



IBM DB2 for z/OS Tools Strategy and Update

Peter Schouboe
zIM Nordic

Schouboe@dk.ibm.com

+45 4120 1153



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Agenda

- Tool Strategy & Overview
- IBM Optim Integrated Data management Suite
 - Data Studio & Optimization Service Center
 - Query Tuning & Monitoring
 - pureQuery
- Optim 'Classic'
- Guardium
- DB2 Tools update
 - DB2 Tools Customizer (TC/z)
 - Performance Analyzer
 - Omegamon for DB2 PE
 - Query Monitor
 - Recovery Expert E 2.2, LAT 3.2,
 - Cloning Tool 2.2,
 - HPU 3.2
 - DFSORT Updates
 - DB2 Admin Tool Update
 - DB2 Utility Enhancement Tool
 - Encryption for DB2
- DB2 X Exploitation

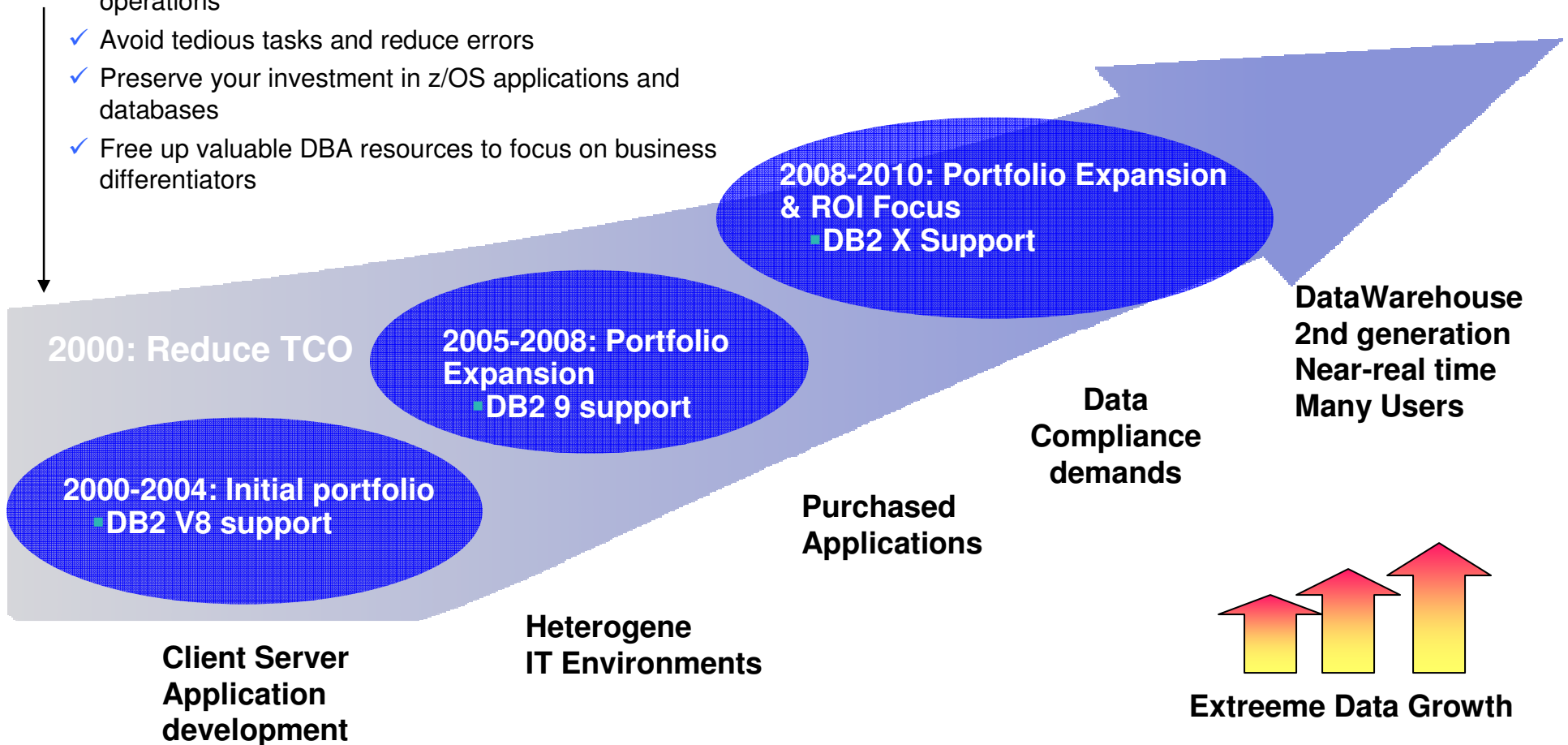


DB2 for z/OS Tools

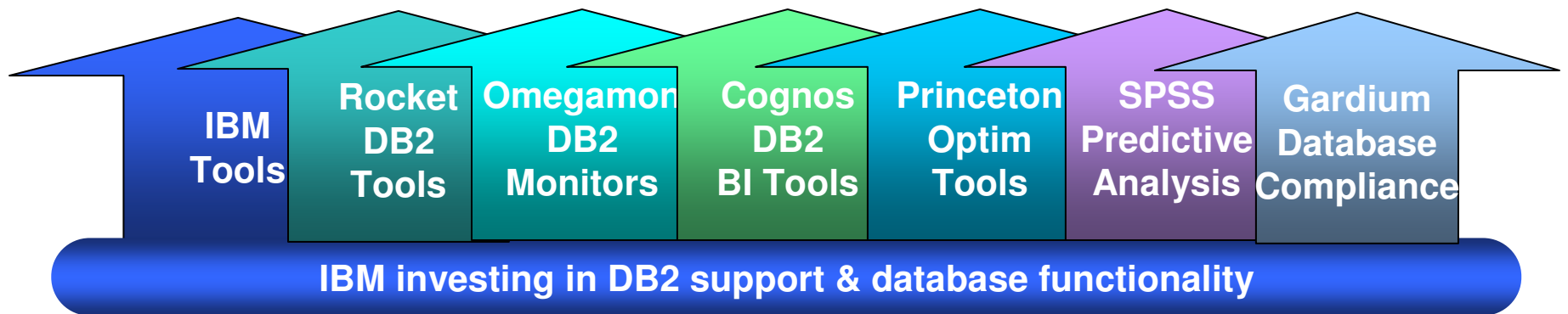
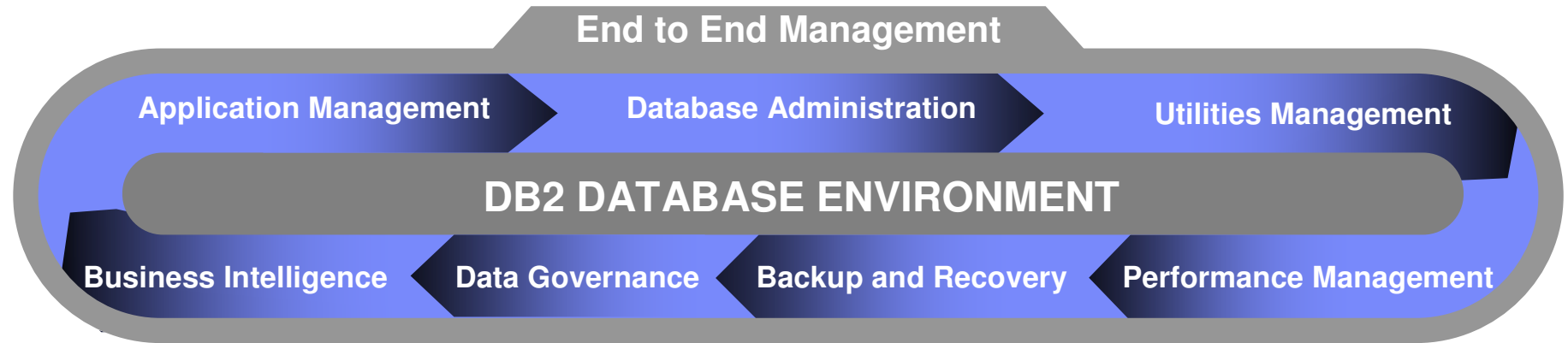
Making your life easier ...

- ✓ 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

Today: Maximize business value of System z



DB2 Tool Space – evidence of strategic focus



Solid DB DataStage Data Mirror Etc...

DB2 for z/OS Tools Overview

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
- Data Studio
- 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
- DB2 Storage Management Utility

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

Backup and Recovery

- DB2 Recovery Expert
- DB2 Log Analysis Tool
- DB2 Cloning Tool
- DB2 Change Accumulation Tool
- DB2 Object Restore Tool
- DB2 Archive Log Accelerator
- 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
- Guardium

Business Intelligence

- Cognos for Linux on System z
- DataQuant
- QMF

IBM Branding ☺

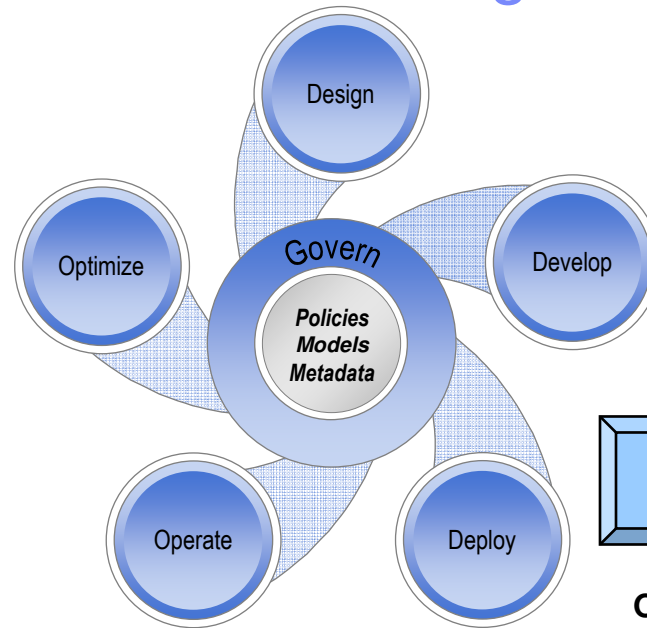
- **DB2 and IMS Tools:**
 - Utilizing functionality & lowering TCO for DB2 and IMS

- **Data Studio:**
 - No charge offerings for improving developer and DBA productivity for DB2 and Informix

- **Optim Solutions:**
 - Managing diverse data across DBMSs & across lifetime

- **InfoSphere Solutions:**
 - Establishing, governing, and delivering trusted information

Positioning the Optim brand: Solutions for Integrated Data Management



DB2 and IMS Tools

- DB2/IMS Backup & Recovery Solution
- DB2/IMS Utilities Management Solution
- IMS Transaction Management Solution
- DB2/IMS Data Governance Solution
- DB2/IMS Application Management Solution
- DB2/IMS Performance Management Solution

Optim Solutions

Optim Classic:

- Optim Test Data Management
- Optim Data Privacy
- Optim Data Growth
- Optim Application retirement

InfoSphere Data Architect

Optim Integrated data management

- Optim Development Studio
- Optim pureQuery Runtime
- Optim Query Tuner
- Optim Query Workload Tuner

Definition of Data Studio

- **Data Studio is no longer used as a brand**
- **It is a no-charge offering that supports**
 - DB2 for z/OS v7, v8, v9
 - DB2 for Linux, UNIX, Windows v8.x, v9.x
 - DB2 for i5/OS v5r2, v5r3, v5r4
 - Informix Dynamic Server (IDS) v9.x, v10.x, v11
- **Fully supported (i.e., PMR support) for customers who are current on their license for the above IBM database products**
- **It currently has two download types**
 - Standalone (sometimes referred to as RCP (Rich Client Platform))
 - Desired when an Eclipse base is not present and there is no desire to shell-share with other Eclipse-based offerings
 - Popular for DBAs / Smaller download size
 - Contains “query tuning” functions as of 2.2.0.1 (Dec 2009)
 - IDE
 - Desired when an Eclipse base is present or shell-sharing is desired
 - Popular for application developers / Larger download size
 - Does not contain “query tuning” functions

The future of Optimization Service Center (OSC)

- **Current OSC remains supported through DB2 9**
 - No new fix packs are planned
 - Hotfixes for customers who can't move to Data Studio right away
- **OSC functionality will be split among the following offerings:**
 - Data Studio
 - Optim Query [Workload] Tuner
 - DB2 X for z/OS (Service SQL, Workload Service SQL)

What do we recommend ?

If you don't already have OSC deployed, then we recommend that you deploy Data Studio instead

If you have already deployed OSC, consider upgrading through 2010

DataStudio provides:

- Common user interface with other IBM tooling like RAD, RDz, OQ[W]T (although shell-sharing is not supported in the standalone Data Studio)
- Support for DB2 X

Functionality split – OSC / OE → DataStudio & Optim

Function	Optimization Service Center 1.1 FP6 (FP7 4Q/2009)	SQL PA for z/OS	Data Studio 2.2.0.1 (standalone)	Eclipse shell-integrated		
				Query Tuner for LUW	Query Tuner for z/OS	Query Workload Tuner for z/OS
Queries from all sources	Yes		Yes	Yes	Yes	Yes
Query Formatter	Yes	Yes	Yes	Yes	Yes	Yes
Query Annotation / Launch from OM/QM	Yes ①			Yes	Yes	Yes
Access Plan Graph	Yes	EEE	Yes	Yes	Yes	Yes
Visual Plan Hint	Yes ①				Yes	Yes
Query Statistics Advisor	Yes		Yes	Yes	Yes	Yes
Workload Statistics Advisor	Yes ①					Yes
Profile Based Monitoring	Yes (removed in DB2 X)					(Yes)
Query Index Advisor		Limited		Yes	Yes	Yes
Workload Index Advisor						Yes
Query Advisor		Yes 100+		Yes	Yes	Yes
Workload Query Advisor						Yes
Access Path Advisor		Yes		Yes	Yes	Yes
Query Env Capture	Yes		z/OS only		Yes	Yes
Workload Env Capture	Yes					Yes
Statistics Migration	Limited	Yes			Limited	Limited
DBRM Library Support		Yes				
PL/I, Cobol, C Code spt		Yes				
Query Costing		Yes				
QMF Governor Intercept		Yes				
Reports		Batch	Yes	Yes	Yes	Yes

① No charge in OSC and not planned to be part of Data Studio -- these were technology previews

Contents of Eclipse-based Query Tuning offerings for z/OS

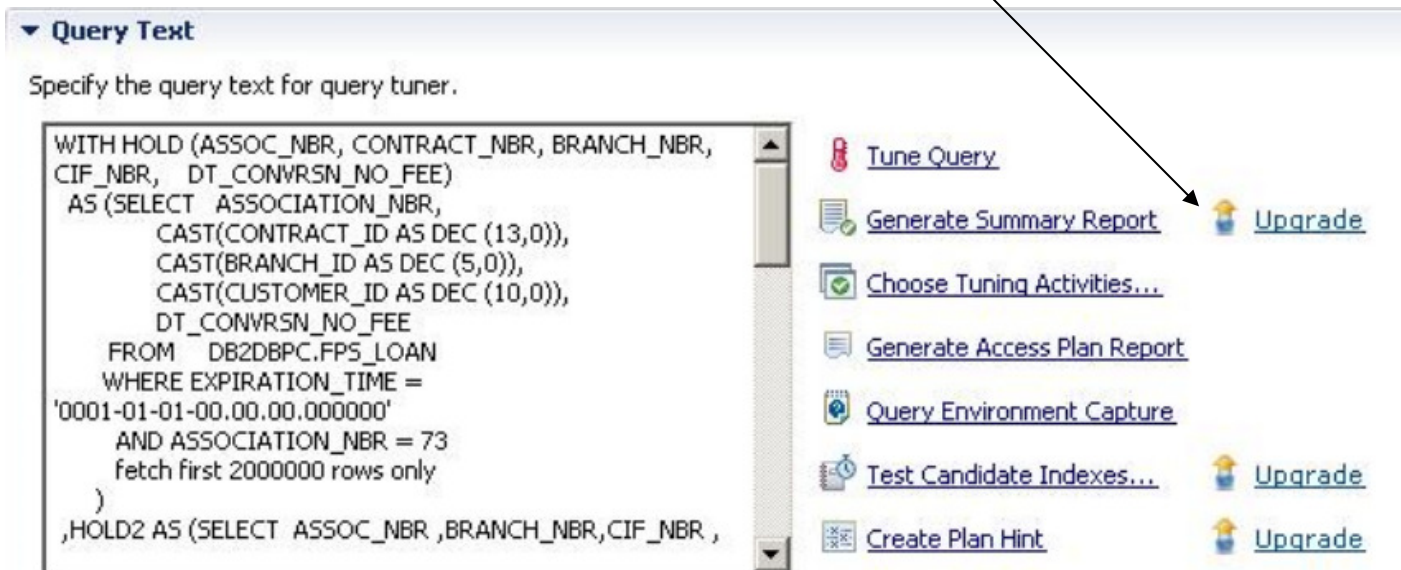
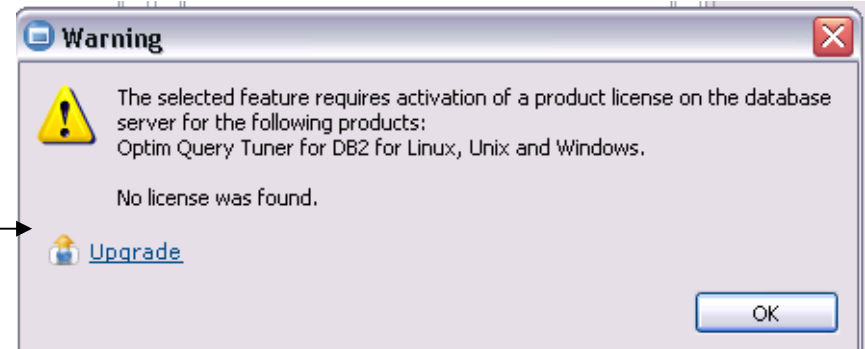
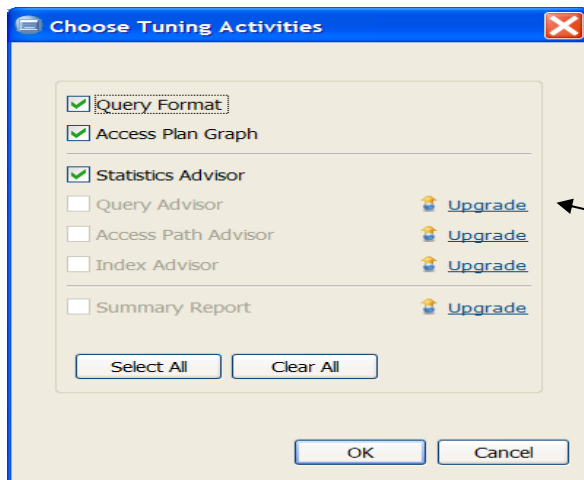
	Data Studio	Optim Query Tuner for z/OS	Optim Query Workload Tuner for z/OS
Queries from all sources			
Reports			
Query Formatter			
Access Plan Graph			
Query Statistics Advisor			
Query Annotation			
Visual Plan Hint			
Query Index Advisor			
Query Advisor			
Access Path Advisor			
Workload Statistics Advisor			
Workload Index Advisor			
Workload Query Advisor			

Migrations

- **Optimization Service Center (OSC) to Data Studio (DS)**
 - We have tested and support project migration from OSC 1.1 FP5 or higher to DS 2.2.0.1 or higher. However, we recommend that they apply OSC 1.1 FP7 before migrating to DS (see backup slides for details).
 - For workload tuning functions that require Query Workload Tuner, warning issued to upgrade to licensed product (screenshots in backup slides)
 - Sample scenario tested:
 - Export one OSC project with all single query advisors and workload advisors results
 - Import this OSC project to OQT and open project
 - Check single query tuning results (access path graph, stats advisor)
 - Check workload tuning results (warning msg to get license to upgrade)
 - We plan to deliver a tech note or a blog entry for the OSC to DS/OQ[W]T migration
- **OE to OQWT**
 - Fully supported from OE 1.2 or 2.1 -> OQWT V2.2



How do we show the functions?



Migration from OSC to DS details

■ **Optimization Service Center (OSC) to Data Studio (DS)**

- We have tested and support project migration from OSC 1.1 FP5 or higher to DS 2.2.0.1 or higher. However, we recommend that they apply OSC 1.1 FP7 before migrating to DS for a few reasons:
 - The OSC_EXECUTE_TASK stored procedure used by both tools only gets updated through the OSC installation.
 - When system programmers install the documented prereq. maintenance for OSC 1.1 FP7, there are a few changes to the tables (indexes etc.)
 - The OSC 1.1 FP7 PTF removes the 1 GB client file from the z/OS file system that was shipped "for historical reasons".
 - Data Studio prereqs artifacts that are in OSC (a few stored procedures)

Query Tuning & Monitoring

What are the IBM query tuning offerings for DB2 for z/OS?

- **SQL Performance Analyzer**
- **Optim Query Workload Tuner for DB2 for z/OS**
- **Optim Query Tuner for DB2 for z/OS**
- **Data Studio 2.2.0.1 or greater (standalone)**
- **Optimization Service Center***

* Deprecation announced; not part of DB2 X

What's not?

- **Visual Explain** (support ends at the end of service for DB2 for z/OS Version 8)
- **Data Studio (IDE)**
- **DB2 Optimization Expert for z/OS**
 - Customers are entitled to Optim Query Workload Tuner for DB2 for z/OS

Query tuning tools for DB2 for z/OS – versus DB2 versions

- **DB2 UDB for z/OS and OS/390 V7: Visual Explain and SQL Performance Analyzer (PA)**
 - Note: DB2 V7 has been withdrawn from service June 30, 2008. Visual Explain remains supported until the end of service for DB2 V8 but no new fixpacks are planned.
- **DB2 UDB for z/OS V8 and DB2 9 for z/OS**
 - Optimization Service Center
 - Data Studio
 - SQL PA
 - Query [Workload] Tuner for DB2 for z/OS
- **DB2 X for z/OS**
 - Data Studio
 - SQL PA
 - Query [Workload] Tuner for DB2 for z/OS

Streamline Monitor and Respond Scenarios

DB2 Query Monitor

The screenshot shows the DB2 Query Monitor interface. A red box highlights the 'OQT' (Optim Query Tuner) button in the 'Property Table' tab. Below the main window, a dark blue box contains the text 'OMEGAMON DB2'. At the bottom left, a red box highlights the 'Copies' column in a table.

Plan	Program	Section	Statement ...	Calls	...
				0	1
				0	3
				0	3
				0	3
				0	3
DISTSERV	RAARDBI2			5	3
DISTSERV	RAARDBI2			13	3
DISTSERV	RAARDBI2			0	3
				0	1

```

SELECT DB2CA_BLOCKNO, DB2CA_DATA FROM DB2PM.DB2C_APPLICATION ORDER BY DB2CA_ID,
DB2CA_BLOCKNO
    
```

Users	Lock and Latch Wait Time	0.000000
Copies	Global Locks Wait Time	0.000000

Optim Query [Workload] Tuner

The screenshot shows the Optim Query [Workload] Tuner interface. It displays a formatted query, an access plan graph, and an advisor recommendation overview.

```

SELECT CASE WHEN R.R_REPAIR_COST < 100.0
FROM TPCCS.REPAIR AS R
, TPCCS.CATALOG_RETURNS AS C
WHERE C.CR_RETURN_SHIP_COST > 100
AND R.R_DIAGNOSIS LIKE '%fire%'
AND R.R_ORDER_NUMBER = C.CR_ORDER_NUMBER
    
```

Advisor Recommendation Overview:

Advisor	Priority	Description
Statistics Advisor	HIGH	Gather and recollect all of relevant statistics
Query Advisor	MEDIUM	Consider adding the following predicate to the TPCCS.CATALOG_RETURNS table
Query Advisor	LOW	Consider adding the following predicate to the TPCCS.CATALOG_RETURNS table
Access Path Advisor	LOW	Consider adding the following predicate to the TPCCS.CATALOG_RETURNS table

QUERY
MONITOR

OMEGAMON DB2

SQL PA

Query monitoring tools – Unique benefits

OMEGAMON XE for DB2 PE on z/OS

System level monitor

- Threads
- Memory
- Buffer Pools
- SQL Statement Summary

Alerts and Exceptions

Real time, near & long term analysis

Tivoli family integration

- z/OS
- CICS
- IMS

User interfaces

- 3270
- Browser
- Windows Client
- Batch

DB2 Query Monitor

SQL Statement Monitor

- Execution counts & times
- CPU Time
- Getpages & I/O times
- SQLCodes
- Hostvars

Alerts and Exceptions

Real time, near & long term analysis

DB2 Tools Integration

- OMEGAMON for DB2
- SQL PA
- VE / OSC / QWT

User interfaces

- 3270
- Browser
- Windows Client
- Batch

Query Workload Tuner

(based on OM PE / QM capture)

Workload Capture

- Execution counts & times
- CPU Time
- Getpages

Capture SQL for tuning

Eclipse Integration

- Optim Development Studio
- InfoSphere Data Architect
- Rational Application Dev.
- Rational Software Architect

DB2 Tools Integration

- OMEGAMON for DB2
- Query Monitor (coming)

User interfaces

- Windows and Linux Eclipse

Introducing pureQuery & Optim Development Studio

A high-performance, data access platform to simplify developing, managing, securing, and optimizing data access for new and existing applications.



pureQuery Components:

- **Simple and intuitive API**
 - Facilitates JDBC best practices
 - Enables heterogeneous batching
 - Enables SQL access to databases or in-memory Java objects

- **Optim Development Studio (ODS)**
 - Integrated development environment with Java and SQL support
 - Improve problem isolation and impact analysis

- **Optim pureQuery Runtime**
 - Flexible static SQL deployment for DB2

Static execution advantages

Feature	Dynamic SQL (pureQuery, JDBC)	Static SQL (pureQuery, SQLJ)
Performance	Can approach static SQL performance with help from dynamic SQL cache. Cache misses are costly	All SQL parsing, catalog access, done at BIND time. Fully optimized during execution.
Access path reliability	Unpredictable – Any prepare can get a new access path as statistics or host variables change	Guaranteed – locked in at BIND time All SQL available ahead of time for analysis by EXPLAIN.
Authorization	Privileges handled at object level. All users or groups must have direct table privileges – Security exposure, and administrative burden	Privileges are package based. Only administrator needs table access. Users/Groups have execute authority. Prevent non-authorized SQL execution.
Monitoring, Problem determination	Database View is of the JDBC or CLI package – No easy distinction of where any SQL statement came from.	Package View of applications makes it simple to track back to the SQL statement location in the application
Capacity planning, Forecasting	Difficult to summarize performance data at program level.	Package Level Accounting gives program view of workload to aid accurate forecasting.
Tracking dependent objects	No record of which objects are referenced by a compiled SQL statement	Object dependencies registered in database catalog

Closing the Loop on Data Access Development

▪ Capture

- Capture performance and application metadata

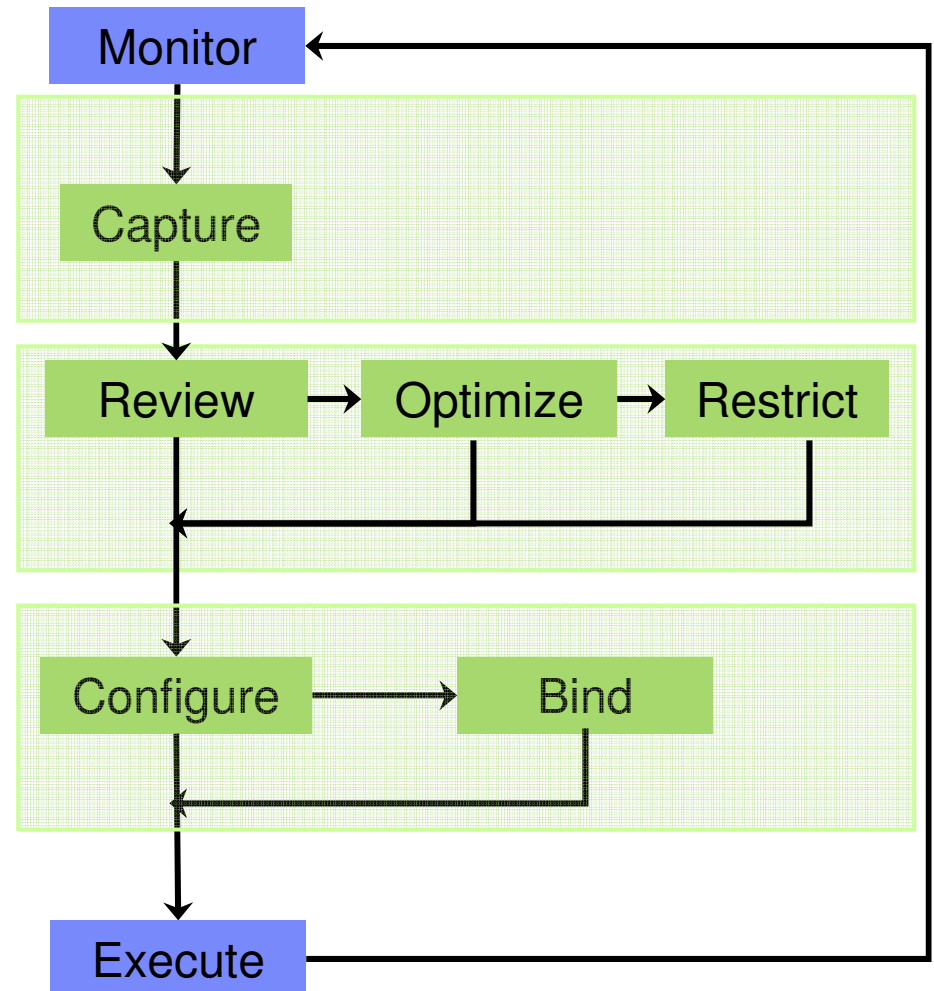


▪ Optimize

- Review and share SQL
 - Visualize hotspots
 - Analyze impacts from schema changes
 - Trace SQL to originating source
- Optimize and replace SQL
- Create approved SQL list

▪ Deploy

- Configure execution properties
- Optionally bind for static execution



Using Optim Development Studio to gain insight & tune SQL

The screenshot displays the IBM Optim Development Studio interface. The top window shows Java code for `ReportApplication.java` with a callout: "Correlate with issuing code". The middle window shows the "SQL Outline" tab with a callout: "Visualize captured SQL". The bottom window shows the "Performance Data Set" table with a callout: "Visualize and compare execution metrics". The left pane shows the "Data Source Explorer" with a callout: "Correlate with data source attributes". A context menu is open over the SQL Outline table with a callout: "Execute, tune, share, trace, export SQL". A callout: "Replace SQL without changing the application" points to the SQL Outline table.

Correlate with issuing code

```

resultSet.close();
statement.close();

statement = connection.createStatement();
if(statement.execute("SELECT CUST_CODE, STDDEV(ORD_STOT_COST) AS TOTAL, CUST_CODE FROM GOSALESC.T
resultSet = statement.getResultSet();
while(resultSet.next()) {
    System.out.print("customer id: " + resu
    System.out.print("net sales:" + results
    System.out.println();
}
    
```

Visualize captured SQL

Visualize and compare execution metrics

Schemas	Number of Times Run	Total Time	Max
GOSALESC.T			
CUST			
SELECT CUST_CODE, CUST_FRST_NAME, CUST_LAST_NAME, CU	1	90.92	90.92
SELECT CUST_CODE AS CUST_FRST_NAME, CUST_LAST_NAME, CU	2	297.06	273.61
SELECT CUST_CODE, CUST_CITY FROM GOSALESC.T.CUST ORDE	3	20.09	7.99
SELECT CUST_CODE, CUST_FRST_NAME, CUST_LAST_NAME, CU	1	2.70	2.70
SELECT count(CUST_CODE) FROM GOSALESC.T.CUST	14	61.04	40.82
SELECT count(CUST_CODE) FROM GOSALESC.T.CUST where (14	61.04	40.82
ReportGenerator			
CUST_CODE			
CUST_ORD			
SELECT CUST_CODE, STDDEV(4	7.11	2.18
SELECT ORD_NBR AS ORDER_	5853	3335.63	46.98
SELECT CUST_CODE, SUM(ORD	3	5.80	2.38
SELECT CUST_CODE, AVG(ORD	4	5.17	1.40
SELECT CUST_CODE, CORRELA	3	3.24	1.20

Replace SQL without changing the application

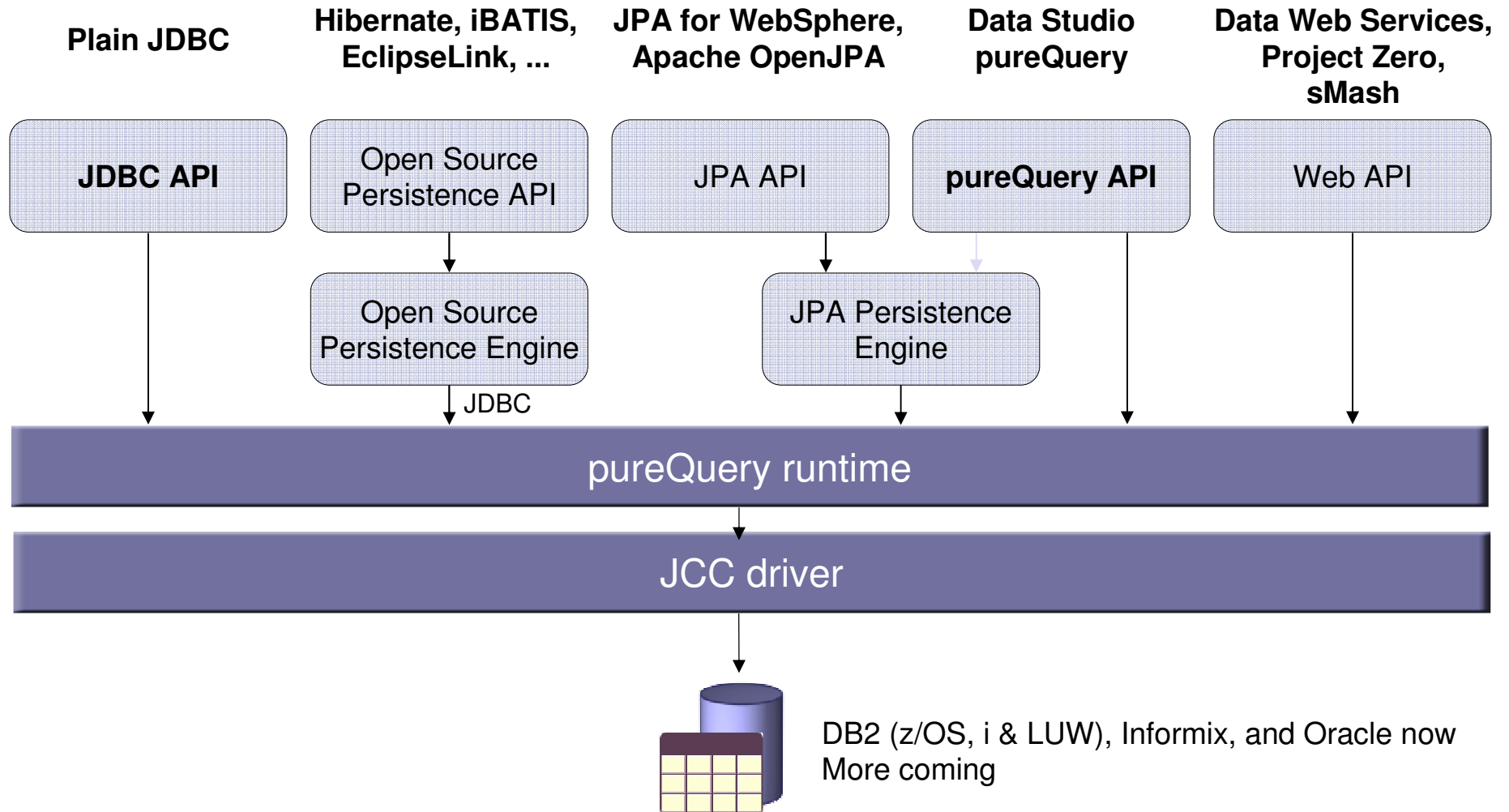
Correlate with data source attributes

Execute, tune, share, trace, export SQL

- Find in Source
- Run SQL
- Show in SQL Editor
- Export SQL to File...
- Compare
- Retrieve EXPLAIN Data
- Open Visual Explain
- Tune SQL
- Generate pureQuery Code...
- Find in pureQueryXML

Java database access and pureQuery

Many on-ramps for new and existing applications



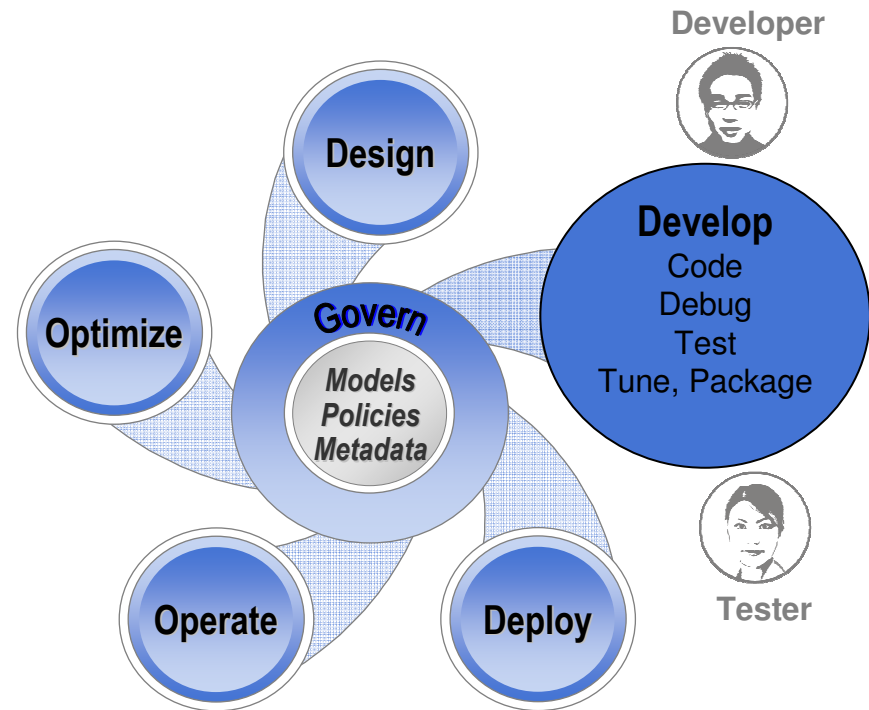
IBM Optim pureQuery Benefits

- **Reduce costs**
 - Increase system throughput
 - Move workload to zIIP and zAAP
 - Improve developer productivity

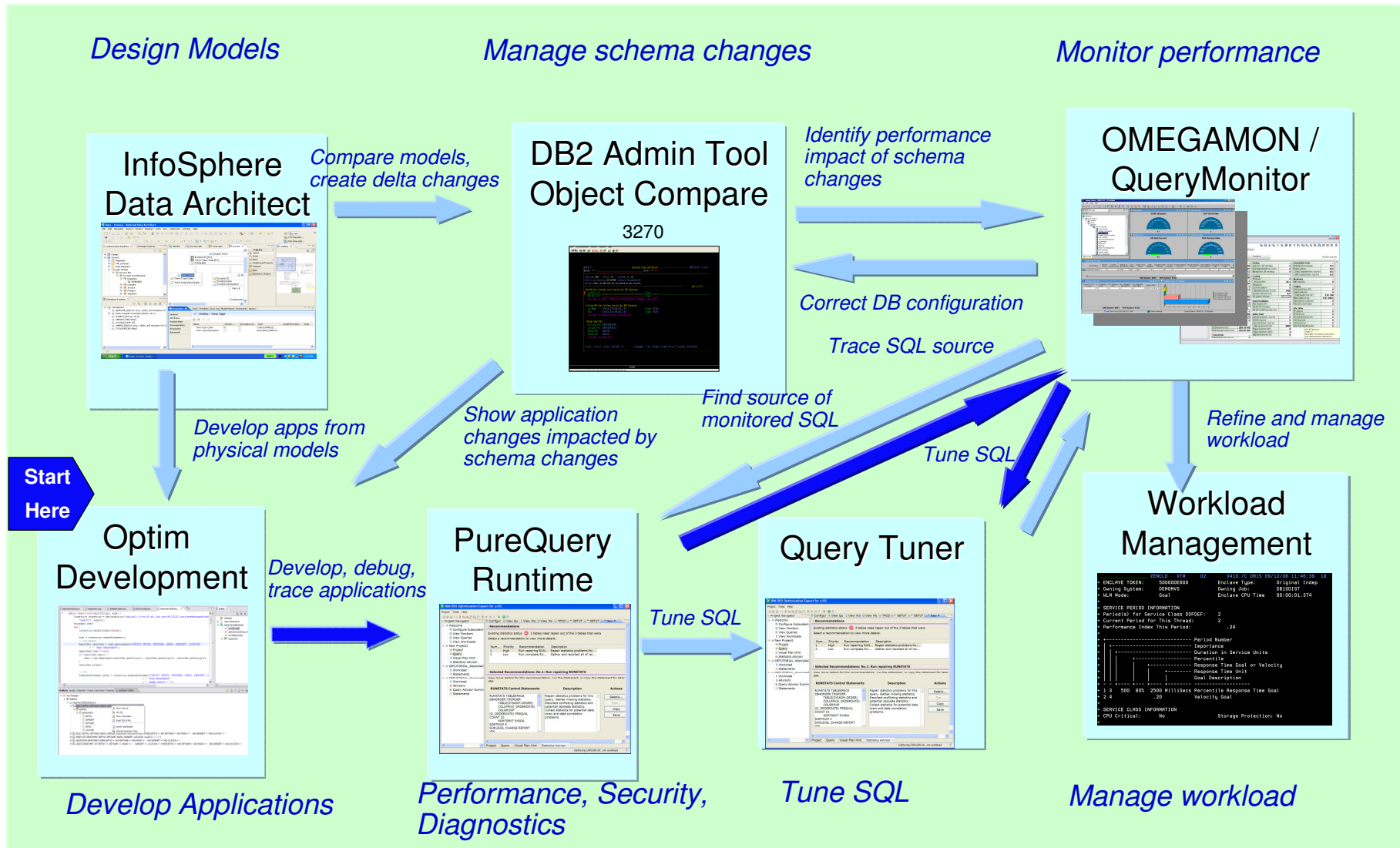
- **Improve quality of service for new and existing Java applications**
 - Improve performance
 - Lock in access plans
 - Speed up problem resolution
 - Exploit workload management features

- **Reduce development time for new Java applications**
 - Bridge Java and data
 - Balance productivity and control
 - Enhance developer and DBA collaboration

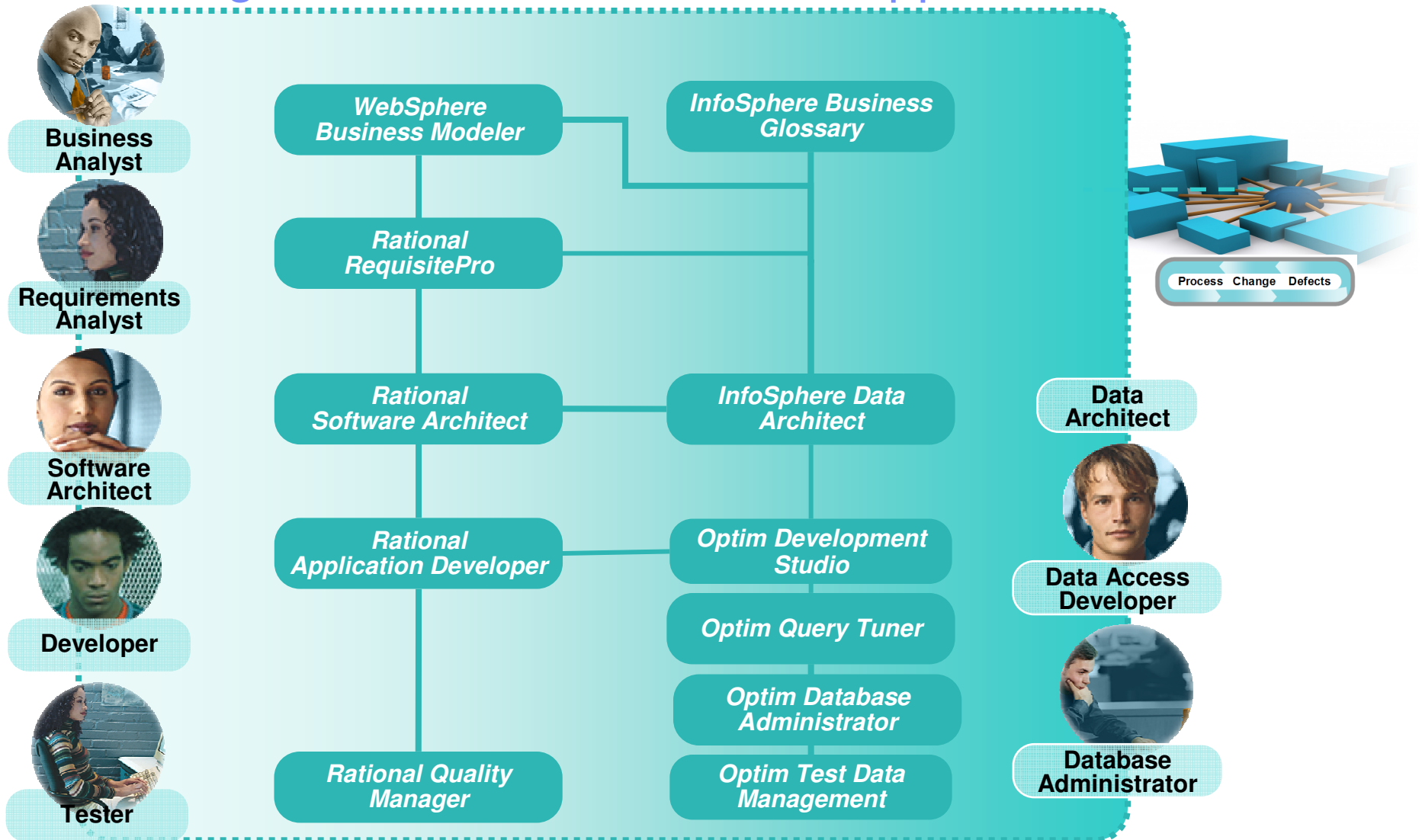
- **Enhance security**
 - Limit user access
 - Minimize SQL injection risk
 - Improve audit readiness



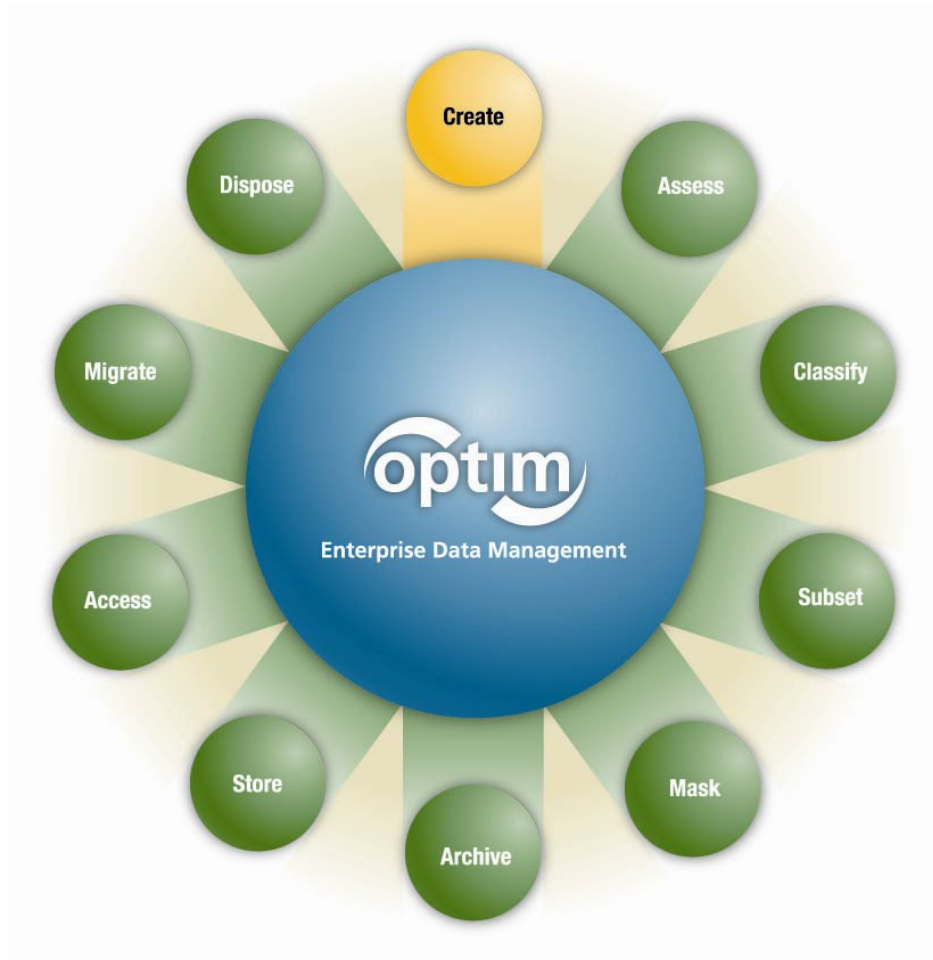
DB2 for z/OS IDM Scenario



Extending Rational for Data-Driven Applications

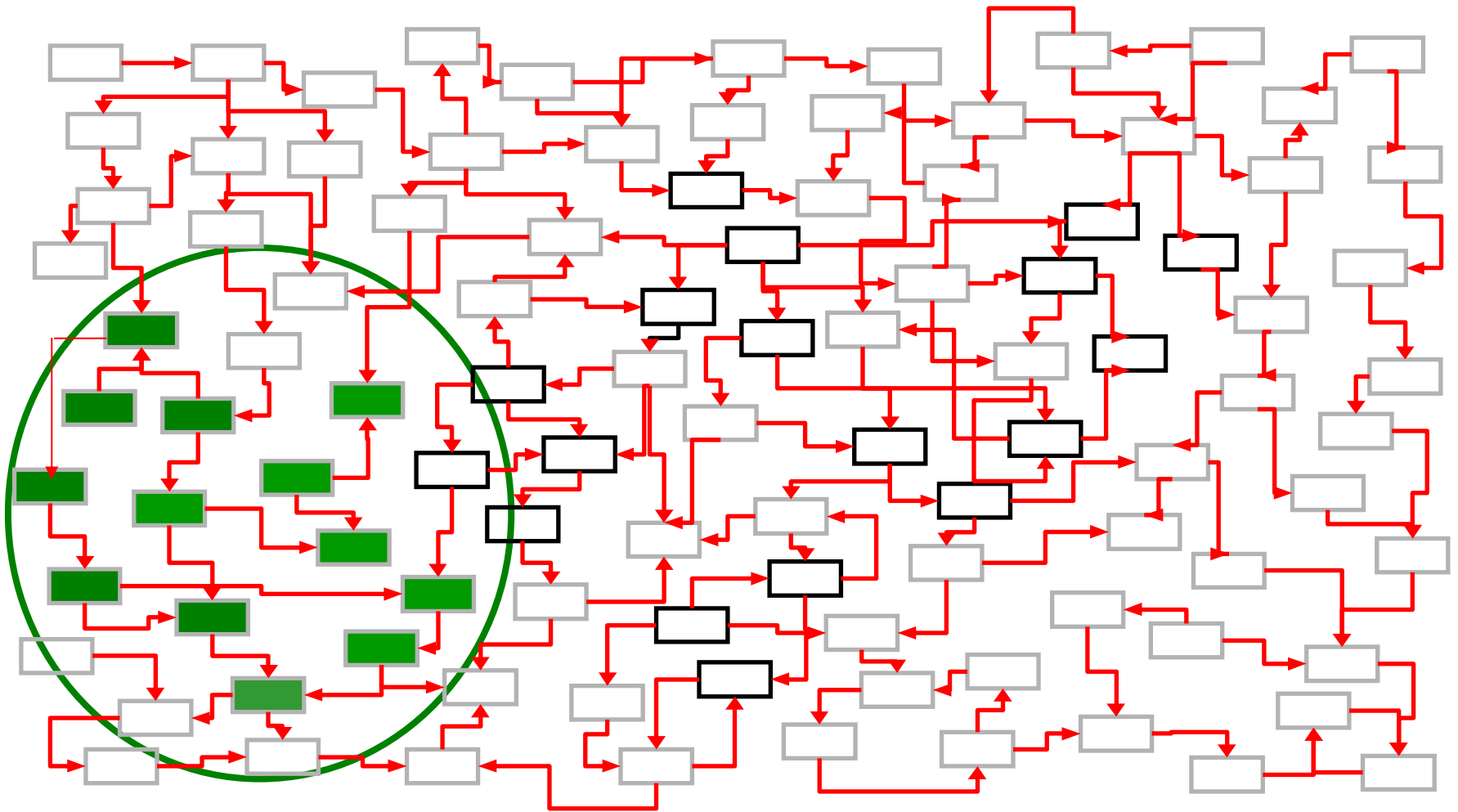


IBM Optim™ Solutions (classic)

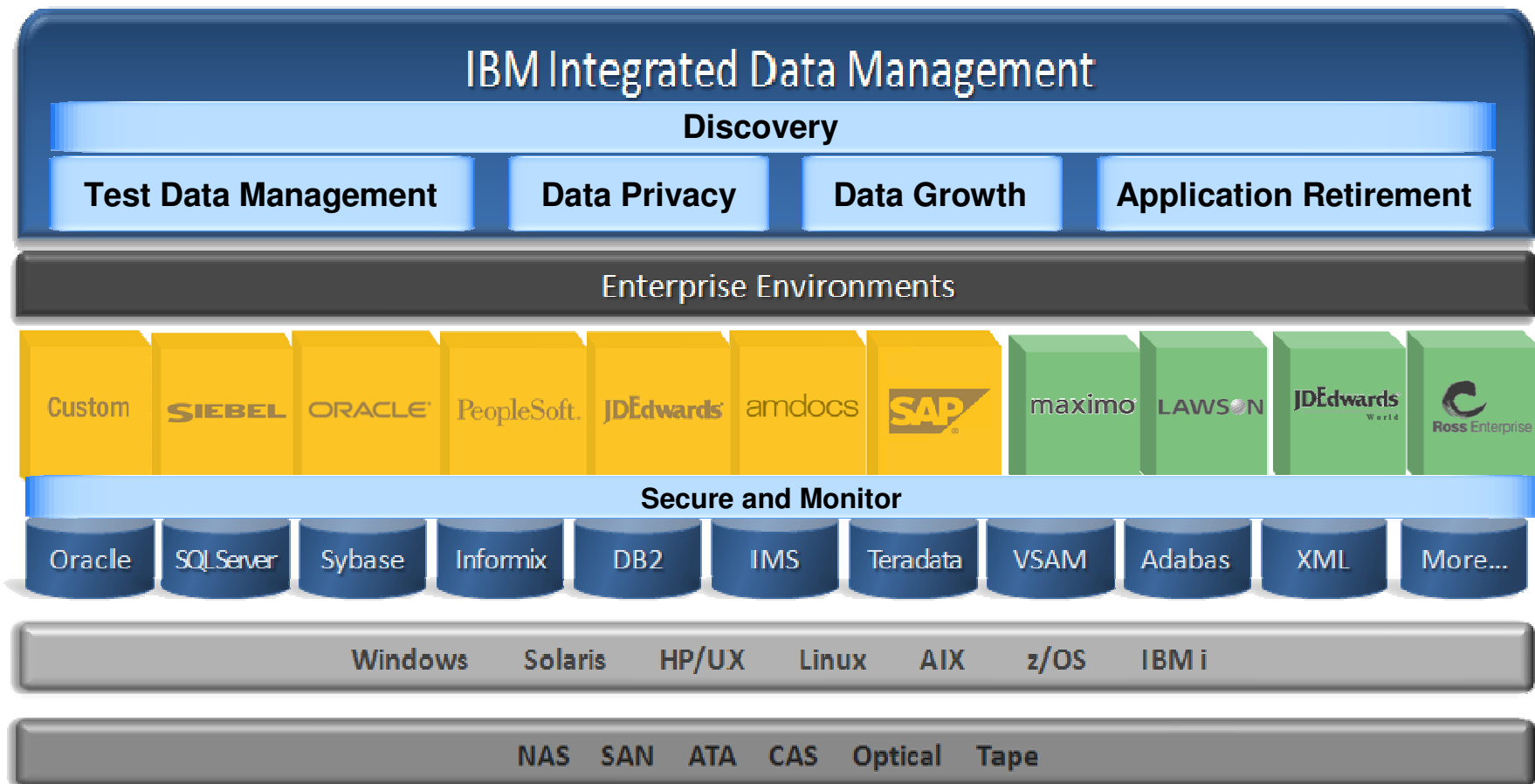


- **Optim Test Data Management**
 - Create targeted, right sized test environments
 - Speed iterative testing processes
 - Improve application quality
- **Optim Data Privacy**
 - Mask confidential data
 - Comply with privacy policies
- **Optim Data Growth - Archiving**
 - Control data growth
 - Performance
 - Storage Savings – Re-use
 - Version Upgrades/Migrations
 - Lower TCO
 - Discovery - Support retention compliance
- **Decommissioning –**
 - Enable application retirement, avoid associated costs

Enterprise Business Objects



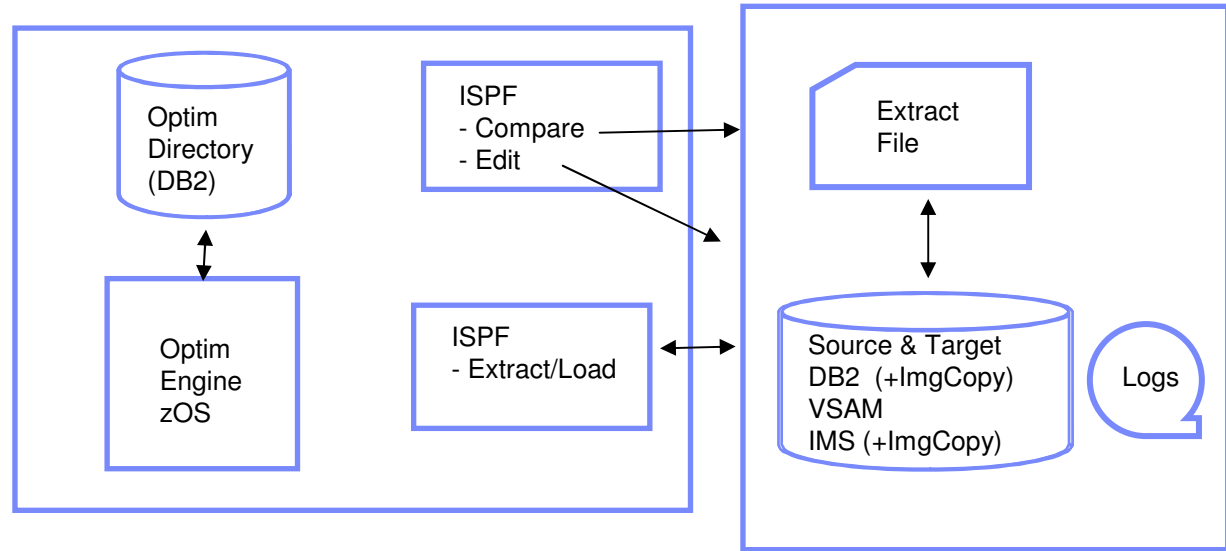
Supporting Enterprise Environments



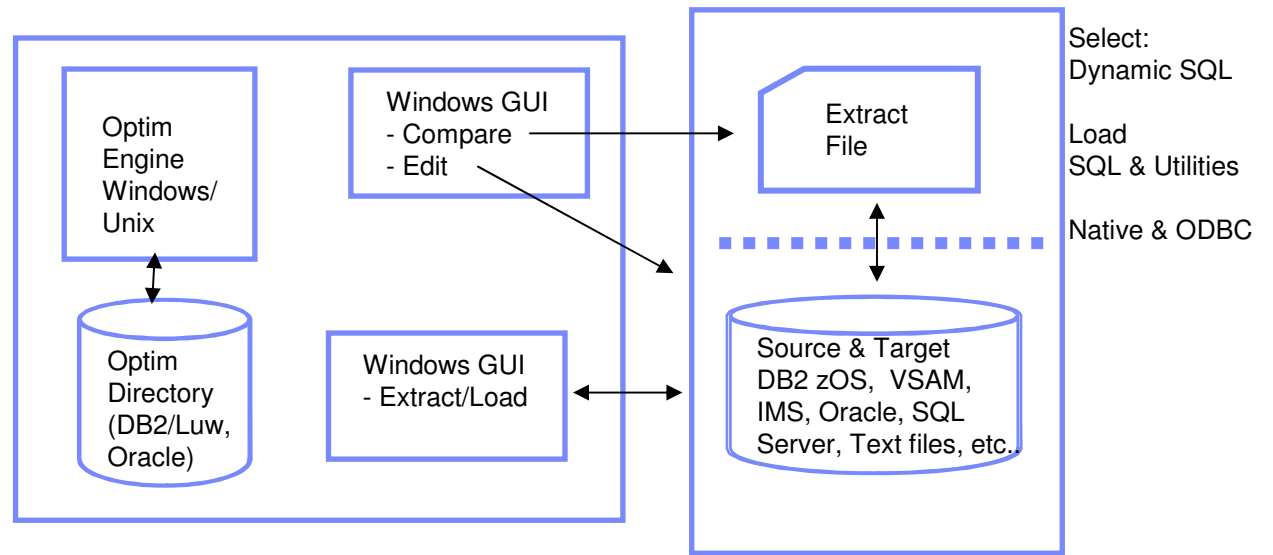
Organization environments are diverse, yet interrelated therefore what you use to manage the data **MUST** support across your environment

Optim 'Classic' Architecture

zOS

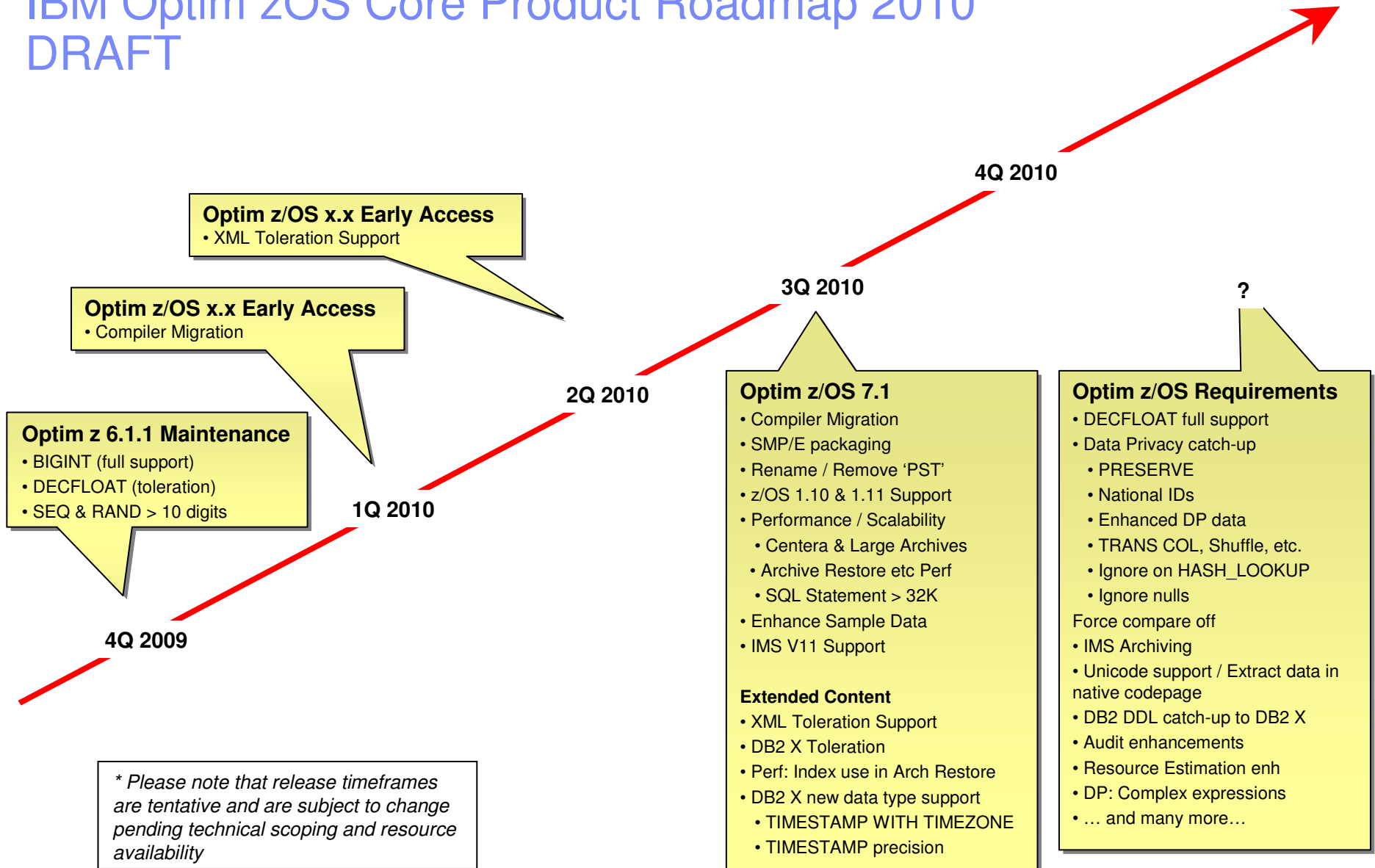


Windows/Unix



IBM Optim zOS Core Product Roadmap 2010

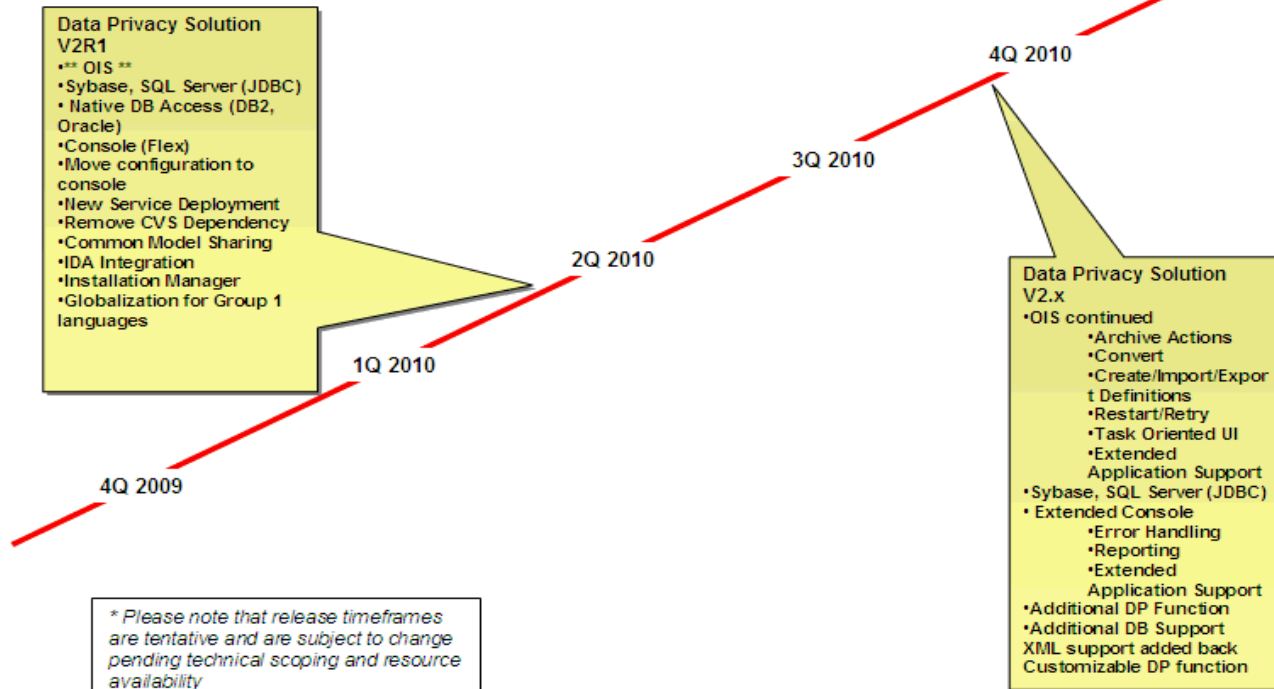
DRAFT



Optim 'Classic' next

- **Optim Data Redaction**
 - Fine grained privacy for unstructured documents
- **Optim designer – SOA /eclipse based user interface – across platforms (Q2)**
 - Data Privacy – in place

IBM Optim Designer / Console / DP Solution Roadmap 2010 DRAFT



Dear Sir,
your ref: [redacted]

18 January 2007

Dear [redacted]

Your complaint about Halifax PII

I refer to your letter dated 15 January 2007 which has been passed to me by [redacted] because I am dealing with your actual complaint. I consider that you have had service responsibility to respond to my original view of your complaint which was sent to you on 28 November 2006. In the meantime the further points you have raised have been reviewed several times however you have not presented any new evidence on anything which, in my view, would persuade this Service to [redacted] original findings I made about your complaint.

I note that you have requested further information from the Firm and you have asked for a further undisclosed period in order to present this to this Service. However this [redacted] already been presented with the evidence you have requested and I comment that [redacted] follows. Although you have requested the information from the Firm yourself and I consider that it is not obliged to provide it to you I conclude that this will not make any difference, because this Service has already reviewed this information.

- The Firm has provided an audit trail of the transactions disputed by you. This shows the location and times of the transactions and evidence that the card used was [redacted]
- The Firm says that no further attempts were made to use the card in question after you had reported it stolen and so it was not able intercepted by the Firm.
- Although you question the Firm's security systems, I consider that the audit trail record is in a format utilised by several major banks and therefore can be relied on. As we have already advised you, since the advent of CHIP and PII, this view is not shared by any recipients where a card with a CHIP has been successfully cloned by fraudsters so that it could be used by them successfully in any instance. My conclusion remains a that [redacted] that the original card is used to carry out the transactions disputed to [redacted]

I agree with my view or the further review carried out on your complaint. I am a past it forward to an ombudsman for a further review. This will complete the table to you from this Service. You should allow a further month for this further to pass and you will be advised of the outcome of it in due course.

any new evidence which you would like to be included in the ombudsman's as reply as soon as possible and in any event by 1 [redacted] 2007. If you are so by firm, please let me know now.

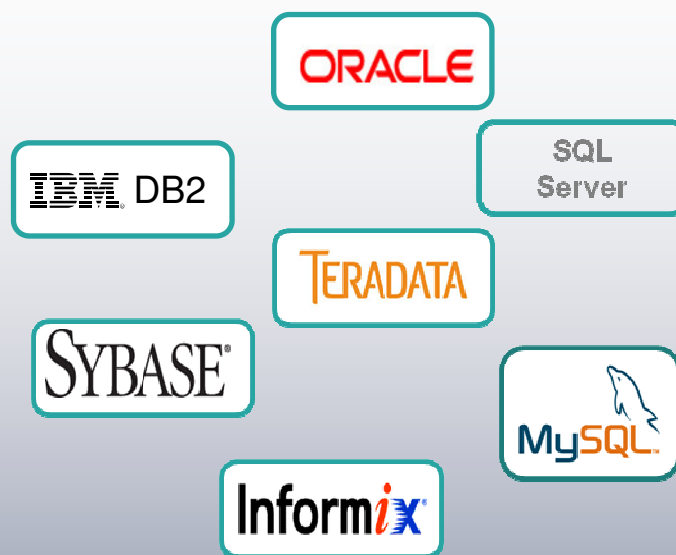
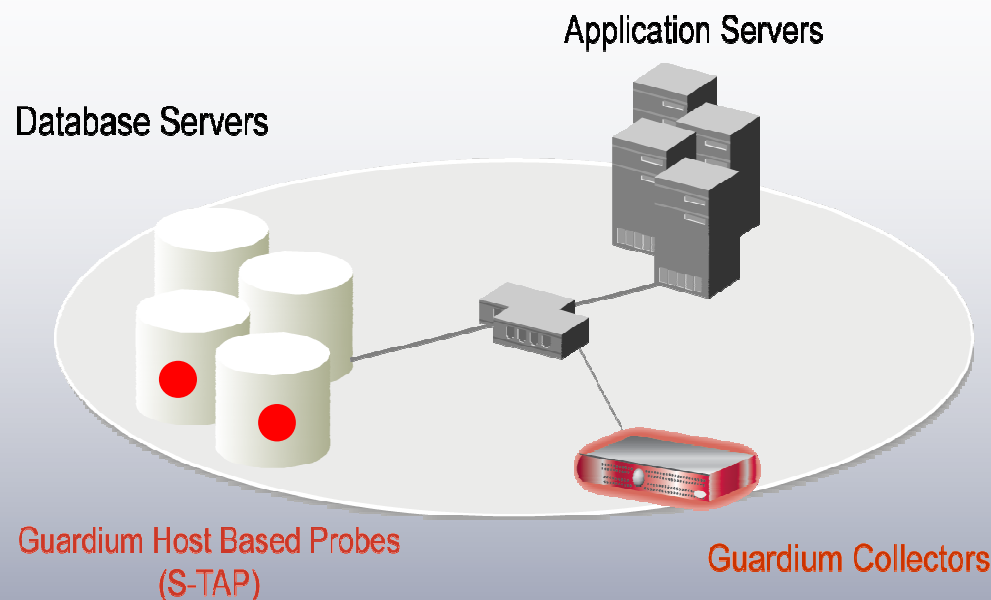
Yours faithfully,
[redacted]

Latest Acquisition: Guardium (to complete Audit Management Expert goal)

- addresses all aspects of Data Protection

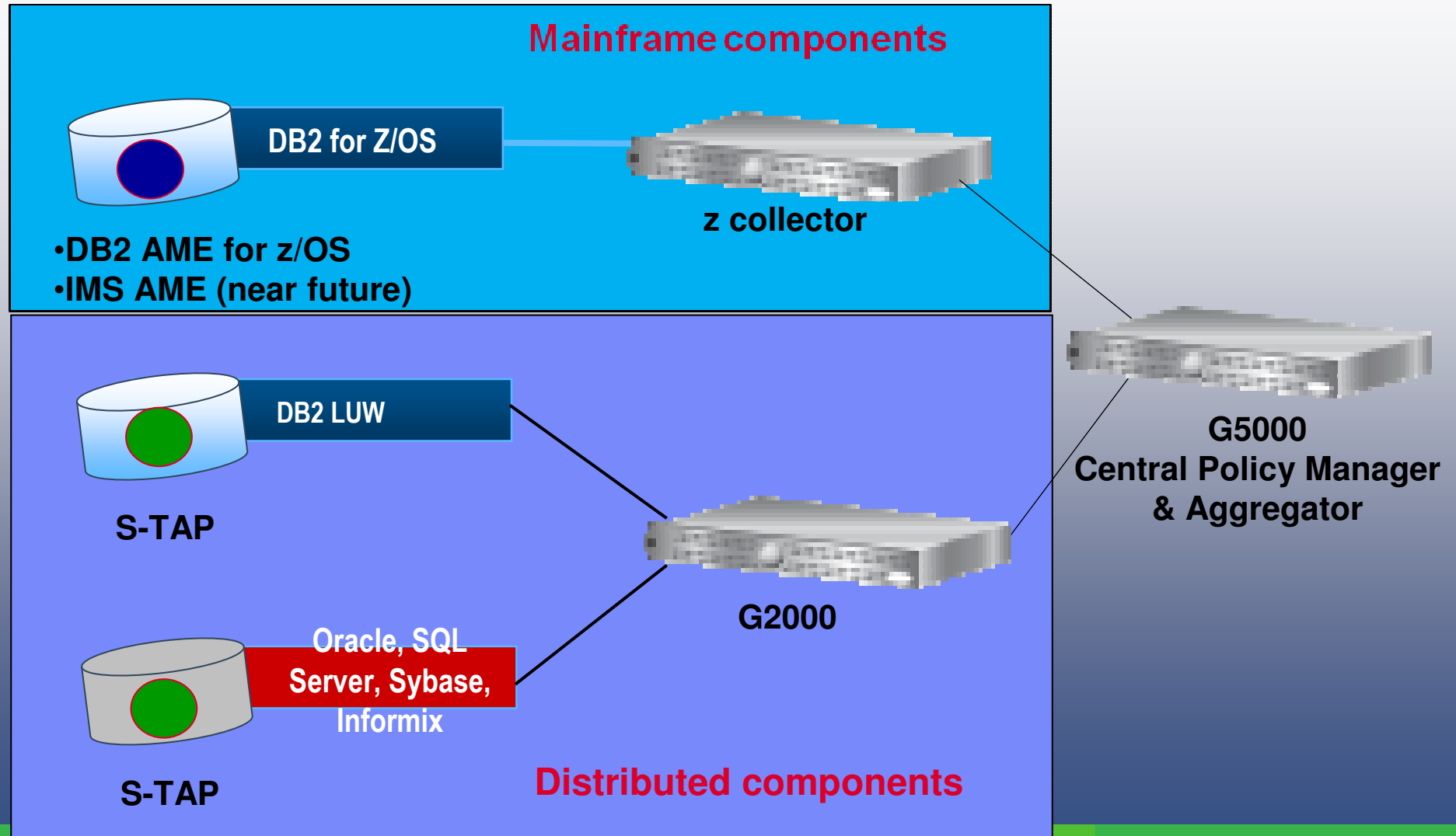


Guardium: Real-Time Database Monitoring



- Non-invasive architecture
 - Outside database
 - Minimal performance impact (3 - 5%)
 - No DBMS or application changes
- Cross-DBMS solution
- 100% visibility including local DBA access
- Enforces separation of duties
- Does not rely on DBMS-resident logs that can easily be erased by attackers, rogue insiders
- Granular, real-time policies & auditing
 - *Who, what, when, how*
- Automated compliance reporting, sign-offs & escalations (SOX, PCI, NIST, etc.)

Single set of security policies & compliance views for both mainframe & distributed environments



DB2 Tools 'Classic' update



DB2 Tools Customizer for z/OS (TCz)

- Drive post-SMP/E configuration, tailoring, customization
- Provide consistent, usable, simple solution
- No-Charge Prerequisite for ISPF based DB2 Tools
 - Separate FMID to be shipped with every DB2 Tool product
 - Except OMEGAMON DB2



Planned delivery in next release of SQL PA in 3Q'10

Benefits of TCz

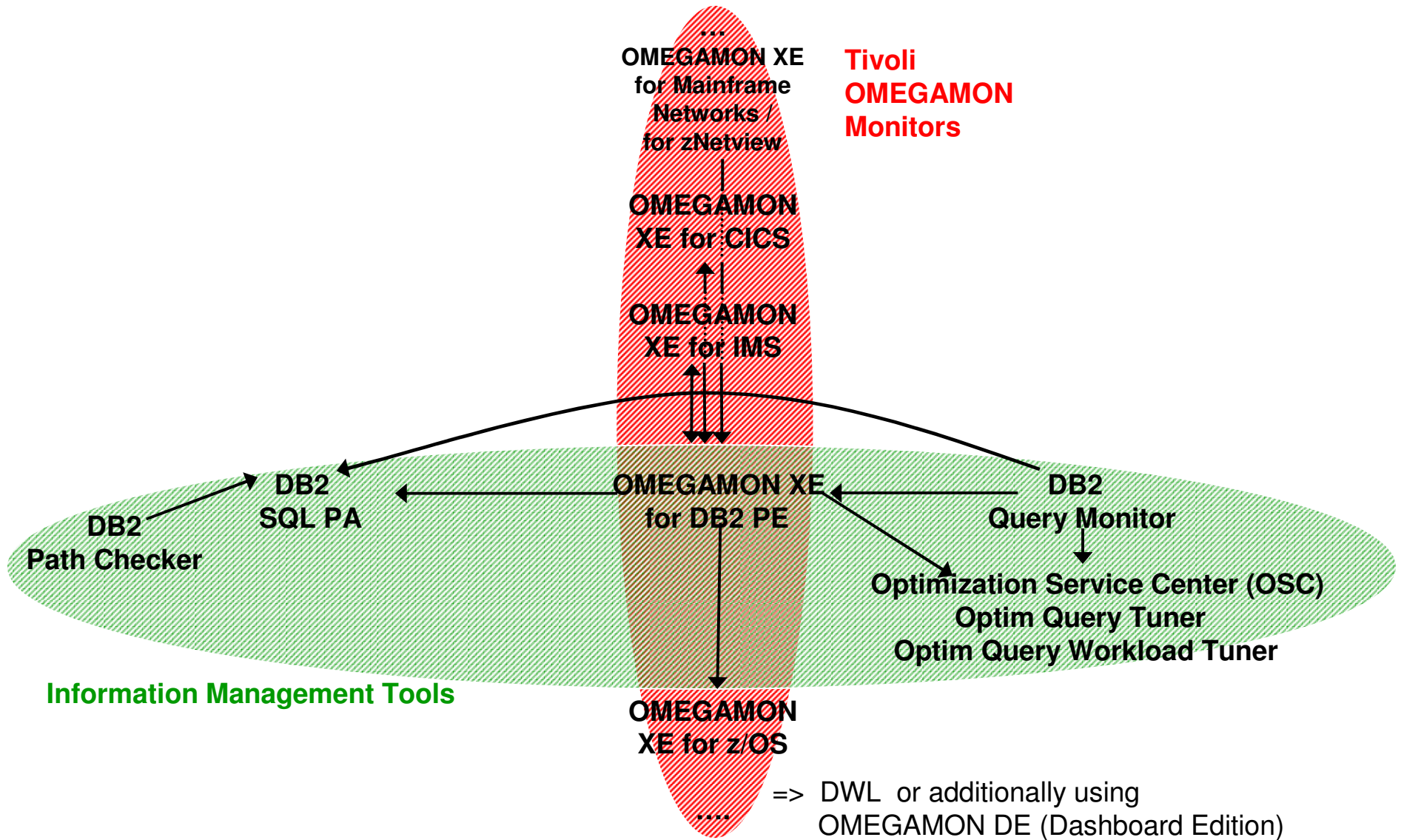
Common customization utility for all DB2 Tool products provides:

- a. **Consummability: Faster time to Tool usage**
 - Due to automatic Discovery of previous release customization parameters, there is less manual entry. Product templates are customized by TCz. Provides Job execution sequence.
- b. **Easy customization of multiple tools simultaneously**
 - Step by step, with HELP text, ISPF panel-driven dialog allows specification of multiple DB2 Tool products customization.
- c. **Faster propagation of customization across multiple LPARs**
 - Resulting product customized skeletons can be saved on shared DASD or user can transmit to other systems for usage on other LPARs.
- d. **Easier upgrades**
 - Parameters from previous customization are saved for future new product releases and DB2 upgrades

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)

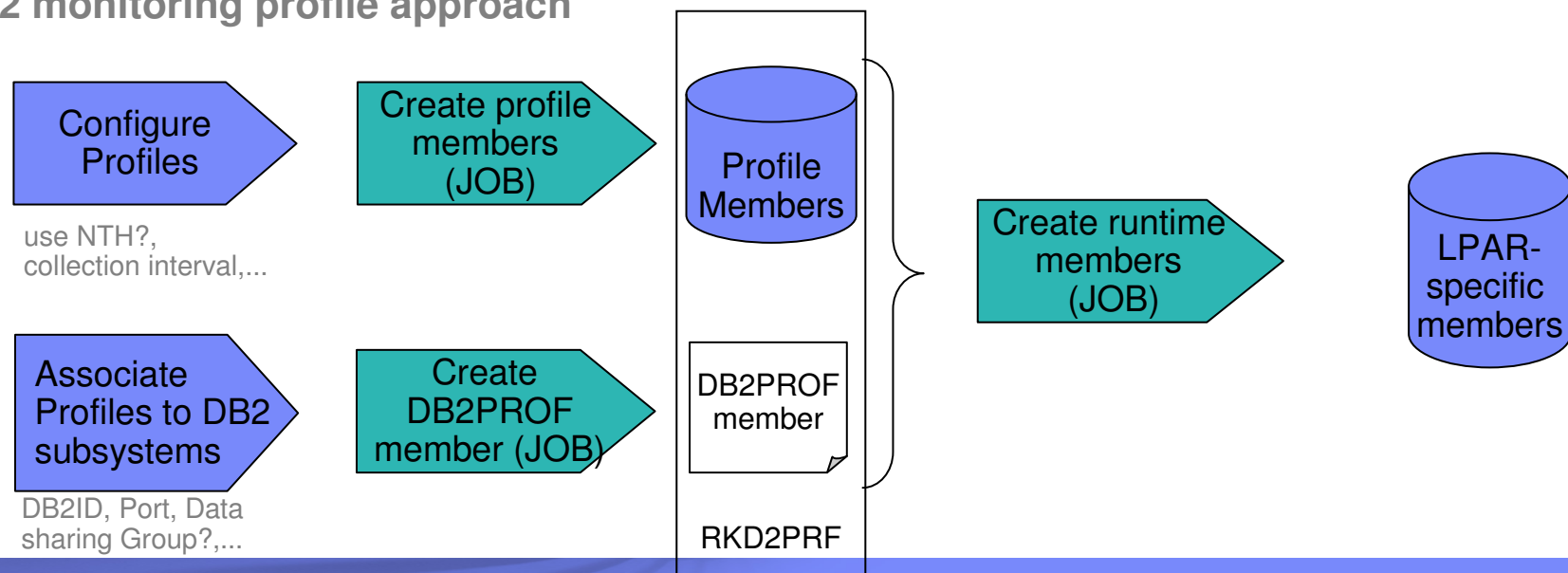
Horizontal and vertical Integration from the OM PE perspective



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

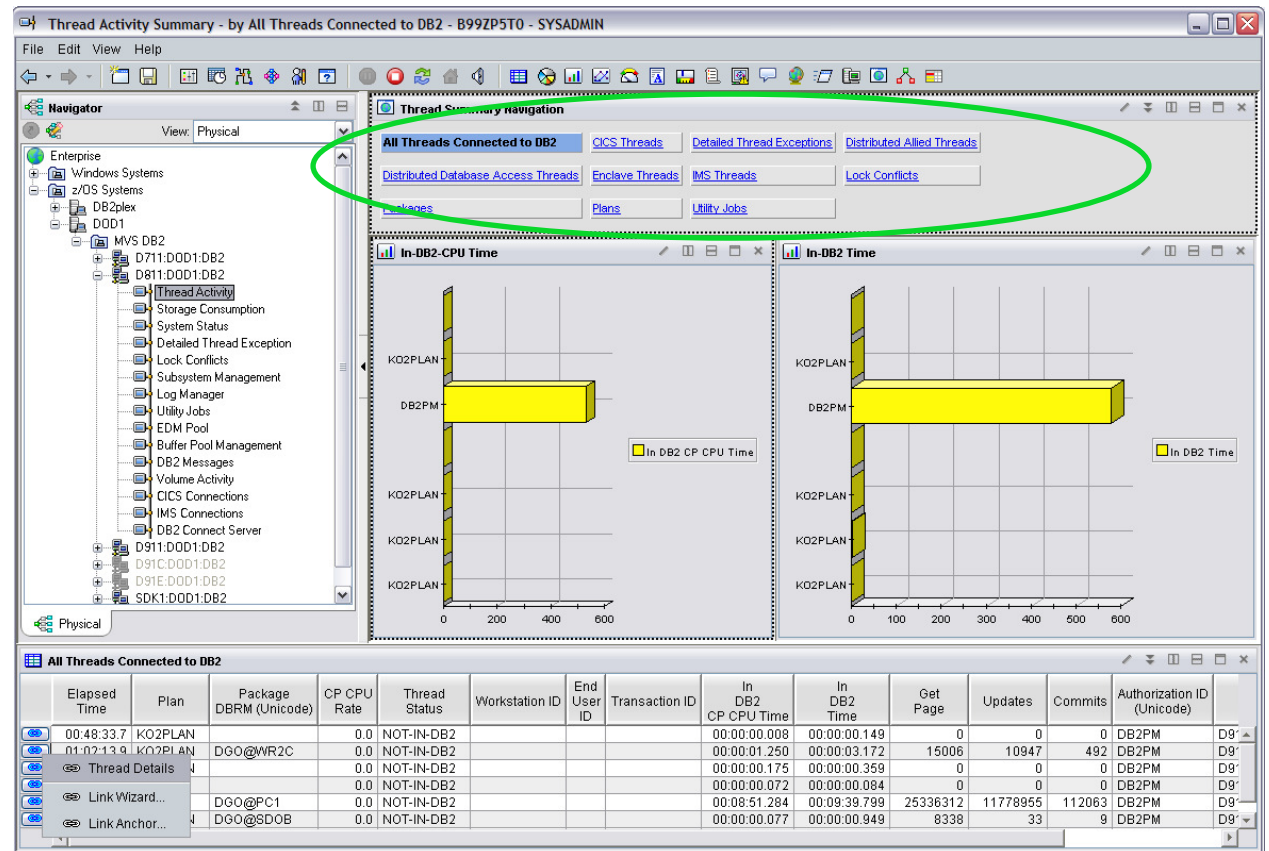
- **Provides a flexible mechanism for DB2 subsystem configuration**
 - Reduces effort for installing and maintaining the product
 - Initial setup
 - Changing an existing configuration
 - Applying maintenance
- **Profile created for DB2 subsystem**
 - Specifies the monitoring function to be enabled for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

- “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**

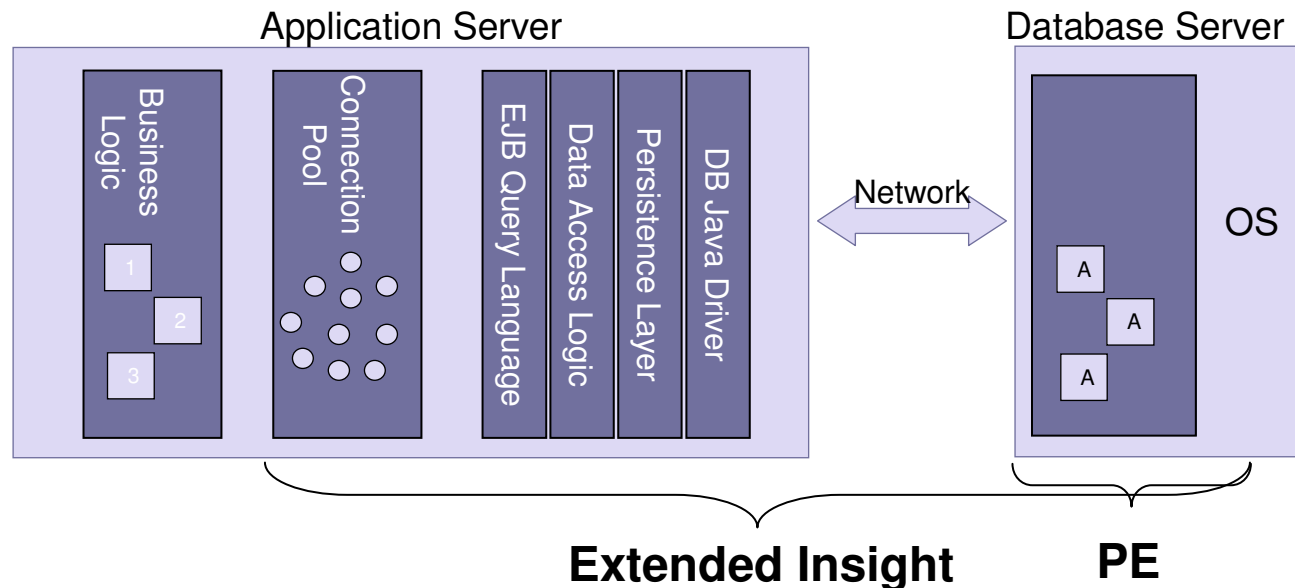
- High-Availability HUB capability that fulfills customer failover requirements for a z/OS-based monitoring server

OM PE Extended Insight for z/OS

- **New offering: OMEGAMON XE for DB2 Performance Expert Extended Insight for z/OS**
 - Surfaces DB2 on z/OS end-to-end response time metrics to the heterogeneous DB2 application monitoring environment to an intuitive GUI
 - VALUE:
 - Visibility to **all** the components that make up end-user response time
 - Facilitates platform and component-agnostic identification of response time bottlenecks
 - Enables near-instantaneous response to and future prevention of application slow-downs that translate into lost revenue
 - Leverages Tivoli Enterprise Portal GUI

DB2 Performance Expert Extended Insight Feature

Getting an End-to-End View



- Set performance indicators that better reflect end user experience
- Visualize time spent in each layer
- Isolate problems to correct area instantly
- Get connection pool detail for WebSphere application servers
- Use with Java workloads now, more coming

LIMETTE_59930_INSTANCE - End-to-End Details

End-to-End Details Selected View Tools Window Help

Data: **History** 05/28/2008 18:30:36 Since 05/28/2008 18:00:36

Aggregation: 1 minute Refresh: **Manual**

Main sales.portal1.jk-enterprise.com

sales.portal1.jk-enterprise.com

Distribution of end-to-end response time (s)

Transactions (x 1,000)

Physical reads (x 1,000,000)

Network bandwidth

Legend

- Data server
- Sorting
- Network
- Driver processing
- Driver agent wait
- WS connection pool wait
- Application

Show data as

- Graphical View
- Text View

Top SQL statements Show top 3 by Avg. end-to-end response

Statement text	Occurrences	End-to-end time
SELECT * FROM sales customer AS cust, sales order AS or...	51,000	2.344
SELECT a.schema, b.name FROM sysi...	37,000	2.308
DELETE FROM account WHERE aid = 3...	42,000	2.227

Top clients Show top 3 by Problems

Client	Problems
sales.portal1.jk-enterprise.com	32%

Buffer pool and sorting

Buffer pool hit ratio (%)	43.400
Buffer pool physical reads per min.	1,900,000
Rows read per selected row (avg.)	11.520
Sorts per minute	8.647
Sort overflows	0

Most of the time is spent for WAS connection pool wait time.

Double-click to drill-down and display detail information.

OMEGAMON PE in development

- **OM PE Version 510**

1. Day-1 support for DB2 X
2. Extended Insight (E2E) for DB2 z/OS (OM EI)
 - New offering: EI bundled with OMPE versus separate PIDs
3. Day-1 Support for IBM Smart Analytics Optimizer (ISAO)

DB2 Query Monitor V3.1 Preview

- **Sysplex support in ISPF Client**
- **Literal Stripping**
- **Full function WEB Client**
 - Activity Browser
 - View data from intervals data sets or archive data
 - Pie chart graphs
 - Customized views
 - Filters
 - Alert Browser
 - QM Administration
 - Edit and Manage Scopes
 - Control CAE Monitoring for Alerts
 - Define Actions and Responses
- **Deprecate Windows Client**

Recovery Expert V2.2

- **Automap Support**

- Easy definitions of Backup Profiles and map target to source
- Exclude target copy pool volumes to limit scope backup scope
- Drive partial Backup System to reduce DASD requirements

- **Create Image Copies from System Level Backup**

- Drive downstream processes that require Image Copies

- **EMC Virtual Device Support**

- Enhanced Incremental System Level Backup
- DFSHSM support post GA via PTF

Log Analysis v3.2

- **Log Forward and Log Backwards in same run**
 - Accelerates Log based replication
 - Supports tablespace changes like reorg without user intervention

- **Automatic HSM recalls**

- **Resolve Started UOW**

DB2 High Performance Unload for z/OS V3.2

➤ What is it?

- DB2 High Performance Unload for z/OS is a flexible, easy-to-use product that provides a fast and efficient tool to unload and extract data for movement across enterprise systems or for in-place reorganizations.

➤ What's its value to customers?

- Enables businesses to speed data extraction and data migration tasks which have become more time-consuming and complex. It supports the unloading of large amounts of data and increases the efficiency and availability of DB2 applications.

➤ New functions and features:

- The ONDEMAND_RESOURCE_ALLOCATION PARMLIB option has been added, which allows better management of a long list of objects that were unloaded in a single DB2 HPU step by using LISTDEF and TEMPLATE
- The TEMPLATE statement has been updated to support HFS files when LOB data is unloaded by using Lob File Reference
- Support for LAST_IC using image copies per partitions has been added to the COPYDDN option
- The ability to obtain one output file per partition when you use a global full image copy as input has been added
- The SQLPART option has been added to the SELECT block, which allows you to generate an output file per partition when you use DB2 FORCE
- New EXECUTE NO option allows generating the LOADDN file without unloading the data

DB2 Utilities Enhancement Tool for z/OS V2.1

➤ What is it?

- DB2 Utilities Enhancement Tool for z/OS provides additional features and functions not found in the DB2 Utilities Suite that address the most demanding needs of DB2 Utility environments. It enables database administrators the ability to proactively cancel threads on DB2 objects that utilities and applications need to access during batch processing. It also.

➤ What's its value to customers?

- Enables businesses to provide more user control over DB2 utilities and applications and thus, DB2 resources and availability. It increases the productivity of the DBAs by reducing time-consuming maintenance tasks and helps free their time so that they can focus on higher priority tasks.

➤ New functions and features:

- More control over thread processing with the ability to define Policy Rules.
- This release increases the usability of REORG, LOAD and CHECK DATA utilities by providing additional options that increase productivity and improve availability:
 - During a SHRLEVEL CHG REORG with no mapping table defined, DB2 UET can automatically create a temporary mapping table and corresponding index using pre-defined sizes. The DB2 UET also drops the temporary objects upon completion.
 - The LOAD utility syntax is enhanced with additional keywords, PRESORT, CONSTANT and VALUEIF.
 - When using the DB2 UET with the CHECK DATA utility, you can write discarded DB2 rows to a flat file automatically created by the DB2 UET, instead of to a DB2 table that must be defined by the user .

What's New in DB2 for z/OS Utilities and zIIP?

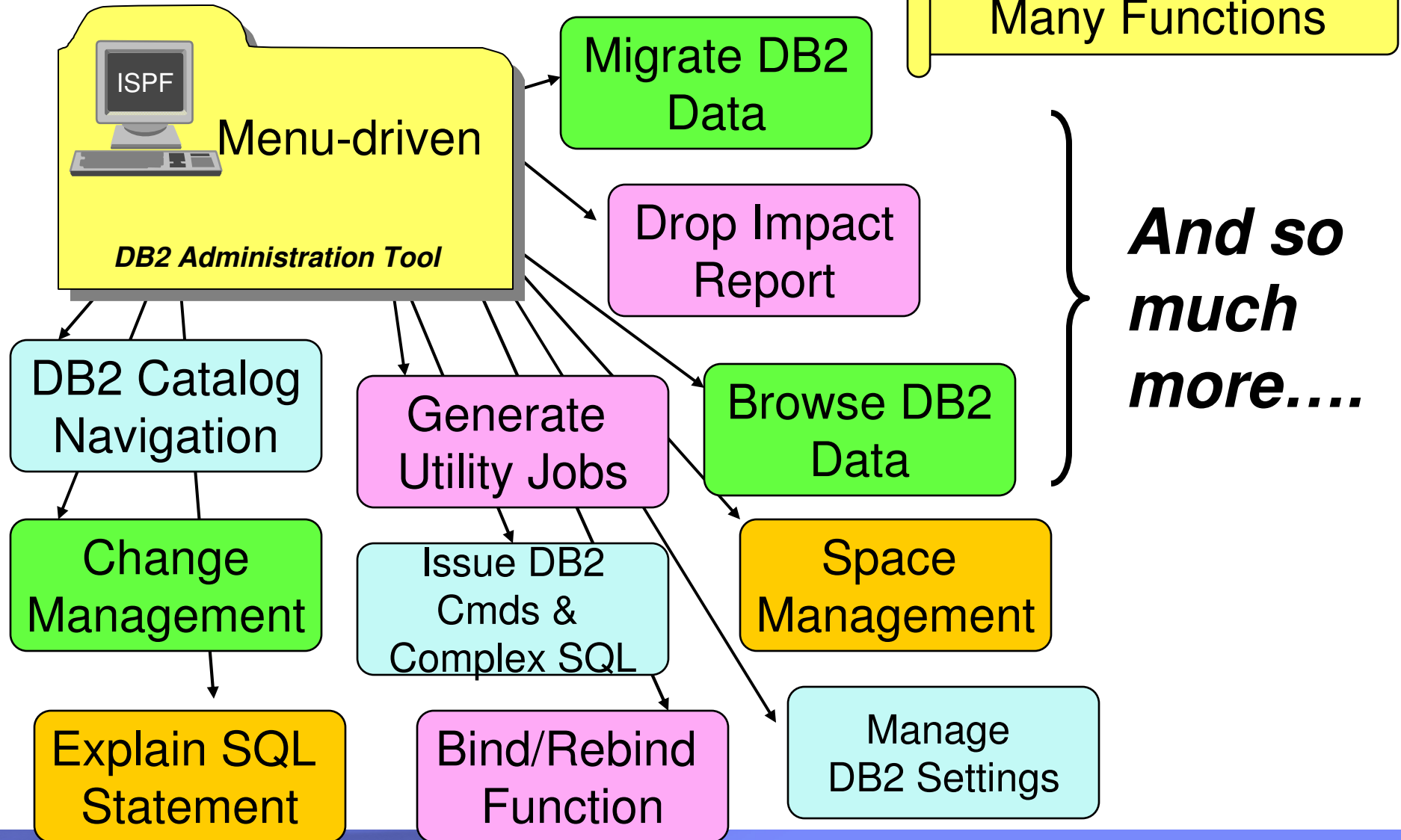
- **Additional zIIP engine offload for the DB2 Utilities**
 - For DB2 Version 8 and DB2 9
- **What is eligible?**
 - Almost all DB2 utilities sorting of fixed-length records in the memory object sort path
- **System requirements**
 - System z9 or z10 with specialty engines and z/OS V1.10 with PTF UK48846 from APAR PK85856 and PTFs for either DB2 Version 8 or DB2 9
 - For DB2 Version 8:
 - PTF UK48911 from APAR PK85889
 - For DB2 9:
 - PTF UK48912 from APAR PK85889

DFSORT zIIP offload Customer Value

- **Almost all utility sort processing involves fixed-length records, so this new support will apply to most utilities**
 - Exception is REORG data sorts that handle variable length records and is not eligible for the offload
- **Most utility processing involves sorting index keys**
 - Can represent a significant amount of data
 - Can consume up to 60% of utility CPU time in sort processing
- **Initial testing determined approximately 50%* of sort CPU time will be offloaded with this enhancement depending on**
 - if the sort processing selects the memory object sort path
 - the size of data being sorted
 - available system resources
- **Who will benefit?**
 - Customers who are constrained on CPU during utility processing or who would like to reduce internal CPU charge back costs for the utilities

DB2 Administration Tool for z/OS

Functional Overview



What's New? Admin Tool V7.2 - 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 Admin Tool 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

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**

Data Encryption Tool for DB2 and IMS Databases

- **Why and what**
 - Self Encrypting Devices solves something
 - Does customer have 100% self encrypting devices?
 - Do auditors have concerns about tracking location of data?
 - Index Encryption
 - Encrypting indexes introduces performance problems
 - Personal Account Numbers should be placed in 1 column index
 - Information is useless without additional Personal Identity Information
 - EDITPROC Restrictions
 - DB2 V9 to lift restrictions
 - Long column names, New Data Types, Alter Add Columns
 - Still need unload/drop/create/load to initially encrypt data

- **Exploits new Z10 CEX3C Encryption, CPACF Protected Key**
 - Requires PK99119 and ICSF HCR7770

Data Warehouse Administration & Automation in DB2/z

- **DB2 Administration Tool for z/OS & DB2 Utility Suite for z/OS**
 - DB2 Administration Tool for z/OS is a critical tool for managing the day-to-day operations of a DB2 system, including a Data Warehousing environment
- **DB2 Automation Tool for z/OS**
 - Data Warehouses are often insert heavy, creating disorganization. Therefore, maintenance aids such as Auto Tool are a big help.
- **DB2 Cloning Tool for z/OS**
 - Some customers have a staging area where they rapidly build temporary data from production to extract for the data warehouse
- **DB2 Recovery Expert for z/OS**
 - Data availability is critical to many Data Warehousing customers. Recovery Expert can help with achieving maximum speed in recovery situations.
- **Optim Data Growth Solution for z/OS**
 - Optim Data Growth allows administrators to effectively manage large volumes of active and archive Warehouse data to reduce costs and limit legal exposures
- **DB2 Query Monitor for z/OS & Omegamon for DB2 on z/OS PE**
 - Complex SQL queries that have a significant impact on performance can be easily identified by Query Monitor
- **DB2 SQL Performance Analyzer for z/OS**
 - Analyze DB2 access paths, Optimize SQL (usage of ISAO – explanation coming)
- **DB2 Utility Enhancement Tool for z/OS**
 - Cancel long running threads to allow DW maintenance

DB2 'classic' Tools that will Xploit DB2 for z/OS V10

- **DB2 Administration Tool / DB2 Object Compare for z/OS V10 ***
- **Tivoli OMEGAMON XE for DB2 Performance Expert on z/OS V5.1 ***
- **DB2 Log Analysis Tool for z/OS V3.2**
- **DB2 Recovery Expert for z/OS V2.2**
- **DB2 Automation Tool for z/OS V3.1**
- **DB2 Path Checker for z/OS V4.1 ***
- **DB2 Bind Manager for z/OS V3.1 ***
- **DB2 Query Monitor for z/OS V3.1 ***
- **DB2 Audit Management Expert for z/OS V2.2 ****
- **DB2 Cloning Tool for z/OS V2.2**
- **DB2 Utility Enhancement Tool for z/OS V2.1**
- **DB2 SQL Performance Analyzer for z/OS V3.3 ****
- **DB2 High Performance Unload for z/OS V3.3 ****
- **DB2 Table Editor for z/OS V4.3**
- **DB2 Change Accumulation Tool for z/OS V2.1**
- **DB2 Object Restore for z/OS V2.1**
- **Data Encryption Tool for IMS and DB2 Databases V1.1**

* New Version ** New Release

Admin Tool Xploitation

- **Online Schema**
- **New security models**
- **Hash Tables**
- **Index Include Columns**
- **Temporal Data**
- **Inline LOBS**
 - Variable records
- **Access Path Stability**
- **Autostats**
 - Manage profiles
 - Retain old profiles and allow them to be reused

Recovery Tooling Xploitation

- **Log Analysis Tool**
 - Undo / Redo Temporal Data
 - Flashcopy Image Copies
 - Full support of all V10 log changes

- **Recovery Expert**
 - Undo / Redo Temporal Data
 - Flashcopy Image Copies

- **Additional Flashcopy Image Copy Support**
 - Change Accumulation Tool
 - Automation Tool
 - High Performance Unload
 - Administration Tool

Automation Tool Xploitation

- **Autostats**
 - Support new architecture as proposed by Data Studio team
 - Interface with existing job schedules

- **Reorg Avoidance**
 - Exploit new Clustering RTS
 - Exploring how to avoid Reorgs for IM enhancements

- **Flashcopy Image Copies**

- **Futures**
 - Support for Admin Scheduler
 - Patrol with Scheduler Task table to write jobs to existing schedulers
 - Exploit Admin Scheduler as alternative job scheduler

Path Checker and Bind Manager Xploitation

- **Path Checker**
 - Provide option to selectively drive Plan Management in V9/V10

- **Bind Manager**
 - Drive V10 Plan Management

OMEGAMON for DB2 Xploitation

- **Extended Insight**
 - End to End response time monitoring
 - New SQL summary reporting

- **Support all new IFI and monitoring data**

- **Support Smart Analytics Optimizer**



Peter Schouboe
zIM Nordic

+45 4120 1153
schouboe@dk.ibm.com

DB2 Events to look for !

I'm a member of:
**The World of DB2
for z/OS**



**IDUG 2010 Europe will take place at
the Hilton Vienna Hotel
8-12 November 2010.**



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