.

THE SOLUTION: UNIKERNEL PERFORMANCE

You don't need to choose between security and performance. While unikernels are not immune to Meltdown their performance improvements can make up for it.

Single Process

Linux and Windows are both multiple process systems that were designed decades ago. Unikernels are single process systems. This single process system design allows things like network access and disk access to function faster since there are no system calls required for every packet and every disk write.

Context Switching

In an operating system such as linux there is the illusion of being able to run multiple programs simultaneously. In reality context switches occur when switching from the kernel to the user land and from process to process. This switch is not quick and it's not light-weight. Since unikernels don't make the distinction between kernel and user land this switch is obviated resulting in increased performance.


Boot Time

Researchers from NEC are now reporting unikernel boot times within 5ms. That is 2 orders of magnitude faster than booting a container while just slightly slower than a fork syscall. This is on top of other work where researchers showed booting unikernels in response to DNS requests.

Built In Hardware Support

Unikernels can utilize built in hardware support such as SR-IOV that provide increased performance over traditional operating systems. This provides process isolation yet at the same time allows many I/O operations to bypass the kernel and talk directly to the hardware. Furthermore by accessing I/O in this manner further performance can be achieved through zero-copy APIs.

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We save companies money on infrastructure and ops cost while at the same time taking real proactive security measures to limit attacks.