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Dynamic Capacity Devices (status, discussion, and future)

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CXL - Dynamic Capacity Devices (DCD)

CXL introduced Dynamic capacity device support in CXL 3.0 and 3.1. The feature promises a lightweight memory hotplug feature which was designed to optimize memory usage within data centers. The details of use cases for DCDs are still playing out. Generally the use case is to reduce the cost of unused memory by allowing for the dynamic allocation of memory.

Specific topics may include:

- The current status of the patch set as of the conference
- Use case discussion
- QoS support
- Interleaving support
- Including ndctl repercussions (ignore different DC partition support for now)
- Ideas for how to group extents
- By region tag (does not work currently as regions are created in a linear fashion with respect to the DPA of the device)
- By dax device tag (by assigning a tag value to dax devices which restrict them to using only those extents with the same tag value)
- Shared memory challenges
- RDMA parallels
- kernel responsibilities
- flushing issues
- memfd to replace dax devices

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