

Trends in HPC for Seismic Exploration

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Market trends
Cloud Computing
Processors
Fabrics
Storage
Workflow

Market Trends

- ▶ Resource Consolidation; delays etc.
- ▶ Virtual or Remote computing is much better than it was just a year ago but adoption is still slower than expected
- ▶ Competition returns! AMD? SGI/HPE? Cray? IBM Even?
- ▶ Scale-up gets interesting again
- ▶ “Lord, please let there be another oil boom...”

Cloud Computing...

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...Still mostly hot air and vapor.

Processors

- ▶ Moore's Law is still alive and well. Probably for the next 10-9 years (Intel)
- ▶ 2016 release of Xeon Phi Knight's Landing, "Winter is coming"
- ▶ Nvidia continues to dominate (for now),
- ▶ IBM OpenPOWER
- ▶ Specialty processors (FPGA, Automata, TI, others)
- ▶ Virtualization (VMware, Docker)
- ▶ Scale-up (Cray, ScaleMP, SGI, IBM LinuxOne)
- ▶ AMD Zen, resurgent?

Fabrics

- ▶ Ethernet
- ▶ Infiniband
- ▶ Omni-Path/OPA

Storage

- ▶ RAM/NAND
- ▶ NVMe (gen 2) and HUGE working memory
- ▶ Flash cache
- ▶ File Systems (GPFS, Stornext, Lustre, glustre, HDFS and many, many more)
- ▶ “Flash for the price of spinning disk” sooner rather than later

Workflow

- ▶ You might not have a performance problem
- ▶ Volume, Velocity, Variety, Value
- ▶ Data movement
- ▶ Services, Tools, Risk

Coming soon...

- ▶ Administration
- ▶ Storage
- ▶ Fabrics
- ▶ Algorithms
- ▶ Collaboration and Visualization

Caveats, Credits & Thank You

- ▶ “It’s hard to make predictions, especially about the future.”
- ▶ Funk’s Law - “A million of anything, is a lot.”
- ▶ Denham’s Addendum - “A billion of anything is a whole lot.”
- ▶ “Originality is the act of forgetting where you heard it.” - Gallagher

- ▶ Scott Denham - Cray Computers
- ▶ Earl Dodd - Ideas & Machines
- ▶ Addison Snell - Intersect360 Research
- ▶ Deepak Khosla - X-ISS
- ▶ Benzi Galili - ScaleMP
- ▶ Others who wisely chose to remain anonymous 😊