



HPC: The Once and Future IT King

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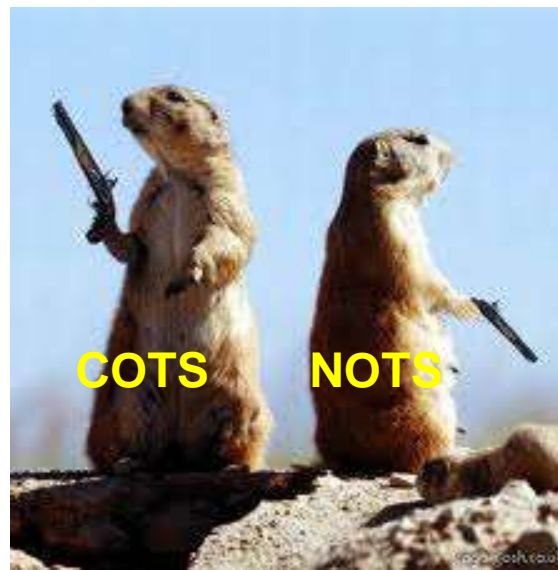
50th HPC User Forum
September 9-11, 2013
Boston, Massachusetts

A group of approximately 20 men are gathered in a conference room. Some are seated around a large wooden conference table, while others stand. The room has a drop ceiling with recessed lights, large windows with vertical blinds, and a clock on the wall. The men are dressed in business casual attire, including shirts, blouses, and suits. The text "April 2000: HPC User Forum Planning Meeting" is overlaid in white on the center of the image.

**April 2000:
HPC User Forum
Planning Meeting**

April 2000: HPC User Forum Planning Meeting Summary

- Held at IDC HQ (Framingham, MA)
- Wide participation (well...28) by major Users in government, industry, academia, along with major vendors
- Serious rift between COTS and non-COTS system advocates split the meeting into two separate breakout sessions:
 - “Large Systems” breakout (MPP, vector and non-COTS systems)
 - “Clustering Large and Small Systems” breakout (COTS systems)



April 2000: HPC User Forum Planning Meeting: Issues for All Participants

- How to make the market for HPC systems sustainable.
 - Will this market disappear?
 - Developing an economically viable supercomputing ecosystem
- Mapping applications to architectures
- Measuring sustained vs. peak performance (beyond Linpack/Top500)
- Creating better channels for collaborating, exchanging information
- Providing input for government policy creation
- Pull together common requirements, so that vendors will address them

April 2000: HPC User Forum Planning Meeting: Issues for the Large Systems (Non-COTS) Group

- Relative price/performance, COTS vs. non-COTS systems
- Ability of clusters to handle “capability” problems
 - Need for memory bandwidth, but costs escalating
- Strategies for migrating codes to clusters
- The Top500 hurts decisions
- Linux capabilities

April 2000: HPC User Forum Planning Meeting: Issues for the Cluster (COTS) Group

- Relative price/performance of scalable systems
 - Attack of the “Killer Micros”
 - “Good enough” computing
- Small SMP clustering
- Linux capabilities / trends in operating systems
- Measuring performance on applications (beyond Linpack/Top500)
 - The Top500 hurts decisions
- Advancing the standards for clusters
- Feedback on real-world experiences with clusters

Top500 Supercomputers List: First HPC User Forum Meeting vs. Today

	April 2000	September 2013	Gain Factor
#1 System	ASCI Red (Intel)	Tianhe-2A (NUDT/Intel)	
Peak performance	3.2 TF	77,300 TF	24,156
Linpack performance	2.4 TF	54,900 TF	22,875
Cores	9,632	3,120,000	324
Entire List (500 Systems)			
Peak performance	77.3 TF	326,000 TF	4,217
Linpack performance	51.0 TF	223,000 TF	4,373



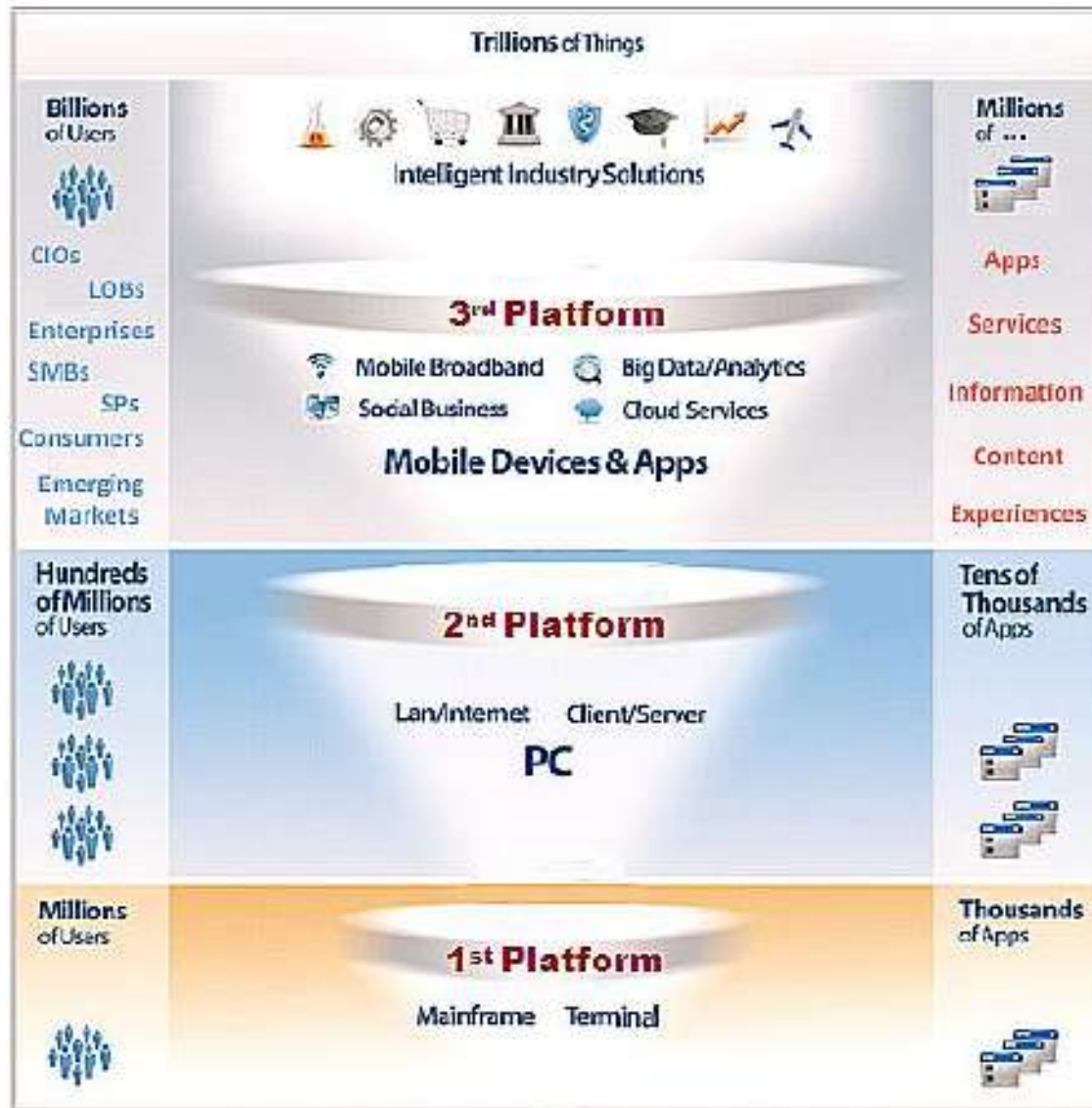
HPC Technologies: Trickling Down Into Broader IT Markets

- Parallelism (hardware, software and systems)
- Clusters
- Grids
- Clouds
- Linux
- Big Data

Broader Market Technologies: “Bubbling Up” into HPC

- X86 dominates
- Standard COTS memory parts
- Low cost power, cabinets, cooling
- GPUs came from the desktop world
- What might be next?
 - ARM based supercomputers?
 - How will commercial big data solutions impact HPC?
 - Will power demands cap the size of the largest supercomputers – or will buyers build 100 Megawatt centers?

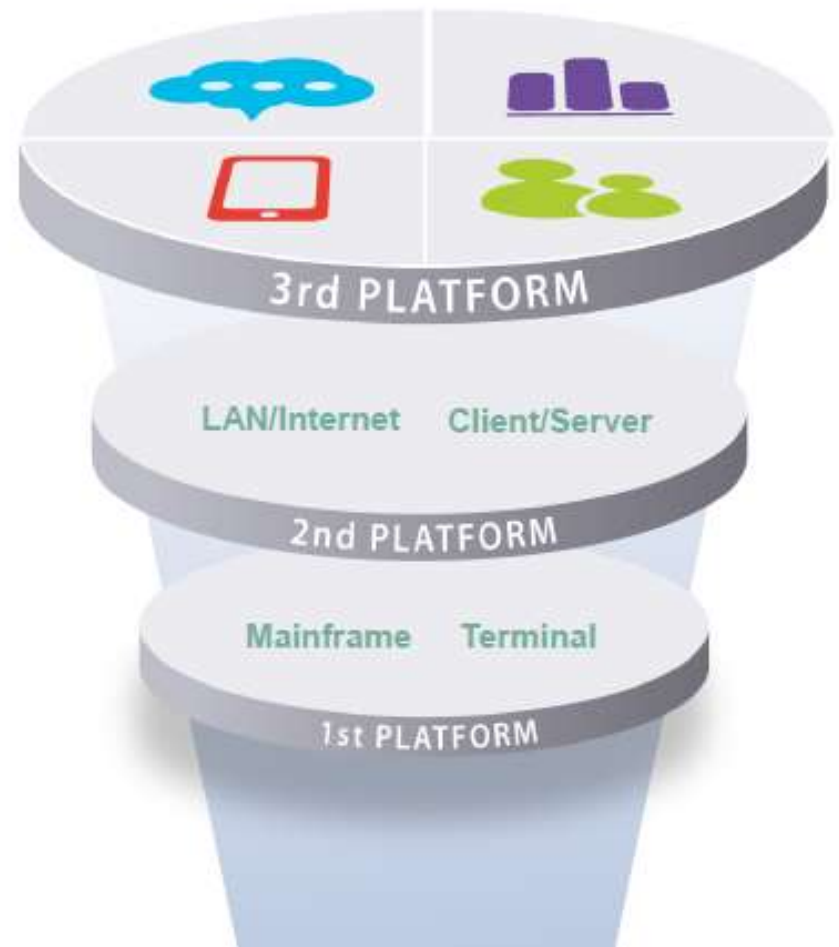
Major IT Trends that Will Impact HPC: The Third Platform



IDC's View Of The Future Of IT: The Third Platform

The Growing Significance of "The 3rd Platform"

- Citizen/consumer transformation pushes enterprise transformation
- New platforms
- New engagement models
- New decision makers
- Continuing focus on operational efficiency
- New focus on
 - Outcomes versus outputs
 - Innovation



The Four Pillars

IDC Four Pillar research provides insight into the intersection and impact of emerging intelligent solutions

- As Big Data/Analytics, Cloud, Mobility and Social come together in an unprecedented way to create entirely new business value solutions and change the ICT playing field, they are enabling intelligent industries and solutions, and most of all - innovation.
- While productivity issues remain important, there is a noticeable shift across all industries in the decision making and purchasing when it comes to these new technologies.
- Unlike traditional IT decisions, the keys users of the technology are playing a more significant role than the technical group within the organization.
- As the 3rd Platform continues to evolve, and the intersection of these trends increases, so will the impact on buyers and their buying behavior.

Questions?

Please email:
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Or check out:
www.hpcuserforum.com

