IBM INFORMATION INTEGRATION
& GOVERNANCE SYMPOSIUM 2012

Delivering Trusted Information for Smarter Business Decisions

Improve performance, scalability and reduce costs with DB2 10

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01/05/2012

= Data

= DB2 and the DB2 10 Experience

= DBA, DB + App Developers

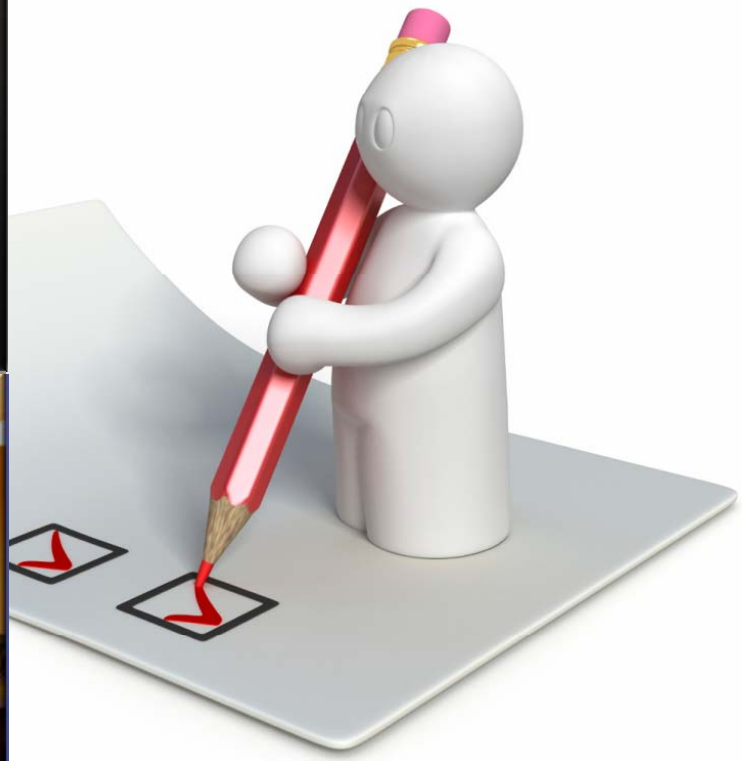
= Business Users

Agenda

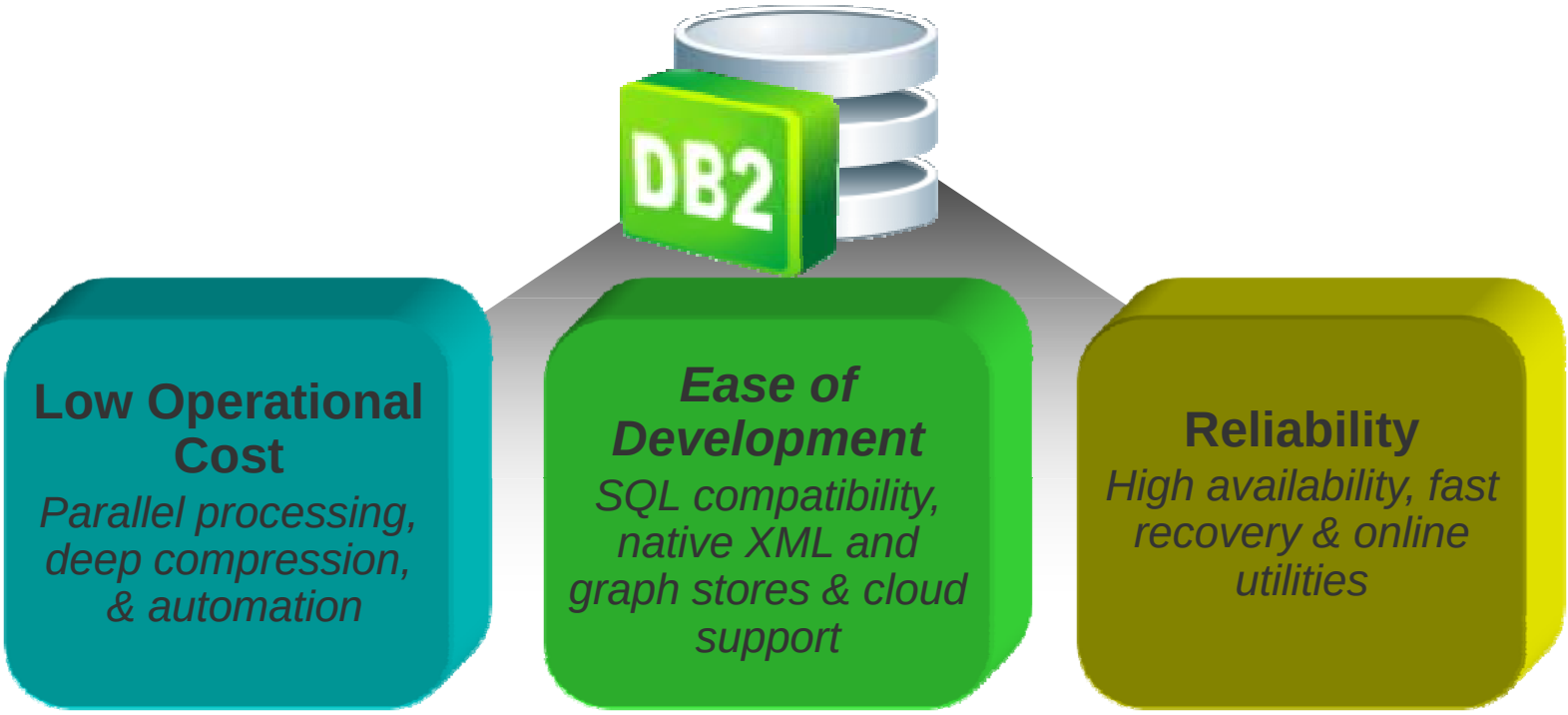
- DB2 10 – The Ne
- DB2 and POWEF

Performance Improvement

Cost Savings



Performance Improvements + Lower Costs



"With each release of DB2, I experience faster results with less CPU."
—Martin Hubel, President, Martin Hubel Consulting Inc.

Up to 3X Faster Query Performance

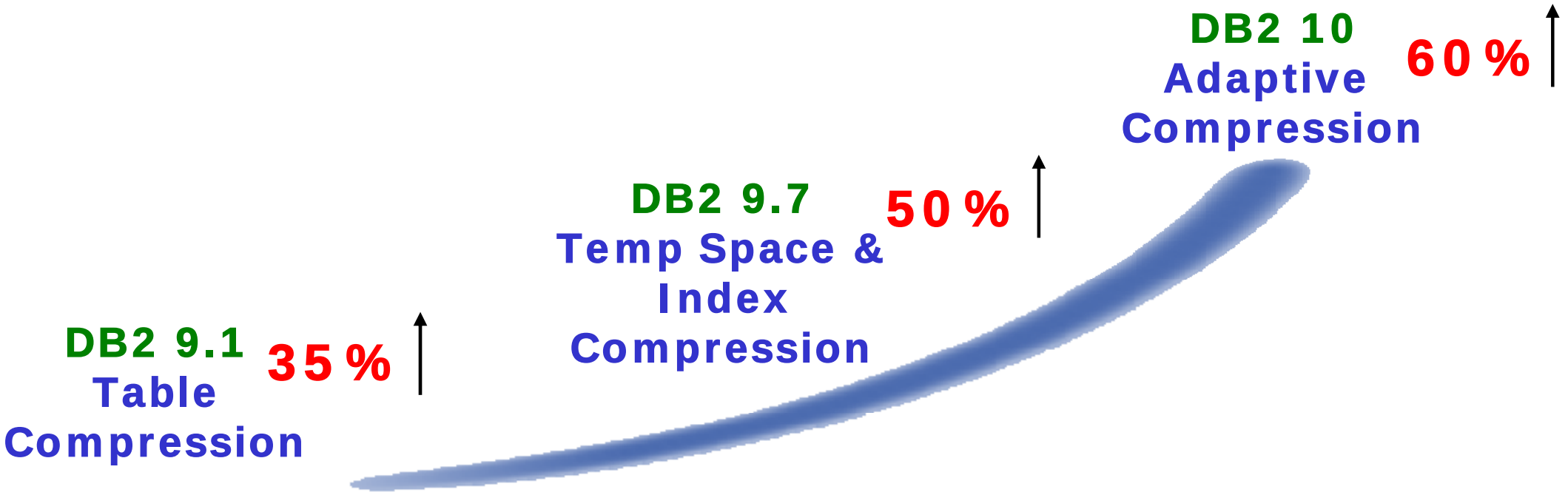
Increase Ability to Meet SLAs; Postpone Hardware Upgrades

- **Performance Improvements**
  - Up to **35% faster** out-of-the-box performance
  - Up to **3x faster** when using new features
- **Cost Savings**
  - Postpone hardware upgrades

- Multi-core parallelism enhancements
- Performance improvements for:
- Queries over star schemas

"Using our DB2 Easy Benchmarks tool to measure I/O times when creating a large table space, we measured DB2 10 to be 3x faster than DB2 9.7."
—Thomas Kalb, CEO, ITGAIN GmbH

NEW! Breakthrough savings with Adaptive Compression



- Adaptively apply both table-level compression and page-level compression
- Table re-orgs not required to maintain high compression
- Compress archive logs

Adaptive Compression shrinks Data Storage Needs

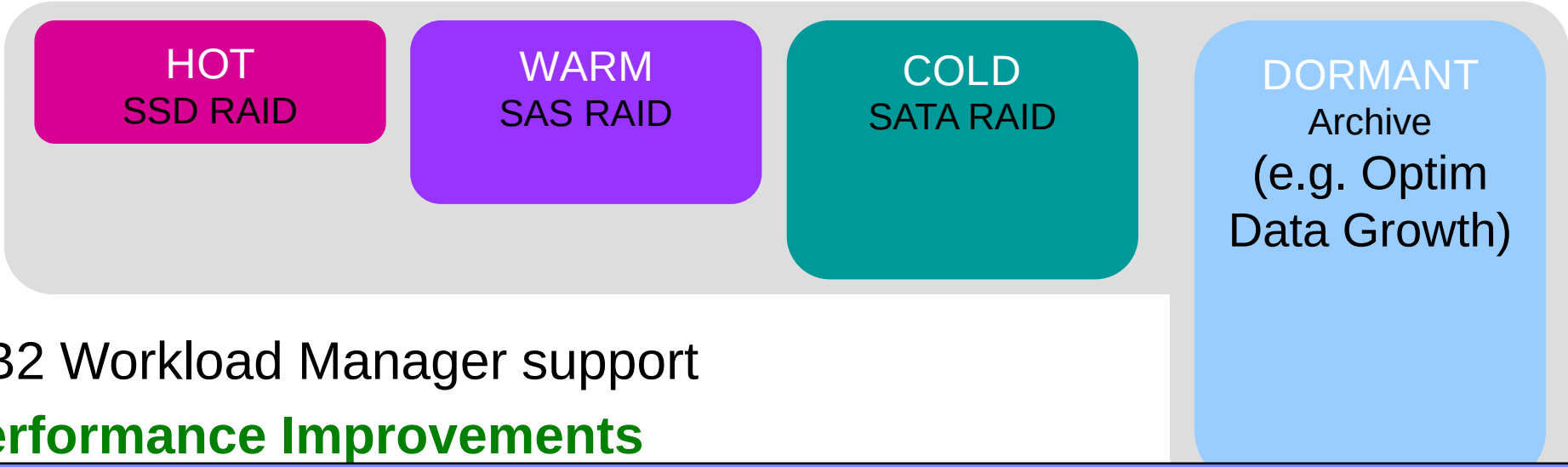
- **Performance Improvements**
  - Faster queries for I/O-bound environments
  - Faster backups
- **Cost Savings**
  - Up to **60% improvement**
  - Postpone upcoming storage purchases
  - Lower ongoing storage needs
  - Easier administration with reduced need for table re-orgs

"Page-level dynamic compression is one of the new DB2 features that will reduce planned outages by 40% and storage savings up to 50%."
—Jessica Tatiana Flores Montiel, DAFROS Multiservicios

New! Multi-Temperature data management

Increase Ability to Meet SLAs; Postpone Hardware Upgrades

- Storage pools for different tiers of storage
  - For range partitions, policy-based automated movement of data



- DB2 Workload Manager support
- **Performance Improvements**

"Using SSDs for indexes and logs and a SATA array for the data, we noticed fantastic improvements in I/O speeds, especially for synchronous reads. Additionally, the background movement of data between the storages groups is very fast."
—Thomas Kalb, CEO ITGAIN GmbH

New! Time Travel Query

Easily Analyze Historical Trends and "Predict" Future Demand

- **Performance Improvements**
  - Native support for fast performance
- **Cost Savings**
  - Eliminate need to maintain and update custom temporal implementations
  - Easy to administer (simply turn on for any table)

- Temporal logic & analysis based on SQL 2011 Standard
- Valid time, transaction time, "AS OF" queries

"The use of standardized SQL syntax for temporal operations and the integration deep into the database engine, make DB2 a leader in second generation bitemporal data management - Bitemp 2.0!"
—Craig Baumunk, Principal at BitemporalData.com

Time Travel Tables: The Detail

- **Built into DB2** – automatic and transparent
- **3 Types** of time travel tables

System-Period Temporal Tables (STTs)
- DB2 stores deleted rows or old versions of updated rows in a history table
- Query past state of the data
- e.g. employees who have retired/left

Application-Period Temporal Tables (ATTs)
- Assign a date range to a data row, indicating the period when the data is valid
- e.g. insurance policy effective dates

BiTemporal Tables (BTTs)
- Combination of STT and ATT
- Keep user-based period information as well as system-based historical information

"Time Travel Query is a big leap in helping customers easily implement time-aware applications in cost effective way."
—Shanmukhaiah D, Cognizant Technology Solutions

Coca Cola Bottling Company

"We've **saved more than a million dollars** over the past four years in licensing, maintenance and storage costs by migrating from Oracle Database to DB2. We've reinvested these savings into other business projects while keeping our operating expenses flat. As a result, we don't have to pass rising costs on to consumers, which allow us to maintain our sales volumes and market share."

—*Tom DeJuneas, IT Infrastructure Manager, Coca Cola Bottling Company.*

Its Even Easier to Break Free from Oracle

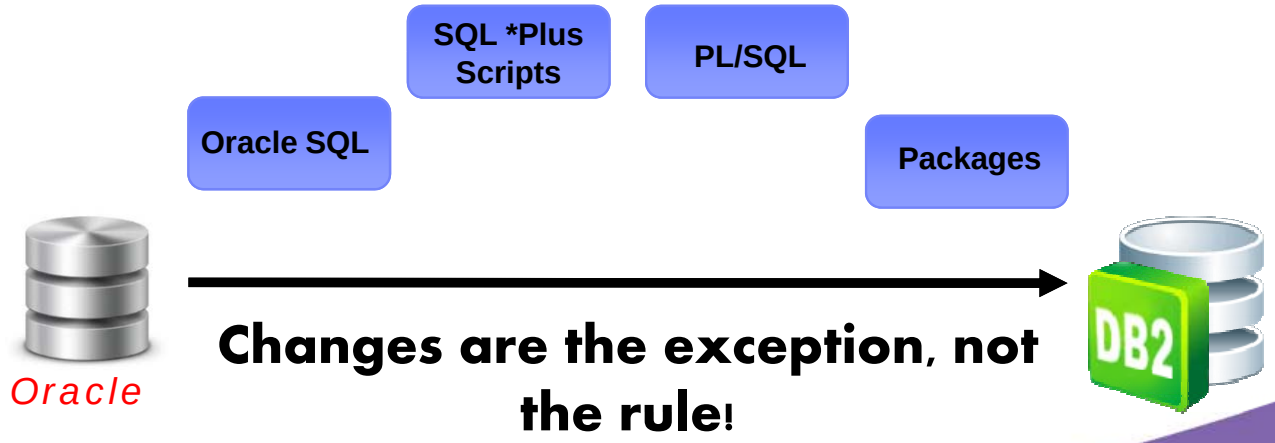
Porting efforts dramatically reduced – lowering costs

DB2 10 takes the Oracle compatibility and migration a step further!

- New PL/SQL enhancements that reduce the development effort required to support DB2
- New migration workbench consolidates tasks and tools to move from Oracle
- Easier to leverages Oracle skills with DB2

Average PL/SQL Compatibility Moves Above 98%

Easily Move from Oracle Database & Leverage Oracle Skills with DB2



New! HADR now supports Multiple Standby Servers

Increase Ability to Meet SLAs; Disaster Recovery

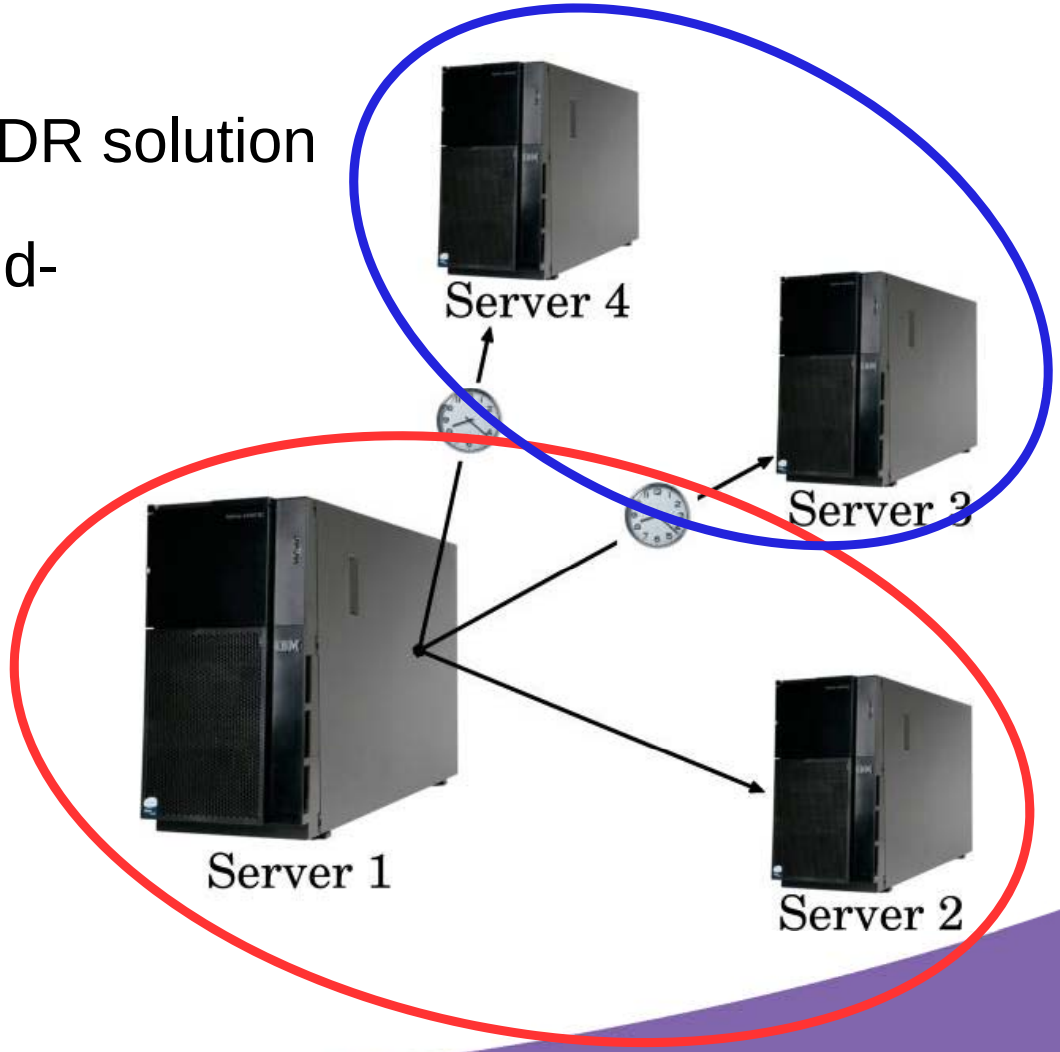
HADR is the most cost effective HA and DR solution

HADR now supports more than one stand-by server

If Primary Server fails, Principal Standby takes over

If Principal Standby then fails, can switch to Auxiliary Standby

Auxiliary Standby can provide complete off site availability, while maintaining speed of local standby



DB2 pureScale Enhancements

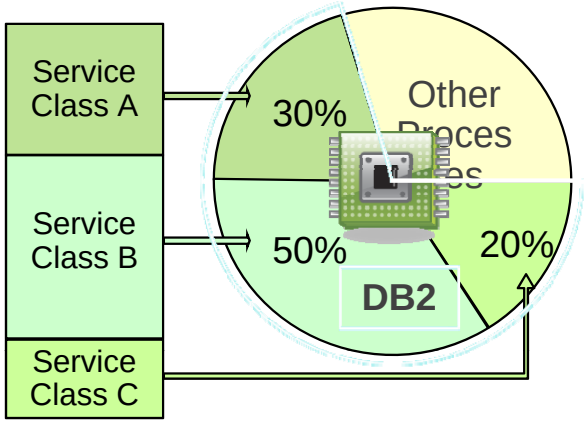
Increase Ability to Meet SLAs; Easily Add or Remove Capacity

- Further Improving IBM's Shared-Disk Cluster Capability
- **NEW!** Workload management for DB2 pureScale
- **NEW!** Range partitioning support
- **NEW!** Additional backup/restore options
- **NEW!** Support for 10-gigabit Ethernet
- **NEW!** Support for multiple Infiniband adapters and switches

Geographically-dispersed clusters

DB2 Workload Management

Increase Ability to Meet SLAs; Postpone Hardware Upgrades



Performance Improvements

Prioritize important workloads

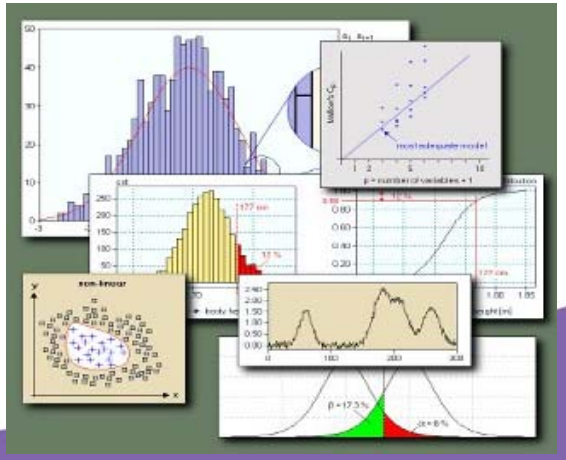
More efficient distribution of workloads

Cost Savings

Postpone hardware upgrades

Index Management Re-defined

Increase Ability to Meet SLAs; Lower Administration Costs



Performance Improvements

Faster index performance

Cost Savings

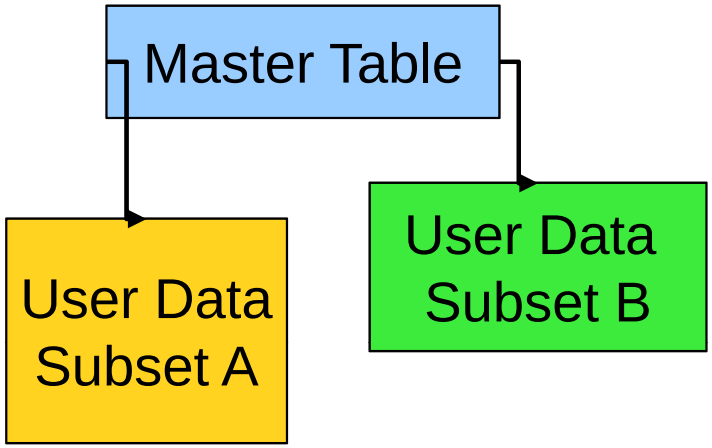
Fewer indexes to maintain

Dramatic reduction in index reorgs

New! Row and Column Access Control

Easy Compliance with Privacy and Sensitive Data Requirements

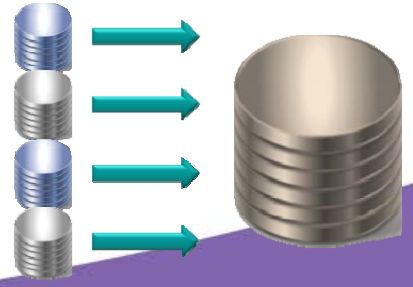
- **Performance Improvements**
  - Less data duplication than using “Views” to mask data
  - More secure than using “Views” to mask data
- **Cost Savings**
  - Easier to implement and maintain
  - Easier compliance with privacy and sensitive data requirements
  - Easier to maintain that using application code to mask data



New! Real-Time Data Warehousing

Faster Business Decisions with Continuous Data Ingest

- **Performance Improvements**
  - Faster availability of data
  - Minimal impact on query performance
  - No downtime (even for large volumes of data)
- **Cost Savings**
  - Costs less than solutions outside database



DB2 & POWER7 Lead in Performance, Cost & Efficiency

1st to top 10 million tpmC

- ✓ 10.36 million tpmC demonstrated on Power 780 and DB2 with TPC-C
- ✓ The highest TPC-C benchmark result ever recorded

2.7x faster per core

- ✓ 2.7x better performance per core than the best Oracle/Sun TPC-C result
- ✓ 35% greater throughput on ½ the cores than the best Oracle/Sun TPC-C result

41% lower cost per transaction

- ✓ 41% lower cost per transaction than the best Oracle/Sun TPC-C performance result
- ✓ The lowest cost per transaction for any result over 1.21M transactions

35% less energy per transaction

- ✓ 35% less energy per transaction (Watts/tpmC) than published Oracle energy usage data

DB2 & POWER Systems – Tighter Integration

Get more from your hardware Investment

- **Performance of POWER7 and DB2**
  - More cores and threads – 32 chips, 8 cores/chip, 4 threads/core Exploited by DB2
  - Full SSD support in Power 750, 755, 770, 780 system units

    DB2 can use SSD for both permanent objects (tables/indexes) as well as temporary objects

- **Consolidation of DB2 on POWER7**
  - PowerVM virtualization second to none
  - Active Memory Sharing exploited by DB2 STMM
  - Workload management integrated between AIX and DB2

- **Reliability of Power Systems and DB2**
  - Power 3x – 4x more reliable than Linux on x86
  - 99.997% availability with Power and AIX

    DB2 tightly integrated with PowerHA and other HA features of AIX

Wrap Up

IBM

Performance improvements across the stack

Out of the box improvements

Adaptive compression

Temporal tables

Index enhancements

Cost savings in multiple areas

Lower operational costs

Postpone hardware upgrades

Increases in reliability

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