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Protected DMAbufs and its dynamic memory assignment woes

Protected memory refers to memory buffers behind a hardware enforced firewall. It is not accessible to the kernel during normal circumstances but rather only accessible to certain hardware IPs or CPUs executing in higher or differently privileged mode than the kernel itself. The use-cases driving this feature in TEE subsystem are secure video playback, trusted UI, secure video recording, secure key/crypto operations etc.

The memory firewalls can be enforced statically during boot where memory regions are typically treated as reserved in the kernel. The woes start when the memory firewalls need to be enforced dynamically for efficient memory reuse since buffer allocations can reach 100s of MBs. This session will try to find solutions to the common problem where collaboration among different kernel subsystems especially MM is required.

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