

Linux Plumbers Conference 2025



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IOMMU State Preservation for Kernel Liveupdate

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During a kernel live update, devices owned by a virtual machine may continue to perform DMA operations. For these operations to succeed, the IOMMU state must be preserved. Normally, a kexec reboot would reinitialize the IOMMU, causing the loss of all state and pre-existing DMA mappings.

To prevent this loss and ensure device continuity, the DMA mappings setup for a preserved device must also be preserved. This necessitates preserving the existing IOMMU state, allowing the device to continue its DMA without interruption across the kernel update.

Content

- Preserve IOMMUFDS
- Preserve IOMMU domain
- What state is saved, and how the process works.
- How the preserved state is restored in the new kernel.
- Verification.

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