DataDirect NETWORKS
INFORMATION IN MOTION

Roundtable Discussion

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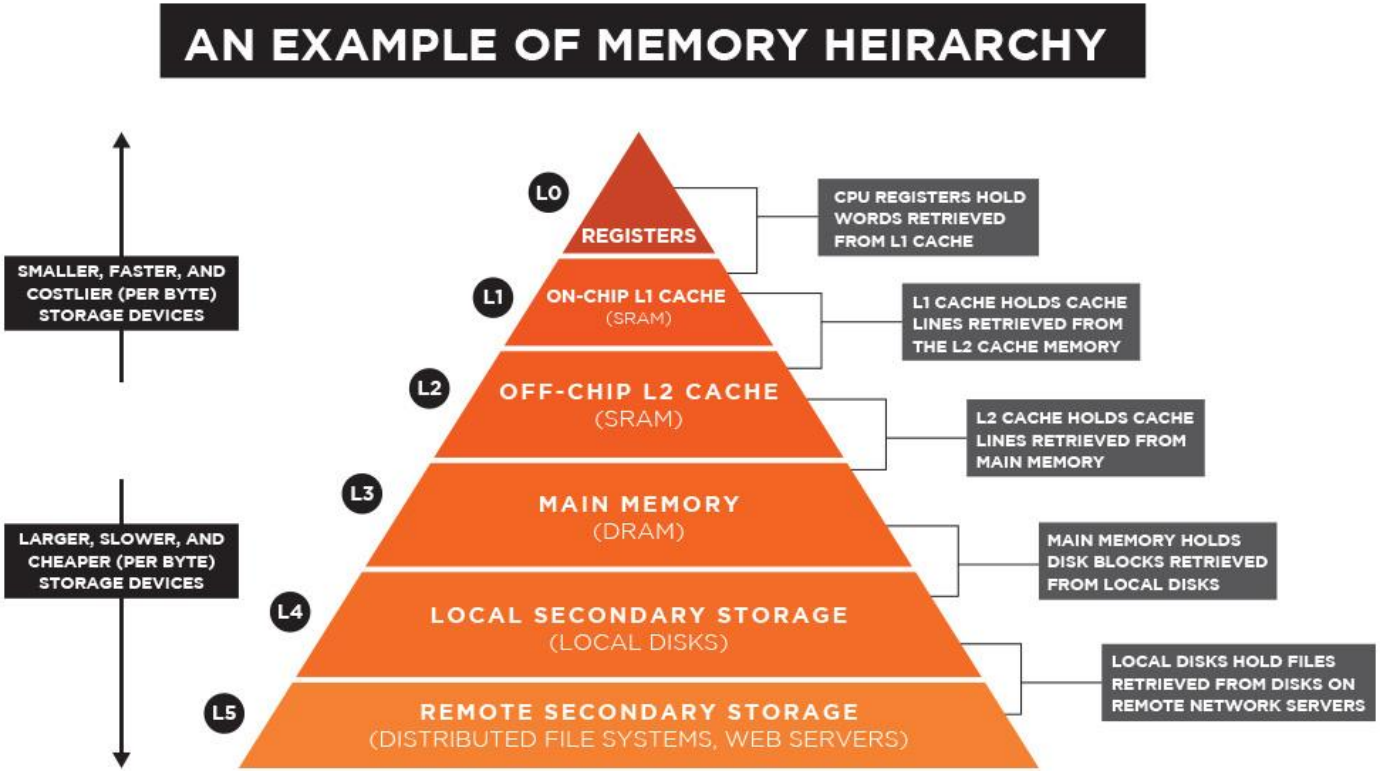
Changes in storage technology will occur and will change the model for data intensive computation

- Storage must make huge advances in power conservation to keep up with CPU technology
  - Flash is at 10^4pJ/bit,
  - HDD at 10^8pJ/bit,
  - STTRAM at 0.1pJ/bit
- Differences in performance layers must be leveled to gain computational efficiency
  - HDDs access data in mS
  - NAND devices access data in uS
  - DRAM, STTRAM, and PCRAM access data in nS
- Storage efficiency will increase by orders of magnitude with 5 years
- Processing bottlenecks will be limited by data mobility rather than storage system performance

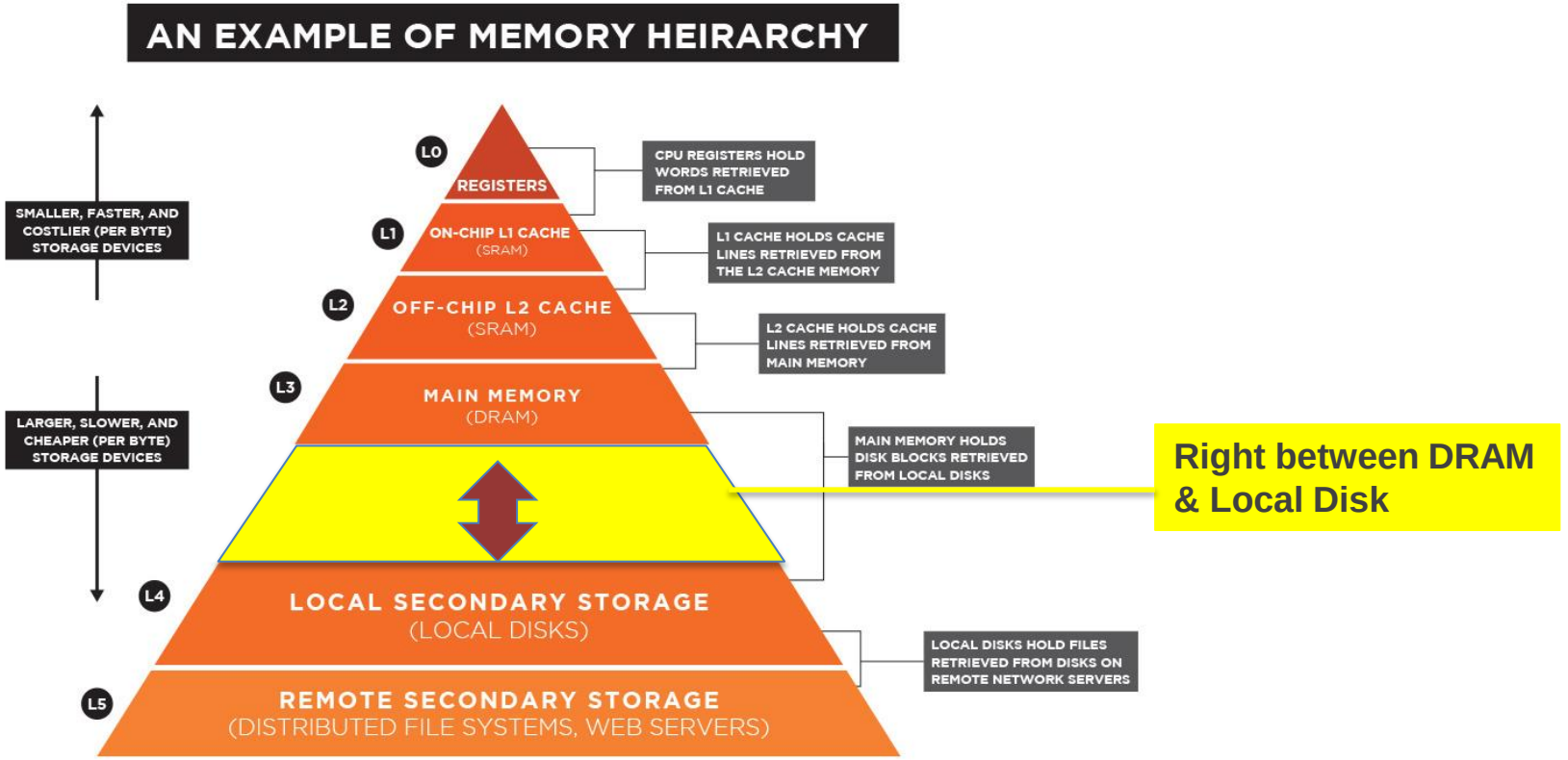
An Emerging Storage Tier is Needed

Traditional Construct



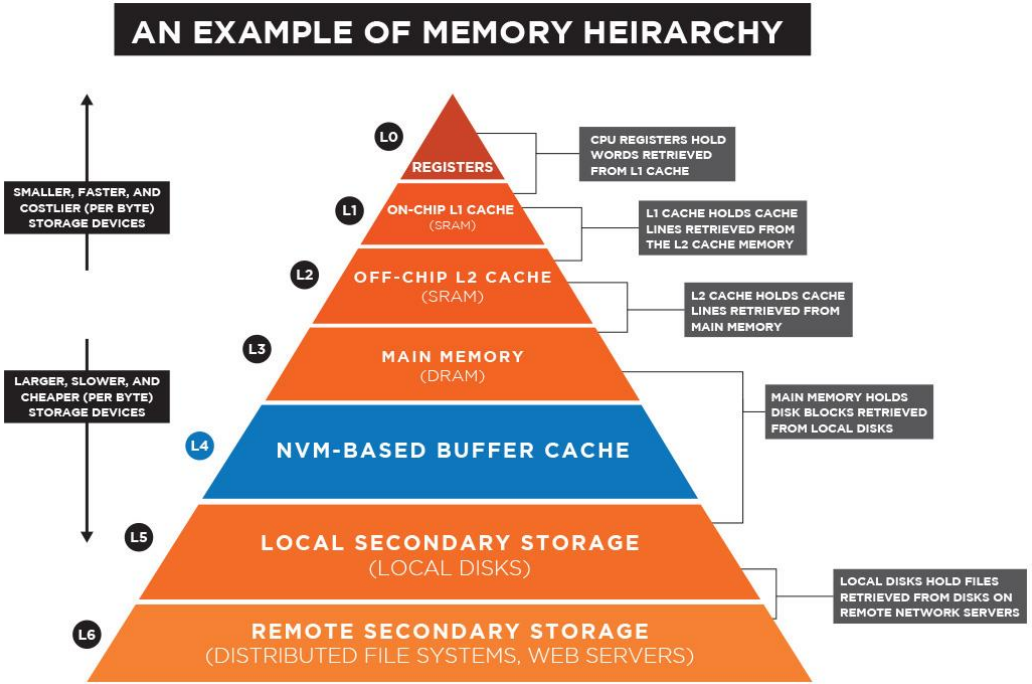
The Emerging Storage Tier's Placement

Where The New Tier Will Reside



Utilizing The Emerging Storage Tier

Non-volatile Memory (NVM)



NVM-based Buffer / Cache

- File cache residing between DRAM & local disk
  - Performance
  - Capacity
  - Cost
- System managed resource
  - Shared PFS acceleration, pinned libraries, common datasets, etc.
- Application managed resource
  - Allocated on a per-job basis, dedicated to a specific job or application, etc.
  - Application “co-design”
- Accelerating parallel file system I/O
  - POSIX, MPI, etc.

Thank You

Questions?