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**

SAP Applications	**DRDA**	DB2 for z/OS SMP or Sysplex	SAP Data

Distributed   **System z**
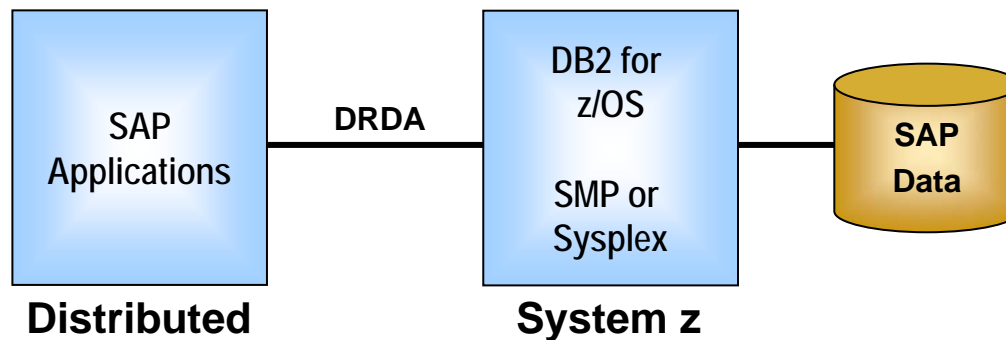
DB2 For z/OS Optimizations For SAP

- **Ease-of-Use**
  - ▶ Easy to clone DB2 instances, such as test environment

- **Less DBA skills and activities required**
  - ▶ Large Object Management, Automated Space Managemnet
  - ▶ DB2 Recovery Expert for automatic recovery and backup
  - ▶ Real-time Statistics Utility provides automatic scheduling information, integratation 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
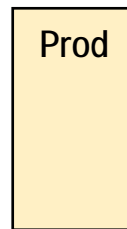
Existing Mainframe

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

Existing Disaster Recovery Site

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

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2,300 MIPS additional workload

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Capacity Backup:
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3 year cost of acquisition $5.09 M

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

Prod

28 Chip
56 Core

201,977*
Performance Units

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Production Performance Units required = 2,300 x 87 = 200,100

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

- **Solaris cost study to replace existing SAP application**
  - ▶ 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.

DB2 9 pureXML can do this.

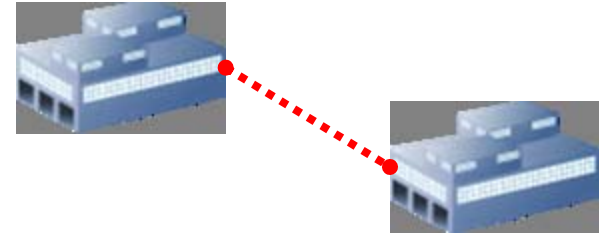Let's see how…

Service Oriented Finance CIO

IBM

XML Solves Business Problems Today

- SOA
  - ▶ Platform independence
  - ▶ Web Service messages are XML

- Business-to-Business Integration
  - ▶ Any to any communication
  - ▶ Information exchange may be defined in XML

- Forms and Document Processing
  - ▶ Forms may have sparse data and change format often
  - ▶ Documents often have a hierarchical structure
  - ▶ Forms and documents may be represented in XML

XML Is Driving Many Industry Standards Today

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

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

Insurance
ACORD
XML for P&C, Life +++

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

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

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

Automotive
ebXML,
other B2B Stds.

Chemical & Petroleum
Chemical eStandards
CyberSecurity
PDX Standard+++

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

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

Telecommunications
eTOM, NGOSS, etc.
Parlay Specification +++

Energy & Utilities
IEC Working Group 14
Multiple Standards
CIM, Multispeak

XML – The Difference Is Fundamental

- **Relational is a data model**
  - Relations (tables)
  - Attributes (columns)
  - Set based w/some sequences
  - Strict schema
  - ▶ Normalized data
    - Data replication limited to KEY fields

CreditResponse

SSN	CreditRespons
111111111	1234
111111111	3456
123456789	2314

ResponseData

CreditRespons	CreditBureau	Rating
1234	ABC Credit	649
3456	ABC Credit	687
2314	TRW Reporting	750

Borrower

SSN	LastName	FirstName
111111111	Smith	Joe
123456789	Haan	Brian

- **XML is a data model**
  - Hierarchical tree structure
  - Nodes (elements, attributes, comments, etc.)
  - Relationships between nodes
  - Sequence based w/ some sets
  - Flexible schema
  - ▶ Data NOT normalized
    - Data can having repeating elements

```
<CREDIT_RESPONSE>
   </CreditResponseID="1234">

   <ResponseData>
      <CREDIT_BUREAU> ABC Credit </CREDIT_BUREAU>
         <BORROWER> Joe Smith  </BORROWER>
      <CREDIT_LIABILITY>
        </CURRENT_RATING=" 649">
      </CREDIT_LIABILITY>

   </ResonseData>
</CREDIT_RESPONSE>
```

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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</CREDIT_RESPONSE>
```

BEST!
Performance
Sparse Data
Schema
Evolution
pureXML

File Name

SQL XML

SQL XML

Can't Query

Overhead

```
<CREDIT_RESPONSE>
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1234	ABC Credit	Joe Smith	649

0	CREDIT_RESPONSE
1	CreditResponseID
2	ResponseData
4	CREDIT_BUREAU
5	BORROWER
6	CREDIT_LIABILITY
7	CURRENT_RATING

/0/1 1234 /0/2/4/ ABC Credit /0/2/5 Joe Smith /0/2/6/7 649
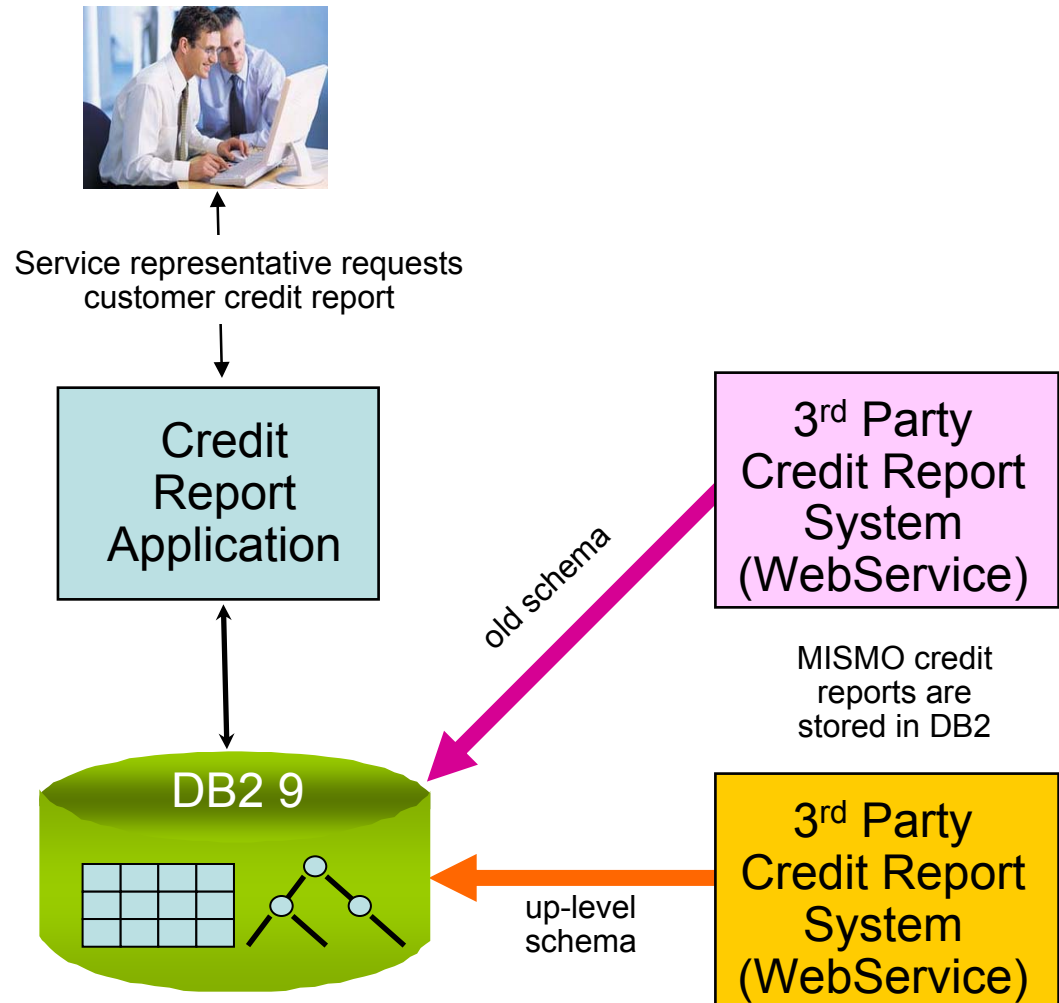
File System

BLOB (Oracle)

Shredded (Oracle)

Native Support (DB2)

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

Service representative requests customer credit report

Credit Report Application

DB2 9

old schema

3rd Party Credit Report System (WebService)

MISMO credit reports are stored in DB2

up-level schema

3rd Party Credit Report System (WebService)

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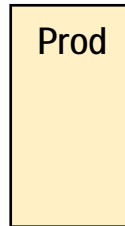# Add an SAP Or XML Database For Less

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