# Benchmarking AMD FX vs. Intel Sandy/Ivy Bridge CPUs Following Spectre, Meltdown, L1TF, Zombieload

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Now with MDS / Zombieload being public and seeing a 8~10% performance hit in the affected workloads as a result of the new mitigations to these Microarchitectural Data Sampling vulnerabilities, what's the overall performance look like now if going back to the days of AMD FX Vishera and Intel Sandybridge/Ivybridge processors? If Spectre, Meltdown, L1TF/Foreshadow, and now Zombieload had come to light years ago would it have shaken that pivotal point in the industry? Here are benchmarks looking at the the performance today with and without the mitigations to the known CPU vulnerabilities to date.

As I've already delivered many benchmarks of these mitigations (including MDS/Zombieload) on newer CPUs, for this article we're looking at older AMD FX CPUs with their relevant Spectre mitigations against Intel Sandybridge and Ivybridge with the Spectre/Meltdown/L1TF/MDS mitigations. Tests were done on Ubuntu 19.04 with the Linux 5.0 kernel while toggling the mitigation levels of off (no coverage) / auto (the default / out-of-the-box mitigations used on all major Linux distributions for the default protections) / auto,nosmt (the more restricted level that also disables SMT / Hyper Threading). The AMD CPUs were tested with off/auto as in the "auto,nosmt" mode it doesn't disable any SMT as it doesn't deem it insecure on AMD platforms.

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Graphics/Benchmarks

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