The Mainframe – Status and Future

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Agenda

Current state of mainframe business

True costs of computing

Challenges for the future

zSeries continued evolution and future trends from Dr. Strassemeyer

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The Mainframe Today

- After surviving NDE in ea[...] began re-invention again[...] technology
- Same pundit that in 1991[...] death, wrote in 2002

  "It's clear that corporate cust[...] centrally controlled, very pr[...] computing systems – exactl[...] that IBM specializes in."

- Enormous momentum gains with new zSeries technology over the last 3 years
- Ongoing with Open standards including Linux

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The Mainframe Today...

- *"In 2004 mainframe growth is up 15% annually, which seems incredible to some observers. IBM competitors had hoped that mainframes were on their way out -- Sun and Hewlett-Packard included -- and a significant increase in mainframe sales disputes that."*

  -Charles King, a principal analyst for Pund-IT Research

- *"It was the zSeries, the modern-day name for the 40-year old mainframes, that again provided the biggest boost to IBM in the latest period. Its 44% growth helped push IBM's second quarter revenues above Wall Street's expectations - to $23.2 billion, up 7% as reported."*

  - Annex Research, on Q2 2004 Results

- Everyone acknowledges – 70% of the world's data resides on mainframes

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The Mainframe Today...

- Linux for zSeries accounted for strong growth in new MIPS in 2004
- Hundreds of Linux application deployment on zSeries
- Majority of the Linux apps are infrastructure (Web, Mail, print/file sharing)
- Consolidation is easier--database and transaction processing developing

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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, Networking

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

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Cost of Computing…

Chart: 5 Year TCU

- PC-Servers: $26,750
- UNIX-Minis: $19,650
- Mainframe: $6,750

Source: 2005 Study, Arcati Research Limited

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Cost of Computing…

Chart: 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

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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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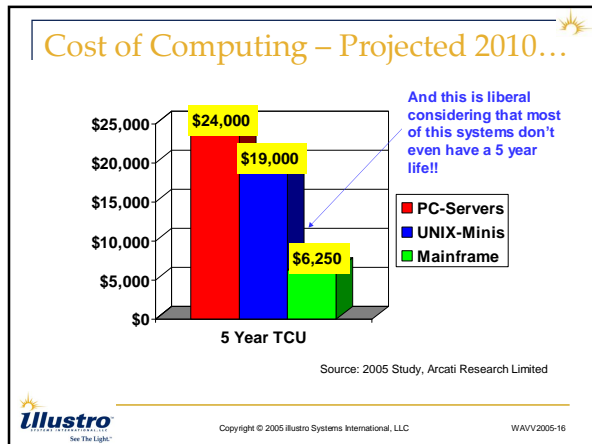
Cost of Computing – Projected 2010

- 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

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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!!

- PC-Servers
- UNIX-Minis
- Mainframe

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

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

5 Year TCU

Source: 2005 Study, Arcati Research Limited

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The Mainframe's Outlook

- The mainframe is the benchmark for all to compare Who says so? Every competing vendor or product!
  - IBM's new pSeries 630 model Unix-class server: "bringing mainframe-inspired logical partitioning to entry servers."
  - In Jan 2003 Sun announced that their: "Sun Fire 6800 server offers mainframe-class availability and resource management features."
  - Intel Corporation describes servers using their processors as having: "…four-way and eight-way application servers to mainframe-class servers with up to 64 processors…"
  - In fact, search for the term "mainframe-class" on nearly all serious server manufacturers' websites!

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The Mainframe's Outlook…

- Challenges
  - Application growth and development
    - Many ISVs not continuing development
    - Discrete interfaces, discrete languages
    - Perceived dearth of talent
  - Perception
    - Executives belief that the mainframe is obsolete and antiquated
    - Interfaces appear old, and *are* old
  - Senior Workforce

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The Mainframe's Outlook…

- Solutions
  - Application growth and development
    - Full exploitation and development of interfaces that provide real interaction with all platforms
      - Web Services/XML/SOAP etc.
      - Usage of connectors and other methods to allow "today's" generation to use mainframe resources
  - Perception
    - Information – gather facts and figures. IBM has never been a better resource
    - Interfaces: appearance is everything

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The Mainframe's Outlook…

- Solutions
  - Senior Workforce
    - Few college grads are exiting with mainframe exposure
    - Cross-training essential in systems area
      - Today's systems interface is a major impediment
    - Best response is to adapt the mainframe to today's emerging standards
      - Use Web interfaces exclusively
      - XML-enabled data to generalize access
      - Implement "current" language support
    - Need to blur the lines of the mainframe versus any other system

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The Mainframe's Outlook…

- Network computing dominates the world
- Pervasive connections/pervasive "computing"
- Any Information from Anywhere
- Universal interface via web browser

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

- Dr. [...]
  - Di[...] [...]nd En[...]
  - MS[...] Un[...]
  - En[...]

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

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.

Dr. Strassemeyer – IBM Distinguished Engineer…