

# **BladeCenter & System X Overview**

**IT Optimisation,  
IT Simplification**

Tikiri Wanduragala  
Snr. Consultant Server Systems

# The Event-Driven World

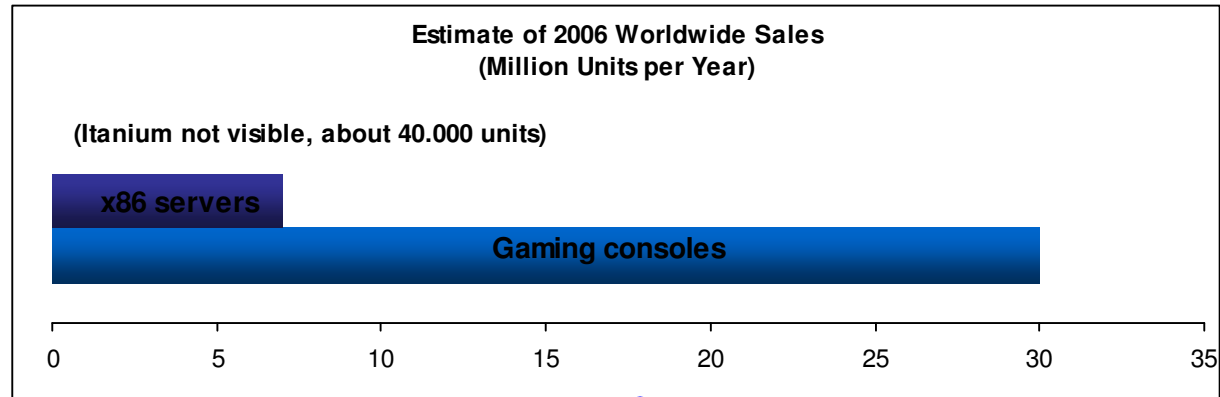
**The accelerating need to handle large volumes of time-dependent events will give rise to new classes of middleware, programming models, and tools**

- There is a growing need to monitor, capture, process, and store massive volumes of time-dependent events
  - Smart sensors, RFID, program trading, fraud management, risk and compliance, intelligent oil field, location based service, logistics, presence (SIP), in-line analytics, etc.
- An increasing number of companies are addressing the needs of the time-dependent infrastructure market
  - Developing event engines that route, transform and derive events from multiple streams
  - Delivering content management solutions supporting large volumes of time-dependent data
  - Extracting event information from applications (ERP, CRM, etc.) and sensors
- Standards are emerging
  - Real-time Specification for Java (JSR 1), Distributed Real-Time Specification (JSR 50)
  - Web Services Notification and Web Services Eventing
  - OMG Data Distribution Service (DDS)
- Middleware will evolve to deal with the throughput and time-dependent needs of the event-driven world. New programming models and tools will also emerge
  - Data integration will evolve to event integration

# Customer Concerns

- x86 Servers operating at 15-20% staff operating at 100%
- Reduce cost?
- How do I handle the complexity of my infrastructure?
- How do I consolidate my server infrastructure?
- How do I keep pace with changes in technology?
- How do I manage all this IT with the staff I have?
- How many transactions per watt ?
- How many servers per square inch and how many servers can one human being manage?

## The Cell and PowerPC Niche Processors? Not if one Considers Sales Volumes ...



Three major gaming console vendors use  
Cell and PowerPC in new or upcoming products ...



**NINTENDO Wii**  
IBM Power PC



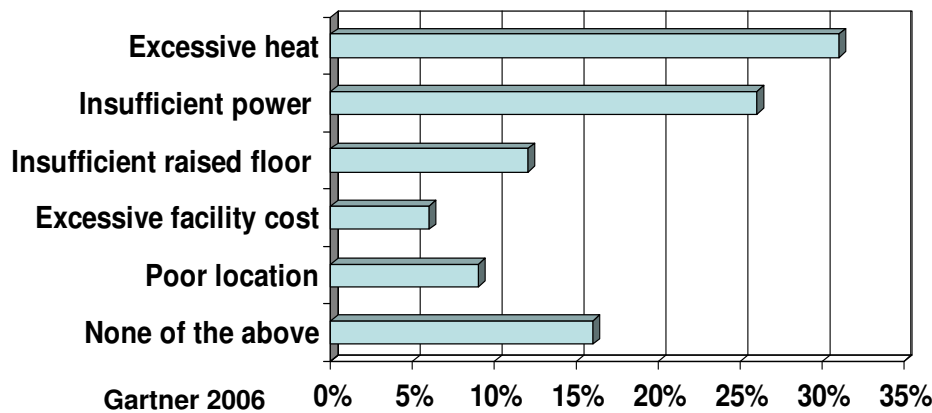
**SONY PS3**  
Cell BE



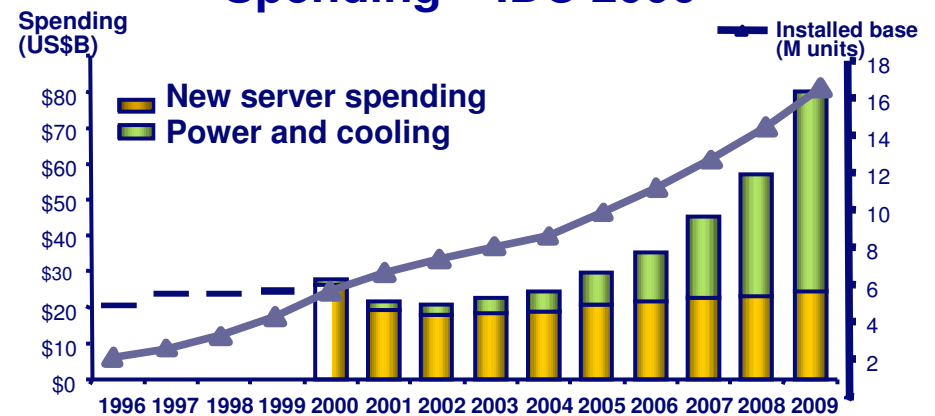
**MICROSOFT X360**  
IBM PowerPC

## Inexpensive dense computing and increasing power costs are shifting requirements and spending

### What is the greatest facility problem with your primary data center?

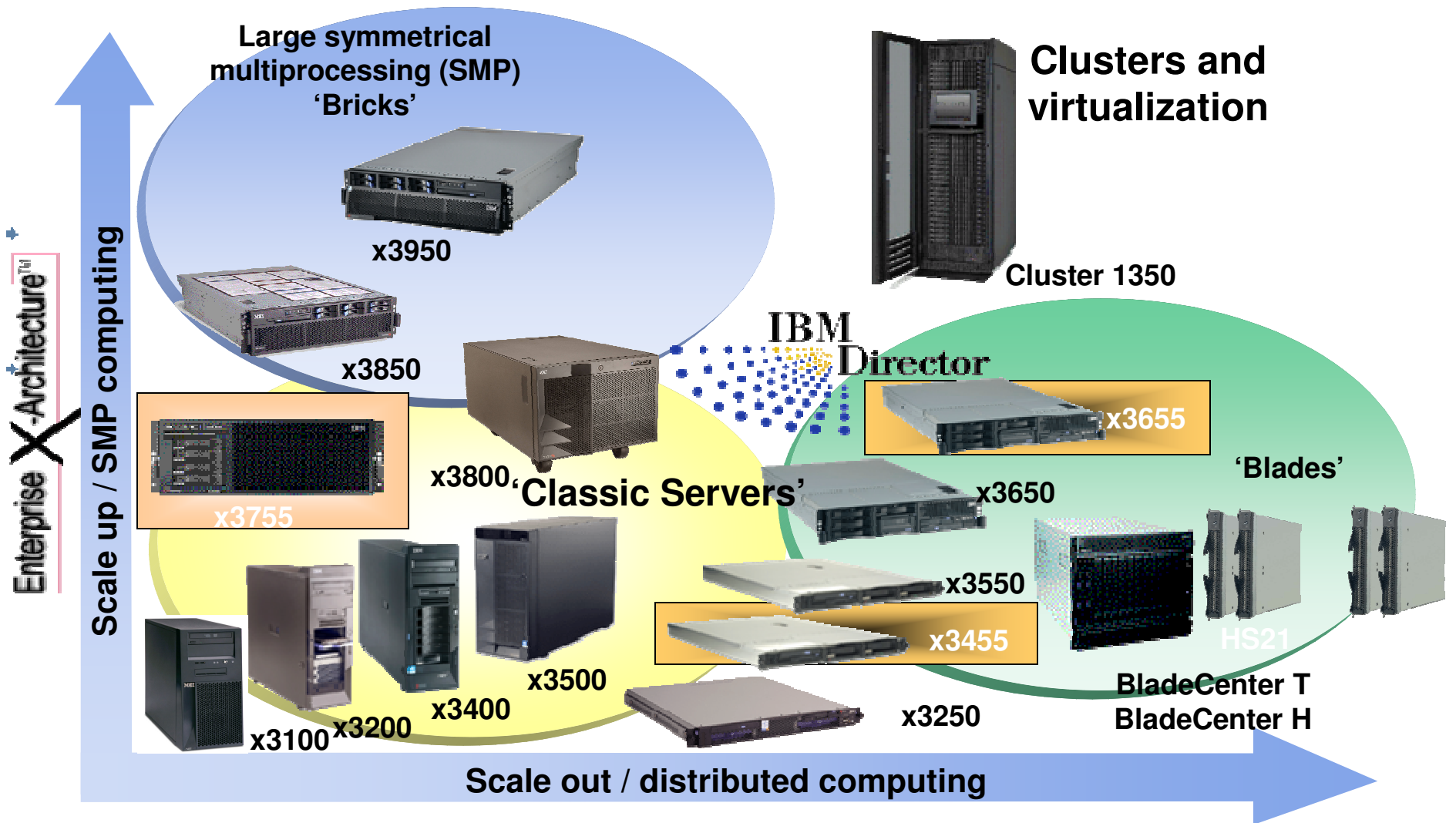


### Power and cooling exceeds server Spending – IDC 2006



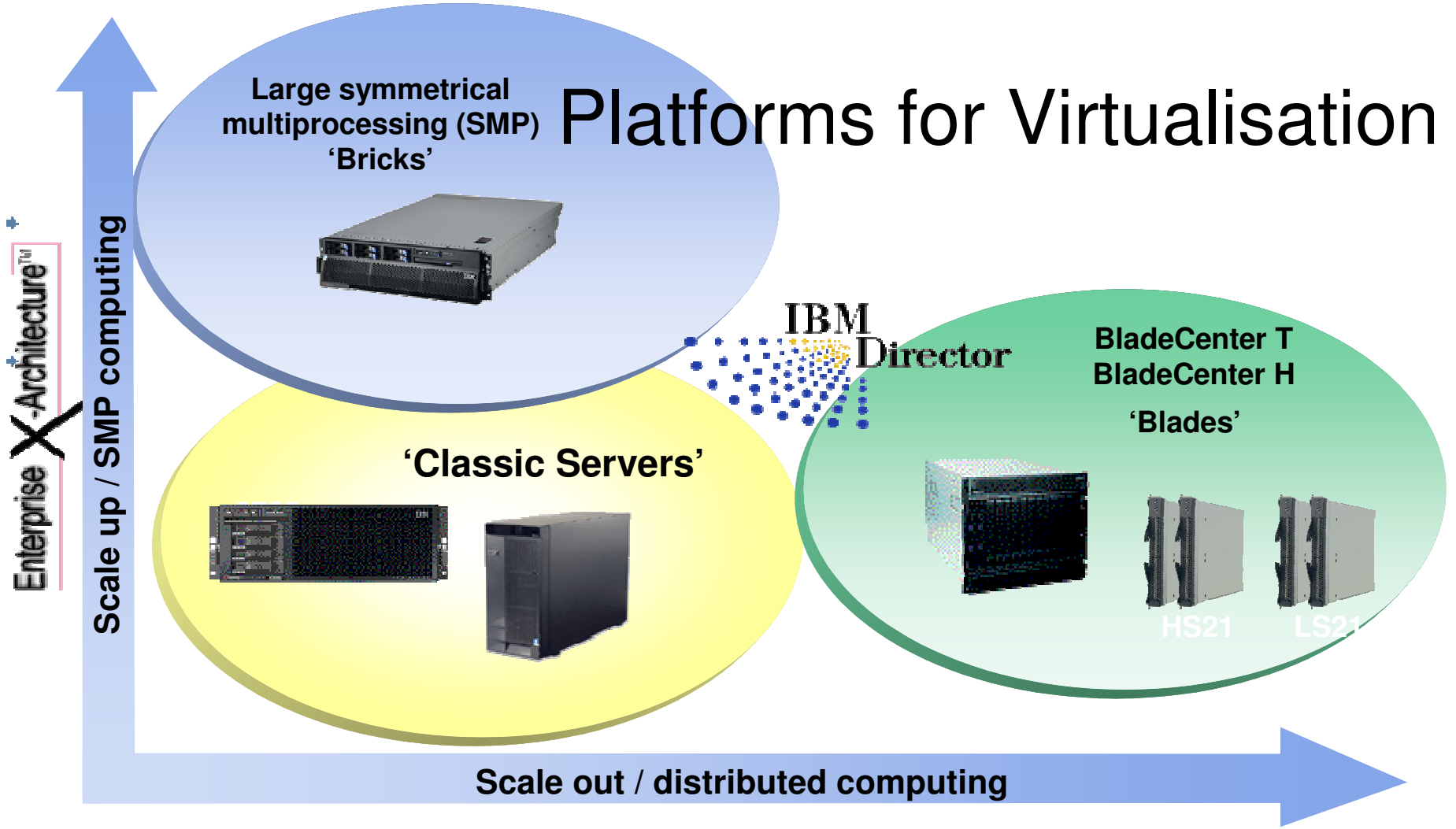
**Power and cooling** costs are increasing dramatically in relation to the total IT budget

**Power and cooling** issues are now influencing and affecting hardware purchases



Source: IDC

# Platforms for Virtualisation



Enterprise X-Architecture™

Source: IDC

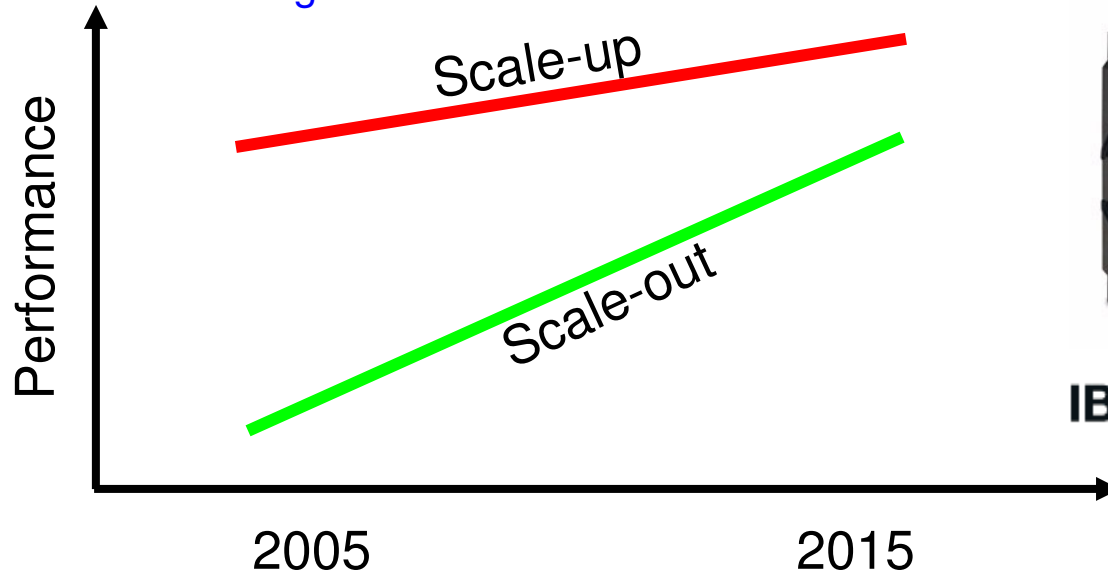
# Virtualisation – The Killer Application

- “Build your own server”
- Increase workloads by combining applications
- Reduce physical population of servers
- Reduce management by automating tasks
- SW server – break link with HW



# Scale-Out Versus Scale-Up

Scale-out performance starts to approach scale-up performance, but significant challenges remain



IBM @server BladeCenter

- Low-cost, scale-out systems are increasing in performance
- Significant challenges remain for running high-end applications on scale-out systems
  - **Management and virtualization**
  - **High Availability**
  - **RAS – Reliability Availability Serviceability**
  - **Power & Heat**

## Expanding Clients Ability to 'BladeCenter'

### March 2004

#### BladeCenter T

Highly rugged, Telco,  
AC/DC, long life,  
NEBS, Air Filtration  
Gb ethernet, fibre



Telco/Core  
Applications,  
Government, Military,  
Rugged Industrial, DC  
medical

### Nov 2002

#### BladeCenter

Highest density,  
lowest cost,  
super power efficient,  
consolidated management

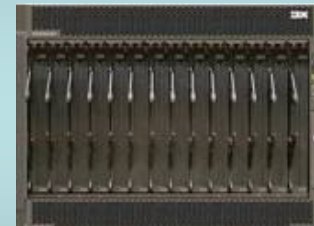


Web hosting/serving,  
SUN Solaris to  
x86/Linux, FSS,  
File/Print, Geophysical  
analysis, Collaboration,  
Graphic rendering,  
Retail.

### Feb 2006

#### BladeCenter H

Ultra high performance,  
4X IB backplane,  
virtualization, future proof  
power and cooling,  
New management module



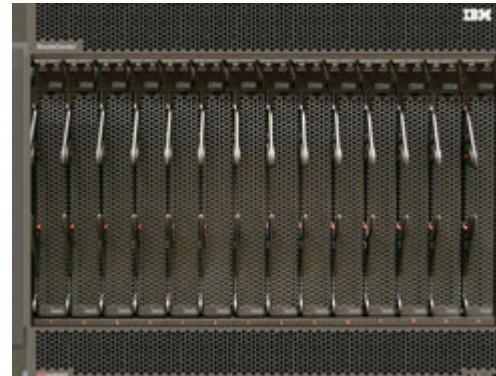
High Performance  
Computing, Technical  
Clusters, Virtualized  
Enterprise Solutions,  
Future I/O.

**One family, many applications, many environments, long term investment protection- BladeCenter Simply Smarter IT**

# BladeCenter H

*High Performance and New Features but Fully Compatible*

- Up to a 10X bandwidth increase
- Completely compatible with all existing blades and switches
- Supported by the complete BladeCenter ecosystem
- Continued focus on power and cooling efficiency
- Future-proof
  - I/O
  - Power
  - Cooling
  - Virtualization



**14 Blades packaged in 9U**  
**All of today's fabric support + high speed**  
**No single point of failure**  
**New Advanced Management Module**  
**Designed for 2006+ processor support**

Extend blade benefits to your entire business

*Chassis tailored to your specific needs*



**IBM BladeCenter S**  
*Distributed, small office,  
easy to configure*



**IBM BladeCenter E**  
*Best energy efficiency,  
best density*



**IBM BladeCenter H**  
*High performance*



**IBM BladeCenter T**  
*Ruggedized*



**IBM BladeCenter HT**  
*Ruggedized,  
high performance*

- **A common set of blades**
- **A common set of industry-standard switches and I/O fabrics**
- **A common management infrastructure**

# Introducing IBM BladeCenter S

*All-in-one gets you up and running fast*

- **Integrated business-in-a box foundation with configurable shared storage**
- **Big IT results even from the smallest IT staffs to deliver big IT results**
- **Easy with “select-and-click” configurability**
- **Office-friendly 110v power**
- **Grows with your business**
- **Optimised for small office environments**



## Easy & Pre-defined Storage Configuration Choices

The Advanced Management Module let's you setup storage in three easy steps:

1. Click on Configuration selection in the Storage Tasks section (fig 1)
2. Click on Storage SM link (fig 2)
3. Select one of the desired pre-defined storage configuration (fig 3)

The AMM will automatically create the server and storage connection

The image displays three sequential screenshots of the BladeCenter Advanced Management Module (AMM) web interface, illustrating the steps to configure storage.

**Figure 1:** The first screenshot shows the AMM main page. The left-hand navigation menu has "Storage Tasks" expanded, and "Configuration" is highlighted. The main content area displays a "System Status Summary" with a warning icon and the message "One or more monitored parameters are abnormal." Below this, there are "Warnings and System Events" and a list of links for various components.

**Figure 2:** The second screenshot shows the "Storage Tasks" section. The "Configuration" link is selected, leading to a table of storage configurations. The table has columns for "bay", "I/O module type", and "Configuration". A red dashed box highlights the "Storage SM" link in the "I/O module type" column.

bay	I/O module type	Configuration
3	Storage SM	Predefined Config 02

**Figure 3:** The third screenshot shows the configuration details for "I/O Module 3". It displays a table of zone configurations. A red dashed box highlights the "Activate Selected Configuration" button at the bottom of the page.

Select	Index	Active?	Type	Name
<input type="checkbox"/>	6	✓	Pre-defined	Predefined Config 02

# Introducing IBM BladeCenter E

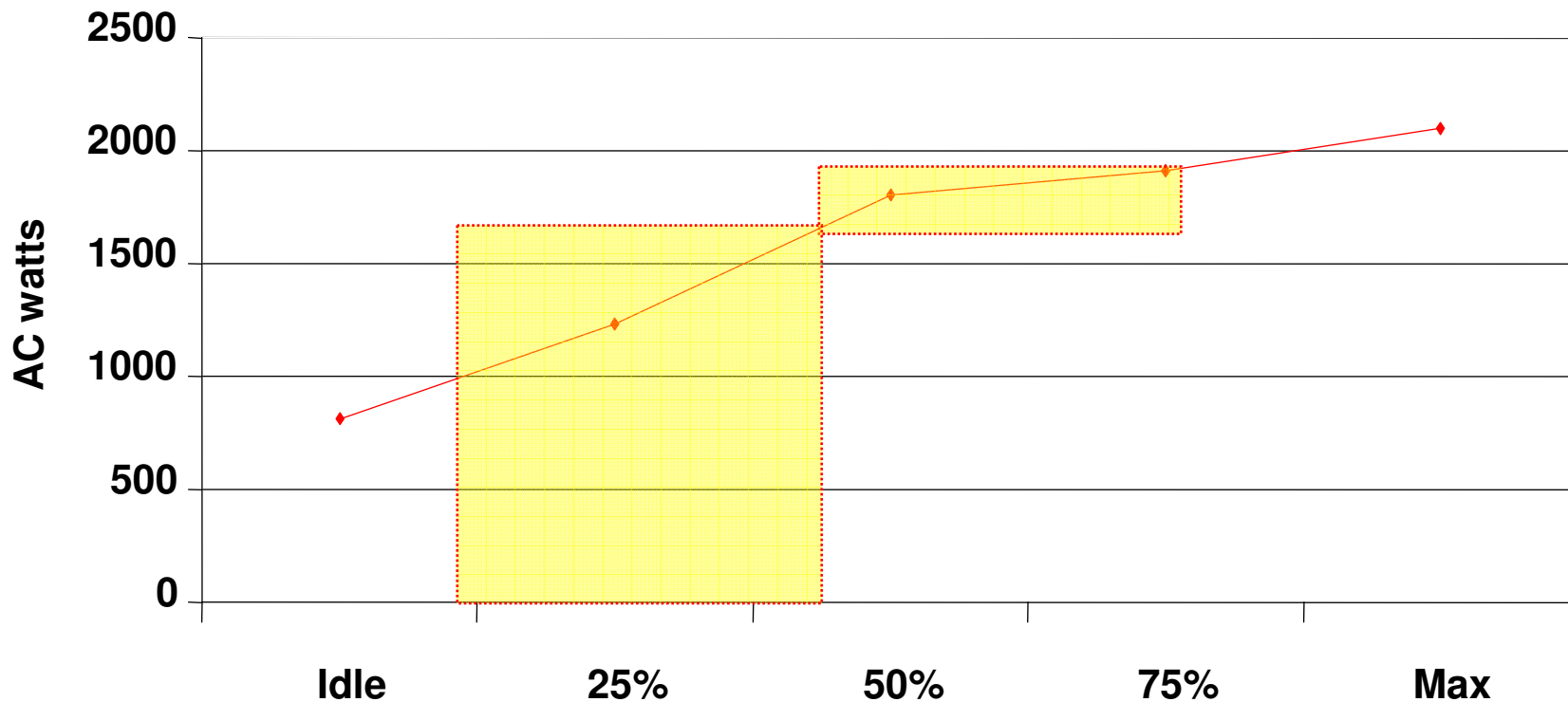
*Most dense, energy-efficient blade in the market*

- **31% more dense** than blade competitors, **2X** the density of rack servers
- **11-19% more energy efficient** than blade competitors, **35%** more efficient than rack servers
- **Easy deployment** and **flexible fabric choice** with IBM BladeCenter Open Fabric
- New **low-cost, high-performance SAS** technology
- New **highly available, low power solid-state** hard disk drives
- **Latest generation, Intel quad-core 80W processor** with HS21 XM
- Up to **8Gb networking** throughput (SAS and Fibre Channel) when available
- **AMD quad core** when available
- **Long-life** platform (2010)



# Power, Can Virtualization Help?

- Typical Intel type server utilization is quite low (15 - 40%)
- Virtualisation can increase utilization and unlock new processing capability for scale up and scale out without adding to power at the rack level

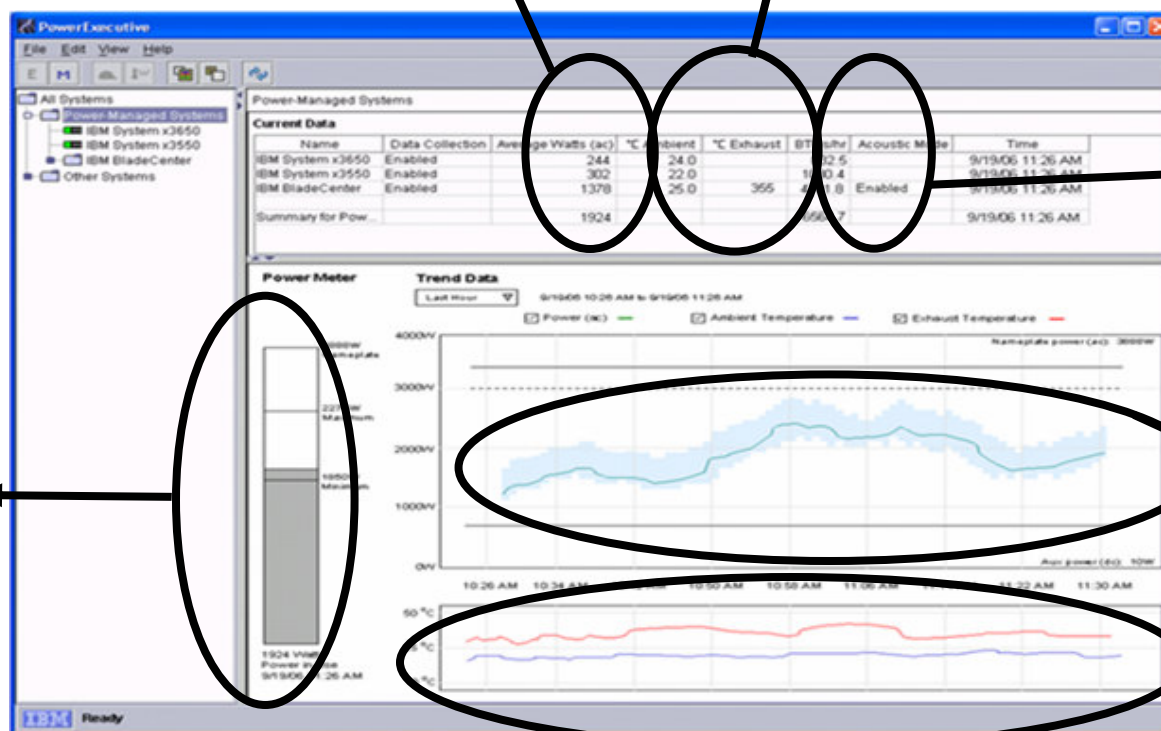




## Simple, powerful and easy power management

Compare actual vs. name plate power at system level

View inlet and exhaust temperature



Track heat emitted

Compare rack actual power vs. label power

Trend power use over time

Trend temperature over time

## *Power and Cooling*

### Financial Services – High Density Computing Deployment

#### Client requirements

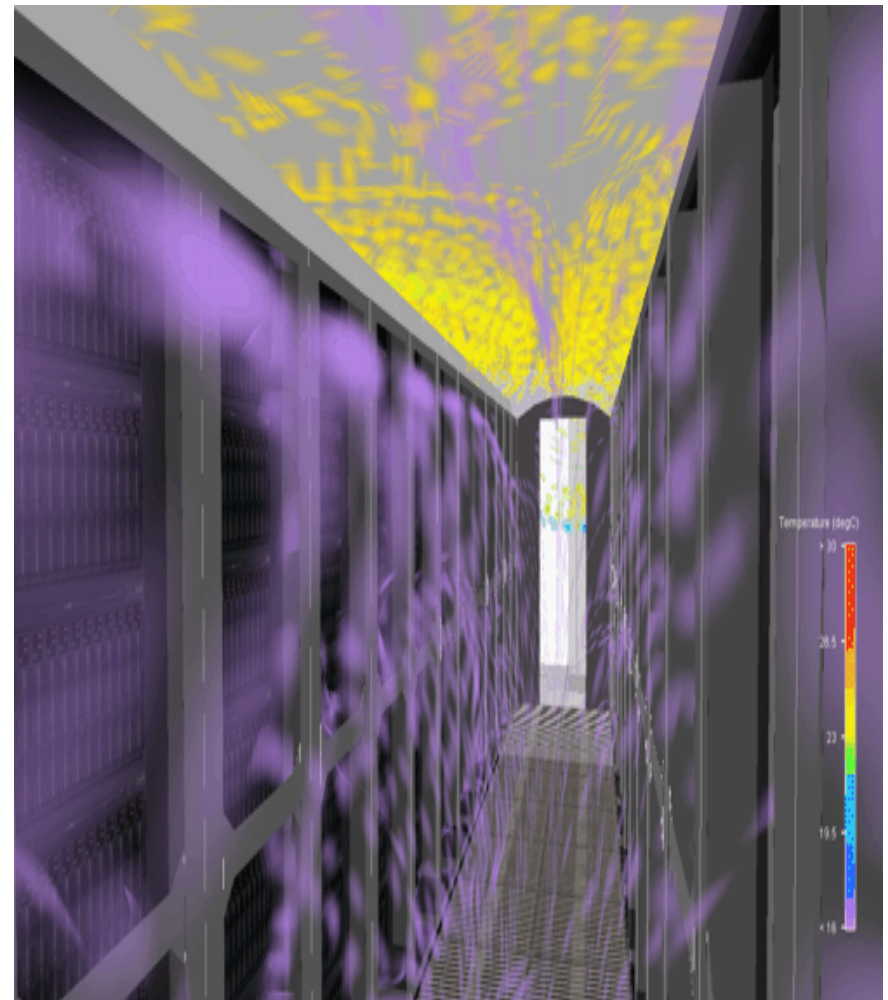
- High density blade deployment for compute intensive financial applications
- Limited floor space and limited power availability
- High availability and resiliency
- Cost and energy efficient

#### Solution

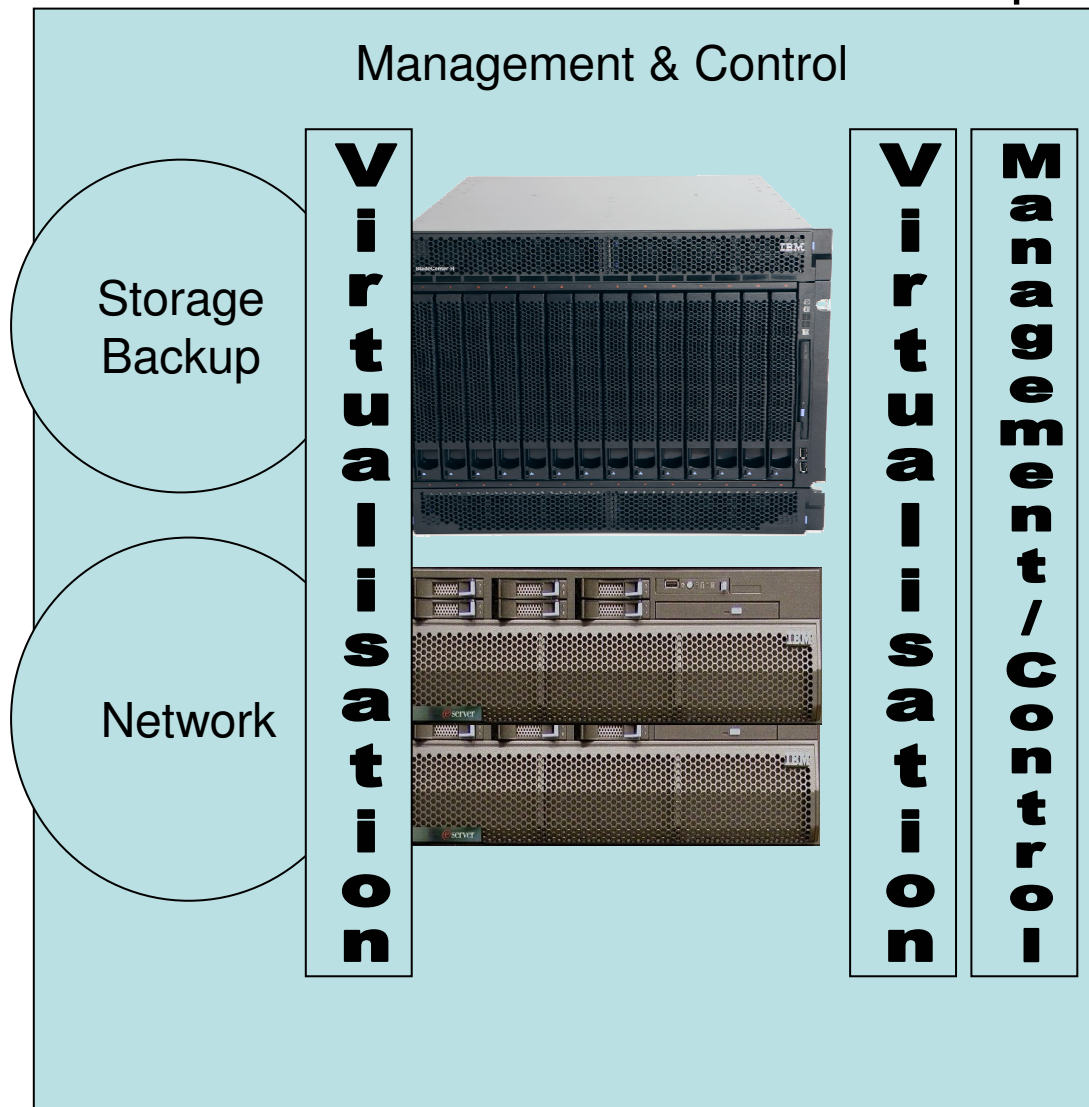
- 2,100 blades in 1100 m<sup>2</sup>
- IBM Integrated Rack Solution for High Density
- Integrated networking, power management and environmental monitoring

#### Benefits

- Centre enclosed cold aisle layout enables 6kW per m<sup>2</sup> or 25kW/rack
- Significant reduction in data center size and number of air conditioning units – cooling efficiency increased by 40-60%
- Reduction of 15-25% in space needed for cabling; improves air flow distribution



## Combining Bricks & Blades The Smart Flexible Computing Platform



### Integrate/Consolidate

- Switches
- Cables/Connections
- Servers

### Virtualise

- OS/Apps
- Network
- Storage

### Consolidate

- File/Print
- Applications
- Databases

### Management & Control

- Standardisation
- Automation
- Multi-level

### Reliability

- No Single point of failure
- Disaster recovery
- Backup

### Match your SW Environment

- Scale up or out
- HW independent
- Flexible