



Contribution ID: 193

Type: **not specified**

Enhancing spatial safety: Fixing thousands of -Wflex-array-member-not-at-end warnings

Thursday, 19 September 2024 10:00 (45 minutes)

The introduction of the new `-Wflex-array-member-not-at-end` compiler option, released in GCC-14, has revealed approximately 60,000 warnings in the Linux kernel. Among them, some legitimate bugs have been uncovered.

In this presentation, we will explore in detail the different strategies we are employing to resolve all these warnings. These methods have already helped us resolve about 30% of them. Our ultimate goal in the Kernel Self-Protection Project is to globally enable this option in mainline, further enhancing the security of the kernel in the spatial safety domain.

As this is a work in progress, the main goal of this presentation is to gather feedback from the wider community of kernel developers to further improve our strategies and effectively address the remaining issues.

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Session Classification: LPC Refereed Track

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