Trends in Data warehousing and Business Intelligence and System z

Jonathan Sloan

IBM Executive Software IT Specialist – Data Management

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Agenda

- What is Business Intelligence & Data Warehousing

- Why Business Intelligence & Data Warehousing

- Market Trends

- Why System z

- Conclusion

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Agenda

- **What is Business Intelligence & Data Warehousing**

- Why Business Intelligence & Data Warehousing

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Understanding the terminology

- Business Intelligence (BI) and Data Warehousing (DW) are sometimes used interchangeably, but are different

  – Typically BI includes end user tools for query, reporting, analysis, dashboarding etc.

  – A data warehouse is a repository of an organization's electronically stored data, sometimes referred to as a Operational Data Store or Data Mart.

- Both concepts depend on each other:

  – BI almost always assumes a Warehouse (WH), Operational Data Store (ODS) or Data Mart (DM) exists with timely, trusted information

  – A DW depends on end user tools that turn data into information.

- Both DW and BI require timely, accurate, available data delivered when, where and how the end users want it

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Data Warehouse Terminology

- **Data Warehouse (DW or sometimes WH)**
  - Is a multi-subject oriented database populated from operational systems and/or ODS's. It is historical (vs. point-in-time) in nature and typically contains detailed data. It is often looked upon as the single source of corporate "truth".
    - Organized by subject, not by application—to support analysis
    - Optimized for reporting and stored differently from transaction-oriented database, for example Star Schema, Snowflake or near third normal form
    - Information is consistent across all subject areas, e.g. data like customer name and product description are consistent

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ODS and Marts

- **Operational Data Store (ODS)**
  - is a data store organized to support queries for point in time information for a specific business function, i.e. payables, premiums, credit card transactions.
  - Is highly de-normalized (i.e. all relevant info in few records) and is typically similar to a transaction record.
  - Is up to date (vs. historical) and detailed (vs. summarized).

- **Data Mart (DM)**
  - is a database designed to support the analysis of a particular business subject area.
  - Data Marts are typically, though not always, extracts from a central data warehouse.
  - Data has usually been transformed and aggregated from the source DW or operational system.
  - Data Marts can be relational, multidimensional (OLAP) or statistical in nature.

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Today's Business Issues

- **Too much information and not knowing what's important**
  - Not using demand signals to drive supply chain
  - Not using customer analysis to tailor marketing and sales
  - Not leveraging valuable unstructured information

- **Multiple versions of the truth**
  - Problems managing customer, product and partner interactions
  - Regulatory compliance inhibited by poor transparency

- **Lack of trusted information**
  - Incomplete, out-of-date, inaccurate, misinterpreted data
  - Difficult to understand or control how information is used

- **Lack of agility**
  - Inability to take advantage of opportunities for innovation
  - Escalating costs due to inflexible systems and changing needs

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Driving Performance Management continues to be challenging

60%+ of CEOs need to do a better job capturing and understanding information rapidly in order to make swift business decisions

79% of companies: have 2 + repositories… (25%: have 15+) used to store data from a large variety of information sources

80% of IT problems are not detected by IT staff until reported by end users

*Sources: IBM & Industry Studies, Customer Interviews
IBM CIO Survey, June 19, 2007
Accenture survey, January 04, 2007*

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Business Users Not Well Enough Informed, Engaged or Aligned

Executive

Business Manager

Individual Contributor

Line Manager

Financial & Business Analyst

47% of users **Don't Have Confidence** in their information

Only **25%** of user population **Has Adopted BI**

42% of managers **Use the Wrong Information** at least once a week

59% say they **Missed Information** they should have used

AIIM & Accenture Surveys, 2007

Business Users Need…

Executive

Business Manager

Individual Contributor

Line Manager

Financial & Business Analyst

- Trusted information that is accurate, on time and relevant

- Attractive, intuitive dashboards and reports

- Self-service with easy access and contribution to information

- A view of the business dimensions that makes sense to them

- Governed, automated workflow and processes

- An understanding of the 'big picture'

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Also True for your System z Customers

Executive

Business Manager

Individual Contributor

Line Manager

– "I have a proliferation of BI tools …"

- They are not fully deployed
- Many of them have their little pockets of expertise but few, if any, are truly our 'standard'
- I am paying maintenance on all of them
- They often do not support my System z enhancements such as DB2 for z/OS or the specialty engines
- I have to constantly add to my "server farm" even when I am pleased with one of our BI providers

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A New Era for Business

24x7

Global

Highly networked

Business Intelligence is moving down the organization

1985

1990

1995

2005

2008

Quarterly

Monthly

Weekly

Daily

"C" Level

Board Room

Executive

Managerial

Analyst Level (Analytics)

Customer Facing Personnel

(e.g., Service Center)

Customers

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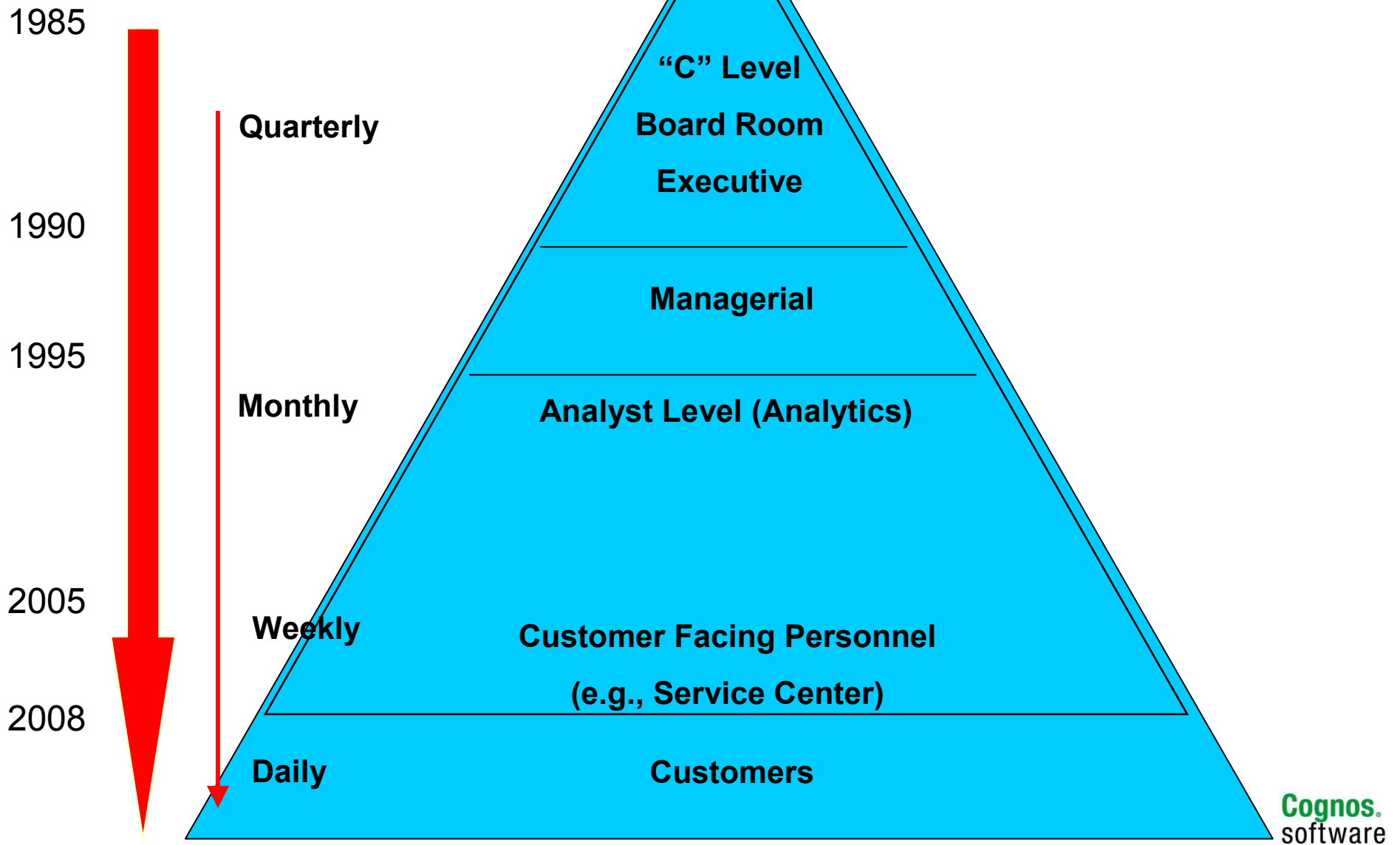
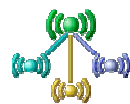# Increase in velocity of change in business and technology
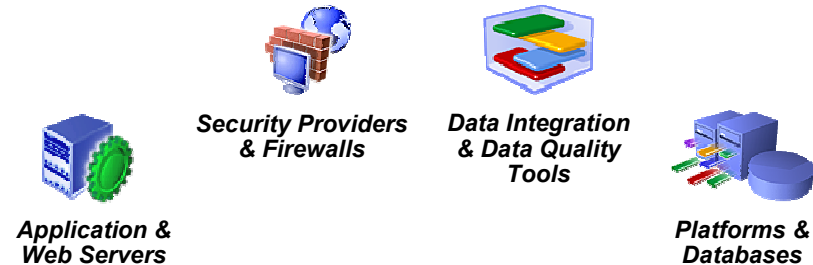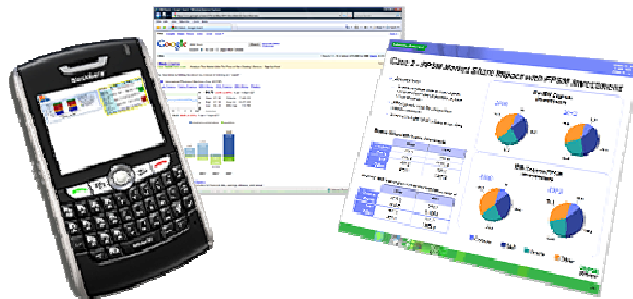
Business
requires new ways to interact with information and more relevant data sets

IT
needs to adopt new standards and manage dynamic technology environments

Security Providers & Firewalls

Data Integration & Data Quality Tools

Application & Web Servers

Platforms & Databases

Message Sources

Relational Sources

Application Sources

OLAP Sources

Modern and Legacy Sources

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*Claudia Imhoff - noted BI Analyst *
Business Intelligence

Claudia outlines 3 kinds of Business Intelligence in her 2007 BI Trend spotting Presentation
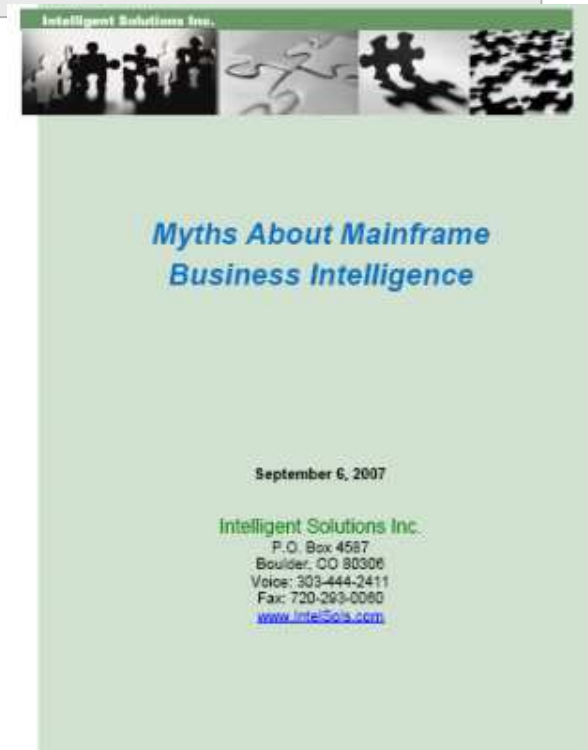
Strategic Intelligence –

- reports tell you what is occurring over time, create longer term business strategy

Tactical Intelligence –

- analytics help you formulate short term business objectives such as marketing campaigns

Operational Intelligence –

- **allows you to manage and optimize business operations and practices**

Intelligent Solutions Inc.

**Myths About Mainframe
Business Intelligence**

September 6, 2007

Intelligent Solutions Inc.
P.O. Box 4587
Boulder, CO 80306
Voice: 303-444-2411
Fax: 720-293-0060
www.IntelSols.com

*Author: Myths about Mainframe Business Intelligence - whitepaper on web: LINK
Author: Operational Business Intelligence – whitepaper on web: LINK

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Access to Data

- The bulk of enterprise data is captured and stored on a System z platform

- The rate and volume of captured data increasing exponentially

- Data collected on System z is often replicated to a distributed platform creating lag time and substantial additional processing

- Real-time and operational uses of data (e.g. customer service) are becoming increasingly more prevalent and mission-critical

- 24x7 operation and system security/regulatory compliance are high priority within the enterprise

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Common Data Center Challenges

Increasing complexity

Rising costs

Energy and cooling problems

The growth of distributed servers in Data Centers

A source of complexity and cost, <u>and</u> a Savings Opportunity

Distributed-systems can proliferate IT costs:

- **Cost and complexity (e.g., more physical servers, real network gear)**
- **Excessive energy usage and heating problems**
- **Inadequate power and cooling infrastructure**
- **Data silos and data synchronization**
- **Linear staffing costs**
- **Linear per processor software costs**
- **Frequent outages**
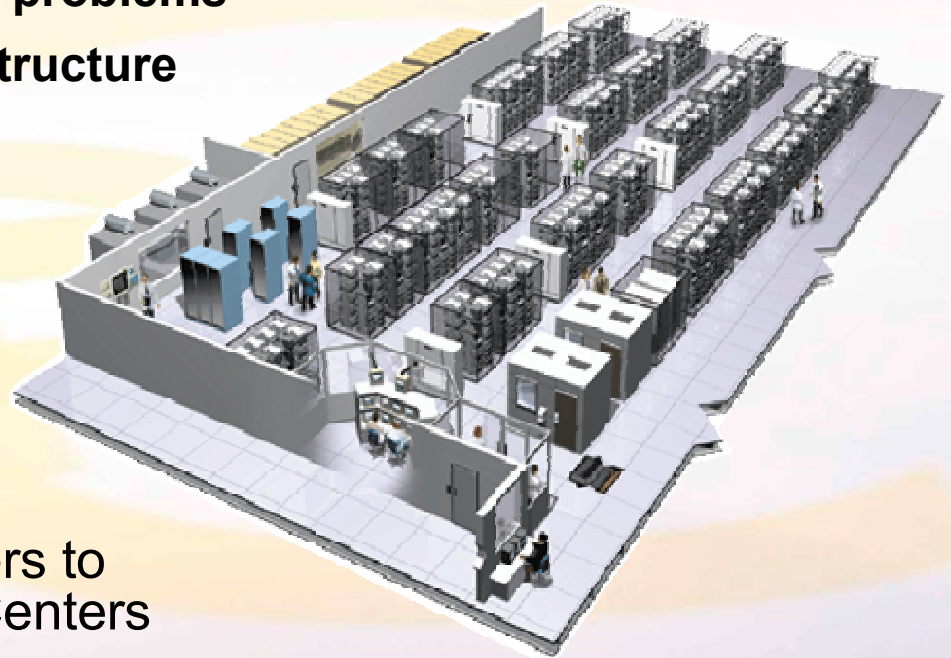
IBM suggests an alternate approach

- Use fewer, more powerful z servers to unlock the savings in your Data Centers
- Use software like Cognos for Linux on System z to consolidate BI workloads

BI is traditionally a distributed workload you can consolidate!

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Business requirements for IT have driven complexity

- Demand for IT capacity continues to grow
  - New IT Solutions
  - New workloads
  - New applications…and more instances
- IT growth has been powered by large scale deployment of x86 servers
  - Seen as powerful, low cost and high density of technology packaging
- Distributed server proliferation is at an all-time high and growing

Worldwide Server Market – x86 Unit Shipments

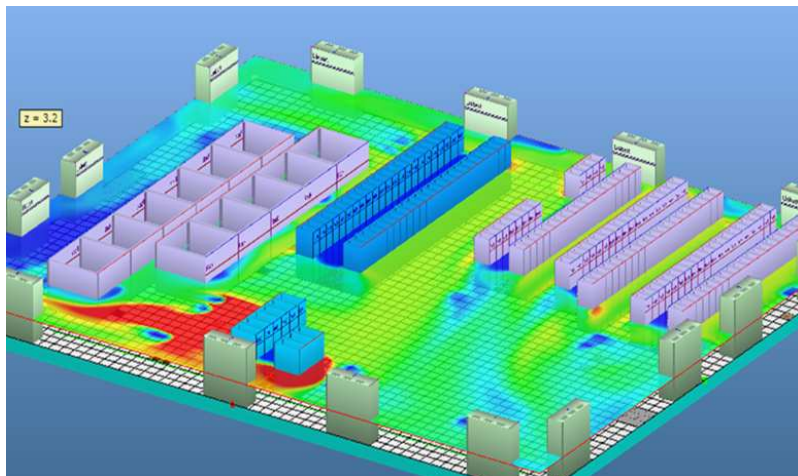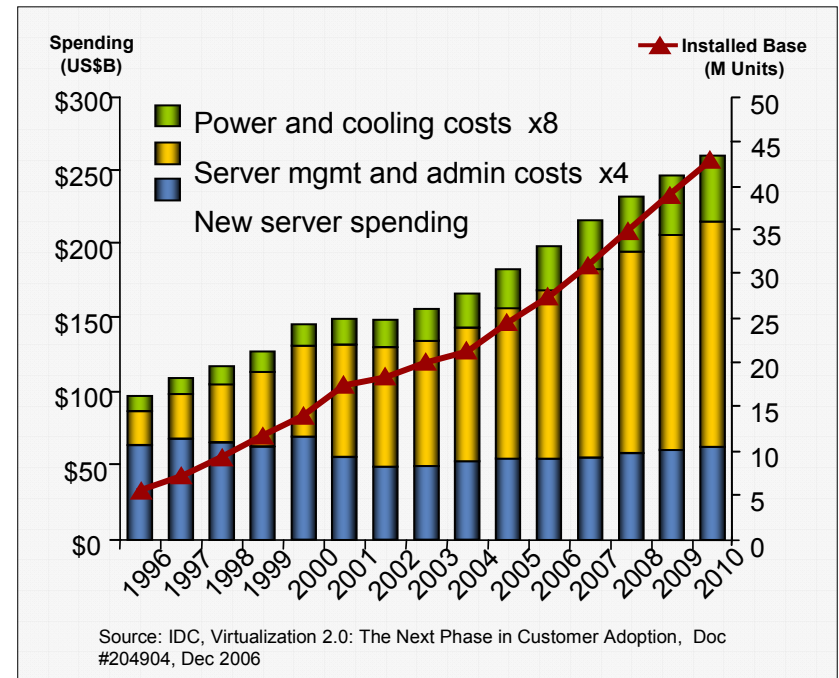|	2003	2004	2005	2006	CGR% '03-'06
Total x86 Servers	4,732,564	5,688,198	6,473,502	6,960,226	13.7%
% Total Server	89.7%	90.2%	91.8%	93.1%	

IDC Worldwide Quarterly Server Tracker, August 2007

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IT Complexity has driven many hidden costs

Customers' desire for a solution to complexity-driven business pain and cost has never been higher

- IT Complexity is driving business pain and cost to our clients
  - People Costs have doubled as a % of Total IT Cost
    - From 33% in 1996
    - To over 66% in 2007
  - Software costs continue to grow linearly
    - As distributed servers grow

Spending (US$B) / Installed Base (M Units)
- Power and cooling costs x8
- Server mgmt and admin costs x4
- New server spending

Source: IDC, Virtualization 2.0: The Next Phase in Customer Adoption, Doc #204904, Dec 2006

- Energy costs are rising
  - A high priority concern for customers
- Excessive heat and Insufficient electricity
  - Key problems for Data Centers
- Global climate and environmental concerns
- Increased technology density will continue to raise energy requirements

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The market is driving…

- **Cost Savings**
  - Reducing operating costs

- **Environmental ("green") benefits**
  - Increaseing capacity without the additional power consumption

- **Server Consolidations**
  - A more cost-effective way to deploy applications, from a labor, electricity (power & cooling) and real estate perspective

- **Real time or near real-time access to data**
  - Access data that has been recently captured within operational systems without waiting to move it to another platform.

- **BI tools standardization**
  - Standardize on Cognos without the incremental costs

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Leveraging System z – 4 Steps to Maximizing your ROI

Lower the running costs of existing IT

Reduce the operating costs of existing workloads with the improved price performance and technology driven dividends of a new IBM System z10™ Enterprise Class (z10™ EC) mainframe.

Manage growth, complexity and risk

Scalable products and solutions you can trust to more easily and securely manage the complex world of IT.

Go green and save

Cut costs and "go green" with leadership energy-efficient hardware, consolidation and virtualization capabilities on System z10 EC

Realize innovation

Technology that makes innovation real in your organization and lets you serve your constituency

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Leverage the strengths of the Ultimate Virtualization Platform
Use z10 EC to rein in Linear Costs driven by Server Growth and Complexity

- *Virtualize* everything with up to 100% utilization rates
  - **CPU, memory, network, I/O, cryptographic features, coupling facility, ...**

- *Consolidate* your workload on a single IBM System z™ mainframe
  - **Replace UNIX® and x86 processors at a 10 - 30 to 1 IFL ratio, and**
  - **Reduce UNIX and x86 OTC SW support costs at a 10 - 30 to 1 ratio**

- *Secure* everything
  - **Highest security classification any publicly available server**
  - **Deploy security updates faster and more efficiently**

- *Non-disruptively add* anything with proper planning
  - **64x CPU scalability per z10 EC, 32x CPU scalability per z/VM® LPAR**
  - **Provision new virtual servers (images) in minutes rather than weeks**

- *Optimize and integrate* it all with the IBM software portfolio
  - **Take advantage of the power to consolidate many licenses on 1 CPU with a**
  Golden Master Image **of all the SW a Linux on System z image would ever need**
  - **Leverage the ability to provide a standardized "superset" of all the SW to any virtual image at no cost penalty**

Virtualize distributed servers and dramatically reduce Software costs.

> **Consolidate all types of workloads**

> **Smart economics: Virtualize, Consolidate, and Save**

> **Make your virtual servers more secure to reduce business risk**

> **Rapidly respond to workload spikes**

> **Increase staff productivity with customization of images no longer required**

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z/VM Virtualization Value point #1: Power to Simplify

Scenario 1: Host 760 Linux Servers
...should I use z/VM Virtualization or x86 Virtualization?

z/VM Virtualization

Grow here (inside the box)

X86 Virtualization

Grow here (add more boxes!)

One IBM System z10 EC with 26 cores (IFLs) and z/VM
– with room to add 38 more cores –
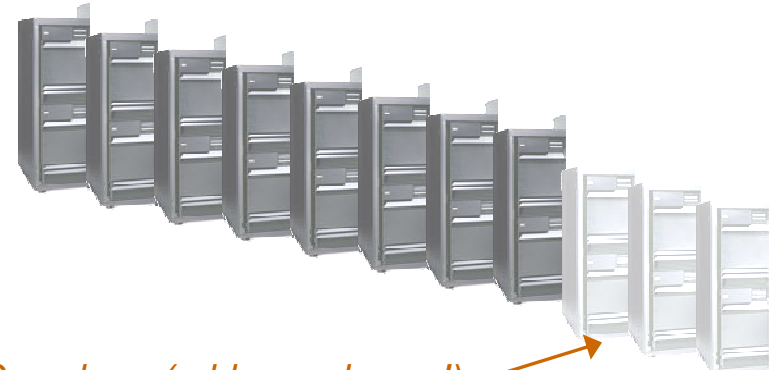
x86 blade servers with 304 cores using an x86 virtualization product
Example: x86 SUN X2100 1U dual-core Opteron
8 racks of 19 dual-core servers per rack running many copies of x86 virtualization product

Simplify your architecture, and simplify management and control.

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z/VM Virtualization Value point #2: Environmental Cost

z/VM or x86 Virtualization?
IT Cost Implications of Scenario #1

z10 EC – 26 IFLs

30 Square Feet

Hourly Energy Usage: 16.3 KWatts

Annual Energy Usage: 0.2 M KWatts*

Cost: $24.6 K/year

z/VM Net Savings per year 900,000 KWatts

$108.4K

81% Less electricity

8 Racks of x86 Blades (304 CPUs)

43 Square Feet

Hourly Energy Usage: 87.8 KWatts*

Annual Energy Usage: 1.1M KWatts*

Cost: $133.0 K/year

* Source of power consumption data for the Sun SunFire X2100 (1U) Opteron 2.8 GHz 1 MB server: *Competitive Profiles*

Become Greener with z/VM Virtualization on z10 EC: 5X better than x86 Virtualization

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IBM

z/VM Virtualization Value point #3:
People & SW Cost

z/VM or x86 Virtualization?
IT Cost Implications of Scenario #1

z10 EC – 26 IFLs

People: 1
Annual Cost $100K

26 new Oracle SW + S&S = $1,269K

26 Annual Oracle S&S only = $229K

**z/VM Net Savings
14 People**

$1,400K Mgt cost

91% Less SW cost
$1,406K S&S Yr 1

$2,537K S&S Yr 2

8 Racks of x86 Blades (304 CPUs)

People: 15
Annual Cost: $1,500K

304 new Oracle SW + S&S = $14,835K

304 Annual Oracle S&S only = $2,675K

The potential to do more with the same labor and save software costs is clear

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z/VM Virtualization Value point #4: Competitive Speed

- **A z10 EC mainframe with z/VM can create a new virtual image in 10 seconds to run a new application on hardware that you already own.**

- **Forward binary capability for new generations. Multiple image maintenance is much faster.**

- **x86 Virtualization products can virtualize quickly, to a point. Extending capabilities: When will you run out of images or need a new server? Speed and ease of deploying logical and physical servers? Technology refresh?**

- **Ordering and installing a new x86 server can take days or weeks. Lots of effort going to a new generation of server and operating system.**

System z with z/VM speeds server positioning and gives on demand flexibility

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z/VM Virtualization Value point #5: Image size

z/VM

or VMWare?
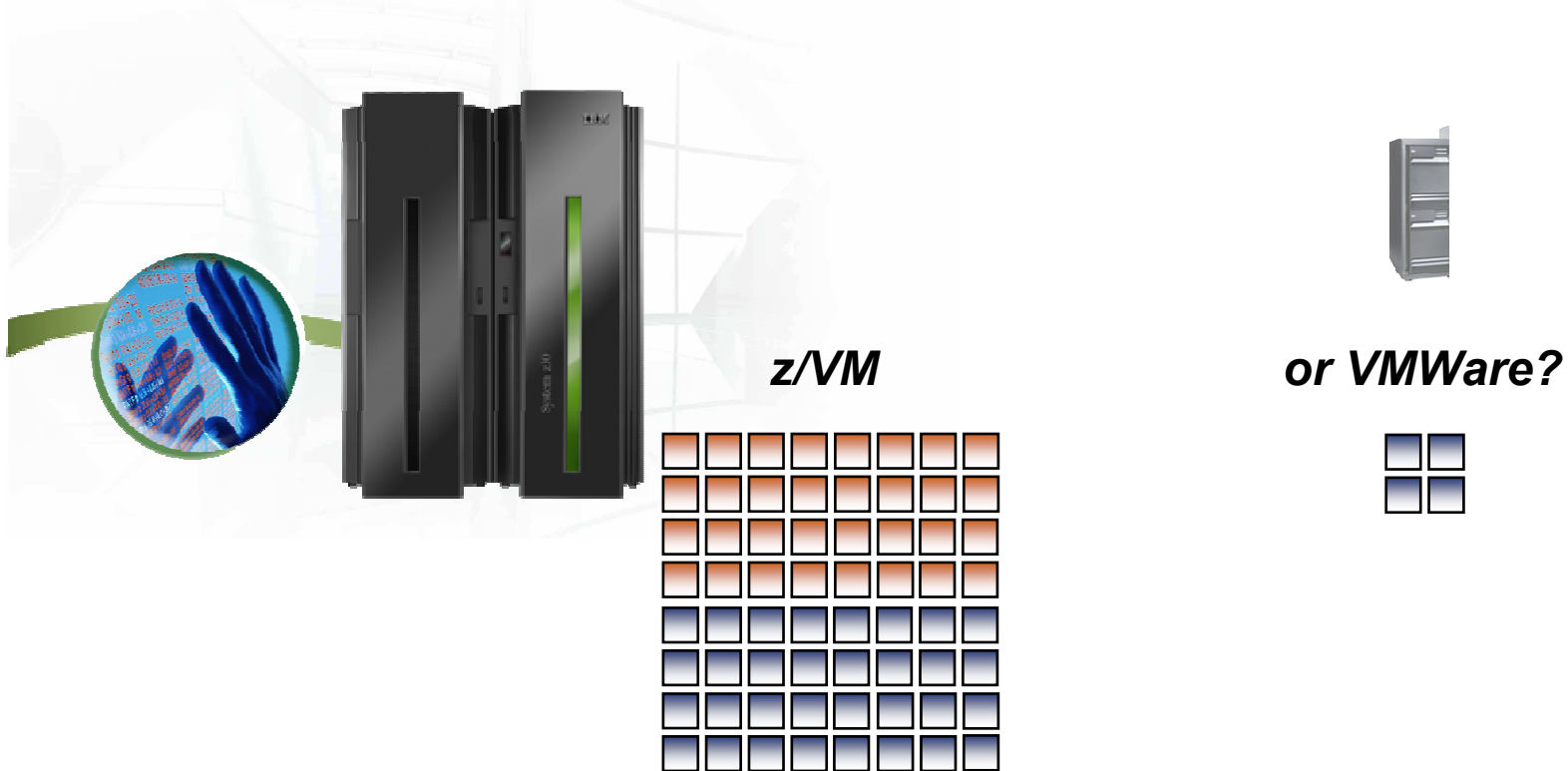
- z/VM supports up to 64 CPUs per virtual machine

- x86 Virtualization products allow 4 CPUs per guest image.

Sharing resources broadens ability to run efficiently and effectively

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z/VM Virtualization Value point #6: Memory

z/VM   **or x86 Virtualization?**

---

z/VM supports up to 256 GB of real memory and is architected to support more than 1 TB (1,000 GB) of memory in use by its hosted virtual machines. It also manages memory!

256

GBs Memory

16

z/VM   x86 Virtualization
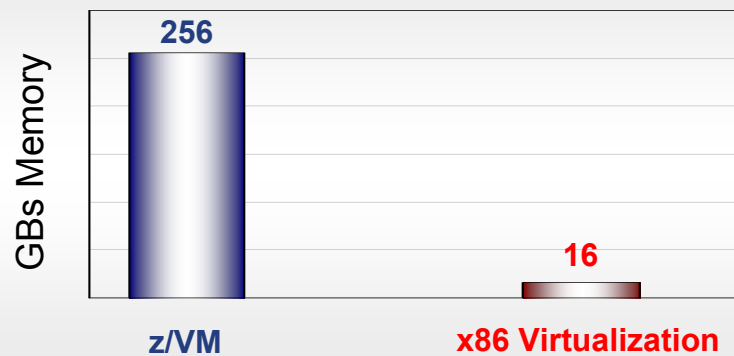
x86 virtualization products limit virtual machines to only 16 GB of memory

---

**Do not let memory constraints put a bite on virtualization:
z/VM supports 16X the real memory of x86 virtualization**

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Value Point # 7: Security, Reliability, Availability, Serviceability

z/VM, LPAR

- Security built into OS and hardware

- EAL5 certification for IBM eServer zSeries 900 (z900), z990 and z9,

    – Certification in-process for z10 EC

- EAL4+ certification for z/OS 1.7 with RACF®

- EAL4+ certification for Linux for System z

- Cryptographic support

**Security for virtualizing sensitive and mission critical workloads.
Reliability, Availability and Serviceability for world-class Quality of Service.**

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Value Point # 8: Secure High Speed Networking

Hipersocket Connectivity

•*System z offers HiperSocket communications with additional built in secured communications at <u>memory speeds</u>.*
•*System z traffic is secured and need not warrant the use of additional firewalls.*
•*With server consolidation onto z, network traffic between workloads can be much more secure.*
•*Network traffic within the same VM LPAR can leverage a virtual networking device.*
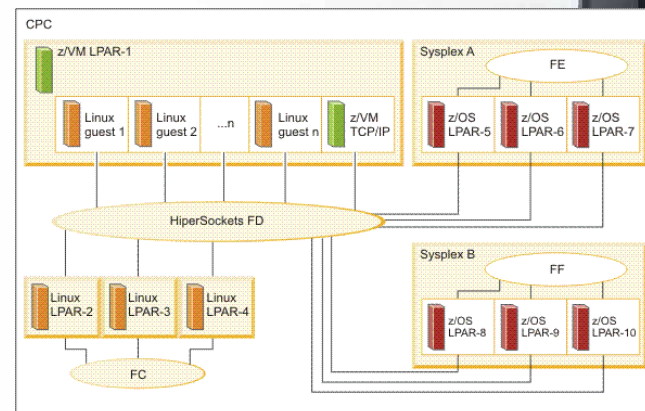
Workloads on the same machine can communicate with each other via several methods
Including hipersockets and vswitch.

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System z is Cost Effective <u>and</u> can help you Go Green *by delivering* highly energy efficient technology

MIPS Capacity per KWatt

H6	G2	G3	G4	G5	G6	z900	z990	z9 EC	z10 EC
3	69	93	100	218	308	367	604	973	1,128

16x Improvement Performance / KWatt
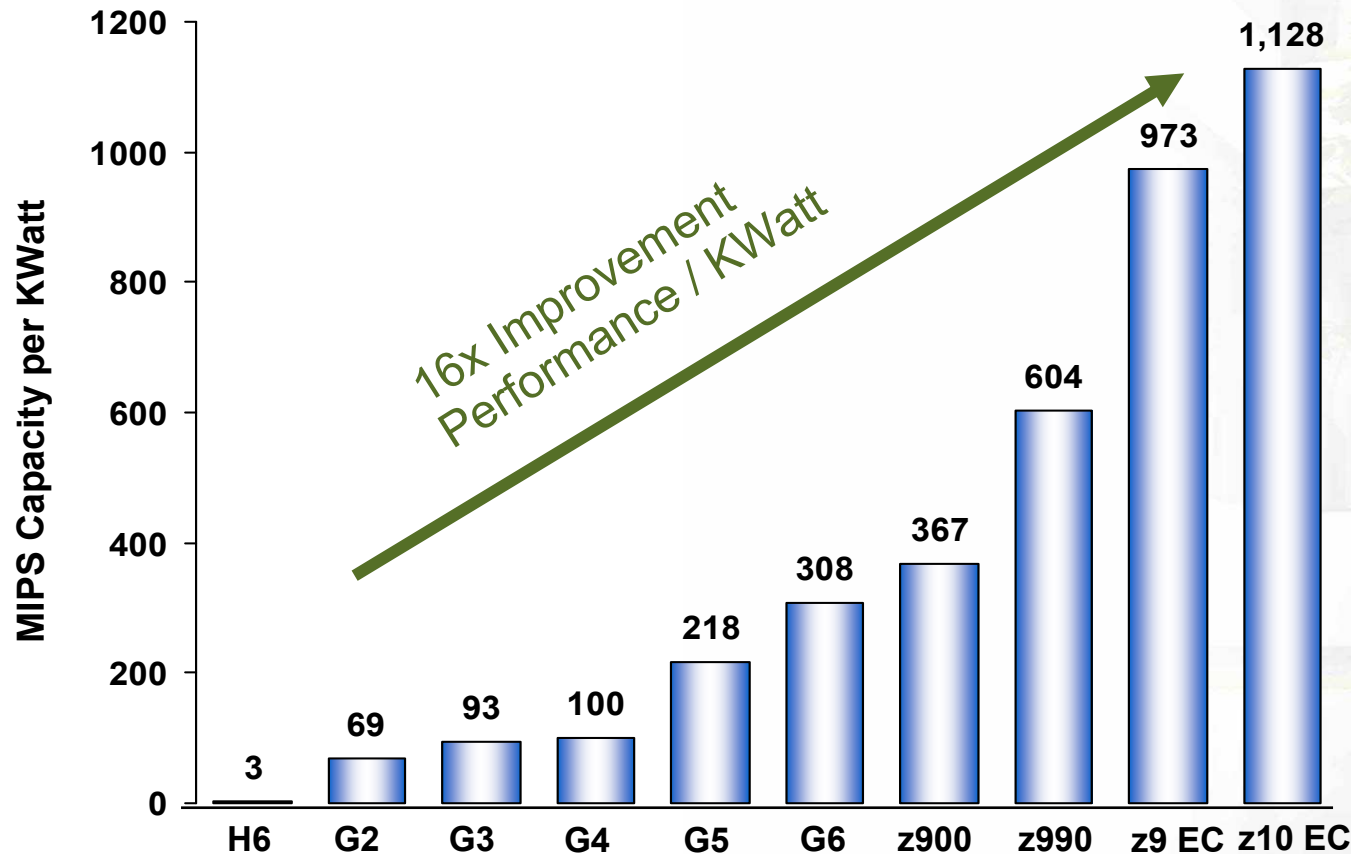
1/24 the Energy Use in 1/5 the Floor Space*

* Comparison is versus x86 Blade servers without virtualization, reflecting a current-day consolidation.

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Harvest the savings in your Data Centers with System z

- **The right tool for the right job can help you harvest the green**

- **System z is the right tool for many Data Centers**

- **Consolidating and deploying workloads on System z can help you realize the Green $ Savings in your Data Centers**

- **Use System z's industry leading Virtualization and Utilization capabilities**

  - *Consolidate many Distributed servers and reap the $Savings*

  - *Use fewer servers that can do more work*

  - *Meet the demand for more IT capacity while simplifying and reducing servers*

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Economics

Leverage the ability of Linux on System z on z10 EC to run many distributed workloads and to consolidate x86 core processors at up to a 30:1 ratio to deliver significant IT Cost savings

- People Cost

- Software Cost

- Maintenance

- Energy Cost

- Facilities Cost

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IBM consolidates distributed servers for large savings

IBM Expected Results

- Reduce operational complexity with significantly less hardware
  - 3,900 distributed servers going to approximately 30 System z9
  - Significant increases in average utilization
- Reduce labor cost through virtualization
- Dramatic reduction in software expense
- 85% reduction in IT Data Center square footage for consolidated servers
  - Enables growth
  - Better consumption of facilities
- 80% reduction in energy utilization associated with consolidated servers
- Increase in new applications deployed to System z

If using all new System z10 ECs, the number of machines could be cut nearly in half … for even greater savings in IT operational cost

Think what we could do for you

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Potential IT Cost impact of mainframe consolidations

Telecom Company IT Costs
Varied UNIX Workloads
5-Year Total IT Cost

Potential 5-Year IT Costs

Your IT Cost may vary:

- Potential for dramatic reductions in software expense for processor based licenses

- Reductions in power and cooling

  - 98% Savings in KWatts and Energy Costs in this scenario

- Facilities Cost Avoidance

- People savings

- Increased processor utilization

$44M Savings

Legend:
- Space
- Power
- People Cost
- Software Maint
- Software
- Maint
- Hardware

1.3 X

3-Year IT Expenses (K$)

5,848 UNIX CPs

205 z9 IFLs

UNIX

Linux on System z9

Imagine the additional savings with z10 EC.

* All performance informa

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Potential Environmental Savings

System z10 EC can help you dramatically improve your Carbon Footprint

Example scenario: 1528 UNIX servers vs. 4x System z9 54-way frames

Environmentals	Current	Alt.Case
Total RackU	9,198	na
Racks	500.0	4.0
Total kW	2,203	41
Adjusted kWh/yr	19,396,862	360,956
Heat BTU/hr	5,038,017	93,752
CO2 tonnes /yr	8,341	155
Carbon tonnes /yr	2,276	42
RIPs /kW	425	2,400
RIPS / tonne CO2	112	634
W /m2	14,373	6,000
RackU / Server	6.0	2.0
Watts / Server	1,442	200

CO_2 Reduction = 27,073 Trees

Source: Scorpion Study results 2007

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IT Cost Savings powered by z/VM Virtualization on z10 EC

Your IT Cost may vary:

Up to 80% Saving in IT Cost

Up to 96% Less Hardware

760 x86 Processor Cores vs 26 IFLs

Potential for dramatic reductions in software expense for processor based licenses

Potential reductions in power and cooling

Up to 93% Savings in KWatts and Energy Costs in this scenario

Up to 46% Less Space

Up to 89% People savings

▪Increased processor utilization
Energize your IT savings with z10 EC.
▪Industry leading Security

**Consolidating 760 Linux servers
z/VM Virtualization versus x86**
Oracle DB Workload
3-Year Total IT Cost

**$56 M Savings versus
x86 without Virtualization**

5.1 X

2.0 X

80% Savings

1.0 X

Space
Power
People Cost
Software Maint
Software
Maint
Hardware

760 x86 CPs

248 x86 CPs

26 z10 EC IFLs

x86 w/o Virtualization

x86 Virtualization

Sun X2100 Single Core servers

Dell Power Edge Quad Core servers

z/VM Linux on System z10 EC

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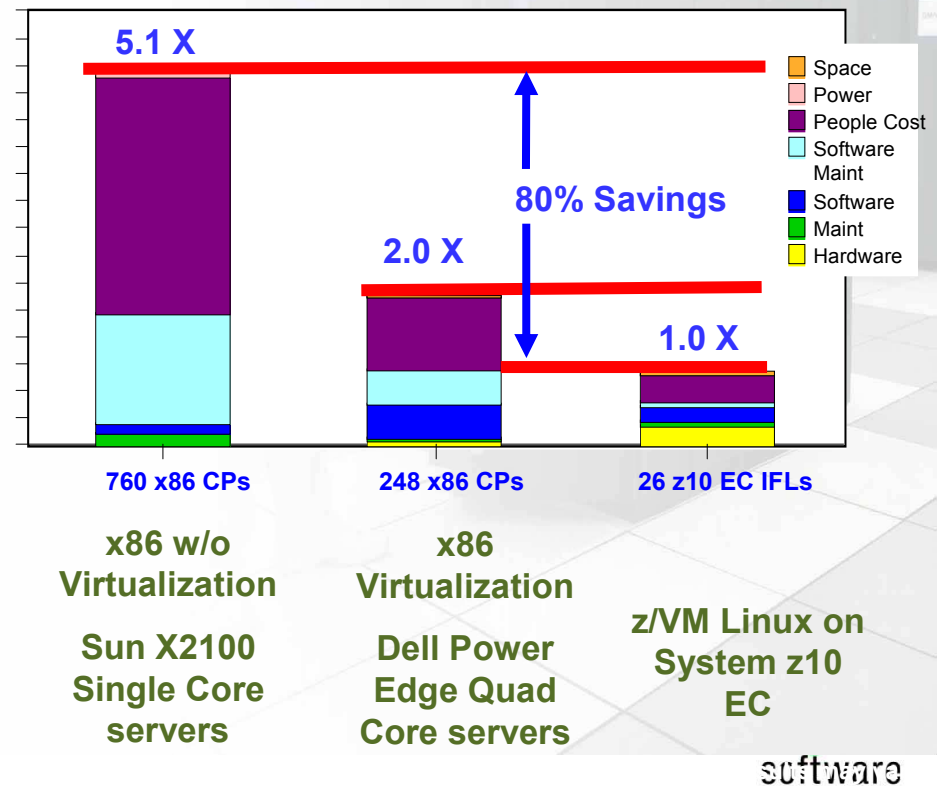
Why BI on System z

IBM System z

- ■ **System z is known for 4 industry leading strengths:**

  - – Scalability:

    - • Scale up with more users,

    - • Scale out with increasing data volumes and functionality requirements.

  - – Performance:

    - • Ensure there is no degradation in application response time as the organization scales.

  - – Availability:

    - • With a mean time between failures of greater than 30 years, business can go on!

  - – Security:

    - • Is the industry standard in platform security, coupled with Cognos's stringent security organization can protect the data as well as who is access that data.

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Proven that Cognos 8 BI for Linux for System z can:
Scale Across the Enterprise

IBM System z

Testing demonstrated IBM Cognos 8 BI for Linux on System z **scales linearly** to large user groups.

Linear Scalability
IBM Cognos 8 BI for Linux on System z
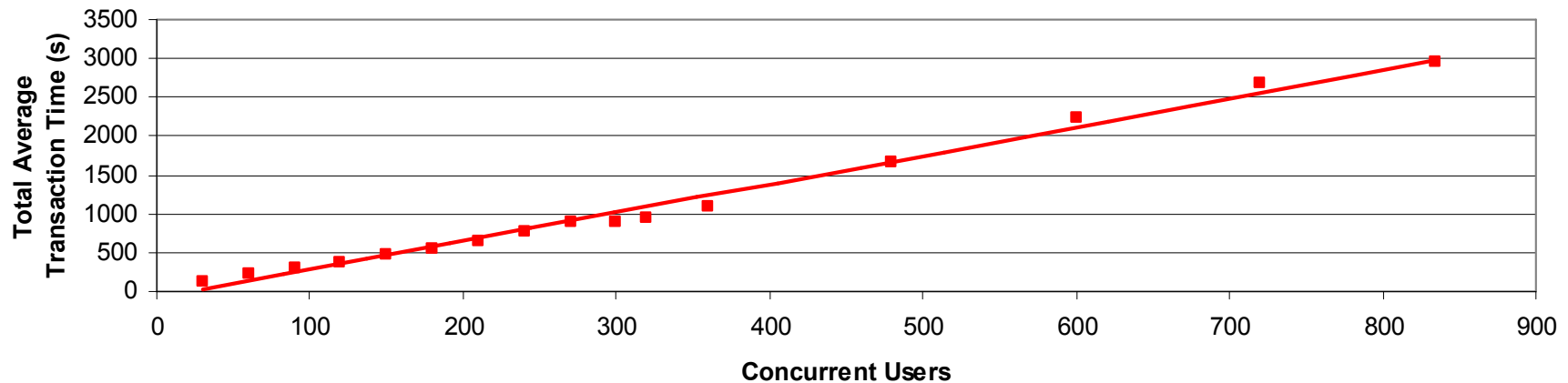
"**Cognos, ...makes it easy for companies to deploy BI and PM** to a broader user population, while **minimizing the resulting workload for IT** departments."

- Nucleus Research, Cognos Takes on the Rest of the Enterprise, November, 2007

▪Testing was conducted on up to **90,000 named users**

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Proof that organizations can save with: BI & DW on System z

Mainframe Cost Per Unit of Work Goes Down as Workload Increases

IBM System z

Accelerated by mainframe cost reductions!

Accruing benefits of workload consolidation

Cost per unit of work

Mainframe

Distributed scale out

Data Center Workload
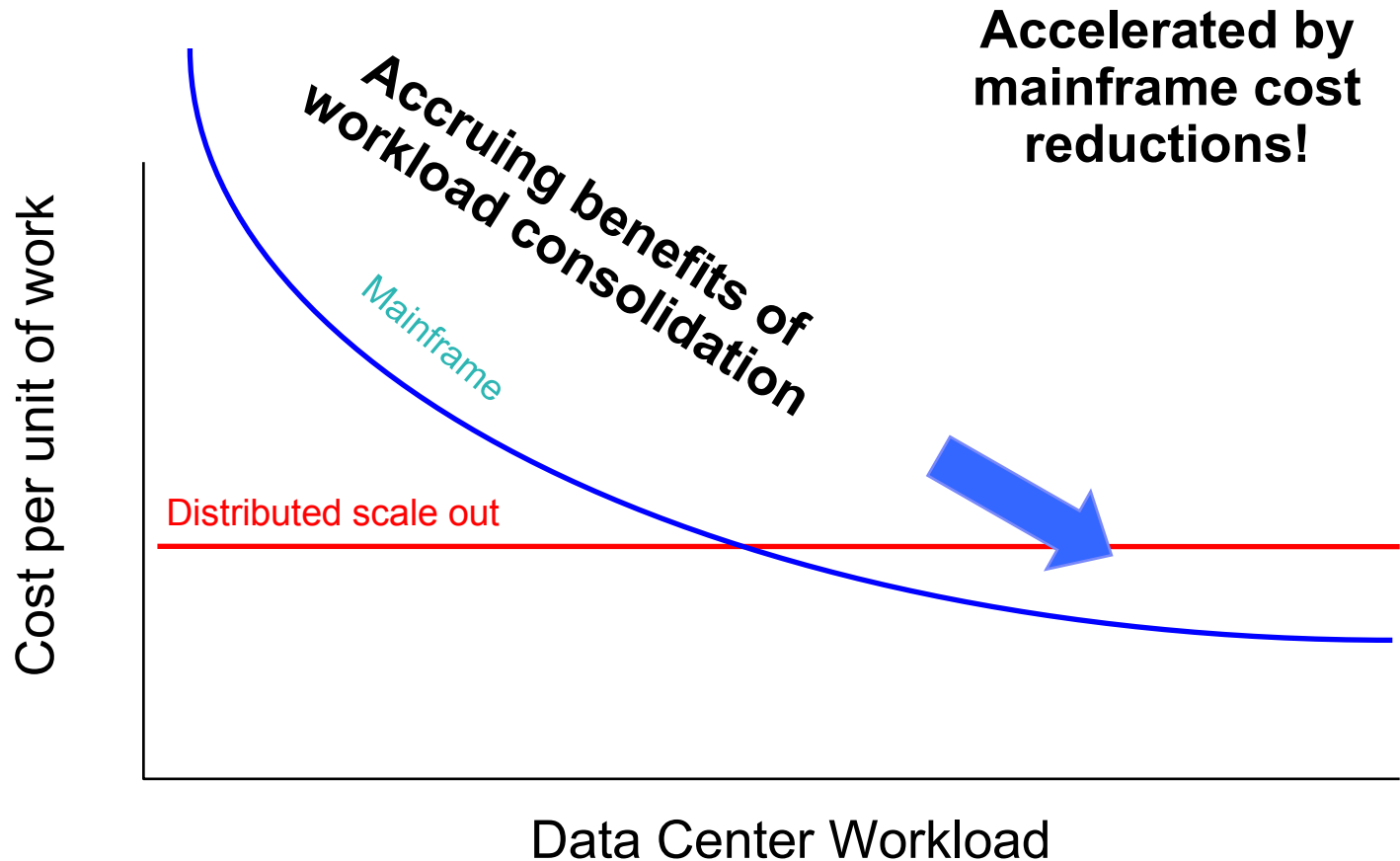
* Reference IBM STG 'Systems & Technology Group'

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Solve excess growth and complexity with System z
Use System z to increase your enterprise's productivity

Ops Staff

MIPS

MIPS

Ops Staff

2001   **2004**

Gartner

"Since ... 2001, the largest z/OS installations have more than doubled their 'MIPS to head count' ratio."

Mieritz, M. Willis-Fleming – Gartner, 2004
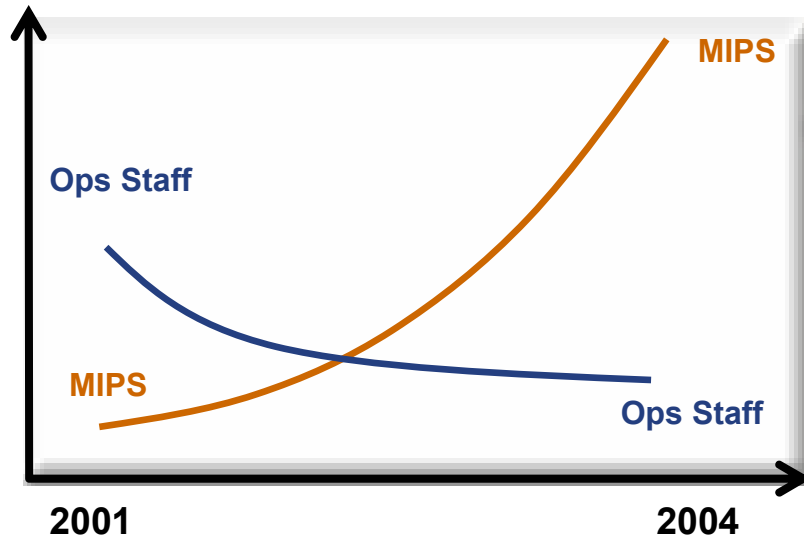
Mainframe data center staffing levels have not significantly changed despite large increases in workload volumes.

First National Bank of Omaha

"Their disparate computing environment was becoming extremely expensive, requiring FNBO to hire more people as more boxes were brought online. "I looked at our infrastructure in 2002 and saw we were growing servers at a rate of 30 percent per year. For every application I had, I needed another one to five servers behind that, for things like development and application and Web serving. And every 20 servers translates to another body to administer them."

Ken Kucera, senior vice president and division head of FNBO Enterprise Technology Services

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Agenda

- What is Business Intelligence & Data Warehousing

- Why Business Intelligence & Data Warehousing

- Market Trends

- Why System z

- Conclusion

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Why Cognos 8 BI for Linux on System z

• New workload is moving to System z to leverage the service, performance, scalability, reliability, availability, bullet-proof security and green capabilities of the mainframe

Customers perception of System z are changing. Many customers are realizing that the costs of managing their distributed environments are spiraling out of control. They view System z as a central control point with superior functionality.

• Customers are requesting the complete Information Management portfolio on System z
- They want their middleware software running as close to their transactional data as possible
- To take advantage of a single point of control
- For close access to data hosted and accessed on System z

What's important here – is that the more operational data you move off the mainframe the higher your customers risks for managing and protecting that data. It's safer and more efficient to keep operational data, middleware and end user tools on the same platform.

• Benefits of running IBM Cognos 8 BI for Linux on System z

- With a BI solution on the same platform as the operational data, customers can reduce the time to access critical operational data which is the foundation of their businesses.

- IBM Cognos 8 BI for Linux on System z is built on the open Cognos 8 platform so customers can now combine the enterprise-class Cognos 8 platform with the z platform,

Cognos is one of the primary market leaders in the BI tools space. The Cognos 8 BI solution that customers know and love is now available -unchanged- on the System z platform. Customers can run the same exact tool on a more robust platform.

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Why Cognos 8 BI for Linux on System z

- With Cognos 8 BI for Linux on System z, customers can leverage the strengths of both System z and Linux:

  - **Linux + Virtualization + System z = Synergy**
  - **Economics of virtualization and consolidation**
    - **Large Financial organization – running 400 virtual servers on 19 IFL engines resulting in enormous savings over distributed environment**
    - **Fewer server footprints equal better TCO**
      - **Lower costs - systems management, data administration, etc.**

  - **A distributed environment requires much more application servers. Much of this can be consolidated to a smaller footprint on Linux for System z resulting in savings and increased reliability, availability, security, etc.**

- Cognos provides the Business Intelligence software to round out IBM's Information on Demand Strategy

  - **Cognos teamed with InfoSphere Information Server provides a comprehensive Data Warehousing and Business Intelligence Solution**

  - **IBM has a comprehensive data warehousing and BI solution on System z which includes all of the middleware and end user tools.**

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IBM System z

Why does Cognos 8 BI and System z make sense together?

- **System z is known for 4 industry leading strengths:**

  - Scalability:

    - Scale up with more users,

    - Scale out with increasing data volumes and functionality requirements.

  - Performance:

    - Ensure there is no degradation in application response time as the organization scales.

  - Availability:

    - With a mean time between failures of greater than 30 years, business can go on!

  - Security:

    - Is the industry standard in platform security, coupled with Cognos's stringent security organization can protect the data as well as who is access that data.

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Cognos 8 BI on System z - Makes Good Sense

Too Expensive?

- Z H/W & S/W labor costs decreasing 17.3% per year
- Mainframes deliver economies of scale, especially as the workload grows
- System z delivers higher utilization, lower overheads and the lowest total cost-per-user of any platform.

Too rigid & inflexible?

- SOA
  - Quick reuse of existing applications
  - Common code base for new applications
  - IBM mainframe customers are ahead of other groups in SOA

Lack of skills?

- IBM will train 20K new University students on the mainframe by 2010
- 407 schools registered over 47,000 students
- 20 Courses+ and Mastery Exam Certification
- zCommunity – Local roundtables with Client/School/ISV

No growth in mainframe market?

- 25 of the world's top 25 banks, 23 of the 25 top US Retailers and 9 out of the 10 of the world's largest insurance companies run DB@ on System z
- 95% of the Fortune 1000 enterprises use IMS
- 4000+ ISV applications & 1300 + ISV Developers on System z
- 1200+ Linux applications supported on System z
- 490 of IBM's top 500 customers run CICS

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IBM Cognos 8 BI for Linux on System z
… a unique offering

- Cognos' first venture on System z – previously only LUW platforms were supported

- Customer-driven initiative – "Add value to my System z investment!"

- Provides a total System z solution from data to analysis

- Complements IBM's Data Warehousing for System z offerings

- Utilizes System z specialty engines (IFLs, zIIPs)

- BI processes and enterprise data co-resident on System z

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Making the Case for IBM System z

- When **business intelligence** is mission critical
- When you want to spend less on environmental expenses such as **floor space and energy**
- When business results suffer as a result of **IT resources** not matching customer demand
- When **speed to market** affects your business results
- When your **IT staff** wants to optimize their productivity for deploying and managing virtual servers
- When workload growth and decline is difficult to **predict**, be it production, development, or test and assurance systems
- When your server applications **need fast, flexible and secure access to** data and applications
- When **innovation** is stifled because your staff cannot experiment or develop new solutions using existing resources

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Next Steps

- **IBM Cognos Government Forum 2009 in DC on April 22, 2009**
  - **www.cognos.com/govforum2009/**

- **IBM Federal System z Software contact**

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Back up slides

Delivering a Successful Business Intelligence Environment on System z

InfoSphere Warehouse (2Q09)

✓ **Low risk, low cost point of entry**

✓ **Simplify Managing your warehouse on z/OS**

✓ **Cubing Services – OLAP on Z!**

✓ **Warehouse Tooling**

Dynamic Warehousing

Cognos BI

✓ **Know how you are doing**

✓ **Understand why**

✓ **Determine what you should be doing next**

Business Intelligence & Analytics

IOD Stack

Synergistic Hardware

IBM System z10 EC/BC
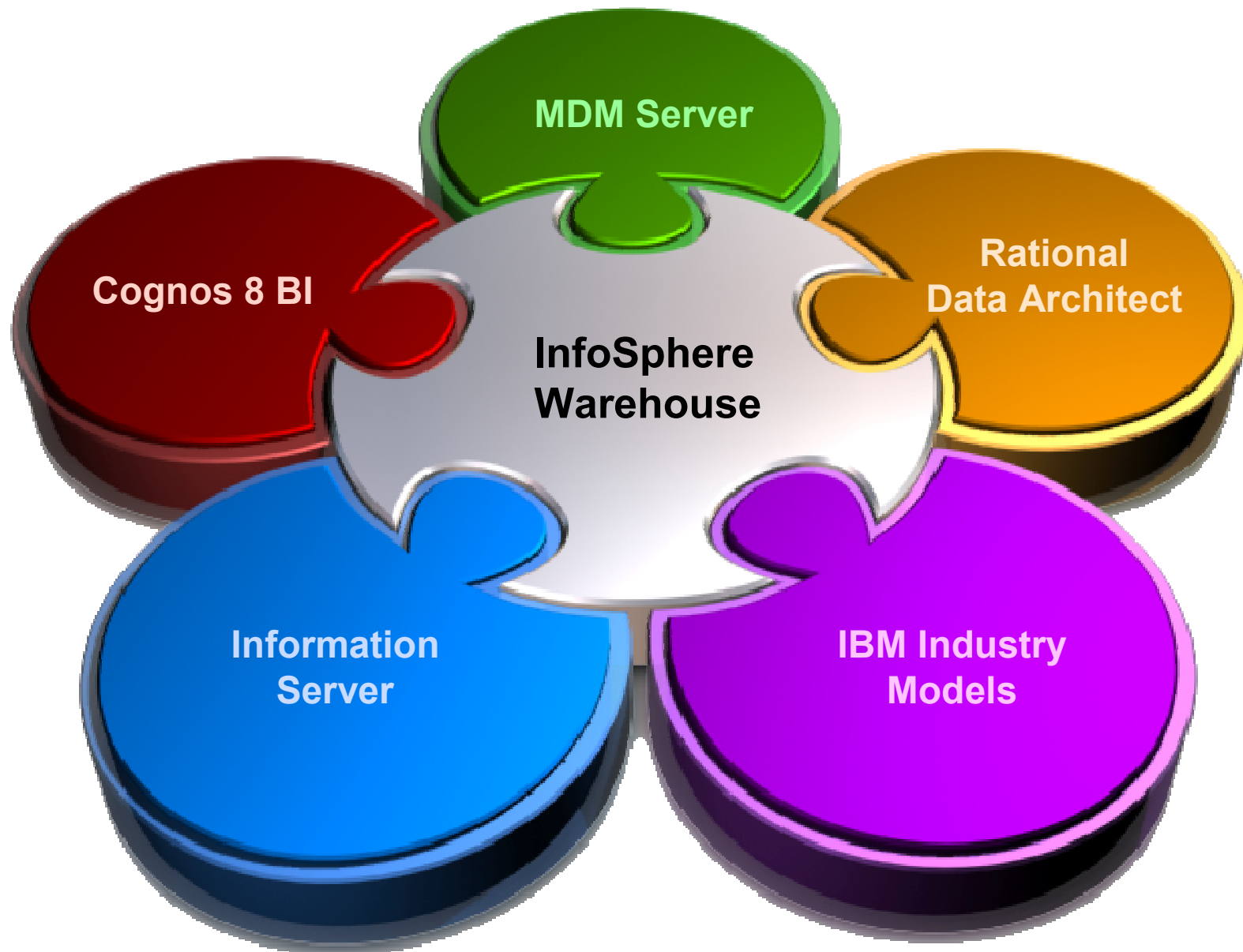
✓ **Simplify operational business processes**

✓ **Reduce IT complexity**

✓ **Reduce management costs**

✓ **Reduce energy demands**

Information Transformation and Managements

InfoSphere Information Server, Transformation and Master Data Management

✓ **Transform information into a trusted strategic asset**

✓ **Deliver trusted information in context**

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IOD Software Stack for z/OS

- **Rational Data Architect**
  - *Full-featured data modeling*
  - *Logical Modeling*
  - *Glossary Modeling*
  - *Model Transformations*
  - *more*

- **IBM Industry Models**

- **InfoSphere Master Data Management Server**

- **MQ Series**
  - *Realtime data feed*

- **InfoSphere Classic Federation Server**
  - *IMS, VSAM, Adabase, etc*

- **Infosphere Replication Server Family**
  - *SQL and Q-based data replication*

- **Many more**
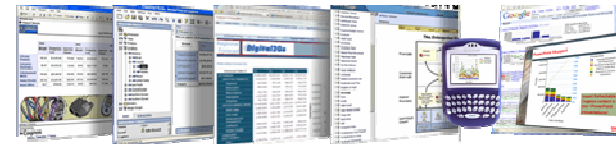
Business Optimization

InfoSphere™

- Data Modeling
- Data Movement & Transformation Services
- Analytic Structures / OLAP Server

Warehouse for DB2 for z/OS
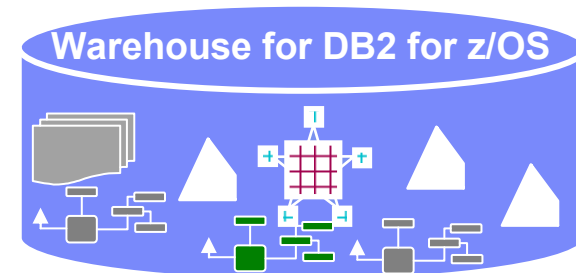
DB2 for z/OS

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Extend Warehouse tooling to System z

Universal Access	Portals & Web Apps	Reporting Solutions	MS Office
	Web Services	SQL/MDX	MDX

Advanced Capability			
Analytics Acceleration No Copy Analytics	Advanced Design & Management		Performance
Cubing Services (OLAP)	Physical Data Modeling		z Workload Management
Data Mining (in follow-up release)	Embedded Data Movement		z Compression
Text Analytics (in follow-up release)	Remote Data Access		Data Retention (Optim)

DB2 for z/OS Data Server (Prerequisite, Not Included)

Platform	System z

Available outside of the Warehouse offering from DB2 for z/OS and Optim

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Cubing Services - OLAP Analytics and Open Access

Reporting Tool

Alphablox/Cognos/DataQuant

Excel

MDX

MDX/XMLA

Cubing Services

MDX/ODBO

SQL

Linux on System z

DB2 Warehouse

z/OS
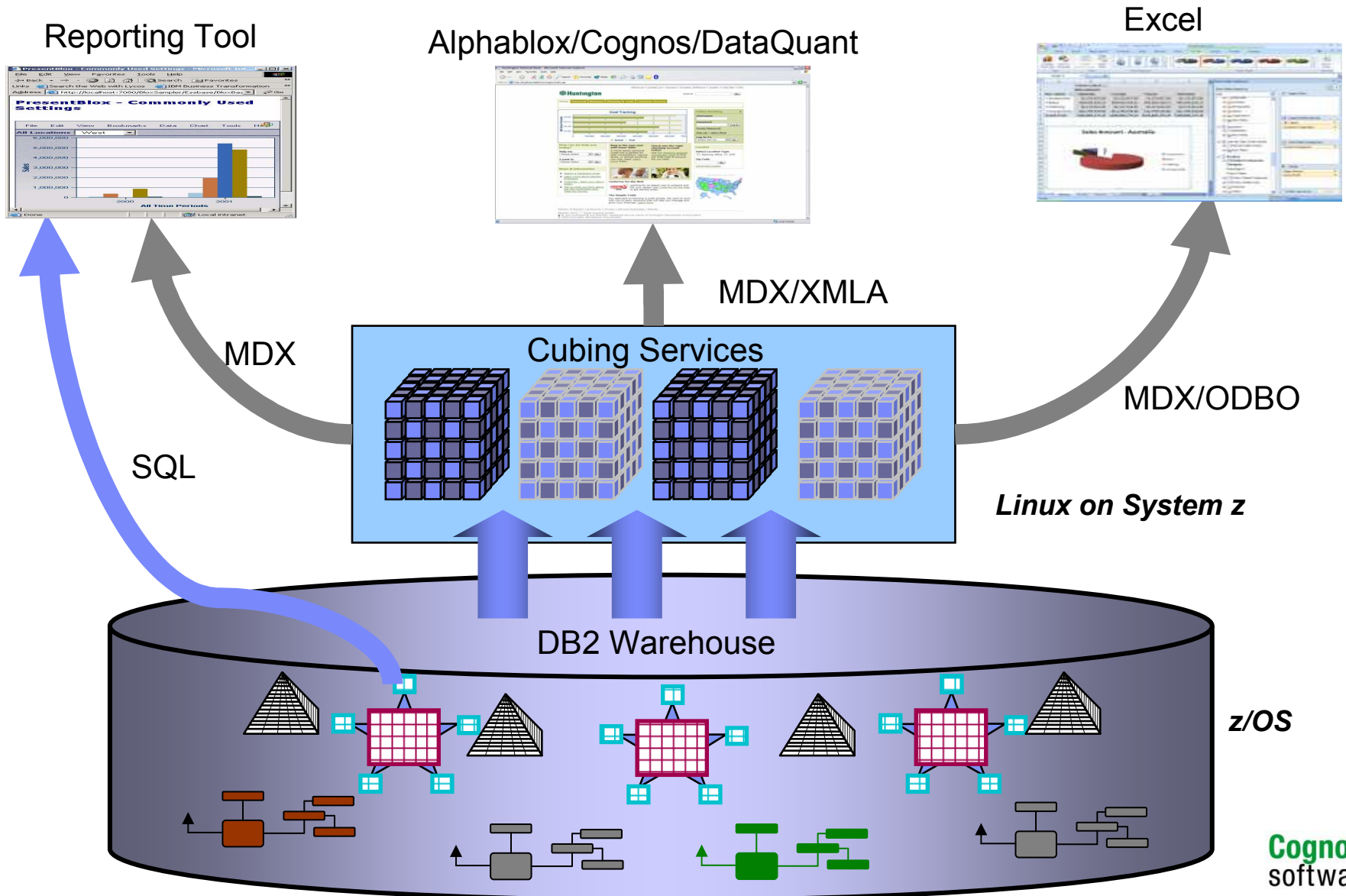
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What is Master Data?

- High value information that a company uses across their business

  - *customers, suppliers, partners, products, materials, bill of materials, chart of accounts, location and employees*

- The challenge companies have is master data is scattered throughout their enterprise and there is no consistent view of master data

CRM	Data Warehouse	Legacy Application
John Jones	**John William Jones**	**J. Jones**
112 Main Street	1500 Industrial Drive	112 Main Street
Customer Value – High	Customer Value – High	Customer Value – Low
Risk Score – Low	Risk Score - High	Risk Score – High
Solicit – Do Not Call	Solicit – No data	Solicit – Do Not Call

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What is Master Data Management?

- Provides a consistent understanding and trust of master data entities
- Provides mechanisms for consistent use of master data across the organization
- Is designed to accommodate and manage change

CRM	Billing	ERP	eBusiness Application
Application – unique Functionality & Data	**Application – unique** Functionality & Data	**Application – unique** Functionality & Data	**Application – unique** Functionality & Data
Common Functionality & Data	**Common** Functionality & Data	**Common** Functionality & Data	

Common Data = Master Data
Common Functionality & Data Master File

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IBM InfoSphere MDM Server Value Proposition

- The first multi-domain, multi-function MDM product in the market

- Packaged to address all types of MDM implementations

  – From small "registry" projects through to strategic "transaction-hub" deployments

  – Allows clients to grow as required by implementing existing functionality

  – Significantly lowers client risk and time/cost to implement

- Enables as an SOA Library - 800 pre-packaged business services

  – Significant out of the box product functionality

  – Reduces total cost of ownership

- Provides leading performance & scalability

Operational Applications

Middleware & Business Processes

Data warehouses & Analytics

Data Stewards & MDM Users

InfoSphere™ Master Data Management Server

MDM Business Services

Intelligence Business Logic Components

Data Quality Management

Data Governance & Security

Knowledge MDM Domains (ie. Party, account, product)

Data Stewardship & Admin

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