SIDE CHANNEL ANALYSIS SECURITY ISSUE
BRIEFING OBJECTIVES

• Provide information on a new class of security issue & mitigation
• Provide context on how this issue has brought the industry together
BACKGROUND & SUMMARY

Security researcher notified Intel, AMD, and ARM of a new side-channel analysis exploit

- A method for an attacker to observe contents of privileged memory, circumventing expected privilege levels
- Exploits *speculative execution* techniques common in modern processors
- NOT unique to any one architecture or processor implementation
- NOT a result of product errata; processors are operating to specification
- Mitigations include updates to system software, firmware and future hardware

INDUSTRY-WIDE COLLABORATION TO FACILITATE RESPONSIBLE DISCLOSURE WITH MITIGATION OPTIONS
WHAT IT IS, WHAT IT IS NOT

IS

• A method for an attacker to observe contents of privileged memory, circumventing expected privilege levels

• Malware using this method and running *locally* could expose sensitive data such as passwords and encryption keys

IS NOT

• A denial of service attack

• A network attack

• A means to inject malicious code or corrupt memory

WE HAVE NOT OBSERVED ACTIVE DEPLOYMENT OF THIS EXPLOIT
Our approach to mitigation

We are taking a comprehensive approach to provide the most secure platforms. Combination of operating system and firmware updates, developed in collaboration with industry partners, operating system vendors, and OEMs. Expect mitigation will be available to users beginning over the next few days and continuing over several weeks.
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<tr>
<th>Summary</th>
<th>Description</th>
<th>Mitigation Options</th>
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<tr>
<td>Bounds Check Bypass</td>
<td>Use existing code with access to secrets by making it speculatively execute memory operations</td>
<td>OS &amp; VMM updates</td>
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<tr>
<td>Branch Target Injection</td>
<td>Malicious code usurps properties of CPU branch prediction features to speculatively run code</td>
<td>OS &amp; VMM updates, Firmware Updates</td>
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<td>Rogue Data Load</td>
<td>Access memory controlled by the OS while running a malicious application.</td>
<td>OS updates</td>
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**ALL VARIANTS ARE LOCALLY EXECUTED SIDE-CHANNEL CACHE TIMING ATTACKS**
Q&A
Risk Factors

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