



Extending Your Mainframe For More Business Value

**Add New Workload –
Data Servers on System z**

New Data Workloads

We need a data base server for our new **SAP** applications

Our credit report project needs to store **XML** data



**Service Oriented Finance
CIO**

**DB2 9 for z/OS is the best
choice for these projects
too!**



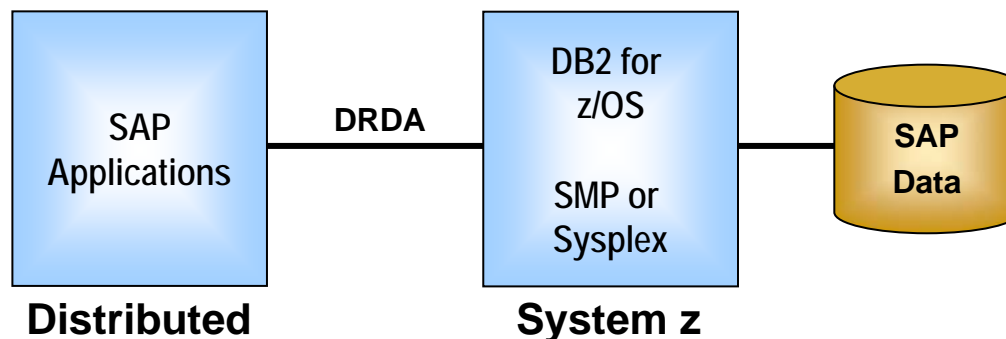
IBM

DB2 For z/OS Is Designed To Work Better With SAP

■ Partnership with SAP

- ▶ 35 years of IBM partnership with SAP, 12,000 joint customers
 - 14 years of DB2 advancements driven by SAP
 - Joint development team
 - technology roadmaps with IBM
- ▶ DB2 for z/OS 9: approximately 40 features requested by SAP
- ▶ Eligible for zIIP and new workload price incentives
- ▶ No unique features in SAP exploit Oracle

■ SAP data operations benefit from the inherent qualities of the mainframe platform



DB2 for z/OS Optimizations for SAP

■ Ease-of-Use

- ▶ Easy to clone DB2 instances, such as test environment

■ Less DBA skills and activities required

- ▶ Large Object Management, Automated Space Management
- ▶ DB2 Recovery Expert for automatic recovery and backup
- ▶ Real-time Statistics Utility provides automatic scheduling information, integration into Workload Management and Resource Limit Facility
- ▶ BACKUP and RESTORE system enhancements

■ SAP exploitation of DB2 9 new features

- ▶ Partition by growth, Merge data and Fast load
- ▶ Simplified connectivity and seamless failover
- ▶ SAP specific Auditing by SAP transaction, report et al
- ▶ Index rename and compression, BIGINT data types

■ High Performance

- ▶ SAP Business Warehouse performance gains through Dynamic Index ANDing

Case Study: Consolidate SAP Data Server on Mainframe

Existing Mainframe



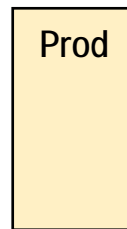
Existing z10:
2 GP 1,720 MIPS
DB2 and utilities
With 20TB storage

Existing Disaster Recovery Site



Existing:
1 GP processor for hot
disaster switch-over
1 "dark" DR
processors
With 20TB storage

Add 1 LPAR for New SAP Data Server w 1TB Storage



Prod
2,300 MIPS
additional
workload

Incremental:
2 GP 1,380 MIPS (60%)
1 zIIP 920 MIPS (40%)
1 GB memory

And Add Disaster Recovery w 1TB Storage



3 year
cost of
acquisition
\$5.07 M

Capacity Backup:
1 GP
1 zIIP

Or Add HP Integrity Superdome 9140N Servers w 1.55 TB storage



And Add Disaster Recovery w 1.55 TB storage



3 year
cost of
acquisition
\$6.68 M

HP DR solution is used in
software and hardware

SAP Data Server With Disaster Recovery Incremental Cost Breakdown

Mainframe Incremental Hardware

OTC		ANNUAL	
1 GP Processor	\$2,604,000 \$125,000	Processor Maintenance * (For year 2, 3)	\$156,785
DR Processors Memory (1GB)	\$27,000 6,000		
IBM Storage (1TB x2)	\$141,750	Storage Maintenance (For year 2, 3)	\$5,272
TOTAL	\$2,903,750	TOTAL	\$162,057 (year 2, 3)

Mainframe Incremental Software

OTC		ANNUAL	
DB2 Utilities	\$568,585	DB2 Utilities S&S	\$81,811
		DB2 MLC x12	\$171,672
		QMF MLCx12	\$76,728
		z/OS MLC x12	\$92,952
TOTAL	\$568,585	TOTAL	\$423,163

Distributed Incremental Hardware

OTC		ANNUAL	
HP Processors DR Hardware	\$1,341,121 \$804,673	Processor Maintenance (prepaid in year 1 for 3 years)	\$464,922
HP storage (1.55TBx2)	\$749,805	Storage Maintenance	\$44,400
TOTAL	\$2,895,599	TOTAL	\$509,322 (year 1) \$ 44,400 (year 2, 3)

Distributed Incremental Software

OTC		ANNUAL	
Oracle EE & Utilities	\$1,752,750	Oracle S&S	\$385,605
Unix	\$132,720	Unix S&S	\$48,421
		(Prepaid in year 1 for 3 years)	
TOTAL	\$1,885,470	TOTAL	\$530,869 (year 1) \$385,605 (year 2, 3)

* Mainframe Processor Maintenance includes the maintenance for general purpose processors and specialty engines

But What About The *SAP Applications*?

- Typical configuration
 - ▶ SAP data base server on z/OS
 - ▶ SAP applications on distributed servers
- Better configuration
 - ▶ SAP data base server on z/OS
 - ▶ SAP applications on **zLinux**
 - ▶ Benefit from qualities of mainframe service
 - ▶ Run on lower cost IFL processors
 - ▶ Benefit from co-location of data base and applications
 - ▶ Systematic disaster recovery

Customer Case Study: European Retailer Saves Money By Running SAP Applications On zLinux

- Cost study to replace existing SAP application on Solaris servers
 - ▶ CASE 1: Applications and data bases on distributed
 - 5 year TCO €15.0M
 - ▶ CASE 2: Applications on distributed, data base on z/OS
 - 5 year TCO €12.6M
 - ▶ CASE 3: Applications on zLinux, data base on z/OS
 - 5 year **TCO €11.1M**
 - Better workload management and virtualization
 - Co-location benefit of SAP applications and data bases on same System z
- All cases incremental cost of additional Hardware and Software

Baldor Electric Company Consolidates Global SAP Systems Onto IBM Mainframe



Solution

- Consolidate 35 global SAP systems to one System z Server
- Portal-based applications extend customer access to inventory systems
- Used zIIPs and IFLs to reduce costs

Results

“The migration of our SAP application servers to Linux on zSeries produced an immediate increase in **performance**, has made it easier to **manage** and maintain our systems, and significantly trimmed the **total cost** of IT”

“Downtime costs us more than **\$100,000** an hour. Availability is king for Baldor, and the IBM zSeries gives us what we need.”

Mark Shackelford,
Director of Information Systems, Baldor

Baldor met customer needs and achieved company growth without a rise in IT costs

Service Oriented Finance Needs To Store XML Data

We need to support the MISMO standard to do credit checks. It uses XML.



**Service Oriented Finance
CIO**

DB2 9 pureXML can do this.

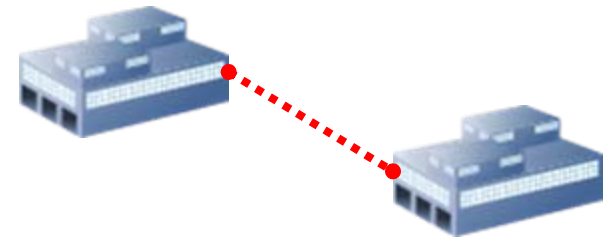
Let's see how...



IBM

XML Solves Business Problems Today

- SOA
 - ▶ Web Services messages are XML
- Business-to-Business Integration
 - ▶ Platform-independent transport mechanism.
Transaction orders may be defined in XML
- Forms and Document Processing
 - ▶ Government and legal industry require digital signature
Tax forms require signature & change year to year
 - ▶ Documents often contain sub-documents
Literary materials contain books, chapters, and sub-chapters



XML Is Driving Many Industry Standards Today

Banking

IFX, OFX, SWIFT, SPARCS,
MISMO +++

Life Sciences

MIAME, MAGE,
LSID, HL7, DICOM,
CDIS, LAB, ADaM +++

Retail

IXRetail, UCCNET, EAN-UCC
ePC Network +++

Healthcare

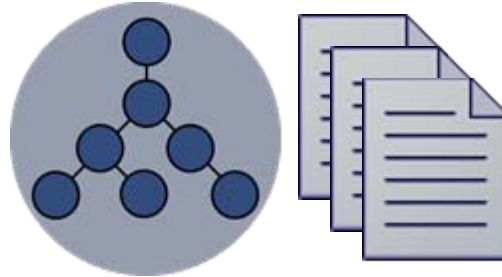
HL7, DICOM, SNOMED,
LOINC, SCRIPT +++

Electronics

PIPs, RNIF, Business Directory,
Open Access Standards +++

Insurance

ACORD
XML for P&C, Life +++



Telecommunications

eTOM, NGOSS, etc.
Parlay Specification +++

Financial Markets

FIX Protocol, FIXML, MDDL,
RIXML, FpML +++

Automotive

ebXML,
other B2B Stds.

Energy & Utilities

IEC Working Group 14
Multiple Standards
CIM, Multispeak

Cross Industry

PDES/STEPml
SMPI Standards
RFID, DOD XML+++

Chemical & Petroleum

Chemical eStandards
CyberSecurity
PDX Standard+++

XML – The Difference Is Fundamental

- Relational is a data model
 - Relations (tables)
 - Attributes (columns)
 - Set based w/some sequences
 - Strict schema

SSN	CreditReportID	CreditDate
111111111	1234	Dec 12, 2007
111111111	4456	Feb 8, 2008
123456789	2314	Nov 30, 2007

SSN	LastName	FirstName	Street	City	State	Zip
111111111	Haan	Brian	1 Harry Rd	San Jose	CA	95141
123456789	Smith	Joe	555 Bailey Ave	San Jose	CA	95141

CreditReportID	CreditBureau	CreditLiability	Rating
1234	ABC Credit	Collection	649
1235	ABC Credit	Collection	687
2314	TRW Reporting	Mortgage	750

- XML is a data model
 - Hierarchical tree structure
 - Nodes (elements, attributes, comments, etc.)
 - Relationships between nodes
 - Sequence based w/ some sets
 - Flexible schema

```
<MISMOVersionID="2.3.1" ?>
<RespondingParty="ABC Credit">
  <RESPONSE_DATA>
    <CREDIT_RESPONSE_MISMOVersionID="2.3.1"
      CreditResponseID="CRResp0001"
      CreditRatingCodeType="Equifax">

      <CREDIT_BUREAU _Name="ABC Credit" _StreetAddress="..
      ...
    </CREDIT_BUREAU>
    <BORROWER BorrowerID="B1" _FirstName="Joe" _LastName="Smith"
    ....
  </BORROWER>
  <CREDIT_LIABILITY CreditLiabilityID="CrL12923"
  ....
  <_CURRENT_RATING _Code="9" _Type="Collection/>
  .....
</RESPONSE_DATA>
```

DB2 9 Native XML Storage

- A “Hybrid” data base environment combining the relational and XML hierarchical data models
 - ▶ Adds a new “XML” data type
- A new storage mechanism to efficiently manage XML data
 - ▶ “Native“ means that XML documents are stored on data base pages as parsed tree structures to reflect XML’s hierarchical structure
- This avoids conversions between XML and relational structures, and the corresponding limitations
 - ▶ Input and retrieval are faster, performance is better, and querying is better and faster
 - ▶ With BLOBs and shredding, every operation (parsing, etc.) is expensive and there is a potential loss of data
 - ▶ The XML document might be too complex to shred

Service Oriented Finance Needs To Store XML Data

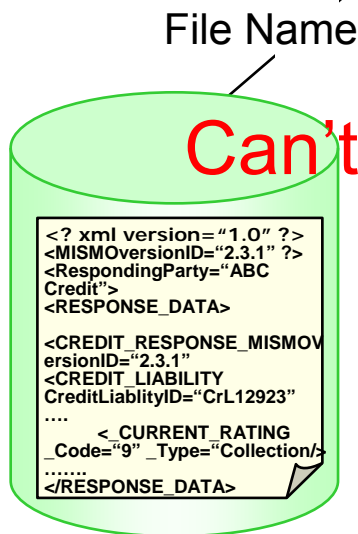
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<MISMOVersionID="2.3.1" ?>
<RespondingParty="ABC Credit">
  <RESPONSE_DATA>
    <CREDIT_RESPONSE_MISMOVersionID="2.3.1"
      CreditResponseID="CRResp0001"
      CreditRatingCodeType="Equifax">

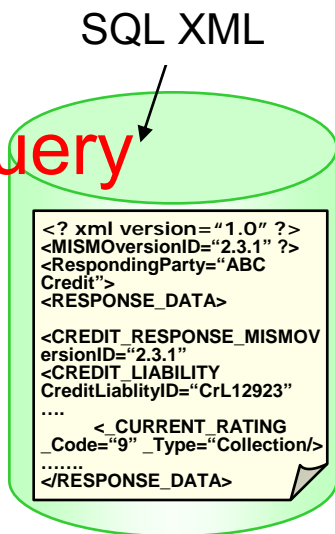
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      ...
    </CREDIT_BUREAU>
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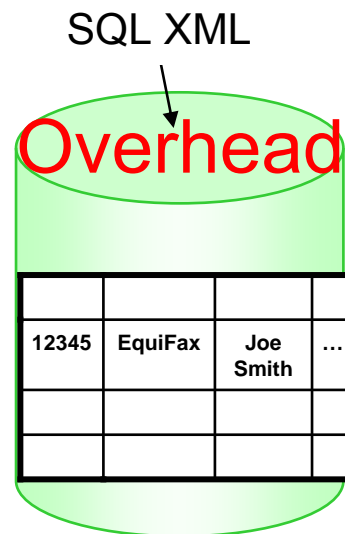
BEST!
Performance
Sparse Data
Schema
Evolution



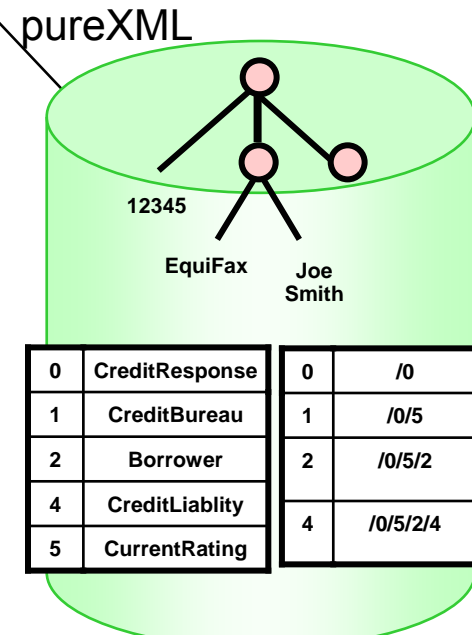
File System



**BLOB
(Oracle)**



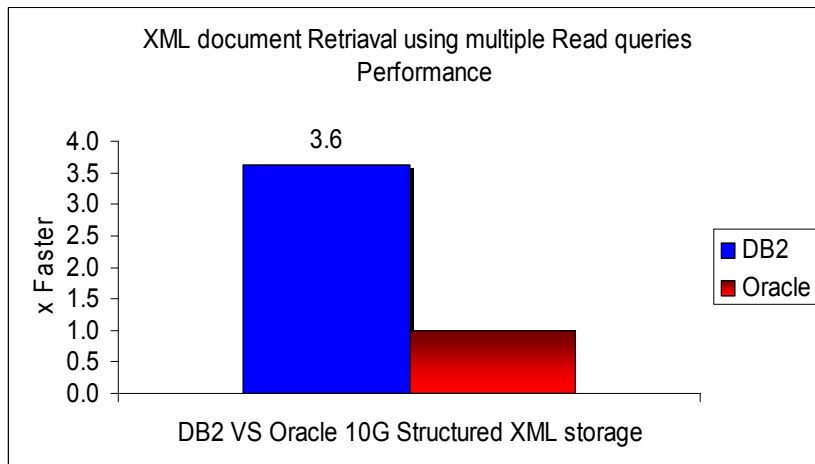
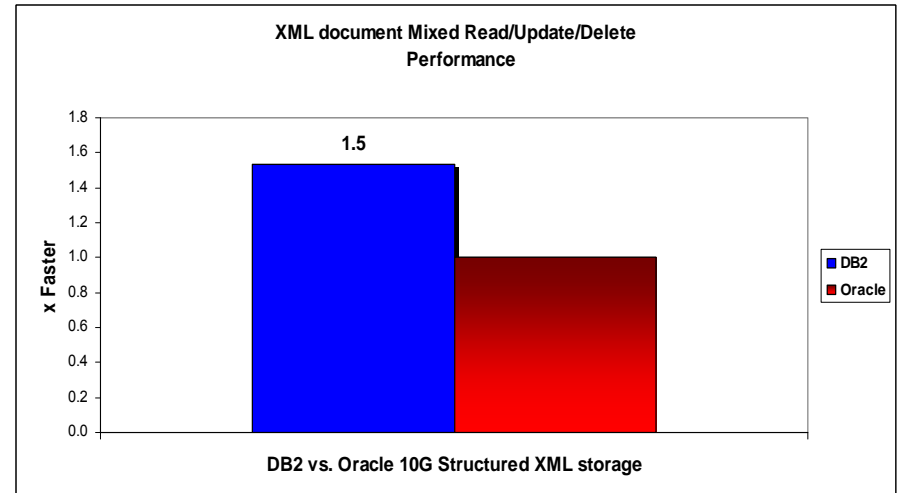
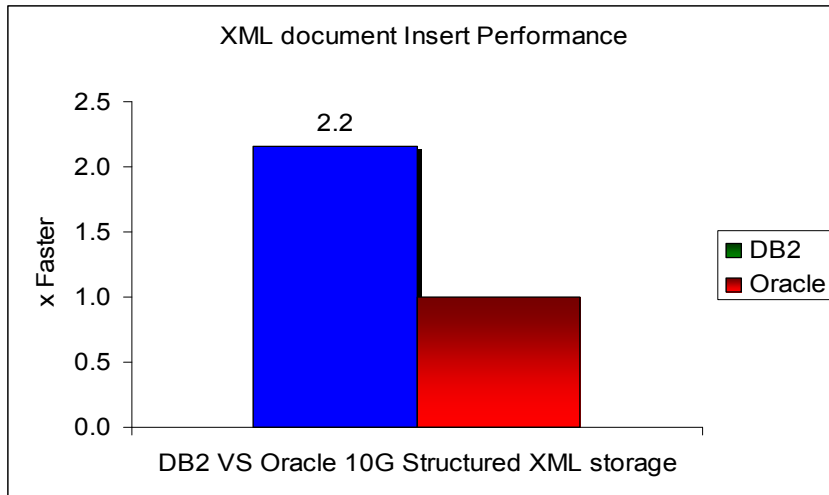
**Shredded
(Oracle)**



**Native Support
(DB2)**

DB2 XML Performance Beats Oracle

DB2 Performance Normalized to Oracle Performance

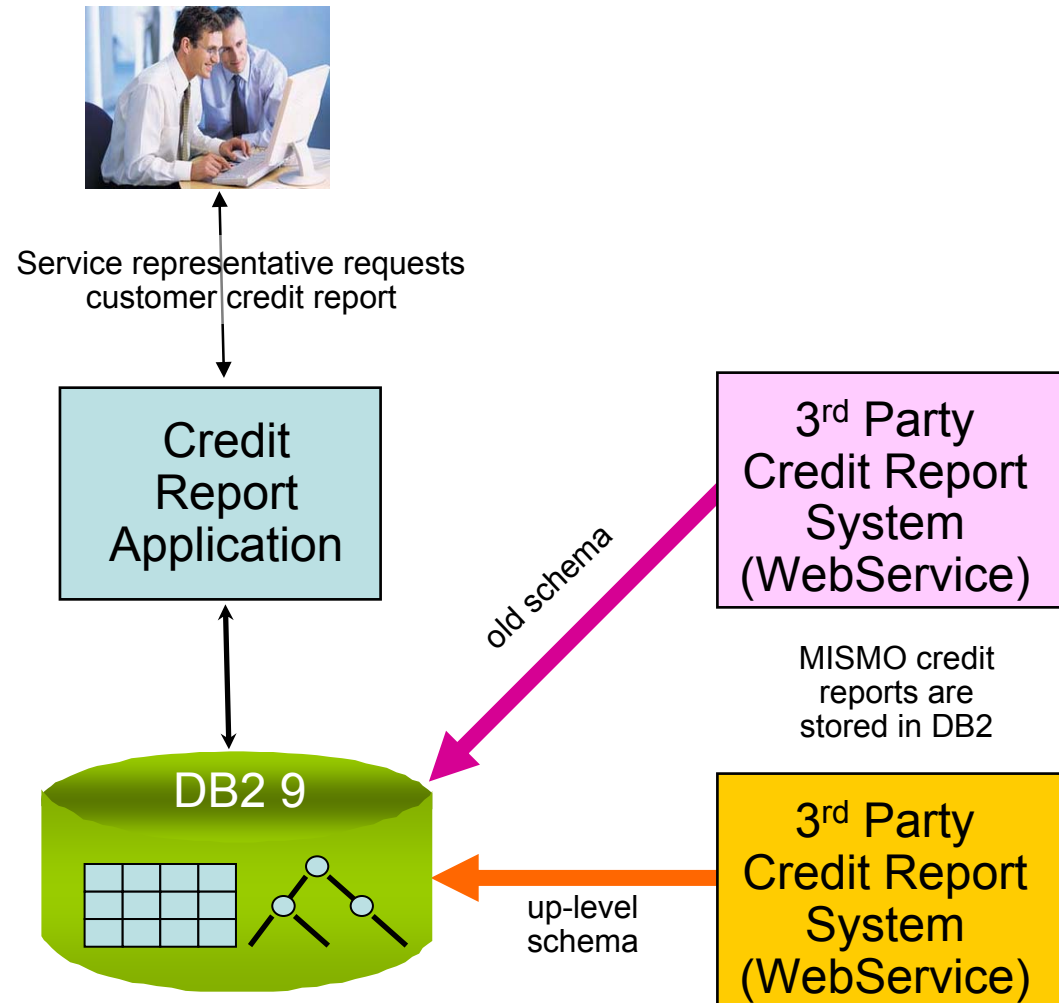


DB2 9 performs 1.5 to 3.6 times faster than Oracle 10G on XML operations on Unix

Source: Internal IBM Productivity Comparison Study for DB2 on LUW

DEMO: Service Oriented Finance Credit Report Processing

- Data base contains two credit reports for Brian Haan
- Schema of one report is old version
- Schema of the other report is up-level version
- New schema contains a new element (high risk loans)
- Same query can access both



Remember This Extension Solution? Add an SAP Or XML Database For Less

Existing Mainframe



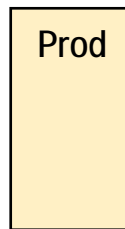
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HP DR solution is used in software and hardware

