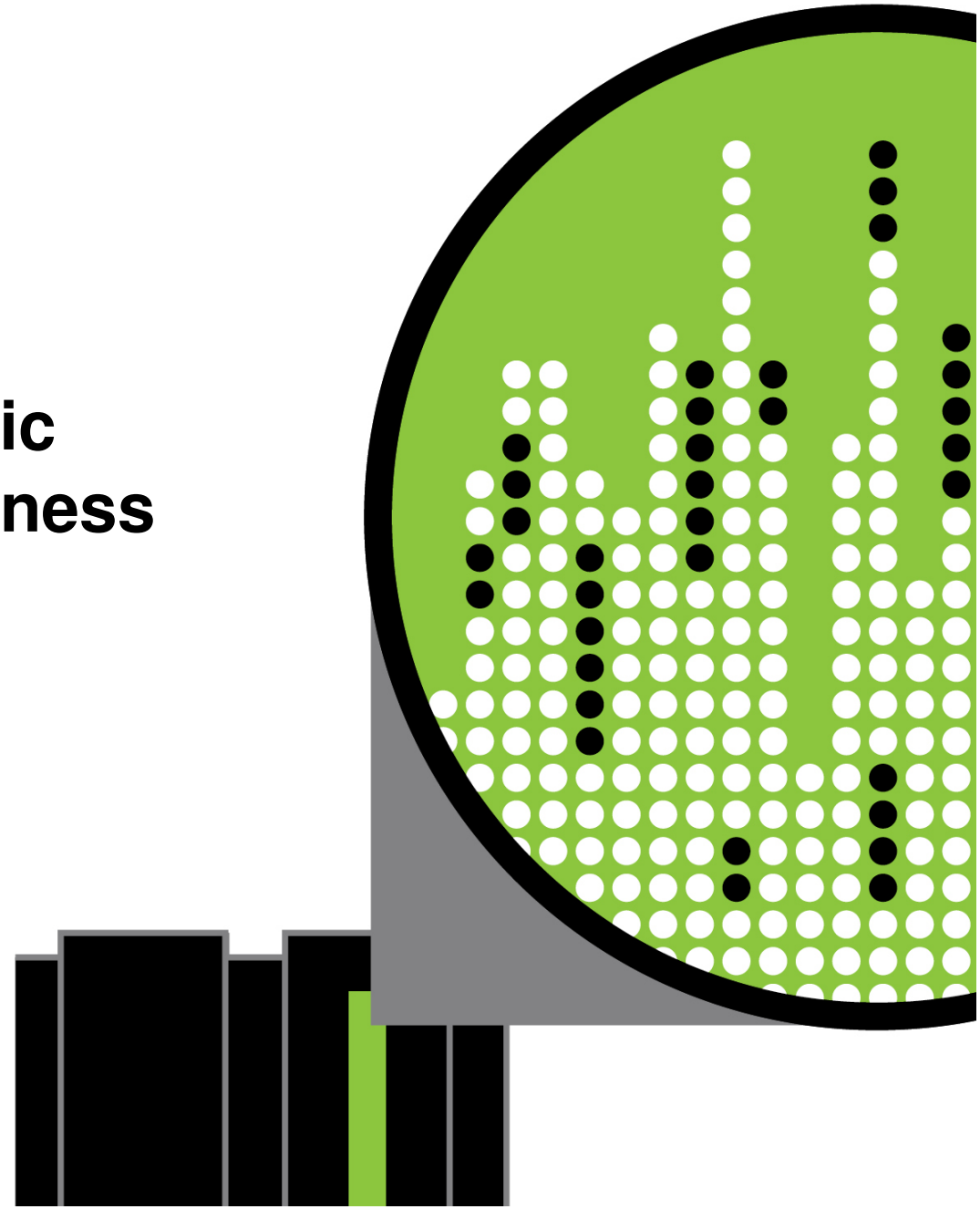
Smarter technology for a smarter planet:

IBM® Enterprise Advance

Advancing Business Intelligence

The New Era of Dynamic Warehousing and Business Intelligence from IBM



IBM®

System z: The platform for the future

"you cannot think seriously about your longer-term IT architecture without thinking equally seriously about what today's mainframe environment has to offer“

CIO Magazine: Mainframe computing is set for a rebirth – September 29, 2009

The World is Changing.

The Reality of Living in a Globally Integrated World is Upon Us.

6x
Increase in global water usage since the 1900s, twice the rate of human population growth

40% to 70%
The losses of electrical energy due to inefficiency - around the world

85%
Idle computer capacity

$11.5 billion
Worth of produce is wasted in India because of outdated post-harvest infrastructure

$0.70 per $1.00
Spent on IT maintenance

$100 billion
Lost annually in the US due to healthcare fraud

22%
of total port volume in North America is empty containers

$40 billion
Annual consumer product and retail sales lost in United States due to supply chain inefficiencies

Annual impact of congested roadways

$78B lost
3.7B lost hrs
2.3B gallons of gas

IBM® Enterprise Advance
Advancing Business Intelligence

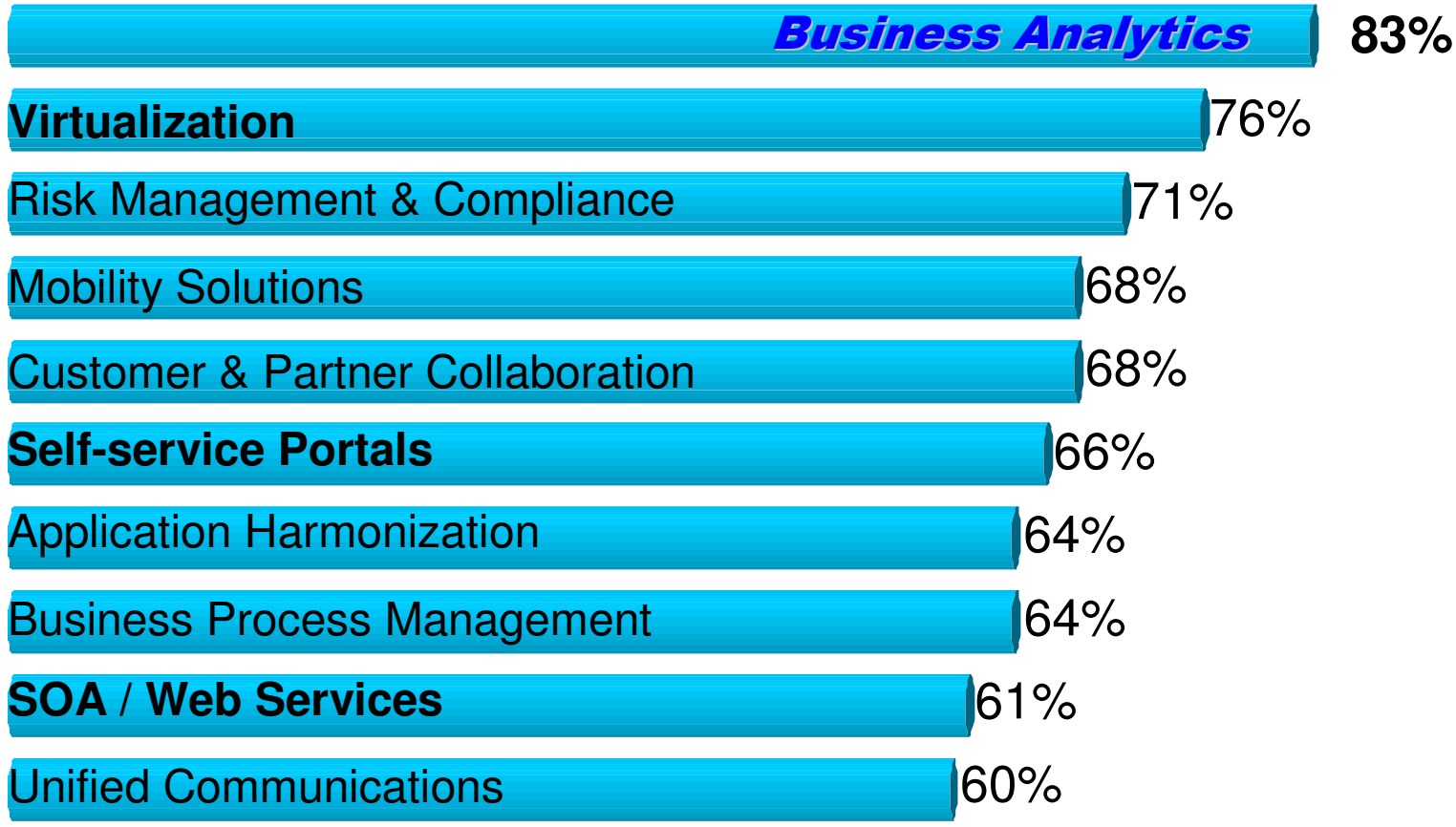
Source: Various IBM and Public Studies

IBM

Information-Led Transformation

Source: IBM Global CIO Study 2009, n = 2345,

Leveraging information & analytics is now the top priority for CIOs, and organizations that do so outperform their peers…



Organizations are Operating with Blind Spots

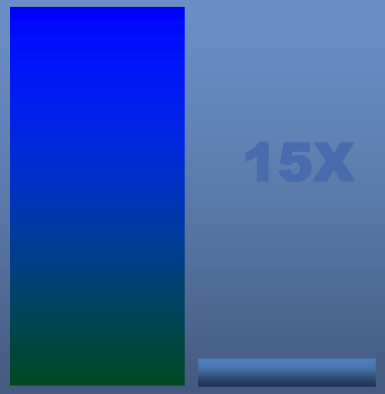
1 in 3

Business leaders **frequently make decisions** based on information they don't trust, or don't have

1 in 2

Business leaders say **they don't have access to the information they need** to do their jobs

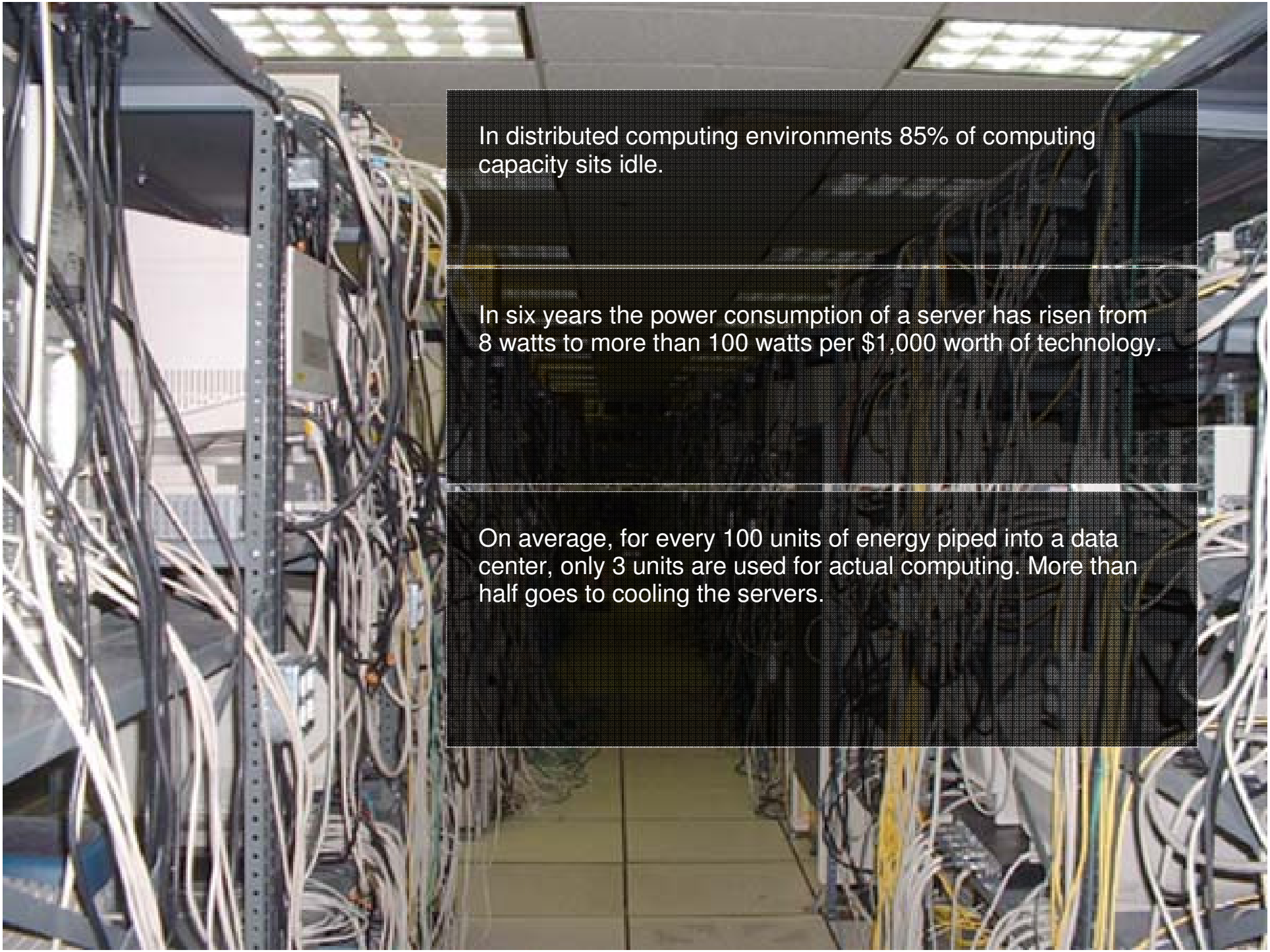
Top Performers Demonstrate Expertise



Predict and prepare for the future by evaluating trade-offs proactively

- Industry Top performers
- Industry Under performers

Source: IBM: Break Away with Business Analytics and Optimization Study

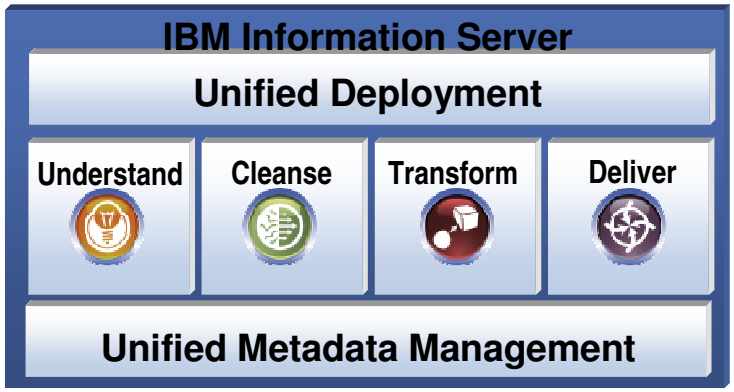

In distributed computing environments 85% of computing capacity sits idle.
In six years the power consumption of a server has risen from 8 watts to more than 100 watts per $1,000 worth of technology.
On average, for every 100 units of energy piped into a data center, only 3 units are used for actual computing. More than half goes to cooling the servers.

The Infrastructure

InfoSphere Information Server for System z

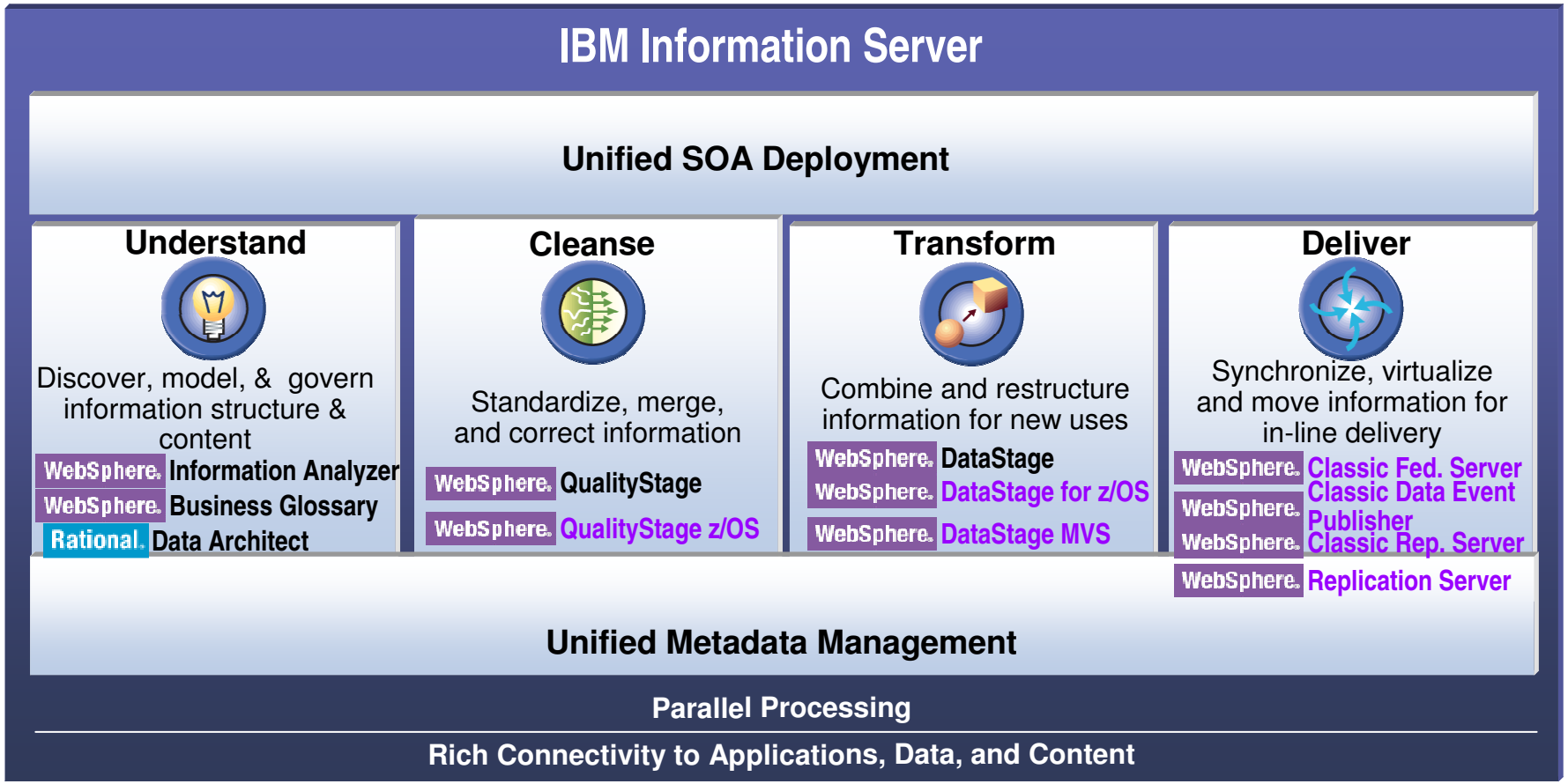
Accelerating the delivery of trusted information

Profile, cleanse, and transform information from heterogeneous data sources to drive greater business insight



- **Significant cost savings on System z**
- **Scalable to any volume and processing requirements**
- **Fully integrated, auditable data quality**
- **Metadata-driven integration for increased productivity**

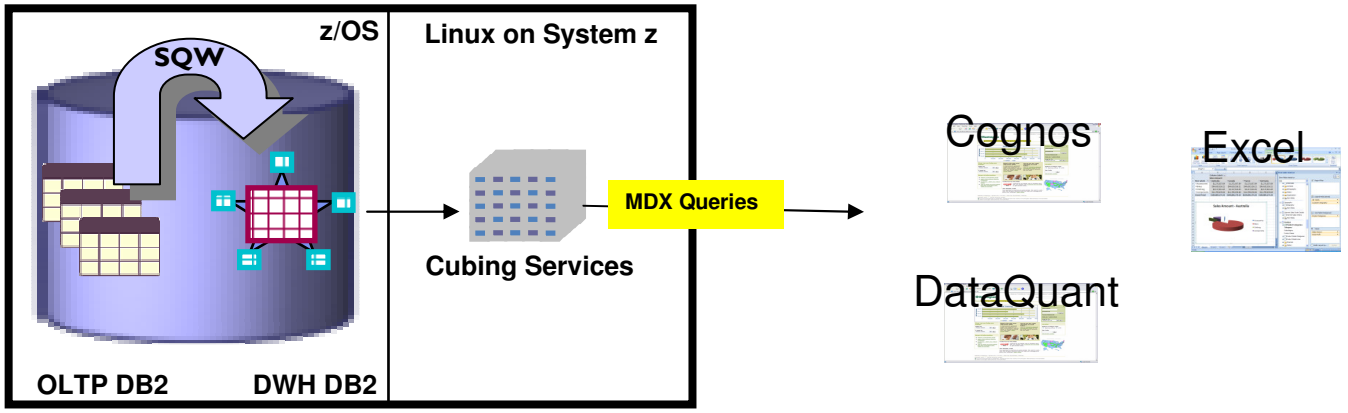
IBM Information Server - for Linux on System z



InfoSphere Warehouse on System z

Adds core data warehouse and analytics capability to DB2 for z/OS

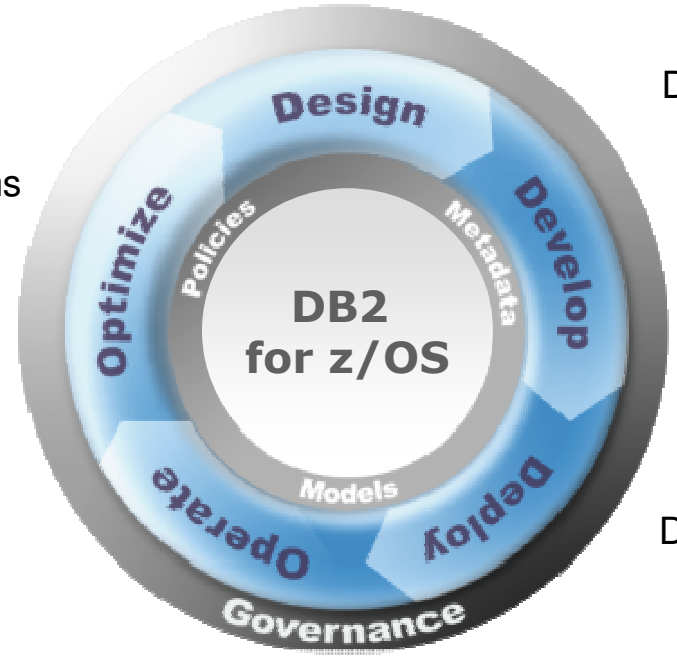
- Advanced physical database modeling and design
- In-database data movement and manipulation capabilities of ***SQL Warehouse Tool*** (SQW)
- Optimize multidimensional reporting and analysis of data with ***Cubing Services***



System z Environment Enhanced with InfoSphere Warehouse

The broadest range of capabilities for managing the value of your data throughout its lifetime

Rational Data Architect



Data Studio Developer

Optim Data Growth Solutions

Optim Test Data Management

DB2 Performance Management Solution

Optim Data Privacy Solutions

DB2 Automation Tool

Data Studio pureQuery Runtime

DB2 Recovery Solution

DB2 Utilities Suite

DB2 Change Management Solution

DB2 Audit Management Expert

Data Encryption for DB2 and IMS

DB2 Encryption Expert

Role-Based Tools with Integrated Metadata

Data Admin

Implementers

Architects

Subject Matter Experts, Data Stewards

Analysts

IBM WebSphere QualityStage

IBM WebSphere DataStage

Rational Data Architect

IBM WebSphere Business Glossary

IBM WebSphere Information Analyzer

Database application and transformation development

Metadata and data-driven data modeling and management

Business definition & ontology mapped to physical data

Data-driven analysis, reporting, monitoring, data rule and integration specification

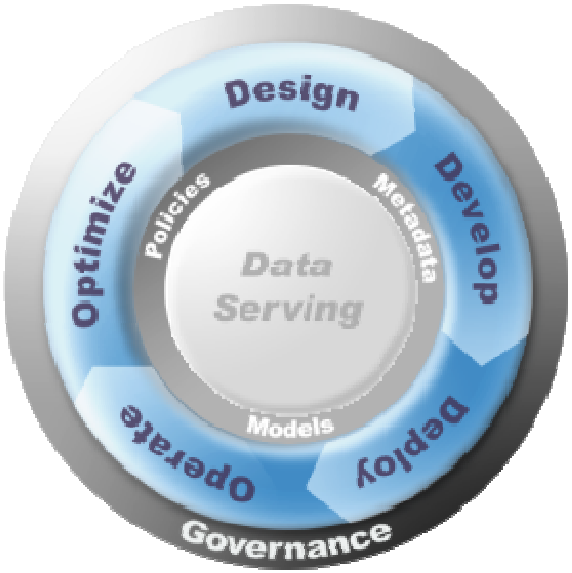
IBM WebSphere Metadata Server

- **Simplify integration**
- **Facilitate change management & reuse**
- **Increase compliance to standards**
- **Increase trust and confidence in information**

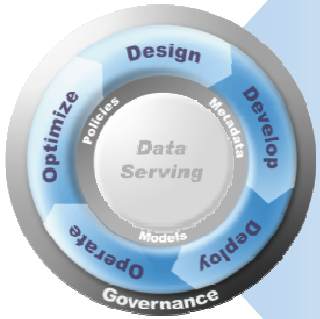
Data Studio Vision

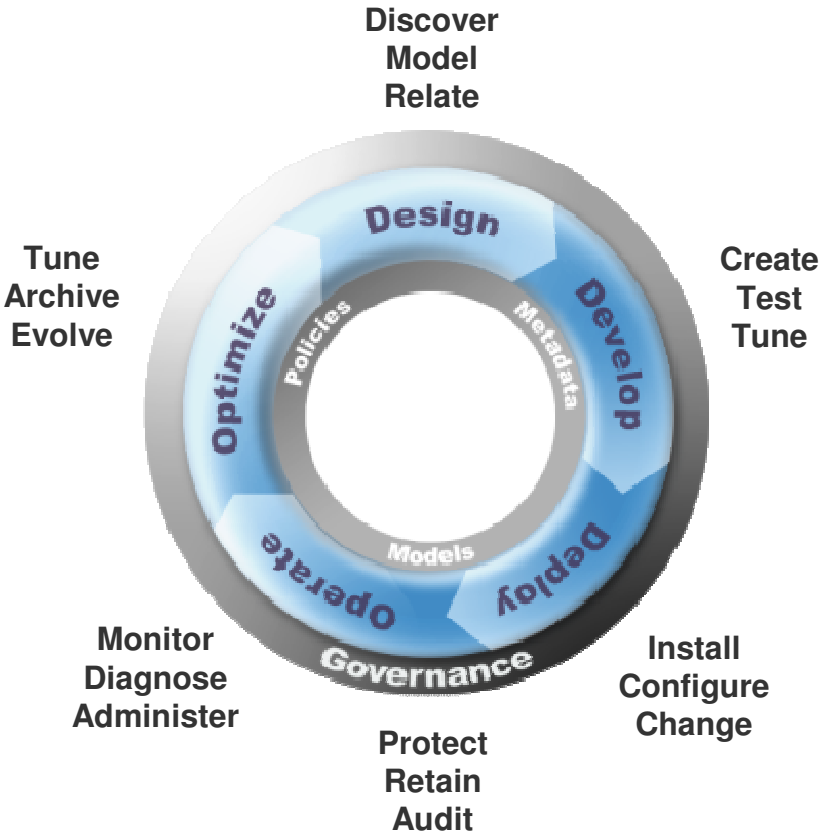
An integrated, modular, data management environment designed to increase organizational productivity and effectiveness while improving the quality of service, cost of ownership, and governance of diverse data, databases, and data-driven applications

- Providing end-to-end data lifecycle management
- Facilitating cross-organizational collaboration for business alignment
- Integrating via common user interfaces, common components and services, and shared policies, models, and metadata



Managing the value of your data throughout its lifetime …from requirement to retirement





Enabling Collaboration and Alignment Across Roles

Rational Software Delivery Platform

Business Analyst

Enterprise Architect

Data Modeling

Logical Modeling

Physical Modeling

Integration Modeling

Data Architect

Application Development

Data Access:

Java objects

Web services

Web 2.0

Application Developer

Database Development

Stored Procedures

SQL

XQuery

User Defined Functions

Database Developer

Database Administration

Configuration

Performance Management

Change Management

Availability Management

Database Administrator

Data Steward

Data Governance

Security and Privacy Management

Archive and Retention Management

Auditing

Tivoli Service Management Platform

Systems Administrator

Network Administrator

Compliance Administrator

Cross-Lifespan Integration Drives Value

- **Common user interfaces**
  - Shared user interface across tasks makes **moving between roles easy and intuitive**
  - Common Web portlets provide flexibility and coherency to **improve an organization's ability to meet service level agreements**
- **Common components and services**
  - Components installed in a common shell instance **reduces tool deployment costs**
  - Shared functions across data servers **reduces skills requirements**
  - Shared policies and services across tools **improves security and compliance**
- **Common policies, models, and metadata**
  - Shared metadata, development, and design artifacts **improves software development alignment, control and efficiency**
  - Shared configuration information **reduces application deployment costs while improving quality of service**
  - Aggregated performance information across application stack enables **faster and more effective problem isolation, performance optimization, capacity planning, and impact analysis**

DB2 V10 for z/OS What's exciting?

Efficiency	• CPU reduced: transactions & queries • Ten times more concurrent users
Resiliency	• More online schema changes • Concurrency for catalog & utilities • Improved security controls and audit
Applications	• Versioned data or temporal queries • pureXML and SQL enhancements

→ Productivity improved for DBAs, application programmers, & systems – ability to 'leap' from V8 → V10

DB2 Tools Portfolio

Application Management
- DB2 Administration Tool
- DB2 Path Checker
- DB2 Bind Manager
- DB2 Optimization Expert
- DB2 Query Monitor
- DB2 SQL Performance Analyzer
- IBM Optim Data Growth
- IBM Optim Test Data Management
- DB2 High Performance Unload
- DB2 Table Editor
- InfoSphere Data Architect
- Data Studio Developer

Utilities Management
- DB2 Utilities Suite
- DB2 Automation Tool
- DB2 Utilities Enhancement Tool
- DB2 High Performance Unload

Business Intelligence
- IBM DataQuant
- IBM QMF
- DB2 Web Query Tool

Database Administration
- DB2 Administration Tool
- DB2 Object Comparison Tool
- DB2 Storage Management Utility
- Data Studio Administrator

Performance Management
- OMEGAMON XE DB2 Performance Expert
- OMEGAMON XE DB2 Performance Monitor
- DB2 SQL Performance Analyzer
- DB2 Buffer Pool Analyzer
- DB2 Optimization Expert
- DB2 Query Monitor
- Data Studio Developer/pureQuery Runtime
- DB2 Performance Expert/Extended Insight

Information Integration
- InfoSphere Information Server
- InfoSphere CDC for System z
- WebSphere Replication Server
- WebSphere Data Event Publisher
- WebSphere Classic Federation Server
- WebSphere Classic Data Event Publisher
- WebSphere Classic Replication Server

Backup and Recovery
- Application Recovery Tool for IMS and DB2 Databases
- DB2 Archive Log Accelerator
- DB2 Change Accumulation Tool
- DB2 Cloning Tool
- DB2 Log Analysis Tool
- DB2 Object Restore Tool
- DB2 Recovery Expert

Data Governance
- IBM Optim Data Growth
- IBM Optim Data Privacy
- IBM Optim Test Data Management
- DB2 Audit Management Expert
- InfoSphere Data Architect
- Data Studio pureQuery Runtime
- IBM Database Encryption Expert
- Data Encryption for DB2 and IMS

* Available only on System z

* Available on System z and LUW

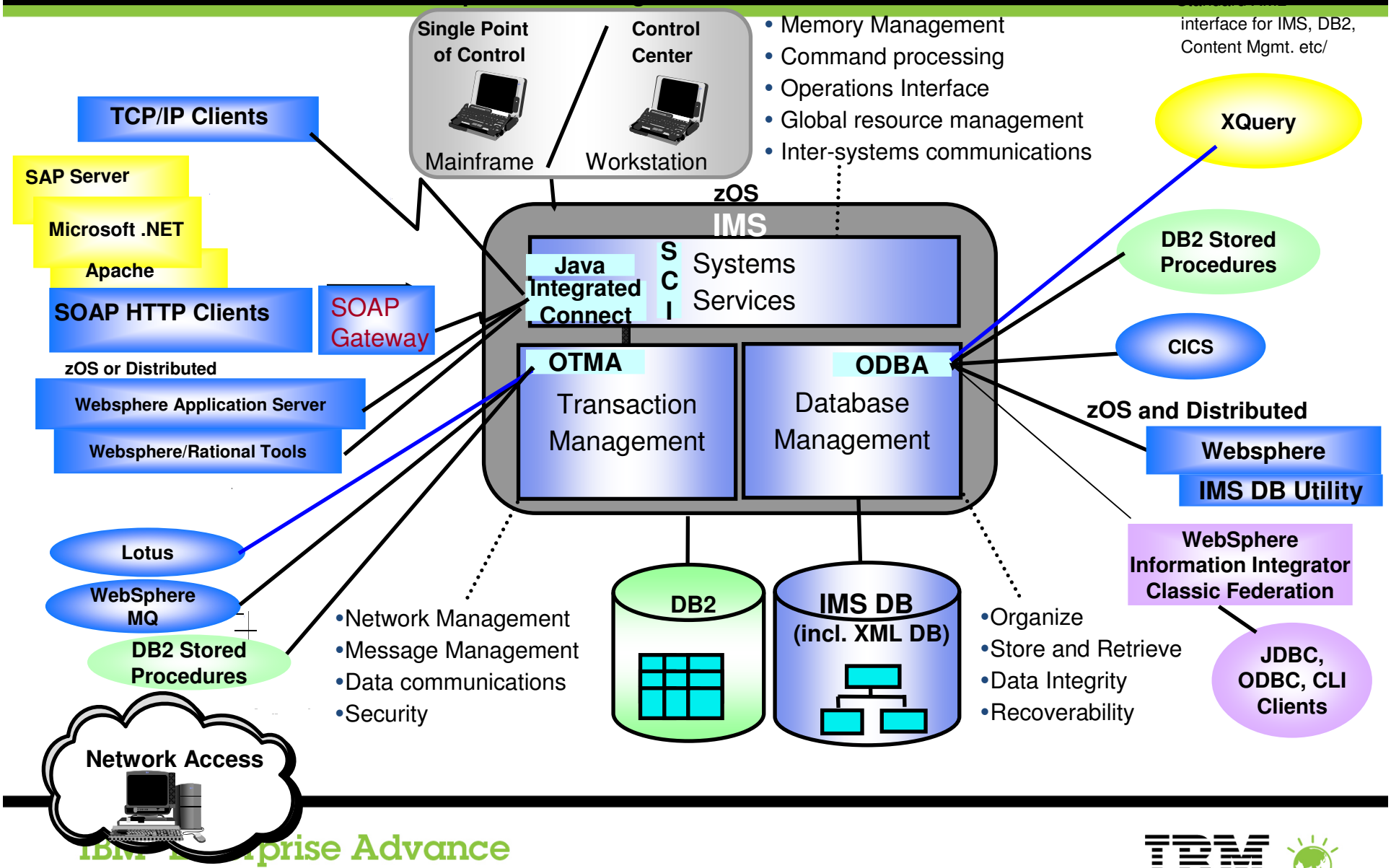
* Available only on LUW

DB2 Tools – maximize your investment

- **Overview**
  - Respond to both planned and unplanned changes, while maintaining business resiliency
  - Maximize data availability and performance to gain competitive advantage
  - Lower operational costs while improving productivity
  - Accelerate DB2 time to value for out-of-the box savings

- **IBM's strategy for our customers**
  - Offer a comprehensive suite of DB2 Tools that respond to today's top IT challenges, helping you to reduce total cost of ownership by maximizing IT staff efficiency.
  - Offer the most complete portfolio in the market, with a continued focus on driving down software costs in areas such as:
  - Proactive performance monitoring, tuning, and management
  - Low cost/low resource utilization for backup and recovery management
  - Less DB2 administration time for many more activities, such as cloning DB2 systems
  - Ease the burden of data governance, compliance, and data security on administrators, always with a concern for system and staff resources.

IMS Today – V10 … there is more in V11



IMS Tools Product Portfolio

IMS Tools Base for z/OS	IMS Database Solution Pack for z/OS	IMS Fast Path Solution Pack for z/OS	IMS Recovery Solution Pack for z/OS
IMS Tools Generic Exits TOSI Policy Services IMS Tools Knowledge Base IMS HD Compression Ext	DB Reorganization Expert - Unload, Load, Index Build, Prefix Resolution/Update HP Image Copy HP Pointer Checker Library Integrity Utilities	IMS HP Fast Path Utilities IMS DB Repair Facility IMS HP Image Copy IMS Library Integrity Utilities	HP Image Copy Database Recovery Facility HP Change Accumulation Recovery Expert
HALDB Toolkit Sequential Randomizer Generator	Online Reorganization Facility IMS Cloning Tool IMS Database Control Suite		DEDB Fast Recovery
Data Base Administration	**Utility Management**		**Backup and Recovery**

System Administration	Transaction Management	Performance Management	Application Management	Regulatory Compliance
IMS Configuration Manager IMS Sysplex Manager	Command Control Facility ETO Support HP Sysgen Tools Queue Control Facility IMS Workload Router	Buffer Pool Analyzer Network Compression Facility	Batch Terminal Simulator Batch Backout Manager Program Restart Facility	IMS Audit Management Expert IBM Data Encryption for IMS and DB2 Databases

IMS Performance Solution Pack for z/OS

IMS Connect Extensions
IMS Performance Analyzer
IMS Problem Investigator

IMS Tools Solution Packs

- **IMS Tools Solution Packs**
  - Related products packaged together to provide end-to-end IMS solutions
    - **Database, Fast Path, Recovery, Performance**
  - Lay the foundation for new IMS Tools in the pipeline via a no-charge Base Pack which contains necessary common code (Generic Exits, DAI, PSS, ITKB, etc.)

- **What's the value to customers?**
  - The customer receives a complete solution for all of their needs rather than having to purchase multiple tools
  - Solution Packs are discounted, offering real value

Reduce CPU Consumption + **Reduce DBA Labor Costs** + **Reduce Application Downtime** =

Deliver faster return on your investment!

The Optim Portfolio – Data Governance

- Optim Data Growth Solution
- Optim Test Data Management Solution
- Optim Data Privacy Solution
- Optim Data Growth Solution Siebel CRM
- Optim Data Growth Solution AmdocsCRM
- Optim Data Growth Solution JDE ENTONE
- Optim Data Growth Solution Oracle ebusiness Suite
- Optim Data Growth Solution PeopleSoft
- Optim Soln for Application Retirement
- Optim Test Data Mgmt for JDE ENTONE
- Optim Test Data Mgmt for Soln Oracle ebus
- Optim Test Data Mgmt for PeopleSoft Enterprise
- **Optim Test Data Mgmt Solution**
- Optim Test Data Mgmt Solution Additional Server
- Optim TDM for Siebel CRM
- Optim TDM Soln for AmdocsCRM
- Optim Data Growth Solution for z/OS
- Optim Data Growth Solution for z/OS for Peoplesoft
- Optim Data Growth Solution for z/OS for Siebel Customer Relationship Management
- Optim Test Data Management Solution for z/OS for Siebel Customer Relationship Management
- Optim Test Data Management Solution for z/OS for Siebel Customer Relationship Management
- Optim Data Growth Solution for z/OS for Adabas
- Optim Data Growth Solution for z/OS for IMS/VSAM/SEQ
- Optim Test Data Management Solution for z/OS for Adabas
- InfoSphere Discovery
- Database Relationship Analyzer
- IBM DB2 Performance Expert
- IBM DB2 Performance Expert Extended Insight Feature
- IBM Optim pureQuery Runtime
- IBM Optim Query Tuner
- IBM Optim Development Studio

IBM


Informix
SAP
ORACLE
IBM DB2
PeopleSoft
TERADATA
SYBASE
i5/OS
z/OS
MySQL
UNIX
Microsoft
WebSphere

Trusted Information Drives Smarter Business Outcomes

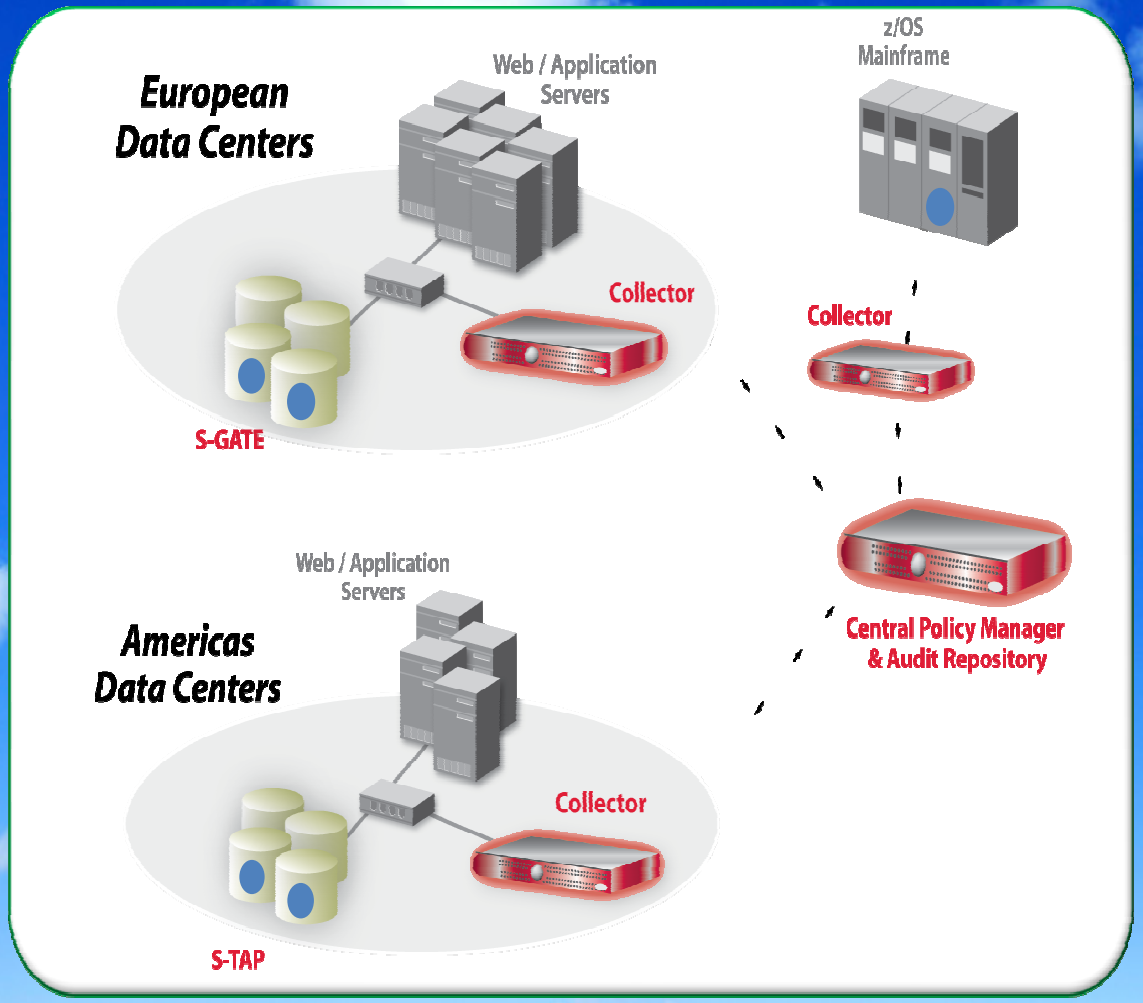
Efficiently govern information in high-value databases to ensure trusted, secure, and compliant use across the enterprise.

Information Management

IBM

Guardium® BENEFITS

Automate & Centralize Controls

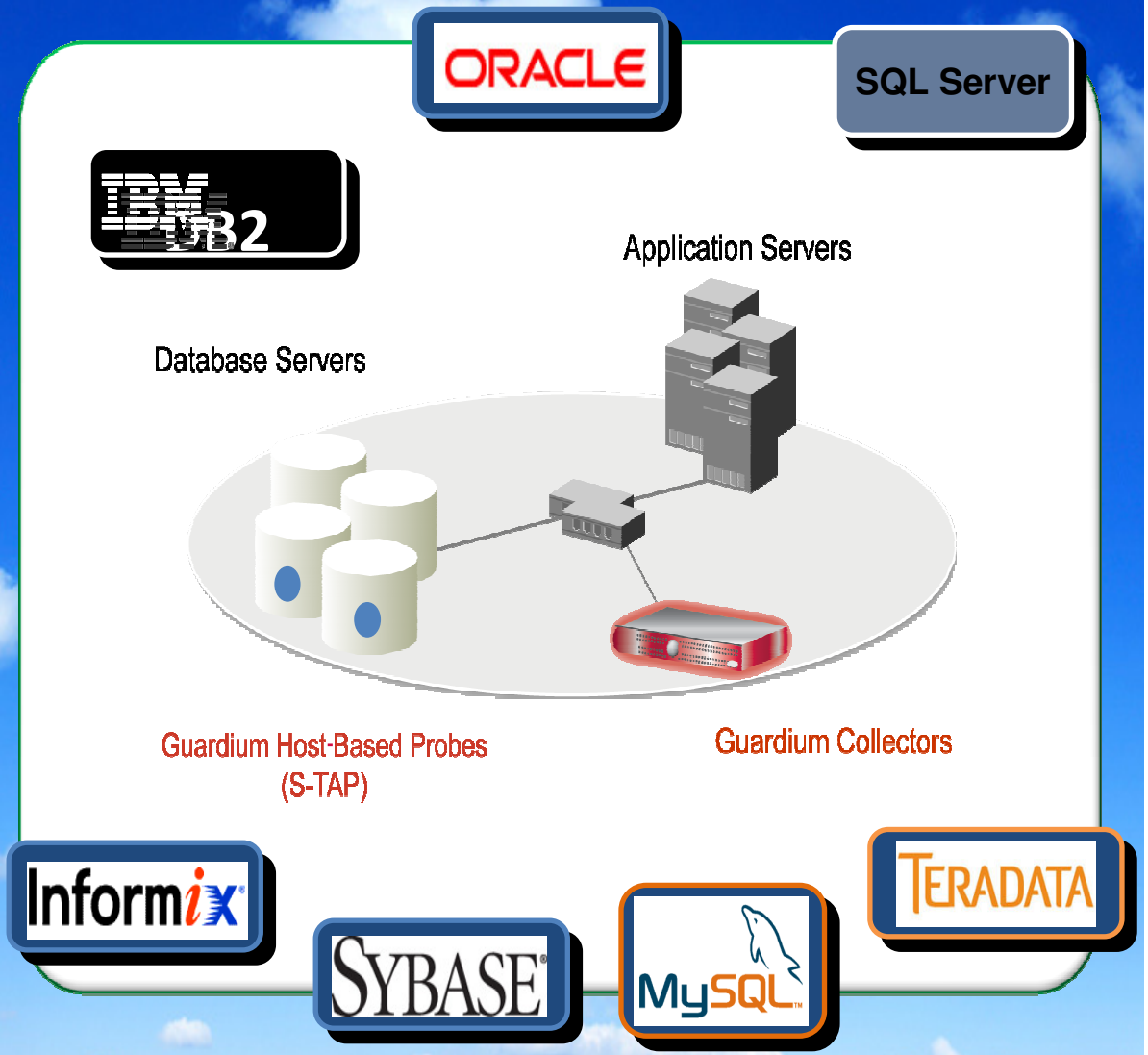


IBM

Guardium® BENEFITS

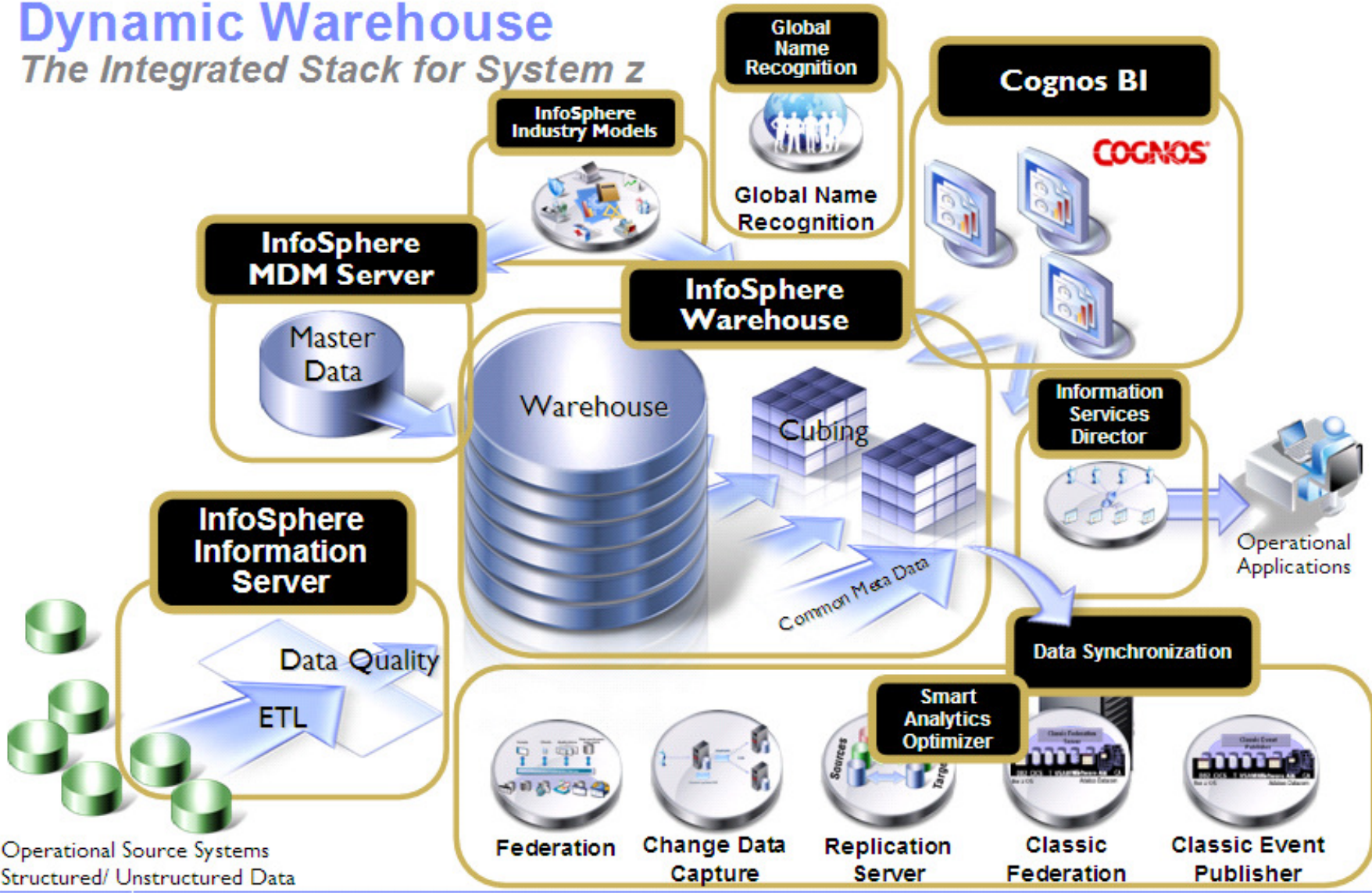
Non-Invasive Architecture

Does not require changes to business processes



Dynamic Warehouse

The Integrated Stack for System z

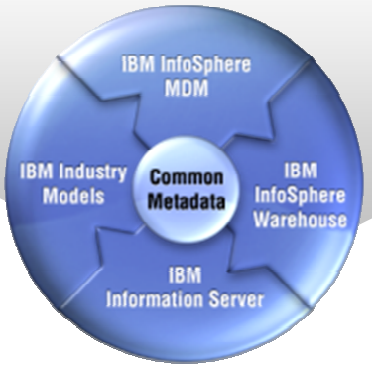


Integrated End-to-End Offerings Means Lower TCO

- Only IBM offers integrated ETL, Warehouse, and Analytics

IBM + IBM + IBM + IBM + IBM + IBM

Models	Cleansing	ETL	MDM	Data Warehouse	BI



- **Benefits Of Integration:**
- ***Decreased risk by 53%***
- ***Improved business alignment 83%***
- ***Improve time to value by 75%***
- ***Reduce project staffing by 90%***

Compared to integrating point solutions from different vendors

Models	Cleansing	ETL	MDM	Data Warehouse	BI

Company A + Company B + Company C + Company D + Company E + Company F

IBM Smart Analytics Optimizer
Technology Preview for System z

What is it?

- ✓ A high performance extension that easily integrates with IBM data systems, delivering predictable, order-of-magnitude faster, analytic query response times, while lowering operating costs

How is it different

- ✓ **Deep integration with IBM data management systems**
- ✓ **High performance query software, based on advanced data in-memory technologies**
- ✓ **Leveraging existing data system investment and values without any changes to applications**
- ✓ **For System z, extends gold-standard manageability, security, and availability to high-performance analytic applications**

Currently in Beta

The IBM Smart Analytics System 9600

- Is an **integrated hardware, software and services offering** that enable customers to quickly and cost effectively capitalize on game changing analytics across an enterprise

- Delivers an expanding portfolio of easy to deploy business analytics, that **seamlessly integrate** into operational fabric of a business.

- Enables a centralized view of the business, with an highly available, **advanced workload manager** that can easily prioritize critical queries within a large pool of queries.

- Allows for **reductions in costs with a highly available infrastructure**, causing customers to reevaluate the mainframe.

IBM Smart Analytics System 9600

Overcoming the obstacles to business transformation

- ✓ **An integrated, high-performance analytics solution for accelerating delivery of insights for faster, smarter action**
- ✓ **Able to adjust and grow based on your company's ever changing business needs**
  - ❑ *broad analytic capabilities*
  - ❑ *powerful warehouse capabilities*
  - ❑ *scalable and fully-integrated IBM hardware*
  - ❑ *set-up services and single point of premium support*
- ✓ **Delivering results in days instead of months**

Delivering the Business Value

Cognos 8 BI & System z

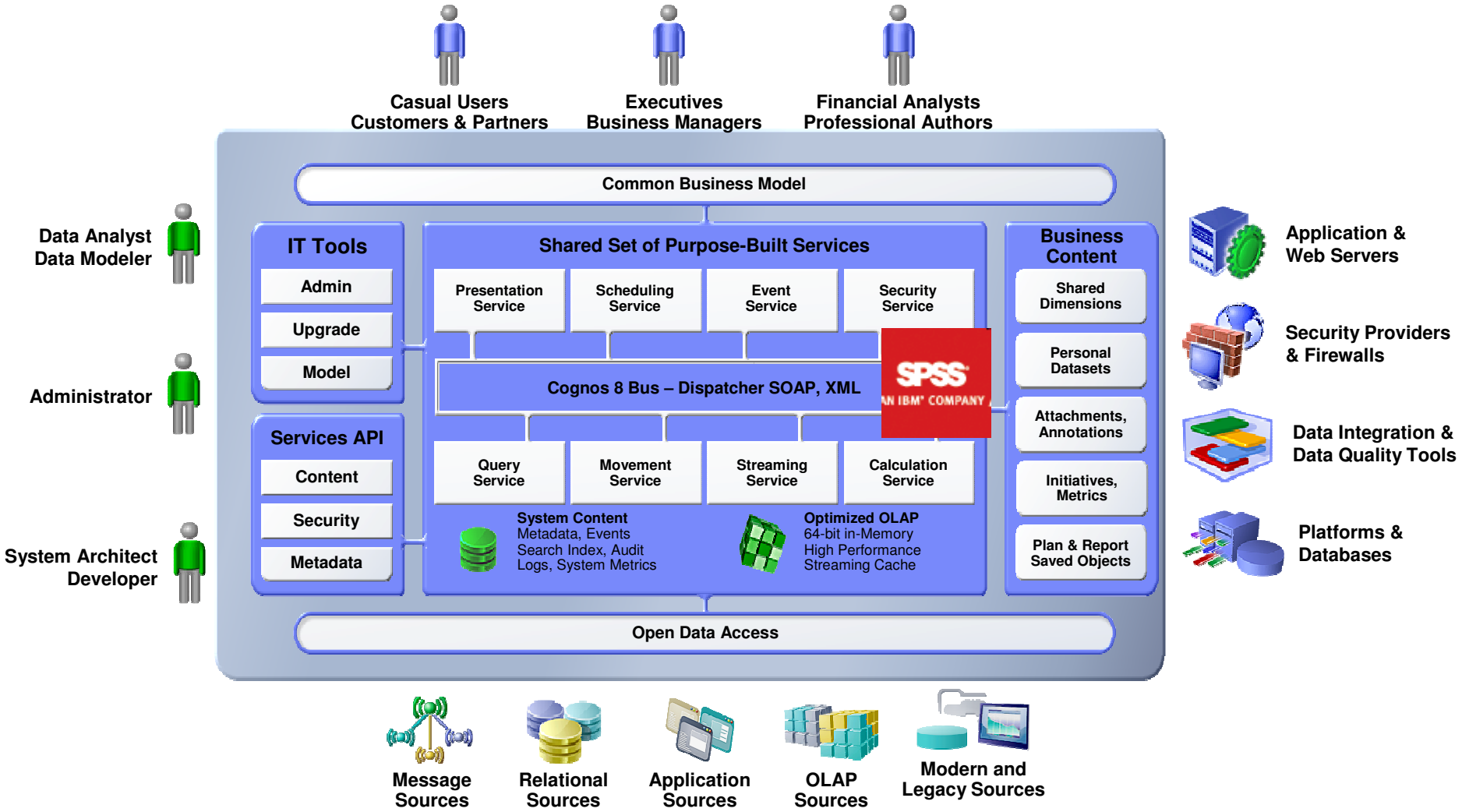
Simplifying the management and maintenance of your enterprise BI

- Customers have told us they want the following from their BI and DW infrastructure:
  - ***Fewer BI tools in house – BI standardization***
  - ***Server consolidation*** - Significant savings in the hardware, software, operating and people costs associated with the management and maintenance of your enterprise BI infrastructure.
  - ***Rapid deployment at a low cost***
  - ***Full range of BI capabilities*** including real-time monitoring, reporting, analysis & dash boards tightly integrated with the Data warehouse
  - Better, more rapid deployment - associated with a new BI application and/or increasing capacity.
  - ***Maximum scalability, reliability, availability and security***
  - ***Simplified and faster access to the transactional data*** located on System z – Operational BI scenarios

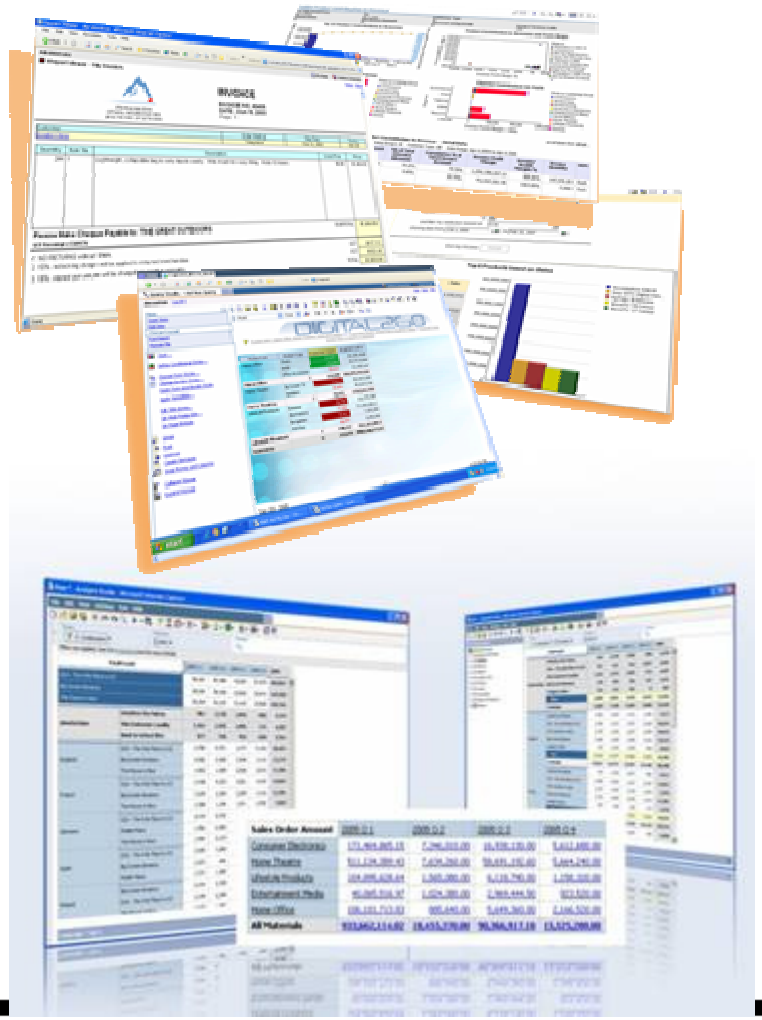
The Core Value Proposition

- Customers tell us they are interested in Cognos on System z because they…
  - Are “z-centric”
  - Have most of their data there
  - Desire to provide a lower cost, single platform solution for DW and/or BI
  - Position BI as mission critical
  - Are looking at new BI operations such as real-time and/or Operational BI
  - Require assured 24x7 operation (System z is known for its 99.999% availability)
  - Want to consolidate distributed servers or see a need to
  - Want to standardize on one or fewer BI tools
  - For some with Linux processors on System z and wish to make them more useful (IFLs)
  - Have stringent data security rules
  - Want an alternative to ISVs
  - Wish to cut costs such as software, hardware, staff support, power

Cognos architecture fits IBM's BI SOA Model

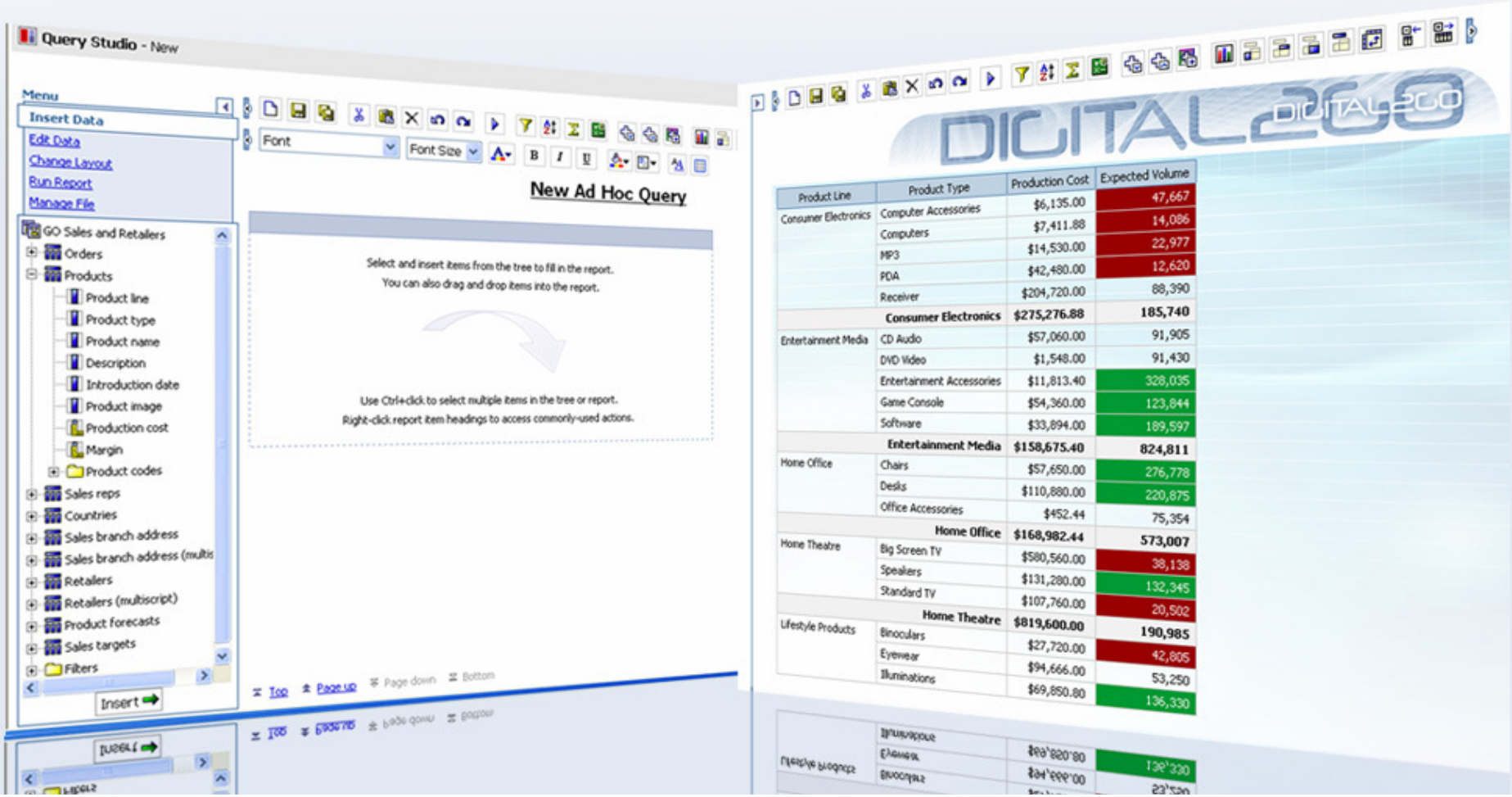


Reporting – OLAP - Dashboards



- **Enterprise Reporting**
  - Supports multiple report types: Production, Managed, Ad-hoc, Financial, etc
  - Is adaptable to any data source
  - Operates from a single metadata layer
  - Can be personalized and targeted
  - Can be distributed via email, portal, MS-Office, search application and mobile device
- **Analysis**
  - Enables the guided exploration of information that pertains to all dimensions of your business
  - Performs complex analysis and scenario modeling easily and quickly
  - Gets to the “why” behind an event or action to improve business performance.
  - Moves from summary level to detail levels of information effortlessly
- **Dashboards**
  - Translate complex information into high-impact presentations
  - Allow you to spot changes
  - Are highly intuitive
  - Align decision makers

Self Service – User Centric Studios



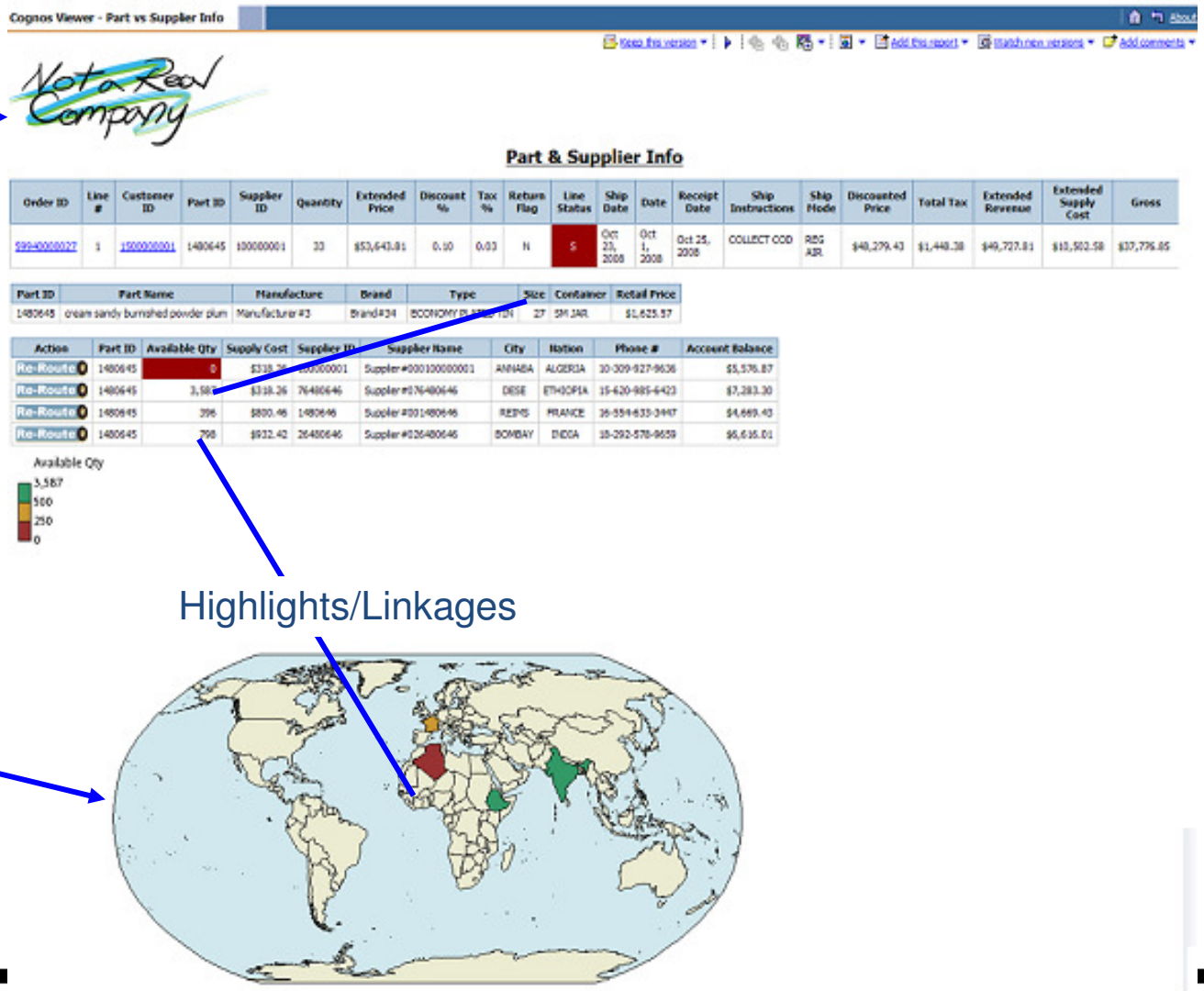
Compound reports

Icon/graphic

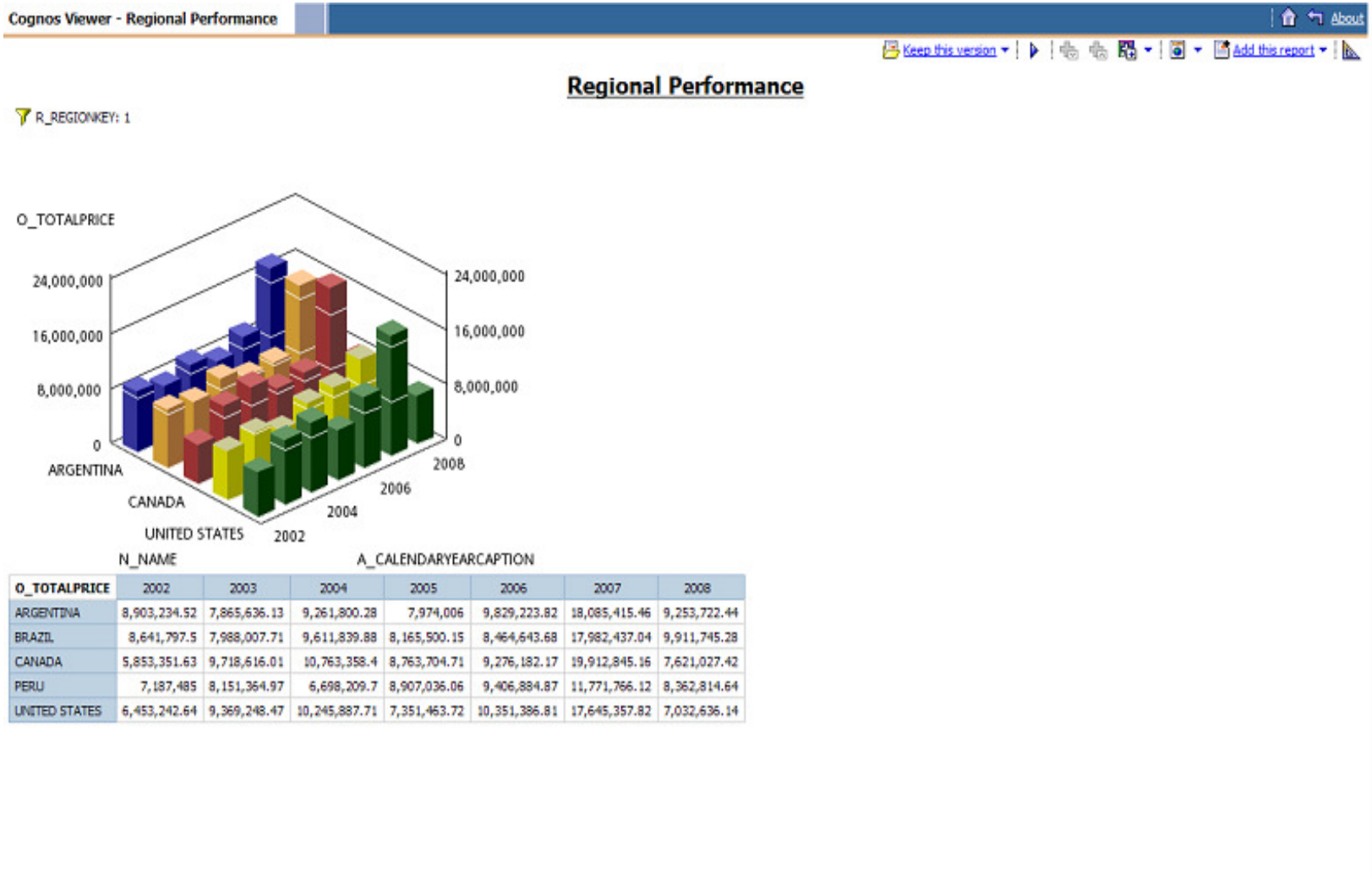
DB2

Oracle

Highlights/Linkages

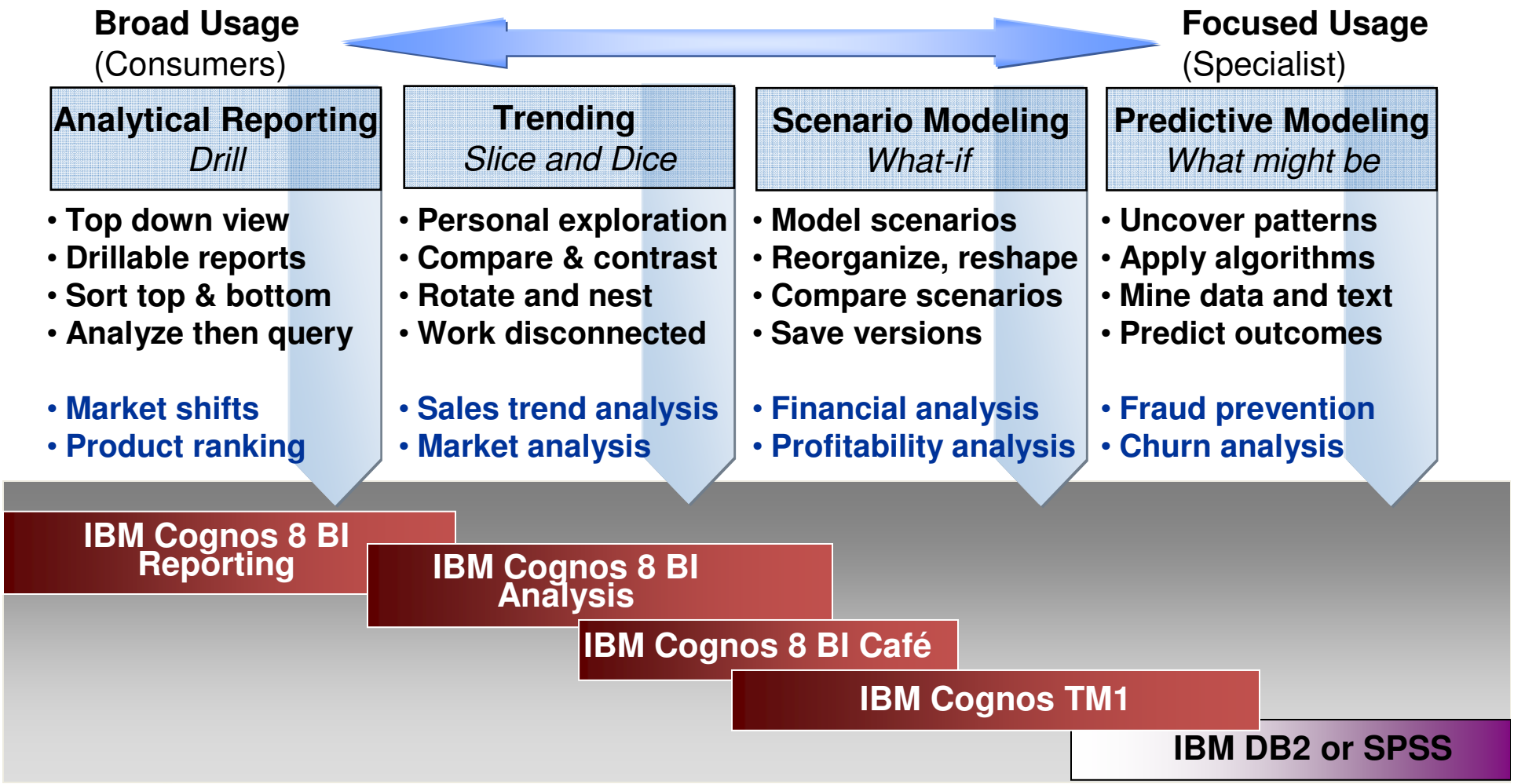


Multi-dimensional analysis – OLAP



O_TOTALPRICE	2002	2003	2004	2005	2006	2007	2008
ARGENTINA	8,903,234.52	7,865,636.13	9,261,800.28	7,974,006	9,829,223.82	18,085,415.46	9,253,722.44
BRAZIL	8,641,797.5	7,988,007.71	9,611,839.88	8,165,500.15	8,464,643.68	17,982,437.04	9,911,745.28
CANADA	5,853,351.63	9,718,616.01	10,763,358.4	8,763,704.71	9,276,182.17	19,912,845.16	7,621,027.42
PERU	7,187,485	8,151,364.97	6,698,209.7	8,907,036.06	9,406,884.87	11,771,766.12	8,362,814.64
UNITED STATES	6,453,242.64	9,369,248.47	10,245,887.71	7,351,463.72	10,351,386.81	17,645,357.82	7,032,636.14

The Four Styles of Analysis



Smart Analytics Cloud

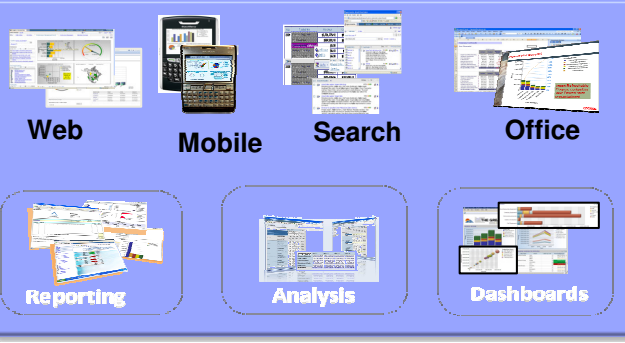
A private cloud optimized for analytic services in large enterprises

	Defined as …	To create…	That delivers …
Smart Analytics Cloud	IBM Smart Business - services with industry leading hardware & software	A private cloud computing solution for business intelligence (BI) & analytics	A services solution for delivering business intelligence to the entire organization

IBM software

Cognos 8 BI

A broad range of BI capabilities



Open, enterprise-class BI platform

IBM hardware

IBM System z

Centralize, Virtualize & Simplify the BI infrastructure

IBM Services

- Create awareness of BI and understand the needs for a BI strategy across the organization
- Complete a readiness assessment to define the scope and priorities for the solution
- Deploy Cognos 8 BI for Linux on System z as a private cloud
- Provide the skills for the on going management & expansion of their BI private cloud deployment

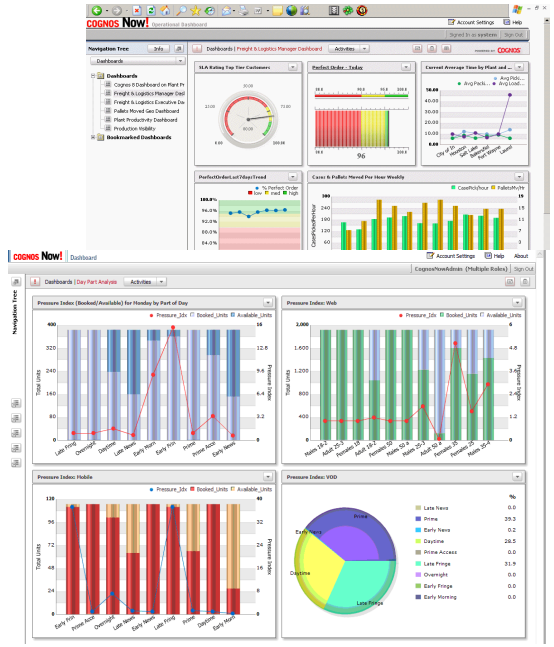
IBM Cognos Now! – Real Time Monitoring

For critical, intra-day monitoring of operational KPIs and metrics
- Aggregated across multiple transactional systems and data sources
- No BPM system required

Closed loop business optimization
- Complete loop from monitor to alerting to corrective action
- Identify, customize operational KPIs and metrics
- Understand and perform root cause analysis
- Drive rapid, effective decision-making and action

Autonomy for line of business user
- Self service model
- User-defined thresholds, alerts
- Graphical watch points
- Customization by end users

Cost effective, low risk and rapid deployment
- No roles based pricing, unlimited user pricing in Americas
- Prepackaged hardware, software or VM appliance
- ***We are exploring the connectivity between Cognos Now! And CICS CBE***



Challenges in Frontline Operations

- Sub optimal utilization of front line agents and customer service reps
  - largest line item expense, call center, field service, customer service
  - results in angry, frustrated, churning customers
- Sub optimal resource utilization
  - energy, electricity, water waste, etc
  - supply chain – production, logistics, dispatch inefficiencies
  - online ad space/time for Google Key Word Search
  - Inefficiencies result in higher costs for consumers/businesses & lost opportunities for incremental revenue
- Managing increasing decision complexity with ***increasing speed and decreased time to act***
  - More variables, more information to distill
  - Longer decision cycle equates to lost opportunities, less revenue
- Goals: Maximizing the customer renewals & retention while minimizing cost to serve and maintaining high customer satisfaction

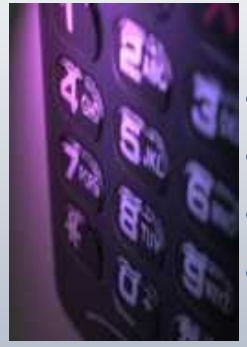
Cognos Now! Solution Investment Areas

Banking

- *Transaction Processing*
- *CD Purchase Monitoring*
- *Program Trader Desktop*

Utilities

- *Grid Transmission Monitoring*
- *Dispatch/Field Service Utilization*
- *Smart Meter Monitoring*



Telecommunications

- *Churn Management*
- *Call Center Operations*
- *Agent Utilization*
- *SLA Monitoring*

Green Sigma

- *Monitoring emissions rate near real time or sub-hourly for carbon, electric, gas, water for facilities, plants, office buildings, etc.*
- *Carbon intelligence*
- *Electricity/Gas/H20 consumption*

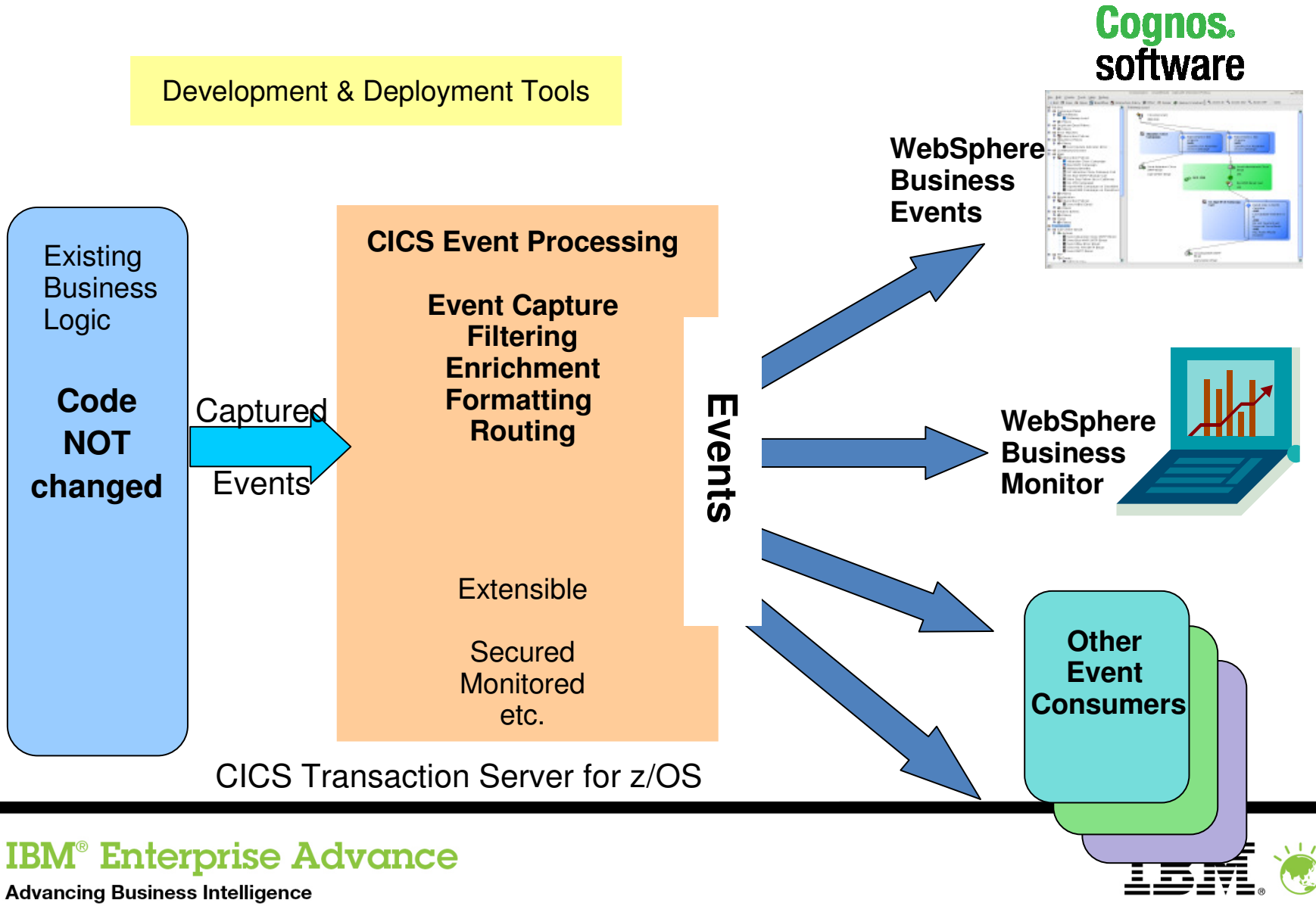
Insurance

- *Online Sales Agent Utilization*

Manufacturing

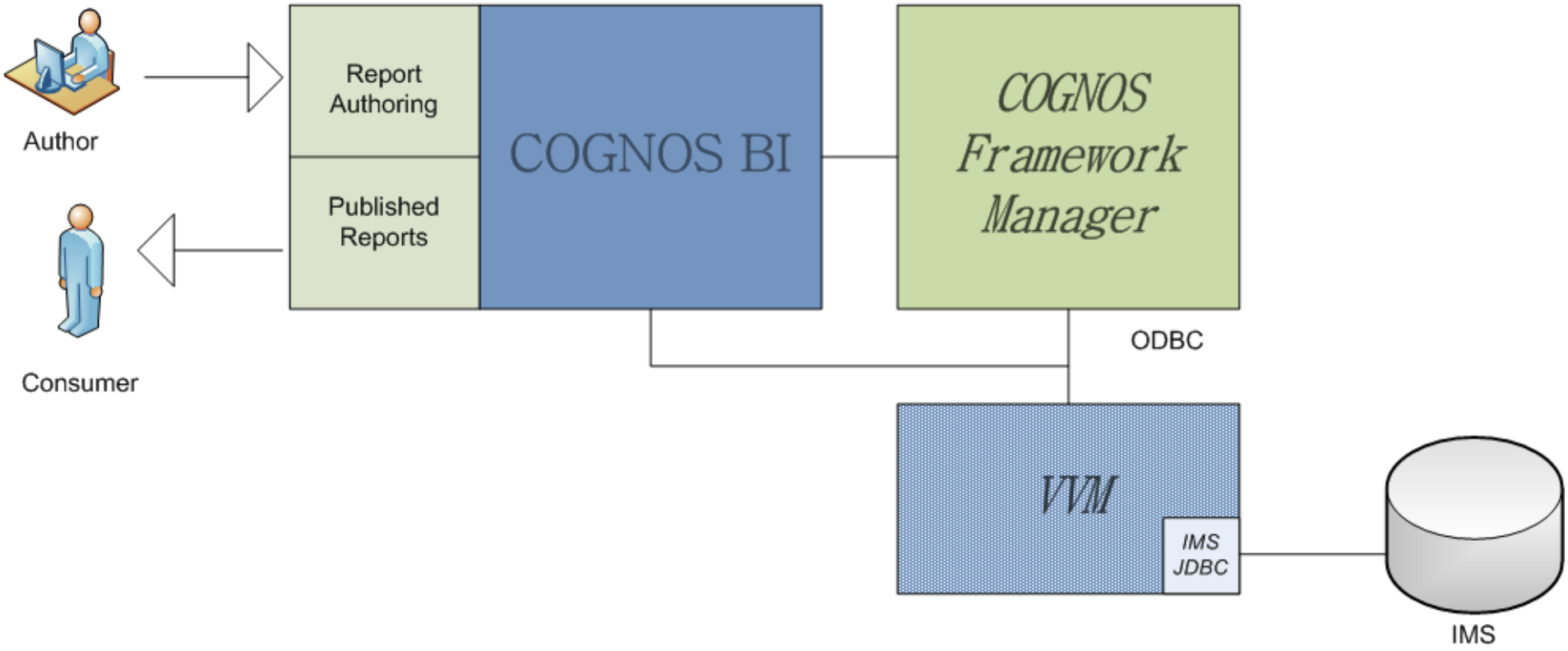
- *Quality Management*
- *Delivery Monitoring*
- *Fulfillment / Logistics*

CICS and Event Processing Overview



IMS Integration with Cognos

Topology



Reference and Addenda

IBM FMS – currently running 47,000 users of Cognos 8 on System z - proof of Success with User Requirements

Yes we are now drinking our own Kool-Aid!!

Replaced previous system in 5 months

- Exorbitant ISV charges erased
- On-demand reporting model
- WW deployment with substantial cost savings

Simplified User Experience

- Single, unified web portal for all their FMS reporting needs supporting multiple browsers
- Reduced number of reports (from 14 to 4) providing the same level of information
- Data populated on existing reports dramatically decreased due to drill down capabilities
- Significant improvement in reporting performance and response time
- Users now quickly and easily define what information they view and how they access it

Increased User Adoption

- Accommodated a larger user population as a result of System z strengths and capabilities
- Ran approx. 350,000 reports in the 1st 5 months, validating fast and broad user adoption

Delivered Increased analysis value to the Business

- New information for Territory Analysis - assist managers in analyzing a seller's territory coverage before achievement and commission payments are available

Numius Case Study

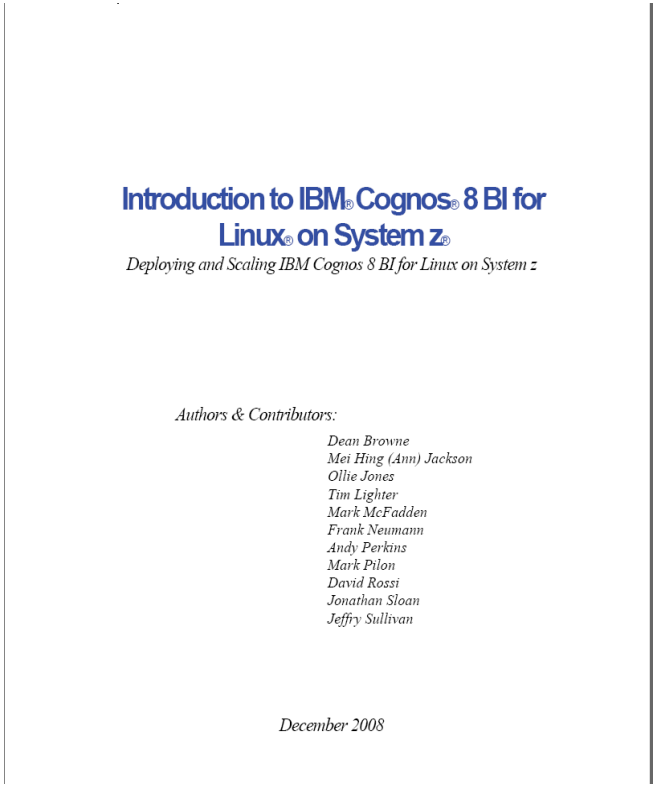
- **Numius tested an existing customer's distributed Cognos environment on System z**
  - The application was successfully and without loss of functionality ported to the System z platform. This required no redevelopment.
  - The client's application would not require a redesign to accomodate its growth in data volumes or in terms of users.
  - Reports that are not practically useable at client's site now become relevant again. Reports that did not run at client's site now are runable.
  - Client would be able to serve many multiples of current number of users with the very simple architecture from this PoC.
  - Client could scale out to more complex architecture without increased hardware complexity.
  - ***Throughput (not clock speed) 400x that of distributed***
  - Much of the improvment was a result of the processing synergy between Cognos 8 BI on System z and DB2 for zOS

50TB Summary – Operational BI validation

- System z and Cognos BI can respond to operational BI requirements
  - Successfully ran **400 active users** simulating call center agents accessing a prompted operational BI report
  - Average **1.75 seconds** response time for query and report creation per user over a 15 min run (steady state), at **56% Linux CPU** utilization
  - DB2 for z/OS provides **very efficient access** to operational BI data
- Cognos configuration options for Linux on System z
  - Multiple 31Bit WebSphere Application Servers on a single system
  - Varied resources assigned to Linux on System z and Cognos
- Load testing techniques using Rational Performance Tester
  - Strategic IBM tool for performance/load tests also recommended for customer tests
- Collateral
  - Best practices and results in Redbook: 50TB Redbook SG24-7674 http://www.redbooks.ibm.com/
  - Collected detailed performance measurement data

10TB study – Configuration validation

- All performance related data used in this section were done with Cognos 8.4 accessing a 10 TB z/OS DB2 data source and are further described in



Introduction to IBM® Cognos® 8 BI for Linux® on System z®

Deploying and Scaling IBM Cognos 8 BI for Linux on System z

Authors & Contributors:

Dean Browne
Mei Hing (Ann) Jackson
Ollie Jones
Tim Lighter
Mark McFadden
Frank Neumann
Andy Perkins
Mark Pilon
David Rossi
Jonathan Sloan
Jeffry Sullivan

December 2008

http://www-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/WP101437

Cost Savings

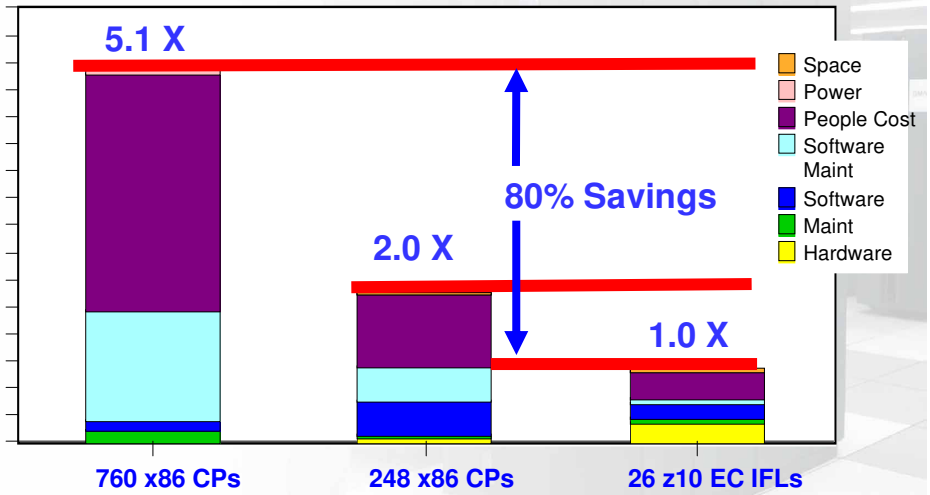
Your IT Cost may vary:

- 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
- Industry leading Security

Energize your IT savings with z10 EC.

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

$56 M Savings versus
x86 without Virtualization



x86 w/o Virtualization

Sun X2100 Single Core servers

x86 Virtualization

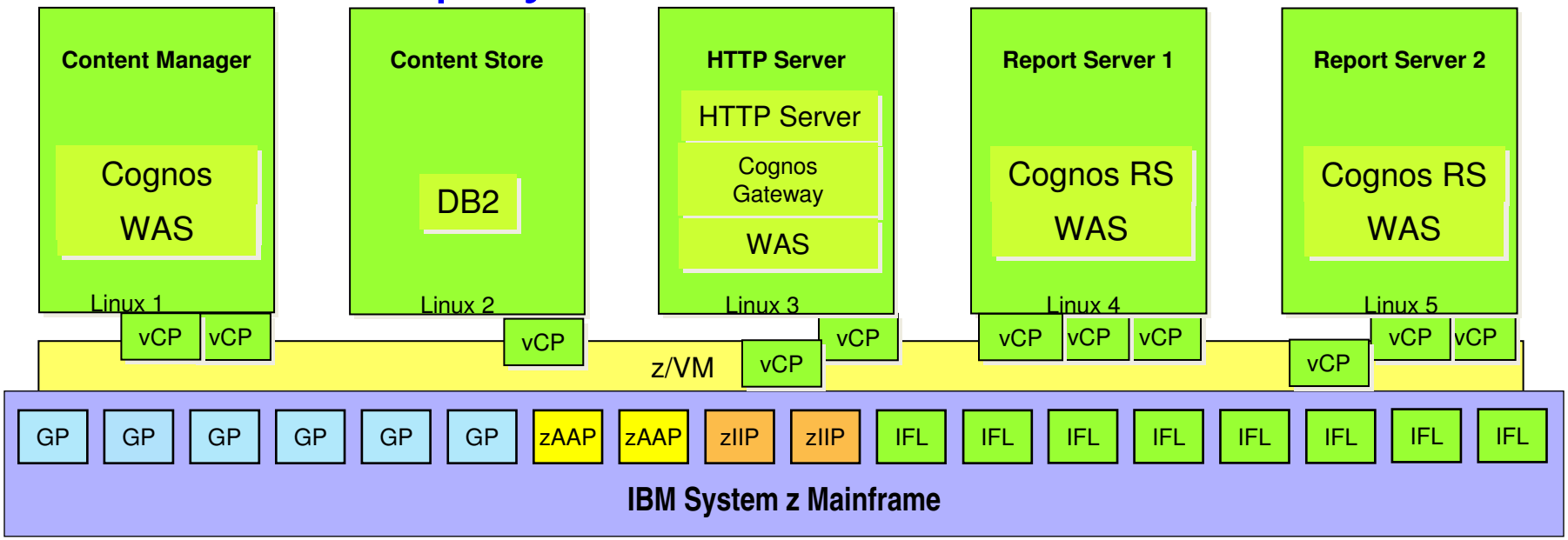
Dell Power Edge Quad Core servers

z/VM Linux on System z10 EC

IBM® Enterprise Advance
Advancing Business Intelligence

IBM Cognos 8 BI within a z/VM environment

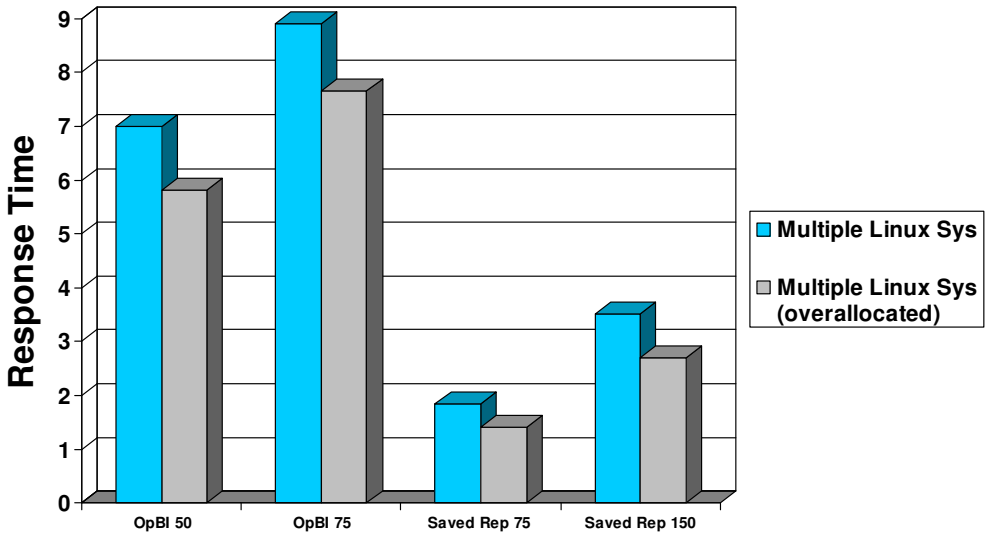
"Distributed" Deployment with Over-commit



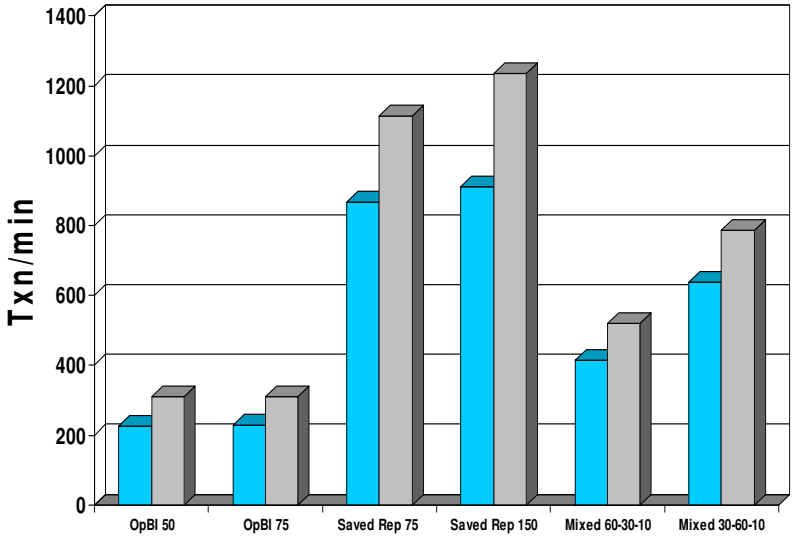
- Total allocation of real GPs/IFLs to z/VM remains the same
- Number of virtual Cognos instances – similar to other platforms' physical servers or partitions
- Individual Cognos components distributed on individual Linux "guest" servers
- Number of virtual CPs /Cognos instance increased on high CPU instances to enable use of excess capacity from low CPU instances
- Number of virtual CPs/Cognos instance should be less than or equal to number of GPs/IFLs assigned to z/VM LPAR
- Over-commit ratio (sum of virtual resource type/real resource type assigned to z/VM LPAR) varies from 1.5/1 to 20/1 or more – highly dependent upon how active the guest server is

Multiple Linux systems
– virtualization with CPU over-allocation

Avg. txn duration (lower is better)



Throughput (txn/min) (higher is better)



- With additional virtual CPU capacity available to the Report Server and HTTP Server, response times were lowered, and more transactions could be processed.

IBM Cognos 8.4.1 BI for Linux on System z

Product Capabilities

8.3
- Ad hoc query, reporting and analysis (Query Studio, Report Studio & Analysis Studio)
- Dashboards and charting (Cognos Connection & Report Viewer)
- Event management (Event Studio)
- Integration with Microsoft Office (Go! Office and CAFÉ)
- Cube building (Transformer)

8.4
- Query Studio: more user preferences, filtering & sorting enhancements
- Analysis Studio: suppression across multiple items, display date cube last updated
- Reports: more drill through capabilities, pass filters from source report to target report, more charts and graphics
- Access WebSphere Business Glossary
- Lineage of data item life cycle
- Parameterized SQL Governor

8.4 Extended
- Go! Search
- Virtual View Manager
- InfoSphere Federation Server
  - Cubing Services (IWHz)

8.4.1
- TM1 Cubes as data source - client access only
- Mash-up

Initial Conformance

Operating System:	• DB2 z/OS 8 and 9 • DB2 LUW 9.5 • Oracle 10g • Informix Database Server 11.5 • InfoSphere Warehouse 9.5.2 for DB2 z/OS
Application Server:	• Apache Tomcat • WebSphere 6.109 (31bit) • WebSphere 6.1 64bit • Oracle Application Server (31bit) • JBoss Application Server (31bit) • SAP NetWeaver 7.0 Application Server (64bit)
Content Store:	• Derby on Linux for System z • DB2 9.5 LUW • DB2 9 for z/OS • Oracle 10g
Directory Server:	• Netscape Directory Server 6 • Sun ONE Directory Server 5.1 SP1, 5.2 • IBM Tivoli Directory Server 5.2, 6.0 • Novell e-Directory Server 8.7.3 • LDAP version 3 compliant server
Web Server:	• IBM HTTP server 2.0 • IPv6 • WebSphere Portal Server

Federated Data Sources

- Virtual View Manager (Included) – SQL Server, Oracle, MySQL, TD … require JDBC driver from z
- Federation Server ($$) – SQL Server, Oracle, MS Excel, MS Access, TD …
- Classic Fed via Federation Server ($$) – VSAM, IMS, Adabas, IDMS, Datacomm, TD …

IBM Cognos Now for Linux on System z

Product Capabilities

- Real-time monitoring metrics
- Support for data at rest operational sources as well as data in-motion messaging sources
- Dashboards dedicated to real-time monitoring metrics
- Real-time metrics augmented with reporting objects in Cognos Connection

Initial Conformance

>Operating System:	•SUSE 10 & 11 Linux (64 bit) •RHEL 4 & 5 Linux (64 bit)
>Metadata Database:	•DB2 LUW 8.1, 8.2, 9.1, 9.5, 9.7 •Oracle 11g, 10g
>Application Server:	•WebSphere 7.0, 6.1 (64 bit) •JBoss 4.2.3 (64 bit)
>Directory Server:	•Netscape Directory Server 6 •Sun ONE Directory Server 5.1 SP1, 5.2 •IBM Tivoli Directory Server 5.2, 6.0 •LDAP version 3 compliant server
>Web Server:	•IBM HTTP server 6.0+ •Apache HTTP Server 2.2+

Summary

- IBM has heard you and responded
  - Information Server
  - InfoSphere Warehouse
  - Cognos 8 BI for Linux on System z
  - Cognos Now! for Linux on System z
  - Smart Analytics Optimizer
  - Smart Analytics Cloud
  - ISAS 9600
  - SPSS (future)
- We have invested billions in new technologies and building a new information-led infrastructure
- BI has evolved from a static, report-centric environment to a more real-time and embedded analytics model
- DW has evolved to a more global, federated, real-time environment
- We are using our own technology to change our business
- You can use it to change yours