Smarter Information, Smarter Decision And Smarter Business

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WW Director
Information Management
16 June, 2011

IBM Information
On Demand
Comes to You 2011

똑똑한 정보, 똑똑한 비즈니스

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Three years ago we started describing the Smarter Planet we saw emerging, **fueling innovation Across industries**.

Neonatal Care

Law Enforcement

Telecom

Fraud Prevention

Resource Management

Traffic Control

Manufacturing

Trading

Enterprises are addressing the challenges that emerged during the last era of computing …

32.6 million servers worldwide
- **85% idle** computer capacity
- **15%** of servers run 24/7 without being actively used on a daily basis

1.2 Zetabytes (1.2 trillion gigabytes) exist in the "digital universe**"**
- **50%** YTY growth
- **25%** of data is unique; **75%** is a copy

Between 2000 and 2010
- Servers grew **6x** ('00-'10)
- Storage grew **69x** ('00-'10)
- Virtual machines grew
- **51% CAGR** ('04-'10)

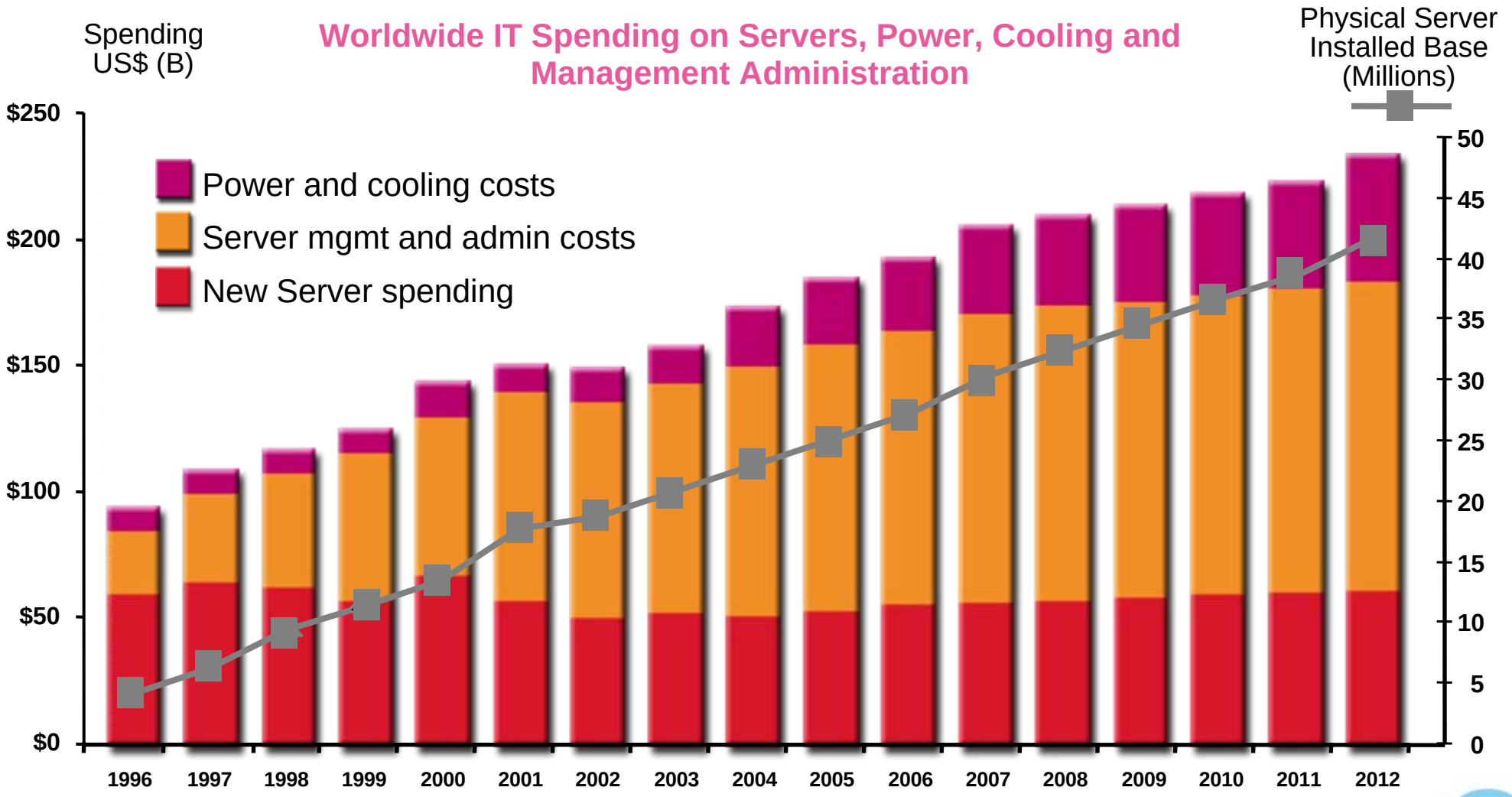
Data centers have **doubled** their energy use in the past five years
- **18%** increase in data center energy costs projected

Internet connected devices **growing 42% per year**

Since 2000 security vulnerabilities grew **eightfold**

…while IT budgets are growing less than 1% per year.

IT operating costs are out of control.



Source: IDC

IT is faced with addressing an conundrum – meeting exploding demand for service on a flat budget.

Incomplete, Untrusted Data: Always Guessing

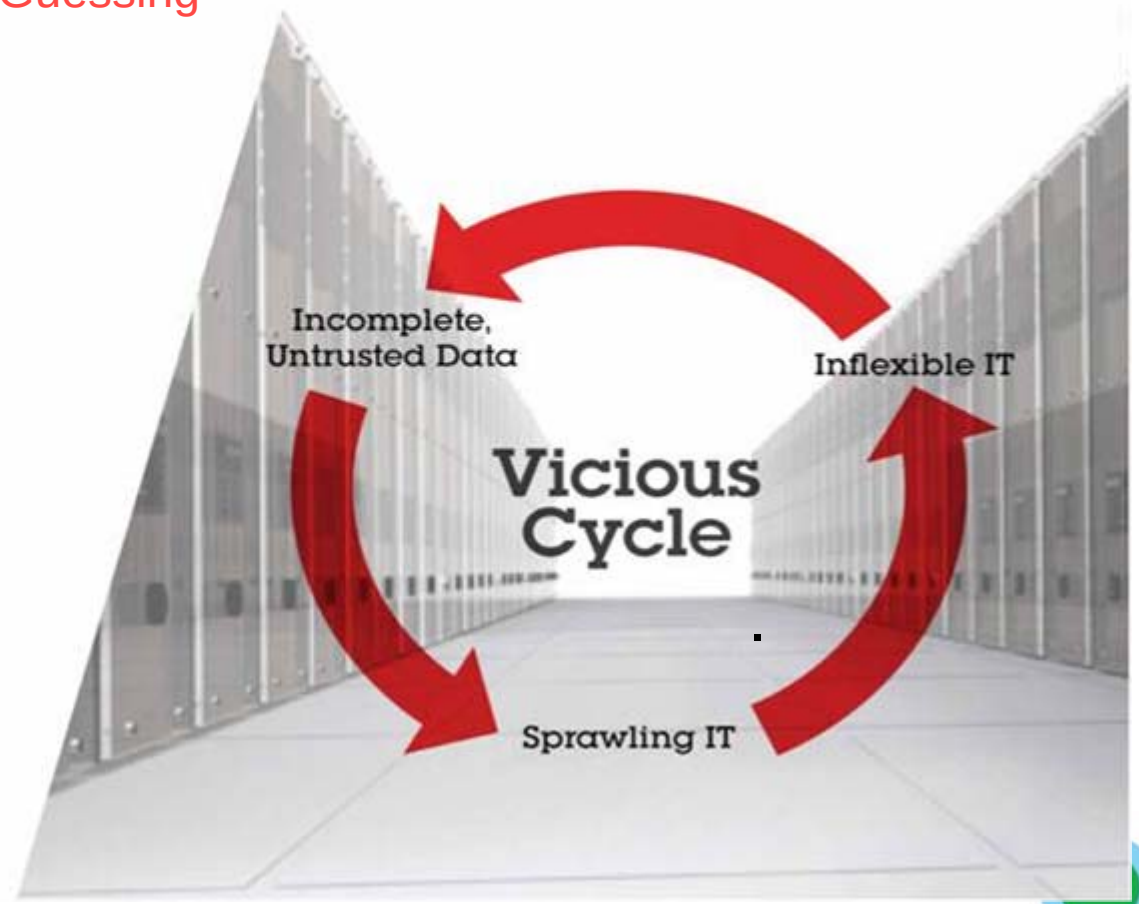
Decisions are made on incomplete data, big ideas are seen as risky, and small decisions aren't optimized.

Sprawling IT: More Cost

Every IT investment leads to more sprawl which drives up infrastructure and management costs.

Inflexible IT: Reactive

Inflexibility of infrastructure limits integration across silos and responsiveness to customer demands.



Smarter Computing: reverses the IT conundrum by designing, tuning and managing IT infrastructure for greater IT economics.

Big Data: Designed for data

Remove barriers to harnessing
all available information and
unlock insights to make informed choices.

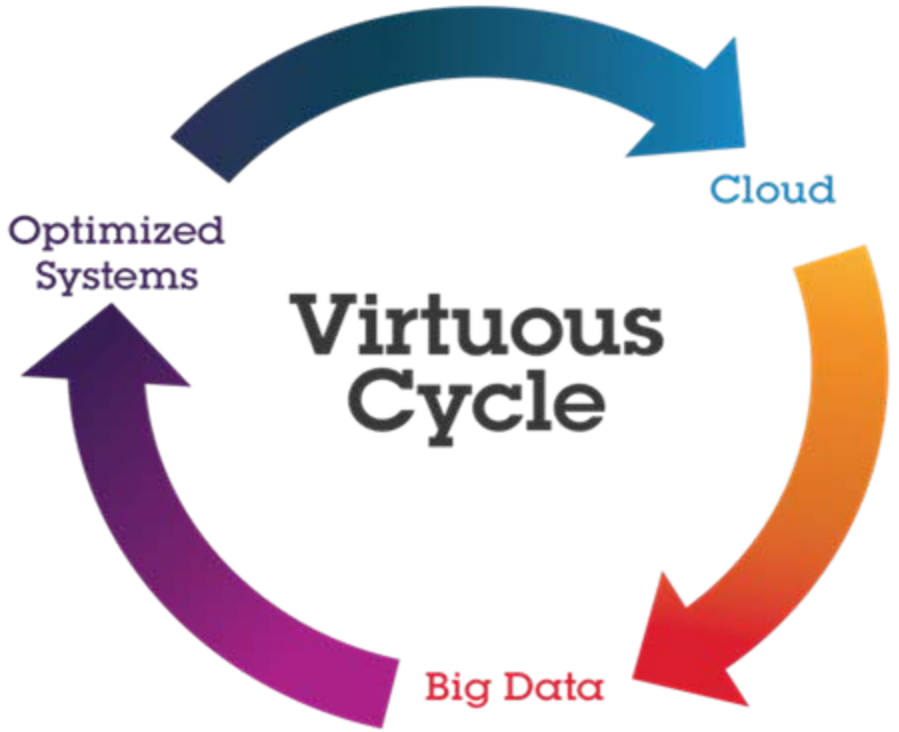
Optimized Systems: Tuned to the task

Remove financial barriers by driving greater performance and efficiency for each workload.

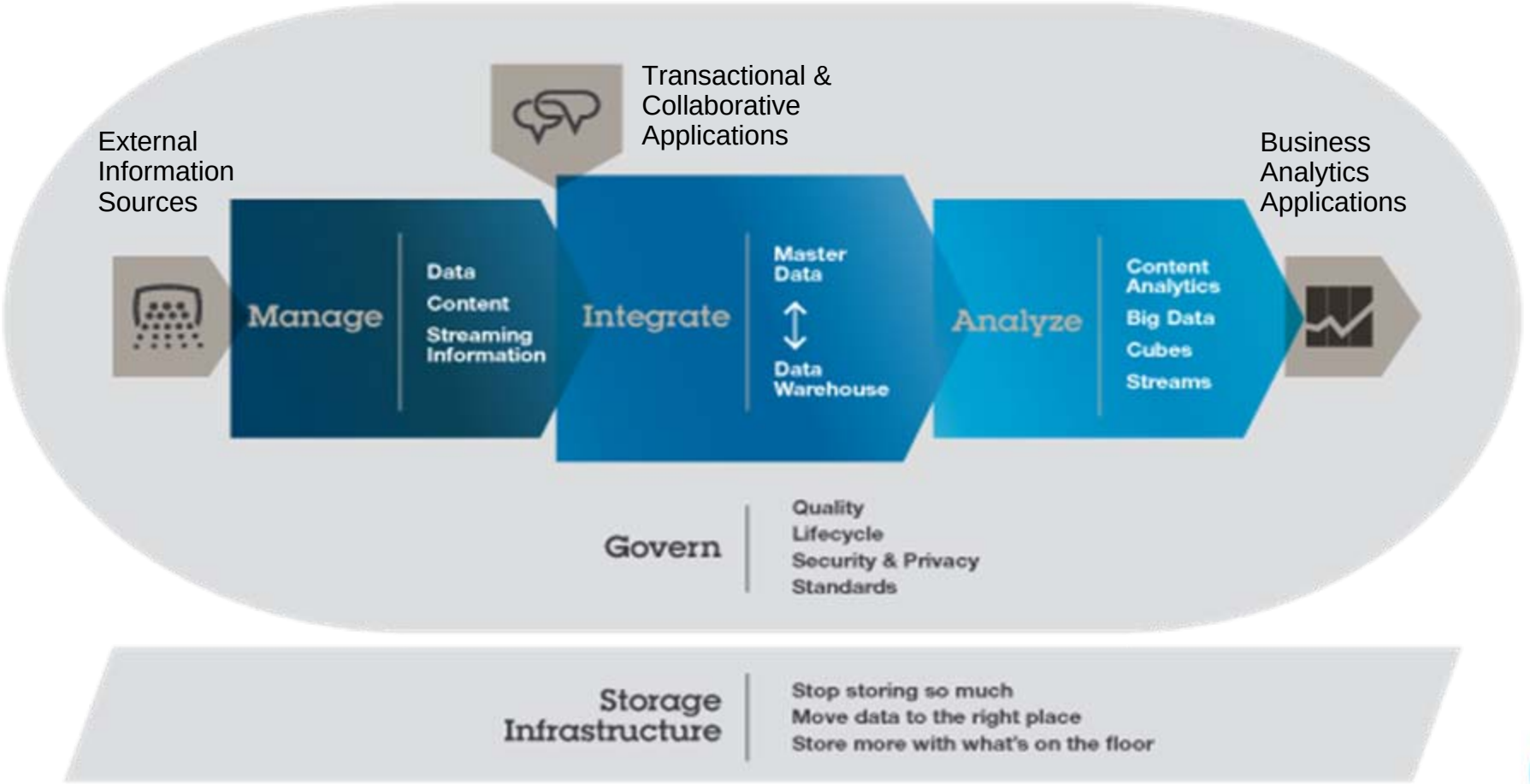
Cloud: Managed through the cloud

Remove barriers to rapid delivery of new services and reinvent business processes to drive innovation.

Smarter Computing



IBM offers the complete set of capabilities required to integrate Big Data into an enterprise's information supply chain and storage infrastructure.



Different workloads have different characteristics.

Transaction Processing and Database

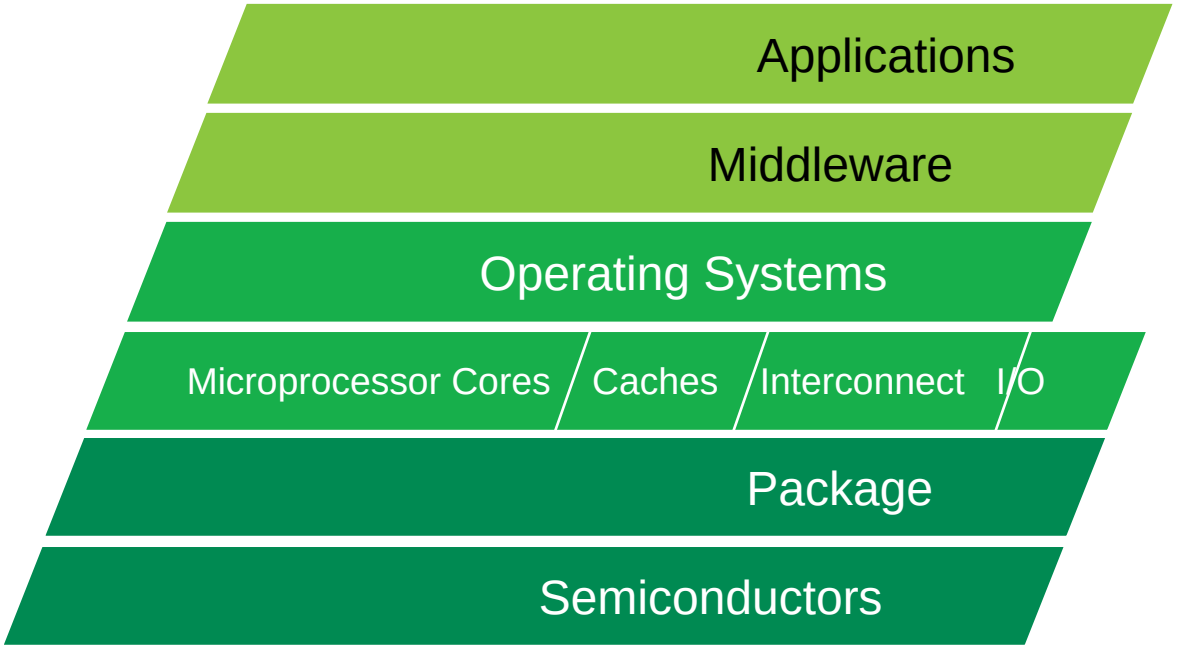
- Thousands of online users
- Large transactional databases
- 24x7 operation

Business Intelligence and Analytics

- Fewer users
- Complex queries
- Multiple data sources
- Large data warehouse

Optimized Systems are tuned to help address the unique needs of any workload.

Domain Knowledge / Workload characteristics / Interdependencies / Architecture options



Software

- Stack integration
- Middleware tuned for hardware
- Integrated management across architectures

Hardware

- Multi-core architectures
- Advanced threading
- Low latency

IBM offers different approaches to optimize workloads – from multi-workload to single workload systems.

Client built with optimized components

E.g., IBM Software optimized for
- System z
- POWER® Systems
- System x
- Storage Systems

Integrated Optimized Systems

E.g., IBM Smart Analytics System

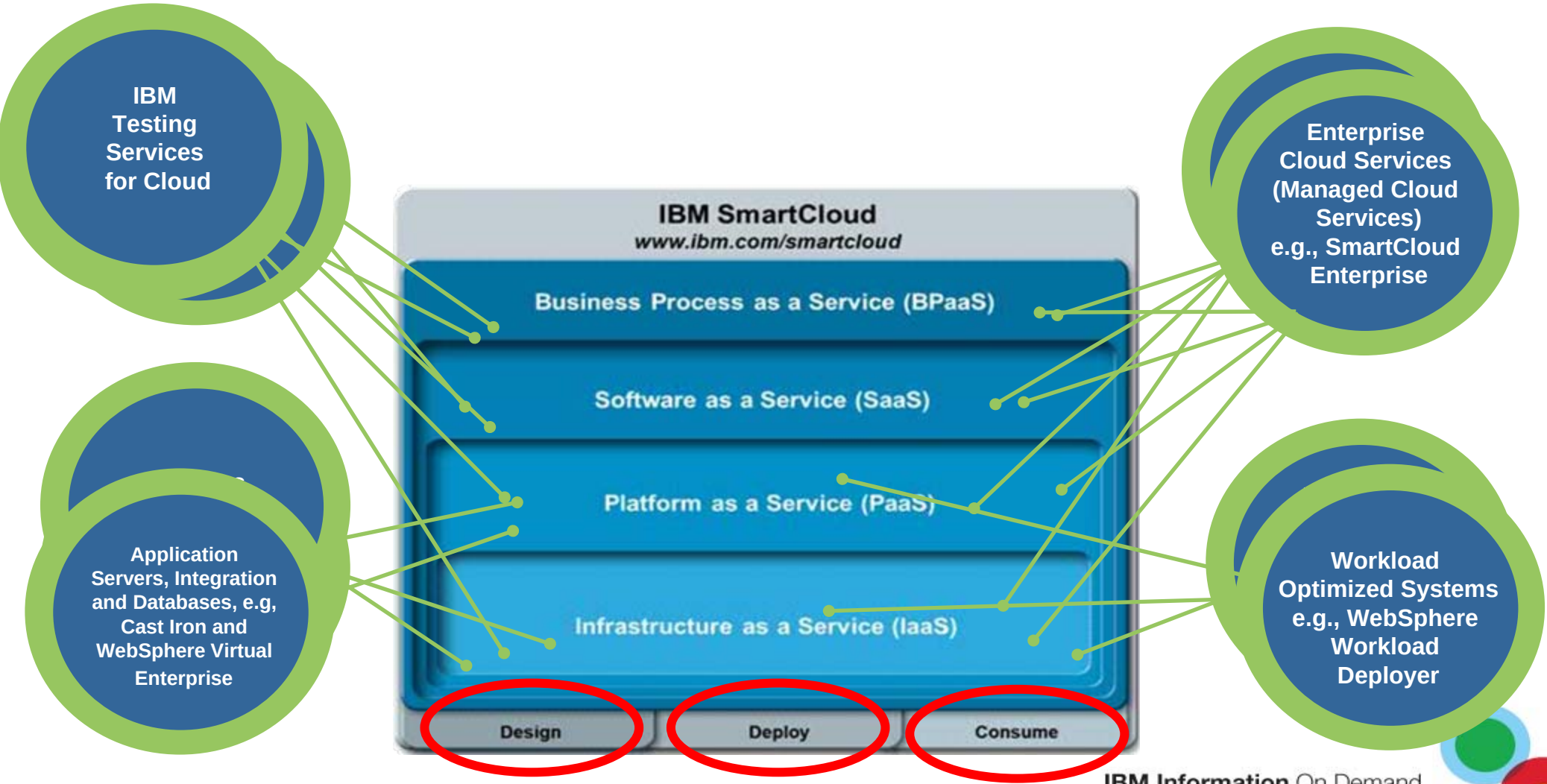
Appliances

E.g., IBM Netezza TwinFin, IBM WebSphere Data Power® & IBM InfoSphere Guardium

Flexibility for greater versatility

Focused for faster time to value

IBM provides solutions for Private, Hybrid and Public cloud computing.



Citigroup achieved Smarter Computing.

Citigroup accelerated time-to-market of new innovations by implementing a private cloud that reduced provisioning time of development servers from 45 days to 20 minutes.

Transform to deliver:

- Implemented a private development cloud based on IBM Cloudburst™ technology
- Software enable automated administration, patch management, and usage accounting
- Dramatically reduced administrative overhead
- Reduced deployment time from as much as 45 days to just 20 minutes

How to Reduce Data Management Costs?

Not all databases are created equal…

Customer and Partner Feedback

- Performance
- Manageability
- Scalability
- Licensing & Cost
- Compatibility (Product and Skills)
- Leverage Existing Skills

Performance

IBM POWER7 and IBM Software Optimization Advantages

86% lower cost
for DB2 on IBM Power 780 than Oracle on Sun[2]

43% less staff
for DB2 on Power 780 than Oracle5

41% lower transaction cost
On POWER7 than the best Oracle/Sun TPC-C result4

73% faster JVM
using a single JVM of WebSphere on POWER7 vs. competitive application server on Nehalem1

40% better utilization
Up to 40% better system utilization with the latest compilers, exploiting POWER7 architecture3

2.7x faster per core
On POWER7 than the best Oracle/Sun TPC-C result4

1 IBM CPO Internal Study
2 As much as 40% improved throughput vs. Power6 for the identify duplicates process One example of performance improvement, TSM 6.2
3 CPO Study - DB2 on POWER7 Delivers The Most Efficient TPC-C Result EVER!
4 IBM POWER7 TPC-C Result: IBM Power 780: 10,366,254 tpmC at $1.38USD/tpmC avail 2010/10/13, (24proc/192core/768thread) Oracle Sun TPC-C Result: Sun SPARC Enterprise T5440: 7,646,486 tpmC at $2.36USD/tpmC, avail 2010/03/19, (48proc/384core/3072thread). TPC-C results available at www.tpc.org.
5 – Solitare Study

Manageability

IBM DB2 requires less DBA resources than Oracle

- Collected over 2,354,000 data points covering over 4,100 systems
  - 650 AIX and 3,450 Intel-based production systems observed
- Reveals less DBAs required for DB2 vs. Oracle
- Reveal less downtime for DB2 vs. Oracle
- Reveals faster time to market

30 - 35% fewer people resources than Oracle*

Note that even though the number of staff to support this small section of machines has a small variation, given FTE rates that run in excess of $96,250 in most operations, the 11.9 FTE difference accumulates quickly.

** Solitaire Interglobal Study - 2008*

Staff Discipline	DB2	Oracle
Account management	0.1	0.1
Application management	0.9	1.4
Backup and archiving	0.1	0.7
Business recovery services	0.2	0.3
Database management and administration	1.5	4.3
Disk and file management	0.9	1.2
HW and network configuration / re-configuration	0.3	0.3
HW deployment	0.3	0.3
Operations	4.7	7.2
OS support	0.3	0.3
Planning and process management	0.7	1.0
Performance tuning	0.7	2.1
Repository management	0.2	0.2
Security and virus protection	0.1	0.1
Service desk	3.2	5.7
Software deployment	0.3	0.5
Storage capacity planning	0.3	0.7
Systems research, planning and product management	0.1	0.1
Traffic management & planning	0.9	0.9
User administration	0.2	0.5
Total staffing level	**16.0**	**27.9**

SOLITAIRE INTERGLOBAL

DB2 requires 43% less DBA time

IBM DB2 - Lightning Fast & Optimized for SAP

- Better Performance with DB2
  - Average 40% better performance
  - World record SAP benchmark, outperforming Oracle by 18% and needing only half (only 50%) the processing power!

- Lower TCO with DB2
  - Average 40% Storage Savings
  - Average 25% DBA Labor Savings

- Deep sales and development partnership leading to great results
  - 33% Growth in SAP clients choosing DB2 since 2006
  - >100 Customers upgraded from Oracle to DB2 in past 12 months

*"We expected an improvement of around 20% in terms of system response time, but **we found that the new system was actually 40% faster. The new DB2 database is even more efficient than we anticipated**." – Peter Boegler, SAP*

Compatibility

The Oracle Community is Taking Note

Steven Feuerstein

Oracle PL/SQL expert, evangelist, author and trainer

Steven Feuerstein is considered to be one of the world's leading experts on the Oracle PL/SQL language, having written ten books on PL/SQL, including Oracle PL/SQL Programming and Oracle PL/SQL Best Practices (all published by O'Reilly Media). Steven has been developing software since 1980, spent five years with Oracle (1987-1992), and has served as PL/SQL Evangelist for Quest Software since January 2001. He is an Oracle ACE Director and writes regularly for Oracle Magazine, which named him the PL/SQL Developer of the Year in both 2002 and 2006. He is also the first recipient of ODTUG's Lifetime Achievement Award (2009). Since 2005 he has focused his attention on improving the testing of PL/SQL programs, primarily through the creation of Quest Code Tester for Oracle, which automates PL/SQL code testing. Steven's online technical cyberhome is located at www.ToadWorld.com/SF. You can also catch up on his latest, mostly non-PLSQL rants at http://feuerthoughts.blogspot.com.

"If you are responsible for PL/SQL coding, this book needs to be on your desk. Period. "
--Michael Wehrle, Amazon.com

"I think this is wonderful news for the PL/SQL community. Not only can I rebrand all of my books for DB2 (as in "DB2 PL/SQL Programming" - wow!), but PL/SQL developers should have growing opportunities for jobs."

The Praise for SQL Compatibility

Gartner

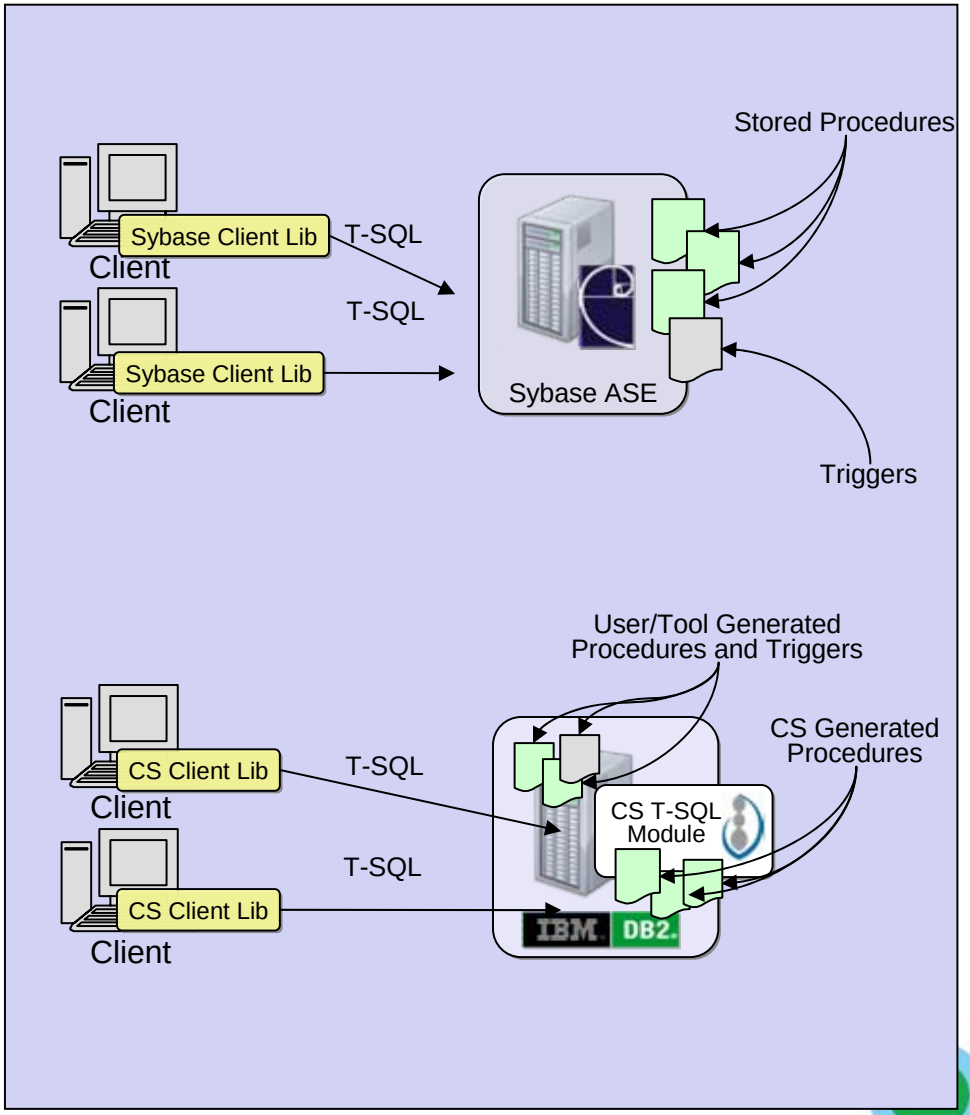
"The Oracle compatibility feature will enable Oracle applications to run natively on DB2. In discussions with Gartner, reference customers tell us that DB2 runs 95% or more of Oracle specific functionality found in SQL statements and natively runs PL/SQL, Oracle's stored procedure language. This native functionality is not an emulator, nor does it require changes to the application code (other than the 5%, which is mostly minor functionality, not found in many applications). Any provider offering applications that run with the Oracle DBMS can easily port its application to IBM's DB2…" - Donald Feinberg, Gartner VP Distinguished Analyst

LAGAN

"We specifically chose to take part in the IBM DB2 early access program because of the program's goal to run 90 to 95 percent of Oracle PL/SQL functionality without modification. This allows us to reduce the time to port our stored produce persistence layer from Oracle to DB2 from 450 days down to 75 days." – *David Moody, Senior Vice President of Product and Founding Director, Lagan*

DB2 Now Has Sybase Compatibility

- Compatibility Service (CS) will drastically reduce the code that must be manually updated
- Compatibility Service will
  - Handle all SPs that the tool cannot convert automatically
  - Handle TSQL calls from the application
  - Converts these calls into “native” DB2 calls and passes back the output in the Sybase format
  - Hide the fact that the database has changed to D B2
- Tried-and-true application code runs unchanged
  - Often without even recompiling!



Scalability & High Availability

More on DB2 pureScale

- Virtually unlimited capacity

  Buy only what you need, add capacity as your needs grow

- Application transparency

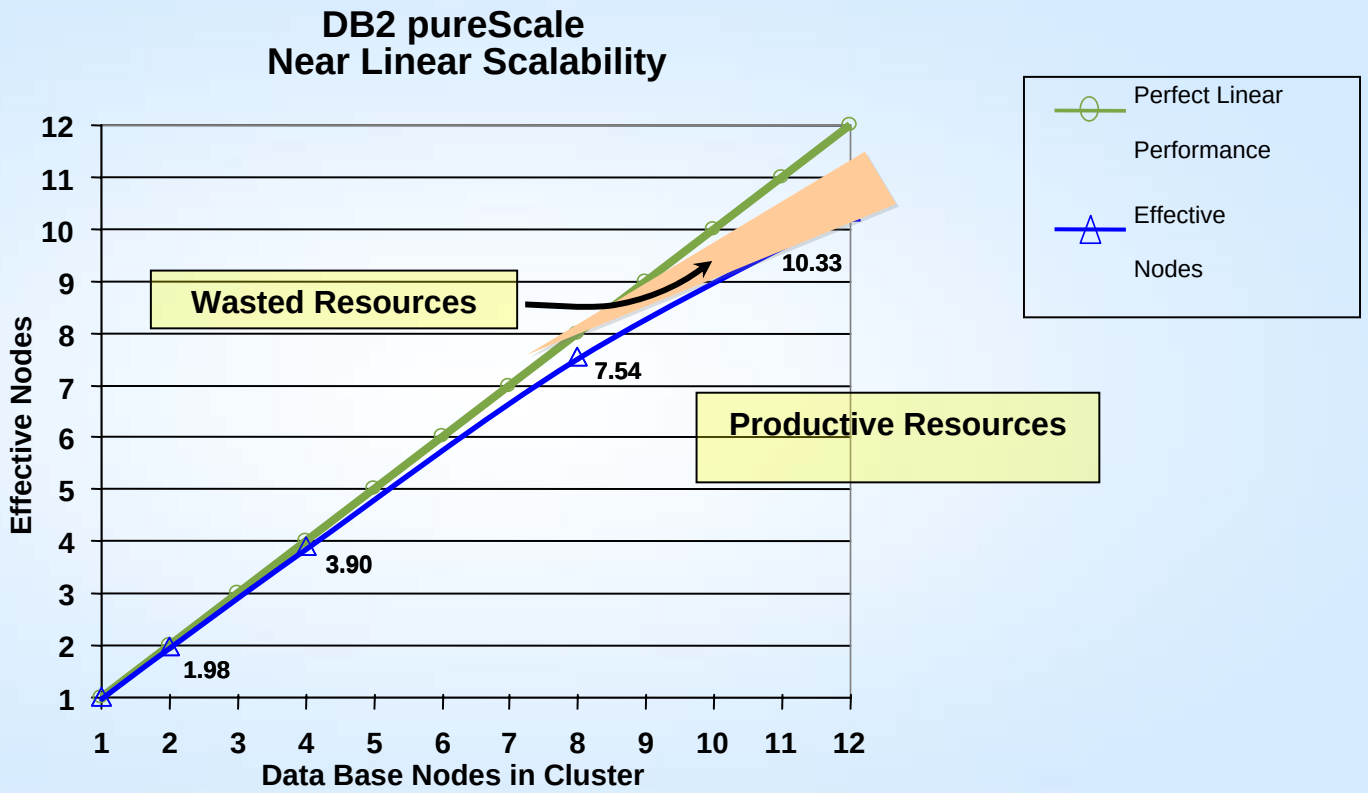
  Avoid the risk and cost of application changes

- Continuous availability

  Deliver uninterrupted access to your data with consistent performance

Why DB2 pureScale is better than Oracle RAC

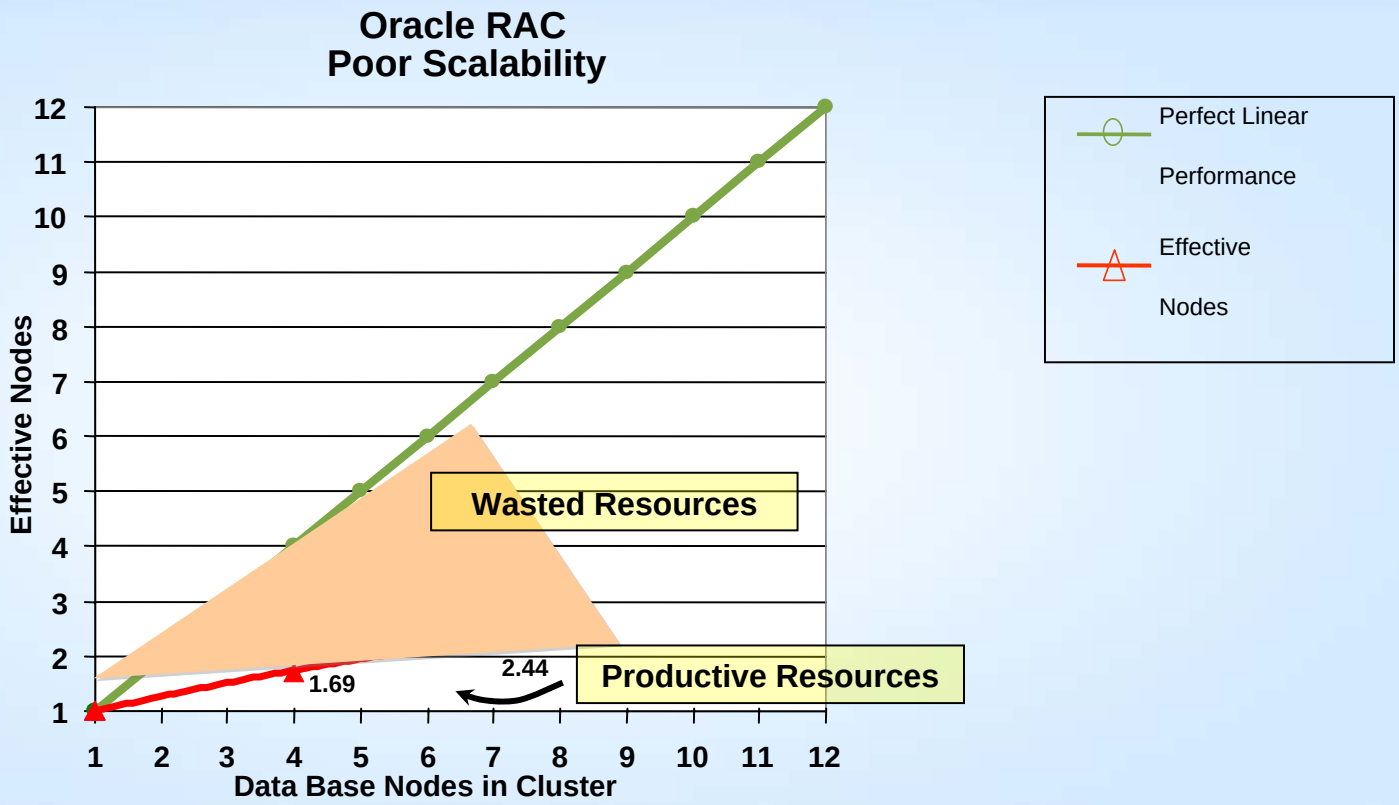
Near-linear scale-out efficiency of DB2 pureScale



Source: DB2 pureScale characteristics as shown in IBM published results from internal tests

Why DB2 pureScale is better than Oracle RAC

Throughput efficiency declines as you add nodes to Oracle RAC



Source: Oracle RAC characteristics as published in Dell test results.

Licensing and Costs

DB2 Licensing

DB2 is Virtualization Friendly

- Flexible licensing allows virtualization for all DB2 editions
- Supports Soft Partioning schemes and OS functions
- License ONLY the virtualized CPU
- Reduce hardware expenses through consolidation and higher utilization
- Reduce staffing costs with easy deployments

ANY discounted licensing for development, quality assurance (QA) and user acceptance (UA) licensing?

- DB2 offers a special Database Enterprise Developer's Edition (DEDE) license
- You do not Pay Production Licenses

DB2 Advanced Enterprise Edition compared to Oracle

For Customers

All-in-one, significant value, one low price

DB2 Advanced Edition (AESE) is only 10% more than ESE (more value for customers!)

Compare DB2 Advanced Edition to Oracle 70% Cheaper

Functionality	DB2	Price	Oracle	Price
Core Server	DB2 Enterprise	$40,500	Oracle Enterprise	$57,950
Compression	Storage Optimization feature	$15,300	Advanced Compression	$14,030
Workload Management	Performance Optimization Feature	$15,300	Workload management	Free
Disaster Recovery	HADR	Free on primary	Active Data Guard	$14,030
Advanced Security	Label Based Access Control	$11,100	Label Security	$14,030
Data Partitioning	Range Partitioning	Free	Partitioning	$14,030
Administration	Optim Database Administrator	$5,775	Oracle Enterprise Mgr	Free
			Change Mgmt Pack	$4,270
Development	Optim Development Studio (10 users)	$8,660	Internet Dev Suite	$7,076
Performance Tuning	Optim Performance Manager (existing price Included in Perf Opt Feature)		Diagnostics Pack	$6,100
Federation	Heterogeneous Federation Feature	$7,353	Oracle to Oracle federation	Free
Active/Active Replication	Q-Replication with DB2	$11,100	Golden Gate	$21,350
Total		**$115,088**		**$152,866**
Advanced Enterprise		**$45,000**		**$152,866**

*Prices are based on Oracle Global List Price publicly available, IBM local list prices differ

IBM Information On Demand Comes to You 2011

Skills?

Take Advantage of Local (and WW Skills)

Business Value Assessment

… a detailed financial analysis of the savings you can achieve by converting to IBM DB2

Application conversion assessment for up to 3 applications

… a customized technical evaluation and conversion plan for your Oracle Database applications

"DB2 for Oracle Professionals" workshop

… an intensive training class to add certified DB2 skills to your Oracle Developer and DBA teams

Proof of Concept

… a consulting project proving the compatibility and performance of your applications on IBM DB2

How do you change the economics of your IT investments?

Get ready for Cloud

- Virtualization: Changing the Economics of IT
- Application Infrastructure Virtualization: Driving operational efficiency
- Integrated Service Management: Overcoming data center complexity

Deploy Optimized Systems

- Analytics: Fast insight and ease of integration with optimized systems
- Databases: Gain 3x performance for as low as 1/3 the price
- SAP: Optimize your SAP environment while reducing costs

Leverage IBM

- Realize better IT economics with strategies and expertise from IBM

Thank
You

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Performance is based on measurements and projections using standard IBM benchmarks in a controlled environment. The actual throughput or performance that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput or performance improvements equivalent to the ratios stated here.

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Backup

University of Pittsburgh Medical Center achieved Smarter Computing.

$8 billion global healthcare enterprise with more than 50,000 employees challenged to lower cost of IT infrastructure to enable investment in next-generation clinical systems

Transform to deliver:

- Doubled IT capacity and held costs flat
- Eliminated need for $80 million data center
- Enabled investment in next-generation clinical technology—“smart” hospital room and paperless hospital

Cloud helps business and IT create and deliver value in fundamentally new ways...but there are concerns....

Deliver IT without boundaries

Create new business value

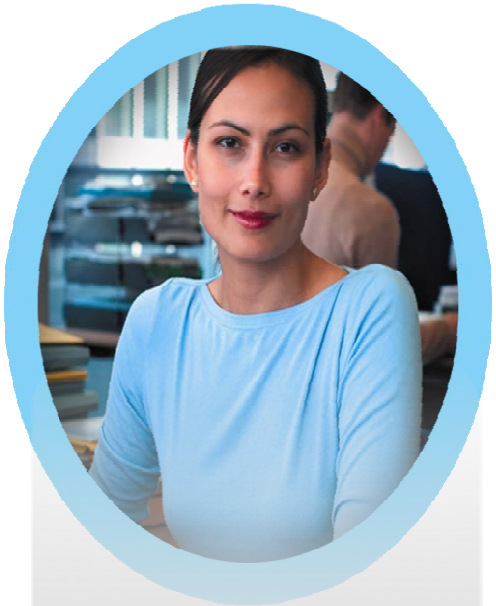
mprove speed and dexterity

44%
are concerned with the lack of or limited ability for customization of public clouds

50%
concerned about the loss of control over IT activities/business processes

56%
believe that service level agreements are not detailed enough

Concerns



IT Executive/DBA

More Databases = More Administration = More Work = More Headache!

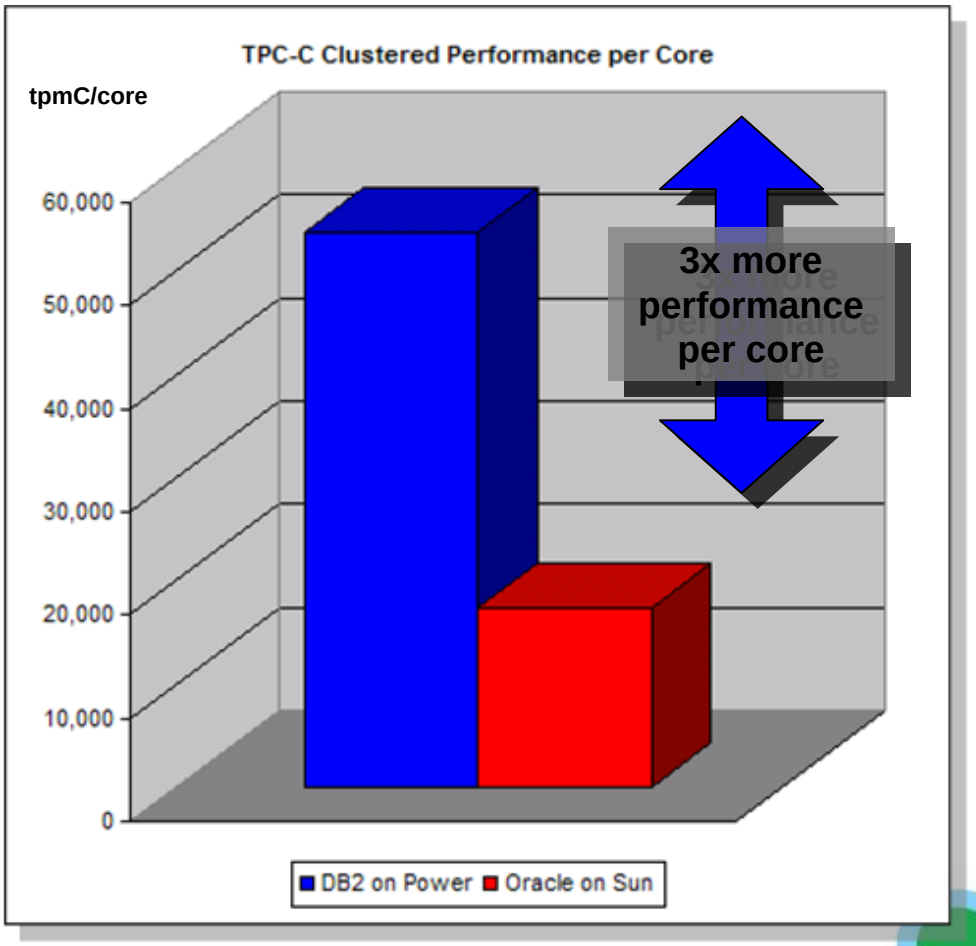
Is it Safe and More Economical?

Across the globe, many customers have moved to DB2 and SAVE!

IBM understands the breadth and complexity of workloads facing enterprises today and we've understood it for 40+ years. We know that there are many pieces to the puzzle—from reliability to speed to scalability and security. We also understand that a single approach to systems can't satisfy the specific workload demands of every organization, the solution lies in optimization.

DB2 vs. Oracle on UNIX per Core Performance

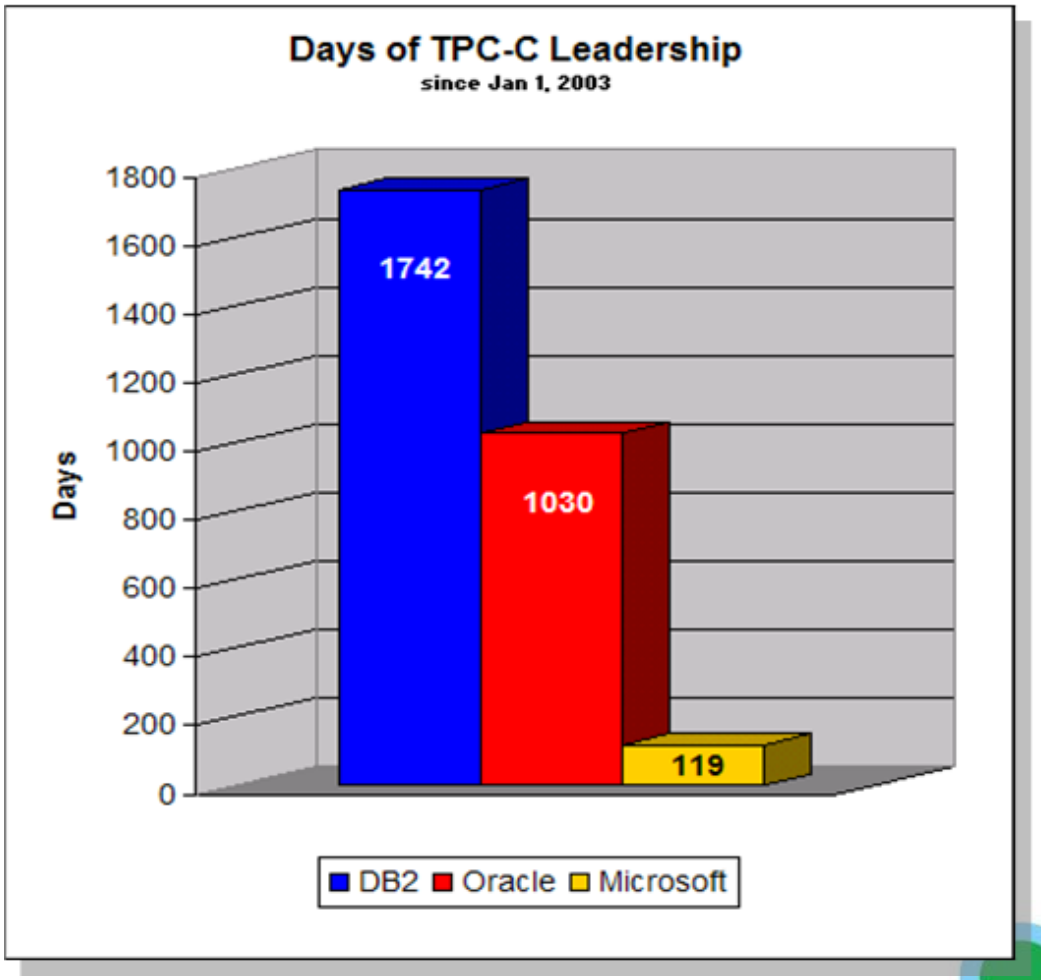
- DB2 on 3 64-core Power 780s
- Oracle on 27 64-core SPARC T3-4 servers
- DB2 delivers 3x the per core performance
- Substitute 1 server of DB2 on Power for every 3 servers of Oracle on SPARC



As of 12/02/2010
DB2 on 3 64-core IBM Power 780: 10,366,254 tpmC, $1.38/tpmC, Availability 10/13/2010
Oracle on 27 64-core Sun SPARC T3-4; 30,249,688 tpmC, $1.01 /tpmC, Availability 06/01/2011
TPC-C, tpmC and TPC are registered trademarks of the Transaction Processing Performance Council. See www.tpc.org for more details.

Longevity in Transaction Processing Performance

- Benchmarks are often a game of leapfrog
  However, DB2 has demonstrated sustained superiority over competitors (savings of at least 30%)



Results as of December 01, 2010 since Jan 01, 2003

IBM DB2 Compresses Data Better than Oracle

- Superior compression rates due to DB2 algorithm
  - DB2 compresses data by looking at all values in the table
  - Other vendors only remove duplicates at the page/block level
  - Disadvantages of page level approach
    - Consistent repeating values throughout the entire table will be stored multiple times in each page header
    - There may be repeating patterns in the table but not on each page

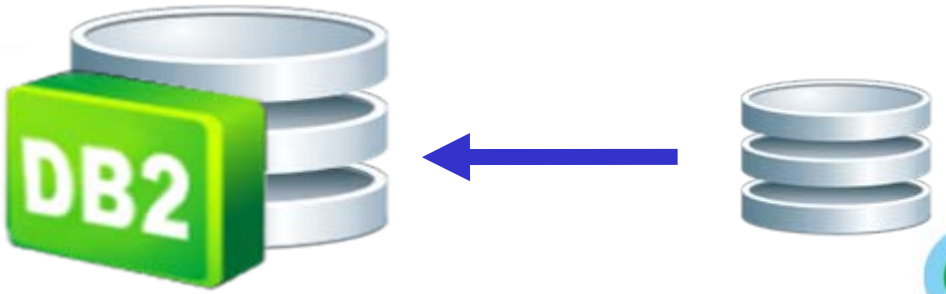
Table	Compression Ratio	
LINEITEM	38%	58% (1.5x better)
ORDERS	18%	60% (3x better)

InfoWorld

"Row-level compression is a revolutionary development that will leave Oracle and Microsoft green with envy".

Standard Migration Practice

- Migration Assessment Phase (ALWAYS FREE)
  - Porting Assessment questionnaire
  - Application porting workshop (free – 5 days)
  - Porting Assessment Document
  - Migration Proposal with dedicated Project Plan
- Database Object Migration Phase
  - Conversion of Database Structures and Objects
  - Move of Data from old to new system
  - Enabling Compression
  - Configuration of autonomic functions
- Application Migration Phase
  - Code adjustments to existing application per Porting Assessment
  - Function and System Test
- Solution Deployment Phase
  - Additional Database optimization
  - Index review
  - Overall Solution Healthcheck



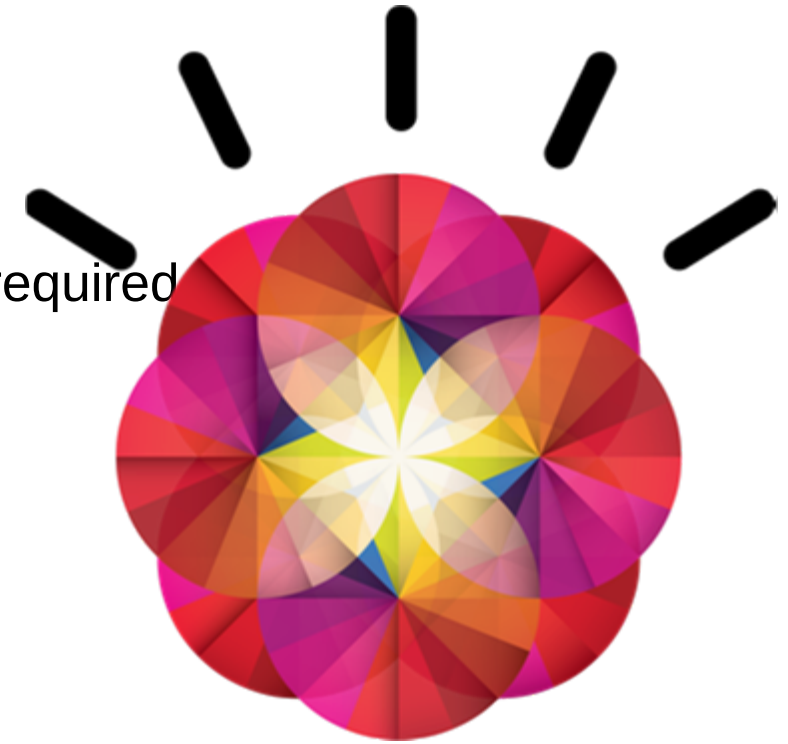
Leading IT organizations are engaging with IBM to succeed in the new era of Smarter Computing.

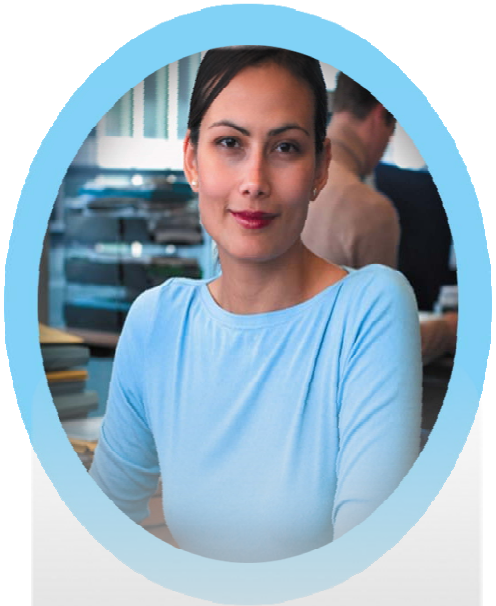
Our approach is inclusive — **no "rip and replace"**

IBM can deliver the **experts and expertise** required

IBMers are extending our portfolio to address the **biggest challenges** in computer science

Proven **innovator** for 100 years





IT Executive/DBA

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How do I start Saving?

Imagine the possibilities when all available information is harnessed to unlock insights.

Information from Everywhere

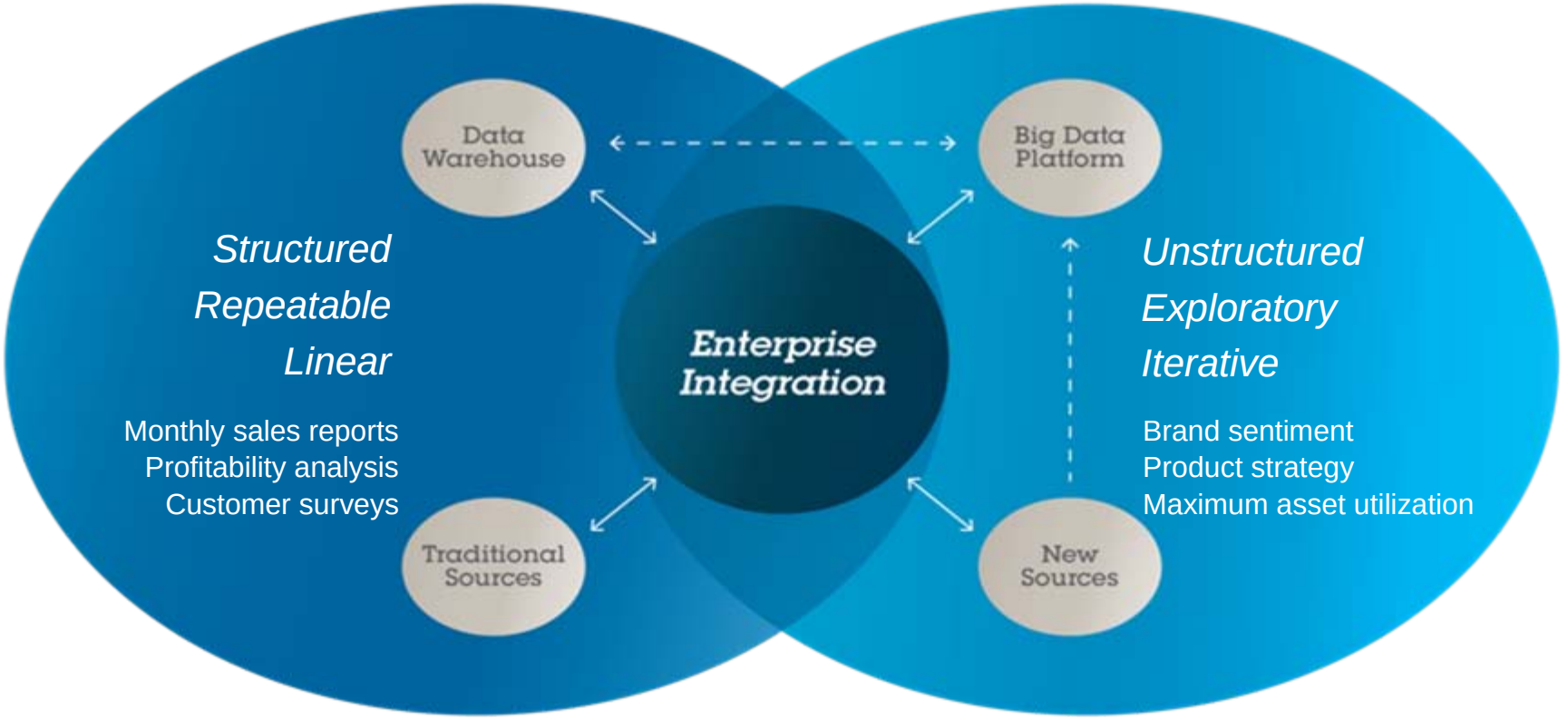
Extreme Scalability

Radical Flexibility

Integrating new approaches such as Big Data will unlock new insights.

Traditional Approach

Structured, analytical, logical

New Approach

Creative, holistic thought, intuition