

# Improve Database ROI with a New Tools Strategy in 2010



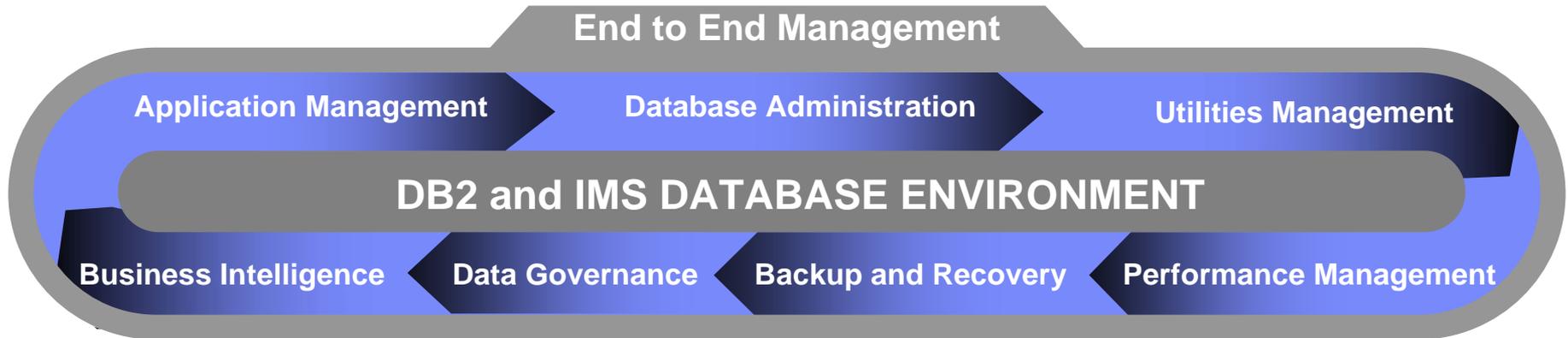


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## Managing your business environment



## Business Challenges

- Optimizing costs associated with maintaining existing applications
- Quickly responding to new business requirements and opportunities
- Ensuring that business and regulatory needs can be properly met
- Maximizing IT staff productivity to streamline business operations



## DB2 for z/OS Tools

Today: Maximize  
business value of  
System z

### *Making your life easier ...*

- ✓ Provide autonomic features to add capability and simplify operations
- ✓ Avoid tedious tasks and reduce errors
- ✓ Preserve your investment in z/OS applications and databases
- ✓ Free up valuable DBA resources to focus on business differentiators



**2008-2010: Portfolio Expansion & ROI Focus**  
▪ DB2 X Support

**2005-2008: Portfolio Expansion**  
▪ DB2 9 support

**2000-2004: Initial portfolio**  
▪ DB2 V8 support





# DB2 for z/OS Tools Portfolio

## Application Management

- DB2 Administration Tool
- DB2 Path Checker
- DB2 Bind Manager
- DB2 Query Monitor
- DB2 SQL Performance Analyzer
- DB2 High Performance Unload
- DB2 Table Editor
- Optim Development Studio
- Optim Data Growth
- Optim Query Tuner
- Optim Test Data Management
- InfoSphere Data Architect

## Utilities Management

- DB2 Utilities Suite
- DB2 Automation Tool
- DB2 Automation Toolkit SAP Edition
- DB2 Utilities Enhancement Tool
- DB2 High Performance Unload

## Database Administration

- DB2 Administration Tool
- DB2 Object Comparison Tool
- DB2 Administration Toolkit SAP Edition

## Performance Management

- OMEGAMON XE DB2 Performance Expert
- OMEGAMON XE DB2 Performance Monitor
- DB2 Query Monitor
- DB2 SQL Performance Analyzer
- DB2 Buffer Pool Analyzer
- DB2 Performance Toolkit SAP Edition
- Optim Query Workload Tuner
- Optim Development Studio
- Optim pureQuery Runtime

## Information Integration

- InfoSphere Information Server
- InfoSphere Classic Data Event Publisher
- InfoSphere Classic Federation Server
- InfoSphere Classic Replication Server
- InfoSphere DataStage
- InfoSphere Replication Server
- InfoSphere Change Data Capture

## Backup and Recovery

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

## Data Governance

- Optim Data Growth
- Optim Data Privacy
- Optim Test Data Management
- DB2 Audit Management Expert
- Data Encryption for DB2 and IMS

## Business Intelligence

- Cognos for Linux on System z
- DataQuant
- QMF



## In the Spotlight Today

- **Take Advantage of Change Management**
  - DB2 Administration Tool
  - DB2 Object Comparison Tool
- **Proactively Address Performance Requirements**
  - Tivoli OMEGAMON XE for DB2 Performance Expert
  - DB2 Query Monitor
- **Plan and Manage Backup and Recovery Strategies**
  - DB2 Recovery Expert
  - DB2 Cloning Tool





## DB2 Administration Tool for z/OS - Overview

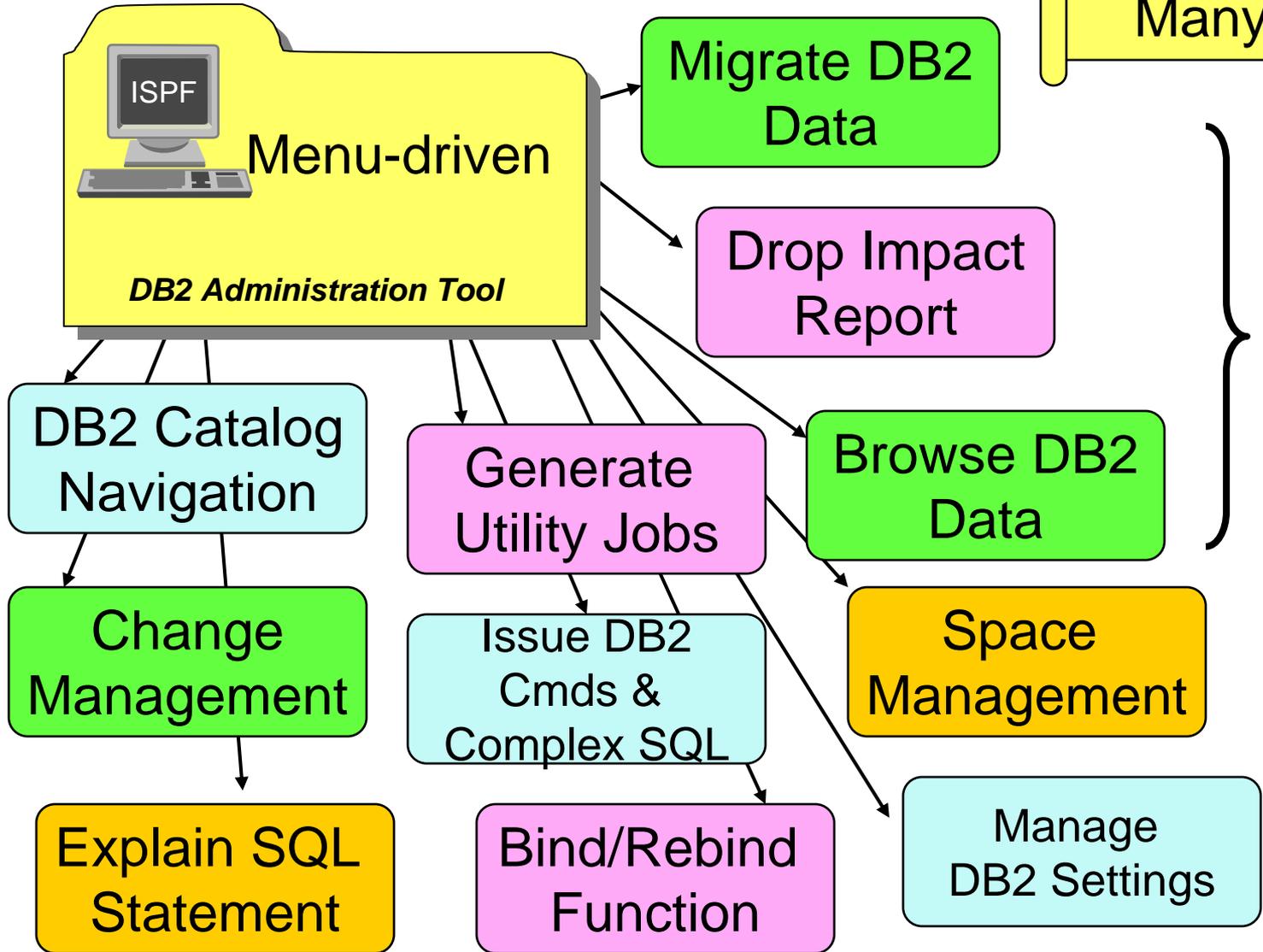
- Provides efficient management of growth and change across multiple database environments
- Increases productivity by automating the administration of DB2 objects
- Simplifies complex database changes required to get new applications to market quickly
- Navigates the DBA catalog and generates complex SQL queries
- Enables less experienced DBAs to correctly perform complex administration tasks
- Synchronizes multiple application environments\*
- Provides easy-to-use and reusable methods for generating batch and adhoc utility jobs
- Increases DBA productivity by reducing the DB2 learning curve
- Leverages the space management function to maximize system resources and helps reorganize or redesign parts of database or indexes to improve performance

\* *With IBM Object Comparison Tool for z/OS*



# DB2 Administration Tool for z/OS Functional Overview

One Tool  
Many Functions



*And so much more....*





## What's New? Version 7.2- Change Management Feature

- **Stores change information in DB2 tables**
  - Provides an audit trail of who changed what and when
  - Establishes a Change ID for tracking purposes
- **Identifies changes being made simultaneously**
  - Determines whether another change for the object or its dependents is in progress
  - Allows multiple users to manage a common set of changes
- **Allows prioritization of changes**
  - Enables user identification of urgent changes for immediate execution
  - Keeps records of the changes in Change Management tables
  - Promotes changes between environments, such as application development to test
- **Restores object definition to prior state before the change occurred**



## What's New? Version 7.2 - LOB Enhancements

- **Easy to use templates for creating LOB structures**
- **Provides object management for tables with LOB columns**
  - CREATE, ALTER, DROP and DROP IMPACT report
  - New commands to display LOB-related objects in Catalog
- **Utility Templates for Unloading, Migrating LOBs**
- **Support for SHRLEVEL REF for REORG of LOBs from Admin Tool**
- **Assists with generation of CHECK LOB utility syntax**
- **Easy to generate RECOVER and COPY utilities for LOB objects**



## What's New in 7.2? - DB2 9 Support

### ▪ **Catalog Navigation**

- System catalog panels incorporate DB2 Version 9 catalog changes
- Authorization enhancements, including Trusted Contexts and Roles
  - Show Grantee (RE) and Show Grantor (RR) line commands
- Clone table support

### ▪ **Manage Stored Procedures (NSP)**

- Use the CREATE Stored Procedure function to create an NSP
- Easily deploy a set of NSPs to a production system from a test environment
- Manage multiple versions of an NSP to facilitate fallback

### ▪ **XML Datatype**

- Create / manage implicit XML tables
- New Commands to support XML tables
  - XML – Shows XML tables for a base table
  - XMLR – Shows XML column information and the related XML table



## Success Story: Change Management at a Major Financial Institution



Change Management - The process in a nutshell:



**Change Management** is an enhanced technique of IBM DB2 Administration Tool and IBM DB2 Object Comparison Tool for managing DB2 DDL changes across DB2 environments

The company realized these benefits from using Change Management:

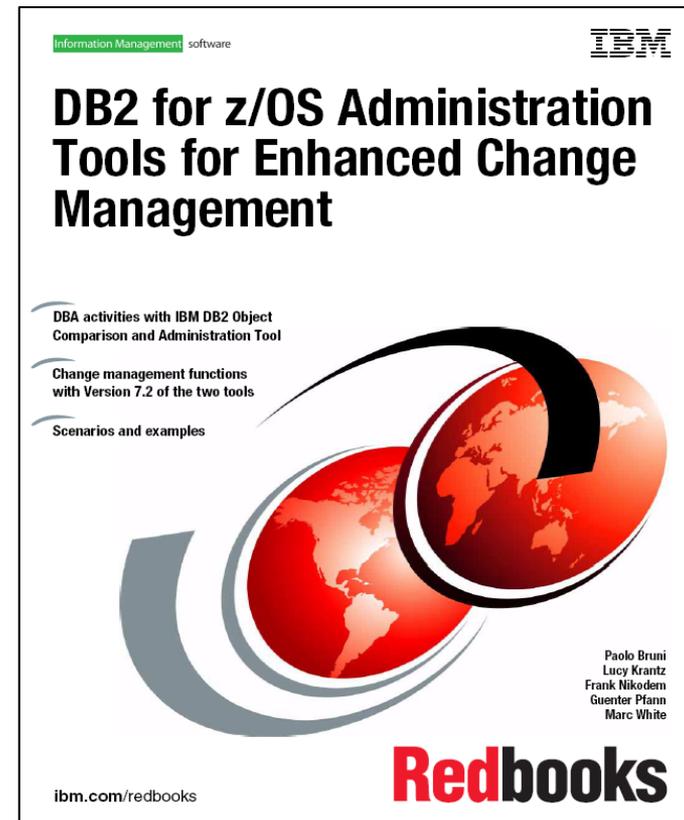
- Change Management gives the company the opportunity to execute DDL activities in a designated time slot to fulfill SLA requirements
- Executed changes are stored inside Change Management tables to fulfill legal requirements ("Who did what when?")
- Change Management ensures that all activities can be organized and well structured



## For more information on Change Management...

### Redbook: Enhanced Change Management

- Installation
- Customization and Setup
- Import, Analyze and Run
- Change navigation
- Recovery of changes
- Pending Changes





## In the Spotlight Today

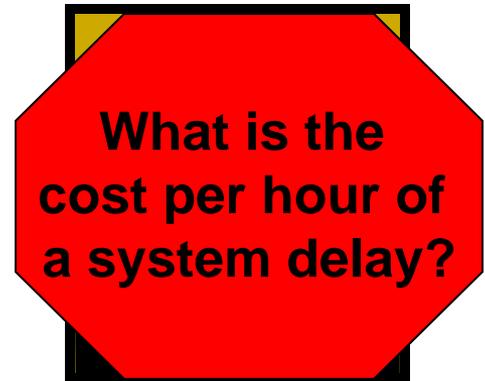
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## For DB2 ... Someone has just reported a performance problem. Where do you start?

- Could the problem be in DB2 itself?
    - Did you run out of system resources?
  - Is the problem related to poorly coded SQL?
    - Is the SQL static or dynamic?
    - What is the access path?
  - How about the network?
  - When did this occur?
  - Is this a one time occurrence, or has it happened before?
  - Is the information stored in a history file somewhere?
- 
- ❖ Do you have the knowledge, time, and expertise to do the analysis and determine the problem?





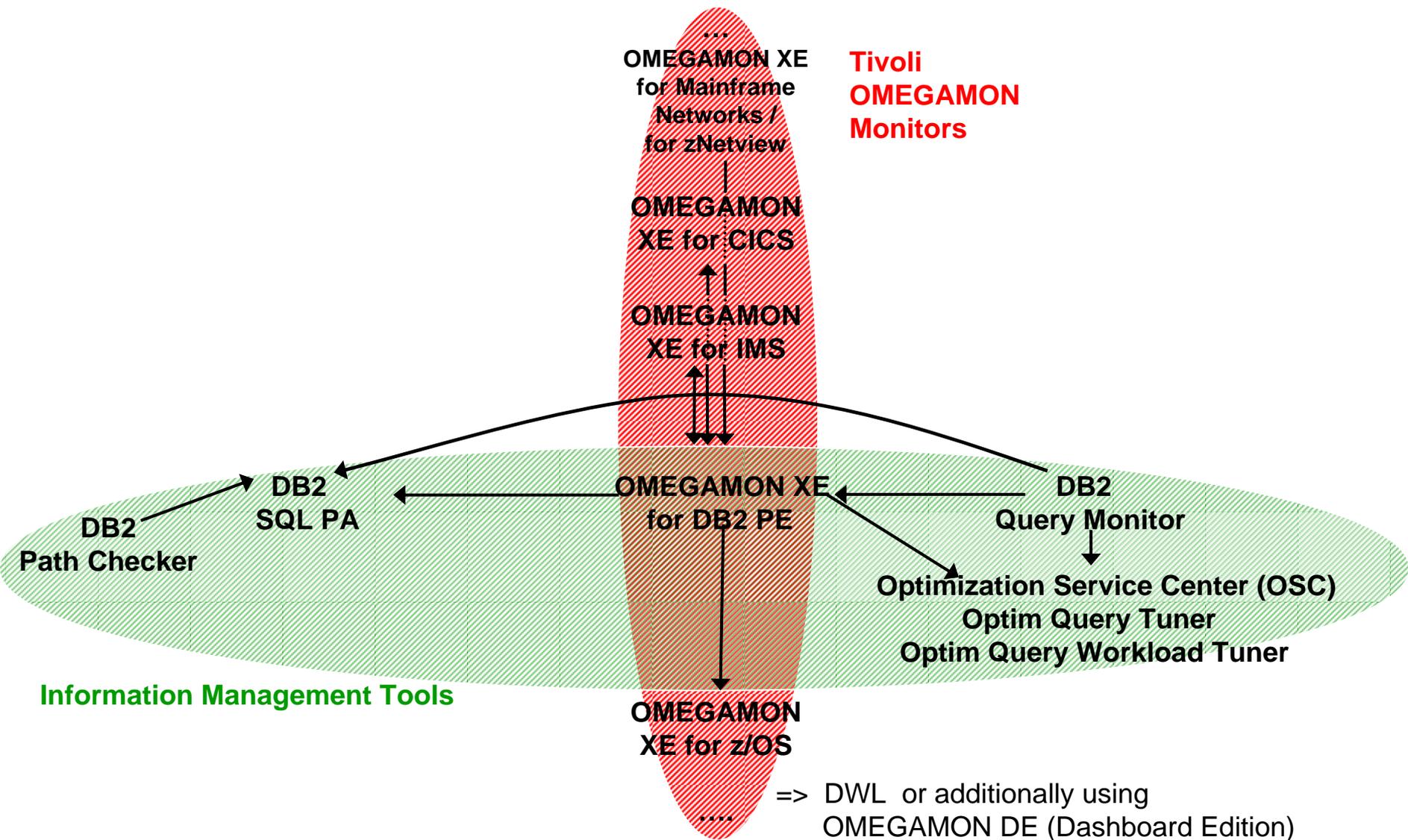
## OMEGAMON XE for DB2 PE and PM - Overview

- Superior overall DB2 management capabilities
- Comprehensive monitoring functionality to manage the efficiency and performance of DB2 on z/OS-based applications
  - Online and real time deep dive analysis capability plus “offline” via reports
- DB2 Performance Warehouse for expert analysis of DB2 application performance data.
- GUI integration with the IBM Tivoli Monitoring portfolio of systems management products
- Integration with DB2 Tools on z/OS (SQLPA, Query Monitor, OQT)





# Horizontal and vertical Integration from the OM PE perspective





## Objectives of OMEGAMON XE for DB2 PE and PM V420

### **Build the foundation for the future**

- A merger of two advanced technologies to provide a best of breed DB2 monitoring offering exposed potential challenges for large installations
- Continual DB2 on z/OS advancements revealed the necessity for a more flexible implementation that could respond quickly and reliably

### **Improve the installation and configuration experience**

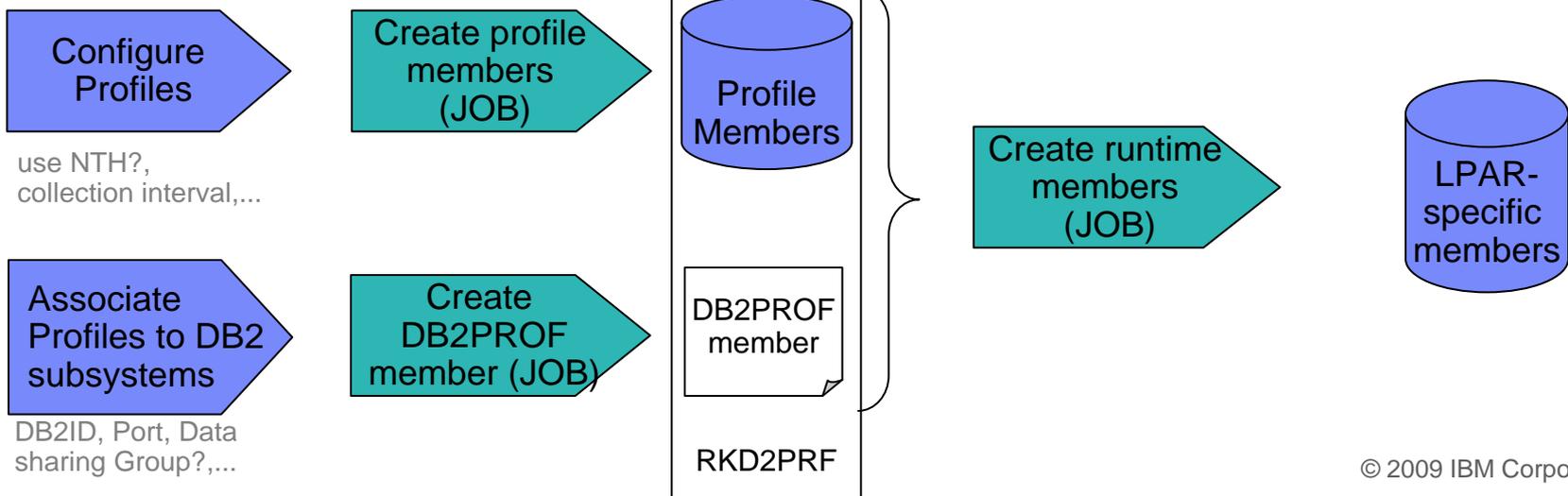
- Migrate from a parameter-driven configuration to a task-driven configuration

### **Continue to drive down TCO through user interface and collector convergence, integration, and RAS**

## What's New in v4.2? – ICAT / Monitoring Profiles

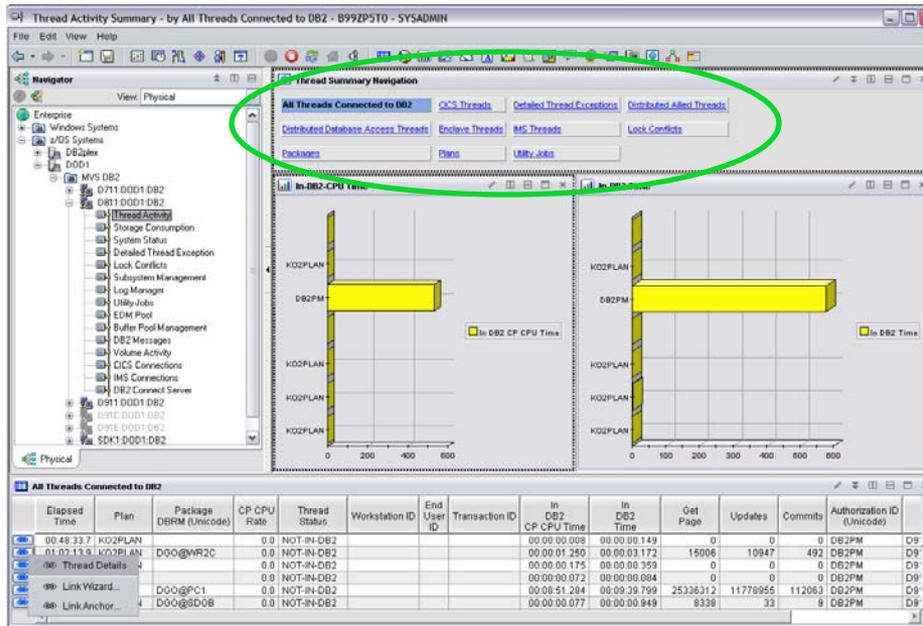
- **Provides a flexible mechanism for DB2 subsystem configuration**
  - Reduces effort for installing and maintaining the product
    - Initial setup
    - Changing an existing configuration
    - Applying maintenance
- **Profile created for DB2 subsystem**
  - Specifies the monitoring function to be enabled for the subsystem
  - Reusable for several DB2 subsystems

### DB2 monitoring profile approach



# What's New in v4.2? – Additional Items

## Usability Improvement – Navigator buttons



## Batch Accounting Improvements

- “OPTIMIZE” option that enables optimization on CPU consumption or ACWORK size
- “CALCULATE” option to determine the disk space required to process a given input

## ITM infrastructure upgrade to ITM v6.2.1

- High-Availability HUB capability that fulfills customer failover requirements for a z/OS-based monitoring server



## DB2 Query Monitor for z/OS

- Low overhead SQL statement monitor
- Identifies SQL requests which are consuming excessive resources and may be preventing critical requests from completing on schedule
- Proactively manage DB2 resources
  - React quickly and effectively to DB2 problems like inefficient SQL or inadequate object structures
  - Determine which tables and indexes are actually being used
- Collects information about exceptional SQL-related events
  - Performs analysis of exceptional events
  - Undertakes notification and curative actions when exceptional events occur

### DATA collected and available to view

- SQL metrics
- DB2 object access
- SQL text and host variables
- DB2 commands
- Negative SQLCODES
- Expanded and grouped Information about exceptions
- Buffer Pool Statistics
- Delays

### Historical Information

- Interval-based VSAM Datasets for data storage
- Intervals of data viewable online
- User controlled number of intervals retained Interval length



## 10 Surprising Things You Can Do with DB2 Query Monitor

Displaying performance-related information about specific queries is the traditional use for DB2 Query Monitor. Tom Glaser points out that its full capabilities go way beyond the expected.

**These 10 DB2 Query Monitor tasks will help out any application programmer, DBA, or DB2 systems programmer:**

1. *Research DB2 commands*
2. *Display host variables*
3. *Exploit DB2 Resource Limit Facility*
4. *Display SQL Communications Area*
5. *Determine SQL error patterns*

6. *Explore dynamic SQL overhead*
7. *Identify resource unavailable -904 errors*
8. *Determine access path changes*
9. *Identify logging increases*
10. *Display DB2 subsystem statistics*

**Tom Glaser, Technical Director, Mainframe Strategic Planning at AT&T  
DATABASE Magazine (Issue 4, Nov 2008)**



## Success Story – A Large Worldwide Financial Services Company Experiences Significant Cost Savings by Monitoring SQL



### Challenges

- ❑ A financial services company serving 68 million customers. Required to evaluate and find the premier dynamic SQL monitoring product from the myriad of monitoring products in the marketplace

### Solutions

- ❑ IBM DB2 Query Monitor for z/OS, the only product among those evaluated that did not require standard DSN traces to be started
- ❑ The company selected IBM DB2 Query Monitor for z/OS as the strategic tool to identify the most expensive SQL statements that were running in the System z environment.

### Benefits

- ❑ DB2 Query Monitor active 24X7 in all 36 North American DB2 subsystems
- ❑ Used the product to track down SQL statements that were increasing chargeback costs to the users
- ❑ The company experienced tremendous cost savings by using DB2 Query Monitor, and was able to show a true return on investment.



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# The Costs of Backup and Recovery



- Safeguarding DB2 applications and data is critical!
- Many backup strategies incur a significant ongoing cost to guarantee a certain level of recoverability
- Actual recovery is rare
- So we are dedicating a lot of CPU, I/O, DASD, tape, and personnel resources to regular backup activities that create recovery resources that are seldom used
- Consider a new model:
  - DB2 Recovery Expert significantly reduces the CPU, I/O, and management costs associated with creating recovery assets, yet you retain the same level of recoverability you have today
  - Recovery time can be improved, while reducing the ongoing backup cost

## *An Expensive Insurance Policy*

### Backing up with image copies (aka. Traditional backups)

- Reliable--but time consuming
- Either tables/DBs are read-only or the backup is fuzzy
- Infrequent backups make for lengthy restores
- CPU cost can be an issue
- Thousands of files must be managed



## DB2 Recovery Expert for z/OS

- Automated backup processing
- HW backups result in less overhead (CPU, I/O, elapsed time) compared to traditional Image Copies
- Less data unavailability during backup
- GUI interface to make users more productive
- Less people time involved in any recovery situation with expert capabilities
  - Usually a stressful situation
- Expert functions to recommend best recovery plan
  - Less error prone recovery plan creation
  - Less skilled people can be productive faster
  - Reduce errors through validation of recovery





## DB2 Recovery Expert – Returning \$\$\$ On Your Investment



- **A small DB2 customer - Example**

- Compared CPU, I/O, and storage cost calculations based on their old model, versus using the DB2 Recovery Expert for backup and recovery

***The following is the annualized savings:***

- DB2 size = Approximately 0.5 TB

**By performing daily image copy backup and volume based on fast replication:**

- Total CPU and I/O cost savings = \$1,416,915
- Storage cost savings = \$192,355
- **Total generated CPU, I/O and storage savings= \$1,609,270**

- **The result was very significant savings for a rather small DB2 system**

- Larger DB2 systems could expect to see even more savings...



## Reasons to Clone Data

### Why Clone?

- Testing
  - DB2 version upgrades
  - Test new functions and features of packaged apps (like SAP)
  - Test new DW solutions
- Performance
  - Move users to cloned system
- Availability
  - Create read only copies of DB2
- Warehousing
  - Quickly clone data to populate
- Replication
  - Load initial replicate

### Cloning Challenges

- Extended downtime is the norm, as most data is shut down during cloning
- The requirement for a separate image
- How to clone different types of data?
  - DB2 – PeopleSoft, SAP
  - CICS, IMS
  - Non-database
- How to simplify cloning when using multiple replication products
- How to quickly access replicas

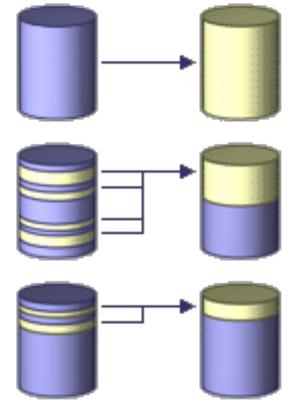
### **The Bottom Line:**

▶ Cloning costs you excessive amounts of people time and system resources



## DB2 Cloning Tool for z/OS

- Clones a DB2 subsystem AND clones at an object (data set level)
  - Renames and catalogs the data sets, fixes the volume internals, and optionally updates all DB2 internal control information
  - No requirement for a clone in a separate LPAR
  - Supports DB2, PeopleSoft, and SAP
- Is extremely fast and cheap!
  - Disk-vendor independent
    - Uses any snap, mirror or PIT copy, only volumes are eligible for cloning
  - Reduces production online downtime when cloning – takes just minutes
  - Dramatically reduces costs of traditional methods
    - Uses less personnel time
    - DB2 no longer needs to be shut down or conditioned the long traditional way
  - Provides virtually 24x7 access to the data





## A Success Story - DB2 Cloning Tool



**A large Insurance Company gains usable DB2 clones instantly, significantly reducing errors and costs**

- Needed to provide multiple DB2 environments to different departments for testing
- Previously, DB2 administrators had performed this task manually, with a lot of effort, resulting in errors and problems
- IBM DB2 Cloning Tool for z/OS helped the company develop an effective testing environment for new applications, while reducing the errors and problems which were occurring when the DB2 cloning was done manually
- The company now has the software it needs to easily and quickly perform the complete DB2 subsystem cloning without interfering with its production environment
- IBM DB2 Cloning Tool for z/OS automates the cloning process to provide usable DB2 clones within minutes, improving business performance and reducing total cost



## A Customer Success Story – Migration to IBM DB2 and IMS Tools

### Challenges

- Largest saving bank in Spain.
- Needed to lower mainframe software costs
- Operated a complex z/OS environment, managing more than 20TB of IBM DB2 software data and more than 30TB of data hosted on IBM IMS software databases.
- “No impact in production” policy

**la Caixa turned to IBM to provide more cost-effective tools for this system**

### Solutions

- **IBM DB2 Tools: DB2 Administration Tool, DB2 Automation Tool, DB2 Query Monitor, DB2 SQL Performance Analyzer, DB2 Utilities Suite, DB2 High Performance Unload, DB2 Change Accumulation**
- **IBM IMS Tools: IMS HP Fast Path Utilities, IMS HP Change Accumulation, IMS Index Builder, IMS DEDB Fast Recovery, IMS Database Recovery Facility, IMS HP Image Copy**

### Benefits

- ✓ There was no impact in business during and after migration
- ✓ Experienced easier contract agreement
- ✓ Products that keep pace with IMS & DB2 development
- ✓ Can exploit new IMS and DB2 functions in the IBM tools

**“Strong proactive approach  
from IBM labs” – la Caixa**



Thank  
YOU