The Mainframe in 2006 –Where are we, and Where are we going?

The Mainframe in 2006

Where are we, and where are we going?

Eric L. Vaughan

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Topics

- The concept of Total Cost of Usage (TCU)

- A "solar event" on the horizon

- The incomparable Dr. Strassemeyer "draws some pictures"

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Cost of Computing

- Significant industry consultant report from Arcati Research (www.arcati.com)
- Not just Total Cost of Ownership (TCO)- must measure Total Cost per User (TCU)
- TCU must be measured over a reasonable time-span to smooth out up-front costs, e.g. 5 years

Cost of Computing…

- Distinction important because mainframes are uniquely designed to support large numbers of users
  - Interrupt driven architecture designed for task switching, to serve external events (slower tasks)
  - Sophisticated resource management
  - Well balanced cube – I/O, CPU, Storage,

Cost of Computing…

- Total Costs--Visible
  - Hard costs of hardware/operating system software, including space, environmentals and maintenance
  - Cost of application software – off the shelf or customized
  - Manpower costs for hardware and support

Cost of Computing…

- Total Costs—Less Visible
  - Scalability cost—as users increase, what is the burden to support the new users?
    - Mainframe = one technician per 250 users
    - Unix = one technician per 100 users
    - PC = often the user is the support person, backing up files, tending to printer etc. *PLUS* one technician per 50 users
  - Cost of inefficiencies in usage
    - Slower response times result in less production by users, adding overhead cost

Cost of Computing…

5 Year TCU

- PC-Servers — $26,750
- UNIX-Minis — $19,650
- Mainframe — $6,750
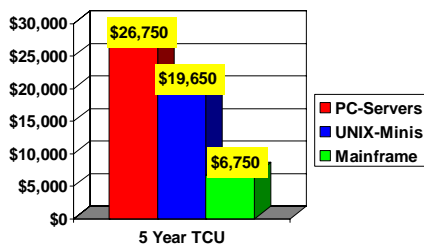
Source: 2005 Study, Arcati Research Limited

Cost of Computing…

5 Year TCU

- PC-Servers — $45,000
- UNIX-Minis — $39,440
- Mainframe — $14,000
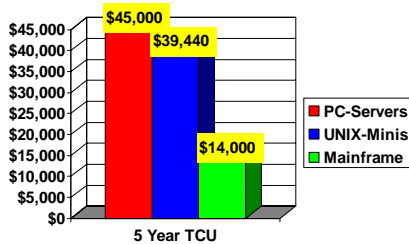
Source: 2001 Study, International Technology Group
The Cost Implications of Platform Choice

Cost of Computing…

- Especially with the PC Server solution, much of the personnel cost out from the data center to the end user
  - Hides the costs—absorbed into other budgets
  - Increases total costs; more people involved in "housekeeping"
- Scalability with non-mainframe solutions not linear
  - Arcati says larger Sun or HP systems typically cost 125% more per user than smaller systems
- zSeries scalability with Capacity Upon Demand (CUoD) and Workload License Charging (WLC) is vastly improved
  - Users can add incremental capacity, leveraging the same platform
  - Fraction of the cost of adding new off-mainframe systems when growth is required

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Cost of Computing…

- Costs do not indicate that UNIX (Linux) is less efficient, but the hosted environment is, i.e. the inherent costs with multiple physical systems
- Combining Mainframe strengths with Linux gives the best of both worlds – new applications in a hospitable (read affordable) environment
- Literally hundreds or thousands of simultaneous servers on one zSeries
  - Eliminates many of the support and management limitations of large UNIX server farms
  - New applications can be added at a very low incremental cost

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Cost of Computing – Projected 2010

- Perception is that PC Servers and Unix Systems' costs are falling rapidly compared to mainframe
  - Reality is many of this systems still lack functionality and management that is built-in to the mainframe
  - Requires system upgrades to gain par function
  - Mainframe cost per MIPS is falling rapidly between 25% and 40% per year
  - Mainframe's software development is focused more on performance (e.g. ESS Shark technology; 64-bit storage) rather than new function
  - z/OS can offer as much as a 10% performance gain over OS/390
  - z/9 – "Doubled everything except the price"

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Cost of Computing – Projected 2010…

And this is liberal considering that most of this systems don't even have a 5 year life!!

- $24,000
- $19,000
- $6,250

$25,000
$20,000
$15,000
$10,000
$5,000
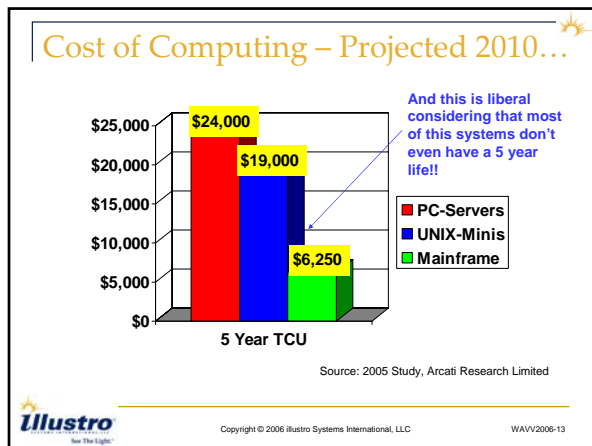$0

- PC-Servers
- UNIX-Minis
- Mainframe

5 Year TCU

Source: 2005 Study, Arcati Research Limited

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A Solar Event

- The strength of POWER technology
  - Versions already used in products from gaming systems, to pSeries and iSeries
  - OS/400 runs essentially unmodified on POWER5 technology
  - R&D and manufacturing shared across product lines
- eCLipz – Enhanced Core Logic for iSeries, pSeries and----zSeries (according to Isham Research)

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A Solar Event…

- eCLipz based on upcoming POWER6
- i and p Series will continue unchanged
- z Architecture too different to share everything common
- Portions will be identical across the architecture
- Result – Future mainframes morph into more of a commodity product
- With BladeCenters – all in one??

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The Story of Mainframe Technology from one who has helped create it…

- Dr.
  - Dis... En...
  - MS... Un...
  - Em...

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Dr. Strassemeyer – IBM Distinguished Engineer

1967 – 1968	System Programming and Compiler Development (BPS, S/360 Model 20 PL1)
1969 – 1971	Diverse management positions in the development field
1972 – 1981	Responsible and visionary for micro programming and future systems Architecture (S/370 Models 121)
1982 – 1986	Assignment at IBM Development Divisions in White Plains, USA as Technical assistant for different development executives
1987	Return to Boeblingen as manager of System Design Control. Becoming an expert status and getting responsibility for the development of S/390 Design in Boeblingen and the IBM Global S/390 Hardware Lab

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Dr. Strassemeyer – IBM Distinguished Engineer…

1990	Nomination to Senior Technical Staff Member by the IBM Corporate Technical Board - Special status as visionary and technical father, leading technical strategic functions concerning future systems: - New system structures for S/390 systems - CMOS-Processor-Design - Transformation from bipolar to CMOS based S/390 systems
1997	Nomination to Distinguished Engineer working mainly on server platform strategy
1998	Election as member of the IBM Academy of Technology an independent highly reputed technical community of 300 Leaders within IBM
1999	Linux experiment on the mainframe succeeds with enormous result - he is Godfather of Linux' for S/390
Today	Promoting the open source culture of Linux in the Enterprise World with customers and application Envisioning and promoting technology breaks through for a leading edge IBM e-Server vendors.

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Dr. Strassemeyer – IBM Distinguished Engineer…

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