FOSSIL: Operating System Support to Leverage Byte Granular Non-Volatile Memory Technologies

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- We will face systems with heterogeneous memory
- Technologies differ a lot in key parameters
- NVM is way more than Optane!
- How to enable OSes to benefit from NVM properties?

Stage 1: An L4 microkernel OS on NVM
- Recovery time
- Application Performance
- Energy Efficiency
- Evaluate performance of NVM types and frameworks

Stage 2: Detailed studies of data placement
- Which memory objects should go where?
- How to make this decision transparent?
- Constant monitoring of metrics from stage 1
- Adapt OS primitives to heterogeneous memory

Finally: Find guidelines for building (microkernel) OSes on NVM
- What properties does NVM need to have in order to be viable for deployment in real systems?
- What can an NVM-aware (microkernel-based) OS look like?
- How to design new and adapt existing interfaces to make applications interact smoothly with OS abstractions?