



IBM Systems & Technology Group
Modular Systems



What's so Important about virtualisation?

Luke Shutler
Business Development Manager
IBM UK, Ireland, South & Central Africa

OUT WITH COMPLEXITY. OUT WITH INEFFICIENCY. OUT WITH CABLES.



IBM Modular Systems



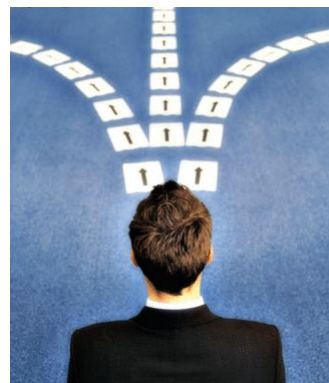
Challenges & Opportunities

Customer Challenges

- Business Continuity
- IT Optimisation
- Compliance
- Green Agenda

Technology Trends

- Processor Evolution
- Performance / Watt
- Virtualise Virtualise Virtualise
- ...or not!



Do things differently!



Customer Challenges

Business Continuity

24/7/365 Requirements

Reduced Maintenance Window

DR Strategy

Cost!

Customer Challenges

Business Continuity

IT Optimisation

Compliance

Green Agenda



Business
Brokerage Retail
Credit Card Sales Authorization
Banking Industry

Average cost (hour)
\$6.5 million
\$2.6 million
\$17,093

Source: Contingency Planning Research & Strategic Research Corporation



Customer Challenges

IT Optimisation

Multiple model & multiple system image

1 app = 1 os = 1 server

Resource Capacity utilisation

-Server level

-Datacenter level

-Personnel level

Cost!

Customer Challenges

Business Continuity

IT Optimisation

Compliance

Green Agenda

"The uncomplicated policy of adding more and more boxes to hold data is unsustainable economically and environmentally. Something has to change, then – and quickly."

"The majority of decision-makers aim for server capacity utilization of more than 50%."

Source – Forrester Group

Compliance

HMRC data breach highlights need for data compliance

Author: Jeremy Smith
Posted: 15:40 04 Jan 2008

The data breach at HMRC, which placed 26 million people at risk of identity theft, has brought information governance back to the fore. Early indications suggest that risk management procedural failures and human error were to blame.



Customer Challenges

- Business Continuity
- IT Optimisation
- Compliance
- Green Agenda

Security Strategy

Customer data breach at UK loans website

Loans.co.uk admits risk of ID fraud...

Loans.co.uk has warned customers they could be at the risk of identity theft after personal data was leaked in a data security breach.

The loans website will not reveal how many customers have been affected or how the breach happened but admitted the names, addresses, phone numbers, dates of birth, loan applications and mortgage details of people applying for loans were passed to other websites loan companies without authorisation.

The Register - Public Policy - Government

Join the army, get your ID pinched - MoD laptop goes AWOL

The general supply of applicants is still there...

by [John W. Brinkley](#) - [John W. Brinkley](#)

Personal details of the 150,000 people who have applied to join the armed forces over the last ten years were stolen with an MoD laptop earlier this month. It was admitted late on Friday. The computer was stolen from the car of a junior naval officer, which was parked outside his house overnight in Edgbaston, Birmingham.

Retailers need to step up IT security, says Deloitte

Author: Iain Grant
Posted: 12:42 07 Feb 2008
Topics: Security | Compliance

Retailers are losing the battle against IT security threats because most have no strategy for their long term defence and merely respond to incidents, says a report from management consultancy Deloitte.

Jeremy Clarkson discovers the dangers of data loss

Author: John-Paul Kamath
Posted: 16:48 07 Jan 2008

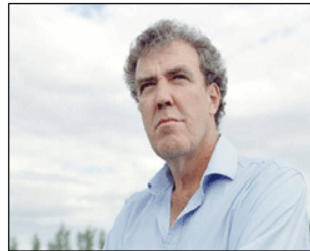
Top Gear presenter Jeremy Clarkson has had an unauthorised direct debit set up in his name after publishing his bank account details.

Clarkson, 47, revealed his account number and sort code in his Sun newspaper column as a way of rubbing the consequences of the government losing 25 million people's personal details on two computer discs.

"All you will be able to do with them is put money into my account. Not take it out. Honestly, I have never known such a palaver about nothing," he told readers.

But Clarkson admitted he was "wrong" after he discovered a reader had used his details to create a £500 direct debit to the charity Diabetes UK.

"I opened my bank statement this morning to find out that someone has set up a direct debit which automatically takes £500 from my account," he said in his Sunday Times column.



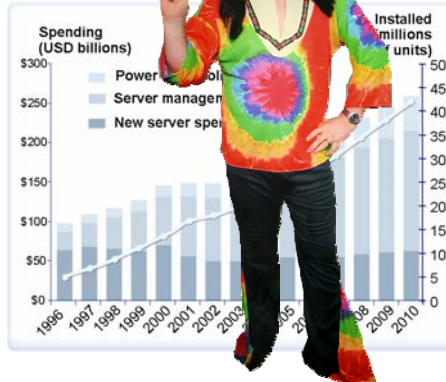
Customer Challenges

Green Agenda

- Stakeholder Pressure
- Customer Perception
- Data centre Limitations
- Cost!

Customer Challenges

- Business Continuity
- IT Optimisation
- Compliance
- Green Agenda



Technology Challenges

Processor (r)Evolution

Each year we will get ~~fewer~~ more processors

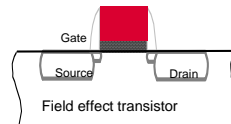
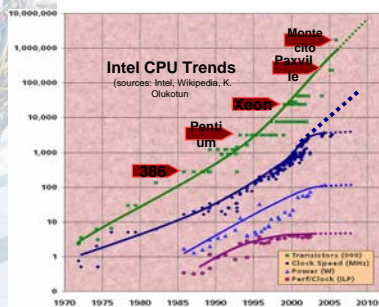
32bit -64 bit Transition

Multi-core designs

Suited to Multi-threaded applications or multiple applications on a single system

Technology Trends

- Processor Evolution
- Performance / Watt
- Virtualise everything!
- ...or not



- Single Threaded
 - Legacy server software and most desktop software
 - Most server software developed by application developers new to multi-threading
- N Threaded (typically N = 4 to 8)
 - Vast majority of server software developed in the past 5 - 8 years
 - Exchange, Notes, Citrix, Terminal Services, most Java, File/Print/Web serving, etc.
 - Almost all customer developed applications
 - Some workstation software
 - Also consider that much of this software does not support fully multi-threaded disk I/O so even if CPU threads are available performance is often throttled by disk I/O limitations
 - 32-bit SW (E.g. Citrix, Terminal Server, Notes, Exchange, etc.)
- Fully Threaded Software (N = 8 to 64)
 - SQL Server, Oracle, DB/2, SAP, PeopleSoft, VMware, 64-bit Terminal Services, various HPC, Apache but not much else

Technology Challenges

Performance per Watt – The New Benchmark *(other benchmarks may apply!)*

- How fast can data be processed
- How many users can I satisfy
- Throughput - Users per £
- Throughput - Users per watt

System power measurement *Every component counts!*

- CPU
- Memory
- Disks
- PSU
- Fans



Technology
Processor Evolution
Performance / Watt
Virtualise everything!
...or not

How is energy typically used in the data centre?

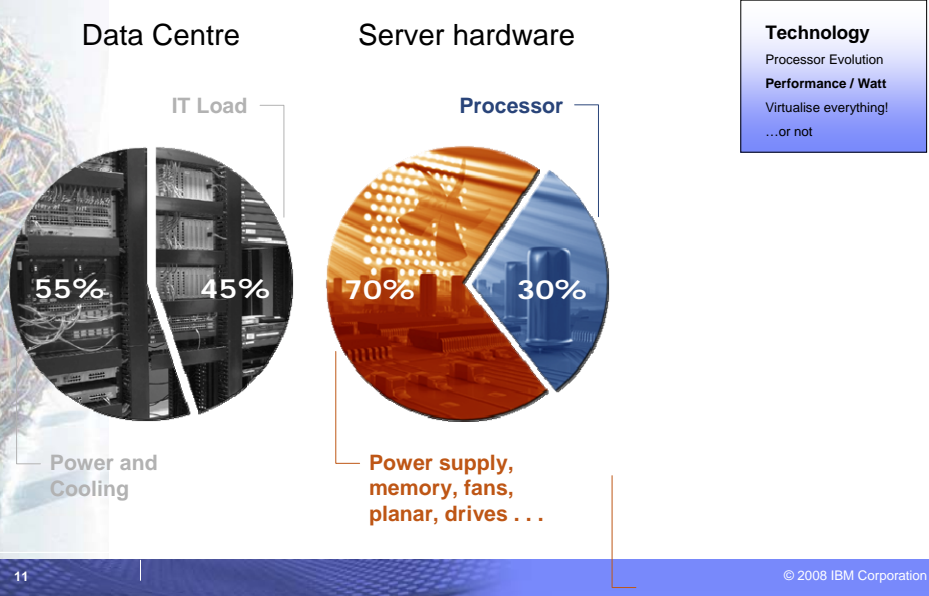
Data Centre



Technology
Processor Evolution
Performance / Watt
Virtualise everything!
...or not

Data source: *Creating Energy-Efficient Data Centres*,
U.S. Department of Energy - Data Centre Facilities and
Engineering Conference - May 18, 2007

How is energy typically used in the Data Centre?



Technology Challenges

Virtualise Virtualise Virtualise

Why?

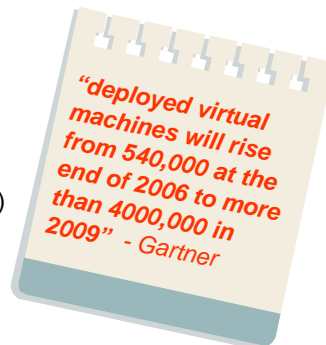
- Unsatisfactory server utilization levels
- Physical and virtual server sprawl
- Lack of reliability and flexibility
- Soaring operational costs and floor space limitations
- VDI

2008 x86 Big Players

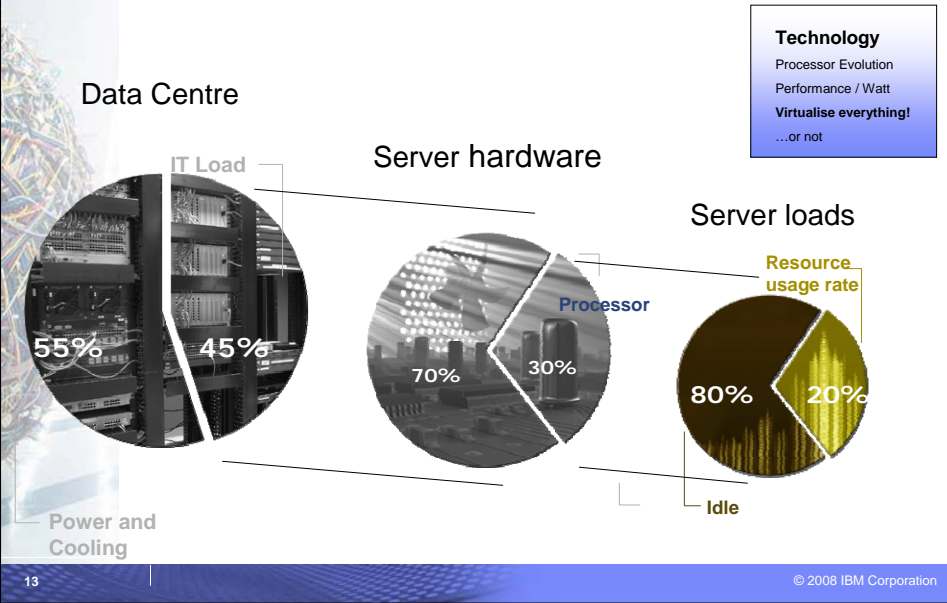
- VMware
- Citrix XenSource
- MS Windows 2008 with Hyper -V (Viridian)



Technology
 Processor Evolution
 Performance / Watt
 Virtualise everything!
 ...or not



How is energy typically used in the Data Centre?



Technology Challenges

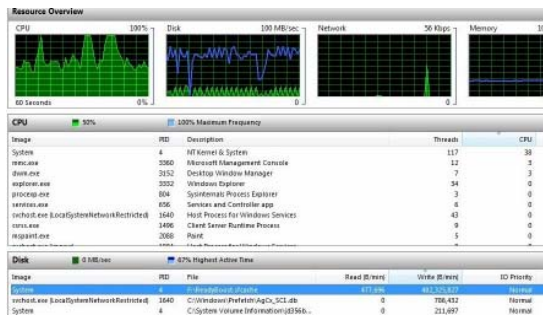
Markets

Virtualisation not a small business play (yet)

Applications with heavy I/O demands or sustained CPU spikes may not be suitable

- ERP
- Database
- IPTV
- Heavily utilised VOIP
- Email (this will change)

Technology
 Processor Evolution
 Performance / Watt
 Virtualise everything!
 ...or not



Maintain Flexibility – Regain Control - Virtualise

Customer Challenges

- Business Continuity
- IT Optimisation
- Compliance
- Green Agenda

Technology Trends

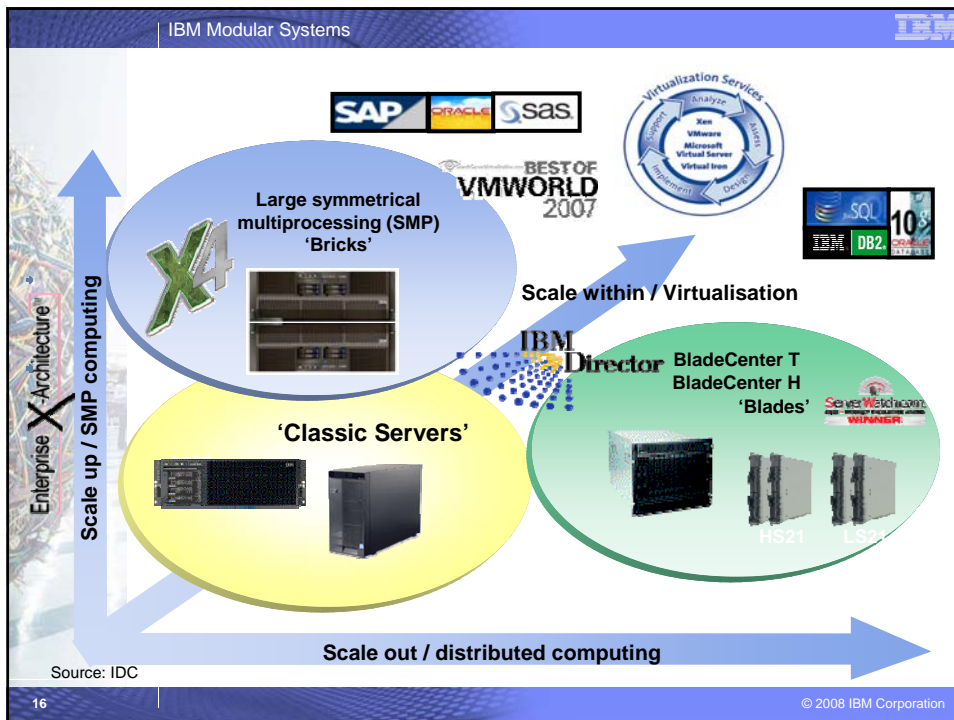
- Processor Evolution
- Performance / Watt
- Virtualise Virtualise Virtualise
- ...or not!

Control

- Resource Management
- Disaster Recovery
- Data Management
- Server / Desktop build Images

Flexibility

- Capacity on Demand
- Right sized solutions
- Rapid Deployment
- Power consumption



The IBM Modular Systems Advantage

World's most powerful x86 platform

Market leader in 4 and 8 socket systems

Leading RAS Features

Pay as you Grow features



Incredibly power efficient Blade System

Open Standards - Widest choice of Storage / Switch fabrics & Chassis'

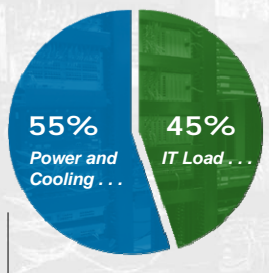
No single point of failure for outstanding Reliability & Availability

Design longevity offers best investment protection in the industry



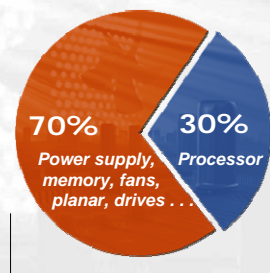
IBM Innovation help across the board

Data Centre



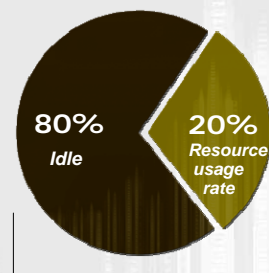
- IBM Heat eXchanger
- DC Stored Cooling
- IBM DC Services

Server hardware



- Component Design
- CVC
- Power efficient PSU
- Chassis Design
- Active Energy Manager

Server loads



- Virtualisation
- SCON & Virtualisation Toolsets
- Scalability
- Memory Utilisation

IBM Modular Systems

Cool Blue™ Portfolio

- 
Power Configurator
 - Get IT right from the start
 - Calculate Energy savings before deploying
 - Measure real maximum power requirements
- 
IBM Director Active Energy Manager™
 - Optimize and manage datacenter power and cooling
 - Take the guess work out of datacenter power management
 - More accurate data center planning helps maximize datacenter performance
- 
Rear Door Heat Exchanger
 - Capitalize on total data center potential
 - Maximum performance per watt per square foot
 - Remove 55% of heat from racks
- 
IBM Site & Facility Services
 - Thermal Analysis for High Density Computing
 - Integrated Rack Solution for High Density Computing
 - Scalable Modular Data Center for Small and Medium-sized Businesses
- 
Virtualization tuned & managed
 - Maximize productivity and utilization
 - Deliver optimal server performance within capital budgets for energy
 - Lower TCO and match business objectives with server performance capability

19 © 2008 IBM Corporation

IBM Modular Systems

Environmental responsibility is a core IBM value

Awards & Recognition

Present Goal
Reduce CO₂ emissions associated with IBM's energy use 12% from 2005 to 2012 via energy conservation, use of renewable energy, and/or funding CO₂ emissions reductions with Renewable Energy Certificates or comparable instruments.

Early Results

40% Between 1990 and 2005, IBM's global energy conservation actions reduced or avoided CO₂ emissions by an amount equal to 40% of its 1990 emissions.

1998 Became the first semi-conductor company to set a numerical target for PFC emissions reduction

58%

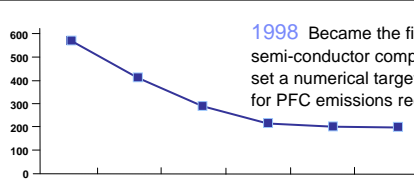
Awards & Recognition:

- BEST Workplaces for Commuters™ (FORTUNE 500 Top 20 2004, 2005, 2006)
- CLIMATE LEADERS (U.S. Environmental Protection Agency 2005)
- WWF climate savers (2005)
- USEPA Climate Protection Award (1998 and 2006)
- Green Power Purchaser Award (2006)
- The Climate Group (2005)

Early Support for Disclosure:

- Computer Program Charter Member (1992)
- ENERGY STAR
- Charter Member (2000)
- WWF climate savers
- CCX (Chicago Climate Exchange) Charter member (2003)
- SmartWay Transport Partnership (U.S. Environmental Protection Agency)
- PEW CENTER FOR Global CLIMATE CHANGE Business Environmental Leadership Council
- CLIMATE LEADERS (U.S. Environmental Protection Agency) Charter Member (2002)
- WRI Green Power Market Development Group Charter member (2000)
- Climate VISION (1605(b) voluntary emissions reporting since 1995)

CARBON DISCLOSURE PROJECT Since inception



© 2008 IBM Corporation



IBM Systems Director Allow you to virtualize more, manage less

- **Common toolset**
- **Modular, industry standards-based approach**
- **Leverages investments in IBM platform management**
- **Integrates with IBM service management offerings from IBM Tivoli group**
- **Supports IBM and third-party extensions**



Simplified management of physical and virtual infrastructure

Rapid deployment and optimization of IT resources

Reduction in time-consuming management tasks

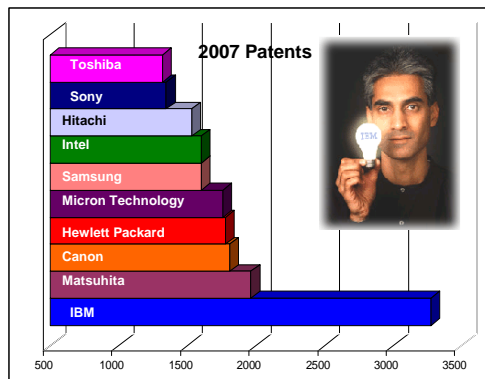
“... IBM Systems Director could become the primary point of control - not just for IBM Systems, but entire data centers.”⁽¹⁾



Summary

Collaborative Innovation that matters!

- Provides X-Architecture foundation for IBM System x Enterprise Servers
- Combines breakthrough technology with industry-standard hardware and software
- Sparks a revolution in server consolidation and efficiency
- Achieves major performance advantages
- Builds a cost-effective, flexible IT environment
- Enables businesses to become more agile, environmentally efficient and productive



For the 14th consecutive year, IBM led the innovation field