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Plumbing SDXI into Linux: From DMA Engine to User-Space Offloads

The Smart Data Accelerator Interface (SDXI) is a new SNIA standard that extends traditional DMA engines with support for multiple address spaces, user-space ownership, and extensible offloads such as memory data movement. This talk reports on the progress of Linux enablement in two phases: an initial DMA-engine integration already upstream for review, and a full SDXI 1.0 implementation with a user ABI and supporting library. We will outline the current IOCTL-based UAPI, discuss key design trade-offs in ABI shaping, kernel/user coordination, and address space isolation, and demonstrate early user-space workloads such as inter-VM memory copy. Preliminary findings and evaluation methodology will be presented. The session will highlight open issues around subsystem placement, security, and virtualization support, and invite discussion on integration and optimization strategies, UAPI evolution, and emerging SDXI use cases across Linux subsystems.

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