The 451 Group

- My background
- Why I’m here
- Why The 451 Group is interested
Software licensing in distributed environments

**Traditional software licensing models are under pressure as they do not satisfy the changing business needs of today’s enterprises.**

- Licenses
  - are web services
  - are managed as agreements
  - support dynamic negotiation
- The access to license protected software is secure
- 100% trustworthy accounting & billing
- Software licensing based on business objectives

**SmartLM is about a win-win set-up, which matches user needs with vendor strategies...**
HPC Market Trends and Forecasts

- Multicore
- GPU
- Scalability
- Cloud
- Software
Multicore Trends

- 2 or 4 core
- 8 or 12 core
- Hyper threading
GPU Trends

- NVIDIA
- AMD/ATI
- FPGA
Scalability Trends

- Core
- Sockets
- Clusters
- Systems
- Grids
Cloud Trends

- Amazon
- Google
- Microsoft
- Telco
- ISP
- etc…
Software Trends

• Existing
  – OpenMP
  – MPI
• Emerging
  – CUDA
  – Ct
  – OpenCL
  – PGAS
Multicore Forecasts

• Future Processors
  – IBM Cyclops
  – Intel Polaris, “Cloud on a chip”
  – 50+ cores
  – Memory bandwidth?
    • Shared memory?
    • Cache architecture?
    • Interconnect on a chip?
GPU Forecasts

- Heterogeneous processors
- GPU and CPU will share the same die
Scalability Forecasts

- Commodity SMP systems > 100 cores
- ScaleMP, Numaflex → 100+ systems
- High end Exascale systems
Cloud Forecasts

- HPC is all about Optimization
- Cloud is all about Abstraction and Virtualization
Software Forecasts

- Many hardware options
- Write once, deploy anywhere?
- HPC for the masses
- Evolution or revolution?
- Target emerging hardware platforms
  - And the Cloud
Thank You

“May you live in interesting times.”

Confucius