30sec Business Case
Virtualisation

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Overview

Maximise datacenter capacity
Deploy less servers
Deploy less desktops
Use less energy
Improve availability
Reduces Management Service Costs

Doing IT better
Doing IT smarter
Doing IT differently

Innovation and Technical Leadership

- Choice

System z10 ™

System p6™

System i6™

System x™

iDataPlex

BladeCenter™

Enterprise Storage Server™

Customer Driven

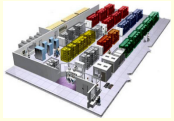
Market Driven

Autonomic Computing	**WorkLoad Mgr,Virtualization, Partitioning, Security, Systems Mgmt**
Series Unique Technologies	**z/OS, AIX 5L™, OS/400, Windows Operating System, FICON Express**
Shared Components	**BladeCenter, Linux, Processors, I/O Power, Hardware Console, Adapters, Switches, Power/Mechanical frames**

Customer value

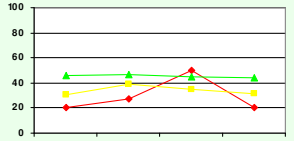
- IBM's best technology
- Shared innovation
- Faster servers
- Improved availability
- Faster to market
- Investment leverage

The real picture from data center input to usage: Where are the Watts consumed ?



Data Center

Servers Hardware



Server Loads

HVAC, UPS 40%

IT power 60%

AC/DC losses; 25%

Fans; 9%

DC/DC losses; 10%

Standby; 2%

Drives; 6%

PCI; 3%

Planar; 4%

Memory; 11%

Processor 30%

Idle; 80%

Used Resource 20% = 3,6% of total

Need one more W of compute energy ?

27 W data center ← X1,7 — 16 W equiv IT power ← x3 — 5 W equiv processor ← x5 — +1 W equiv. used ressource

SPL Sites & Facilities GTS

STG Systems Design

STG Lab Services

GTS DC Design – Southbank Ground Floor Lab

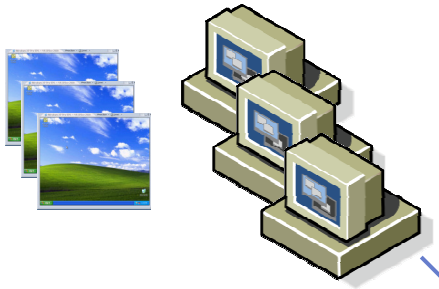
Virtualisation Attributes / Scope

- Utilisation
  - Multiple environments
  - Over commit HW resources
  - Reduce HW platforms
- Emulation / Grouping
  - Utilise existing resources
  - Increase lifespan of products
- Replacement
  - Improved availabilty
  - Improved Service
- Clustering
  - Multiply existing resources

Virtualisation – The Killer Application

- Benefits
  - Increase workloads by combining applications
  - Reduce physical population of servers
  - SW server – break link with HW
- Concerns
  - Management
    - Must have automated management
  - “All eggs in one basket”
    - Must have disaster recovery
- Opportunities / Directions
  - Virtualise I/O / Storage
  - Virtualise Desktops
    - Security
    - Service / Support
    - Energy Efficiency 150W -> 15W

Target Environments



Knowledge Workers

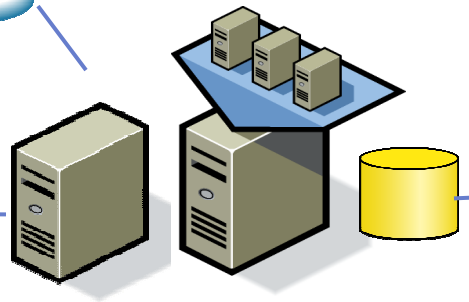
- Replace desktop environment with virtual environment
- Preserve desktop usability
- Central management of all desktops

Branch Office Workers

- Highly secure access to Banking Applications
- Increased Security by replacing fat clients with thin clients

Transaction Workers, Call centers

- Deploy virtually any application
- Flexible architecture to increase decrease number of seats

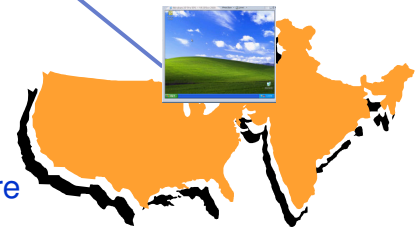


Virtualized Hosting Client Infrastructure

- Central management
- Back end storage of Desktop
- Off-line patching of Desktop
- Security policies

Remote Access

- Access to your desktop from virtually any PC at any time
- Highly secure access to enterprise resources and data
- Deploy virtually any application



Developer Desktops

- Consolidate multiple developer desktops
- Highly secure offshore development
- Centrally manage developer desktop

Choosing Virtualisation Platforms

"Virtualisation capacity is a function of how much memory and I/O bandwidth/capacity one can provide a core/socket at a given energy level"

Enterprise eX4

Energy efficiency ←

Performance ←

Reliability ↔

Physical VM Isolation / Granularity →

HW/SW Management ↔

Ease of Upgrade →

BladeCenter

The Total Systems Management Experience

Delivering innovations throughout the systems management stack

Upward integration into Tivoli Service Management

Tivoli software IBM Tivoli

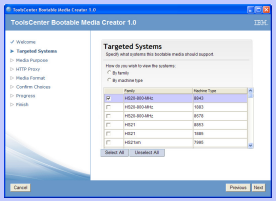
IBM Systems platform solution for System x, BladeCenter, Power Systems, System z and storage

IBM® Systems Director

IBM Systems Director

- *Platform management that is easy and efficient*
- *Management of physical and virtual resources across heterogeneous systems*

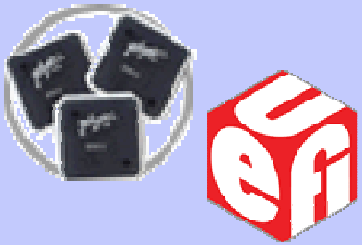
Redesigned system tool portfolio for single-system management and scripting



ToolsCenter

- *Consolidated, integrated suite of management tools*
- *Powerful bootable media creator*

Hardware and firmware advances which are standard across all new systems



Integrated Management Module (IMM)

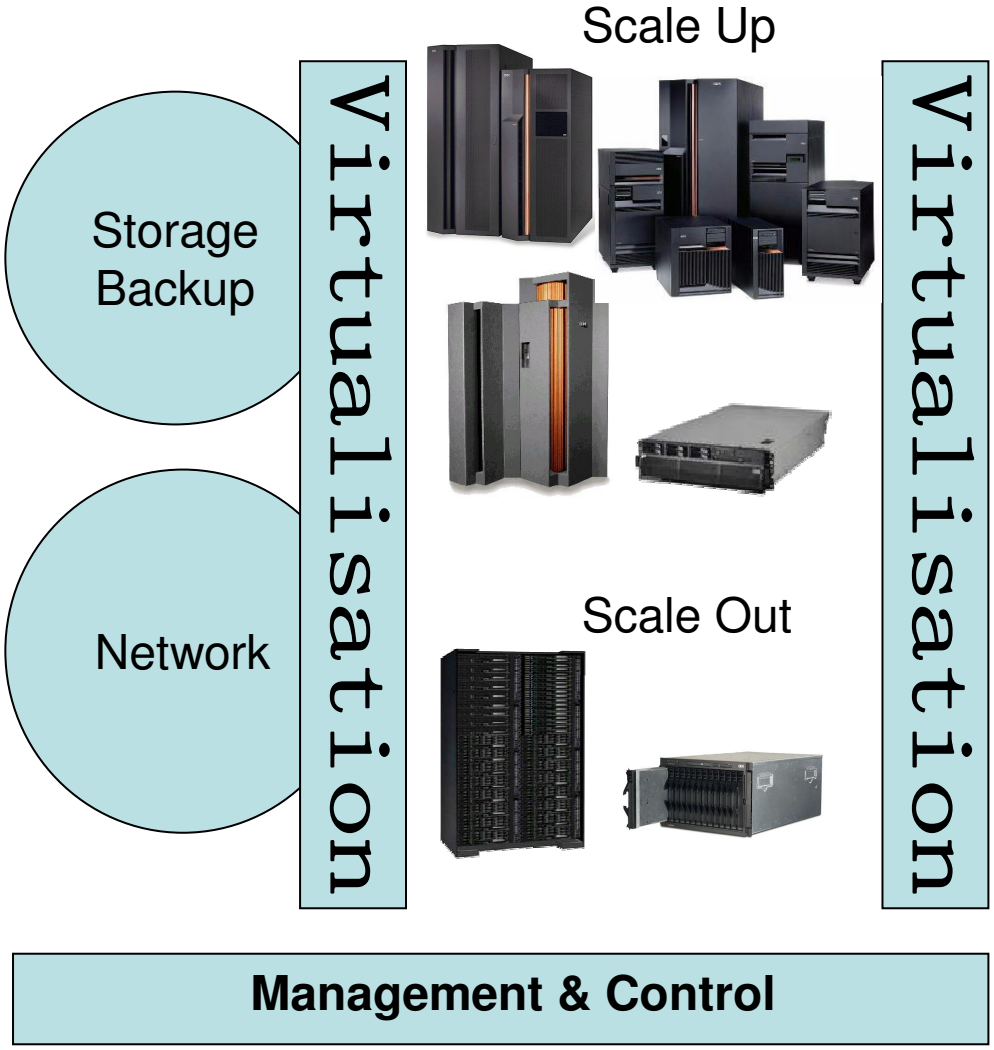
- *Standards-based hardware which combines diagnostic and remote control*

UEFI—next generation BIOS

- *Richer management experience and future-ready*

“a server or desktop is a file”

Combining Scale Up and Scale Out
A Smart, Flexible, Energy Efficient - Computing Platform



Scale Up/Out Combination

Maximum Flexibility & Choice
Balance Market & Customer Driven
Energy & Systems Management
Investment/Technology Protection