

# Lessons Learned from Isbank

## A Story of a DB2 for z/OS initiative

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Due to Isbank's confidentiality regulations some of the performance numbers, naming conventions and figures are removed or rearranged.

- \* Nasıl Başladık ?
- \* Kuruluşlar, Parallel Sysplex ve Daha Fazlası
- \* Corebank ve Java
- \* IMS ve DB2 Beraber varolma süreci
- \* Unicode, SQL ve Application Tuning, ...
- \* ODS
- \* V9 Migration

- \* 2 x System z9 EC
- \* z/OS 1.7



- \* DB2 V8
- \* Omegamon for DB2 V4.1.0
- \* DB2 Admin Tool from IBM



- \* No Application!

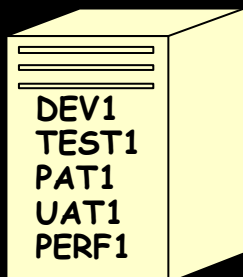
- \* Sandbox LPAR / İsim ve Yetki Standartları
- \* Install DB2 V8 NFM - Codepage 1026
- \* One-Way Data Sharing Enabled
- \* Two-Way Data Sharing...
- \* CF Sizing ve DataSharing Failure Test Senaryoları
- \* CF350 - DB2 for z/OS and Data Sharing Impl. Workshop
- \* CF83 - DB2 for z/OS Database Admin Workshop

4 LPAR

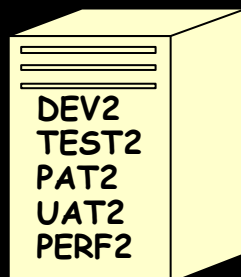
5 DataSharing Grup

4 Member / Grup

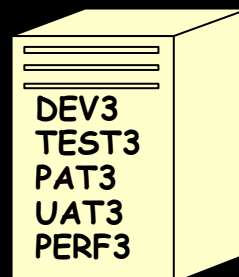
Dev Test Uat Pat Performans



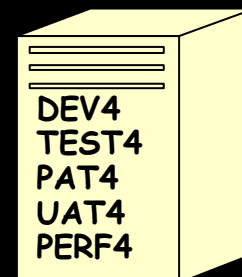
LPAR1



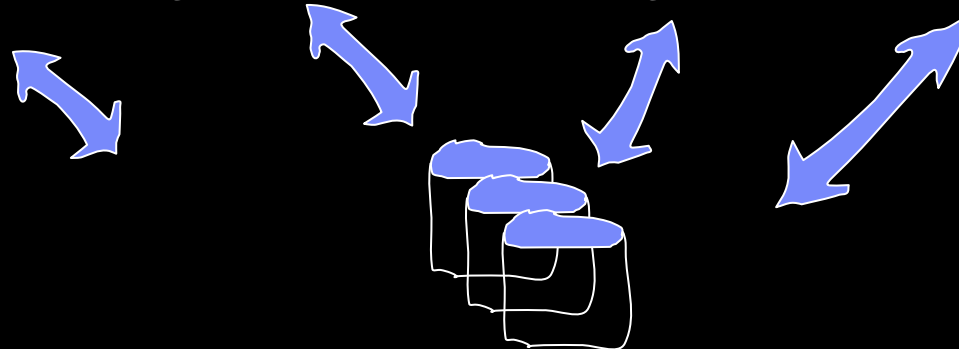
LPAR2



LPAR3



LPAR4

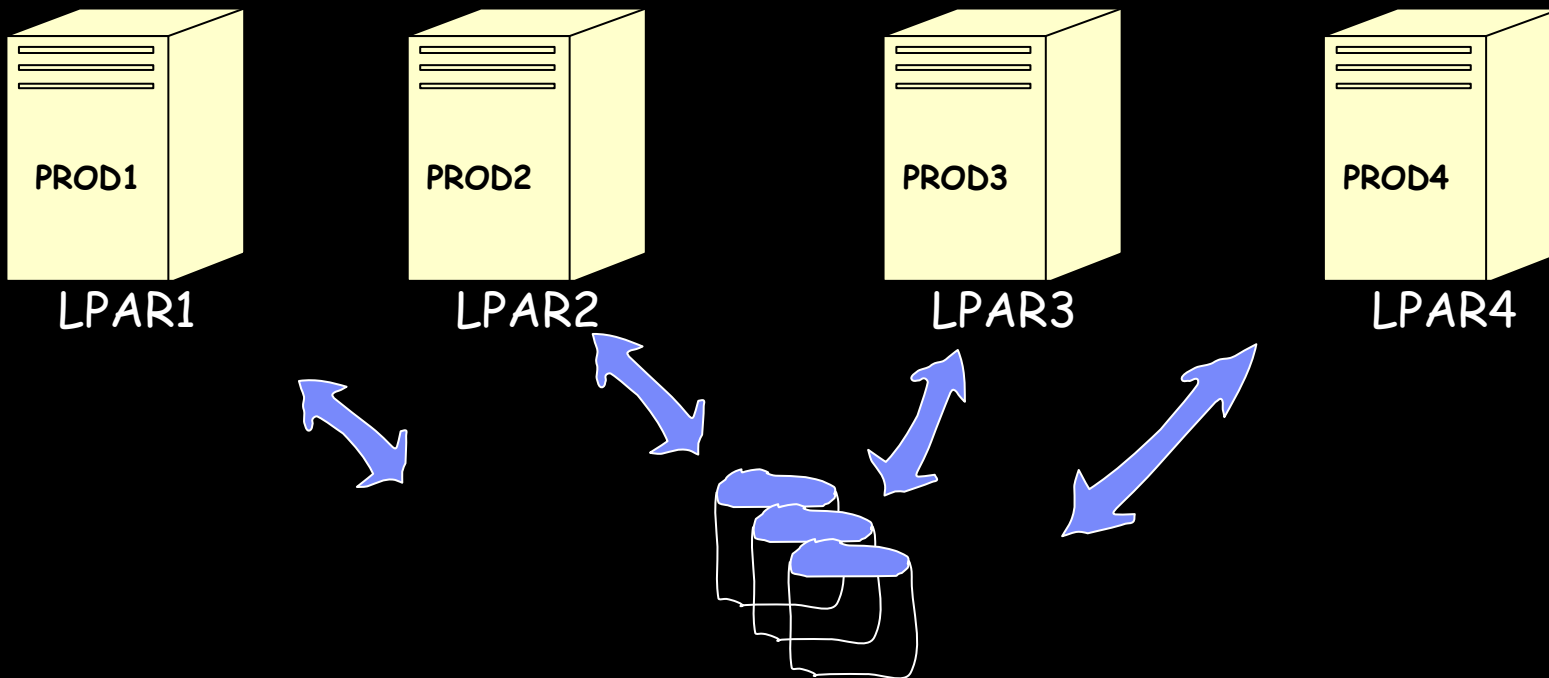


4 LPAR

1 Data Sharing Grup

4 Member / Grup

Production



- \* IpPlex / VIPA
- \* RTS ve Utility Otomasyonları
- \* Dynamic SortWork Allocation for DB2 Utilities



PK45916: REMOVE THE NEED TO SPECIFY SORTNUM ON UTILITY STATEMENTS FOR DYNAMICALLY ALLOCATED SORT WORK DATA SETS

UTSORTAL = YES

IGNSORTN = YES





MAX\_UTIL\_PARTS → PK51853

SORTWKnn, SW01WKnn, DATAWKnn,  
STATWKnn, ST01WKnn



\* Kritik DB2 for z/OS mesajlarının takip edilmesi (DSNJ111E, DSNI014I, DSNP007I, vb.)

\* WLM

-  SMFACCT=(1,2,3,7,8,10)  
SMFSTAT=(1,3,4,5,6,8) and STATIME=1
-  ACCUMACC = NO → Development-Performans  
ACCUMACC = 10 → Prod
-  SYSIBM.SYSPACKAGE WHERE OPERATIVE <>  
'Y' OR VALID <> 'Y'
-  PARMLIB(CSVLLAxx) → ...SDSNEXIT  
/F LLA,UPDATE=xx



**i** "Automated Space Management" veya "sliding secondary extent"  
MGEXTSZ=YES  
SECQTY = -1

**i** CLI Paketleri → SYSxynzz  
x: L veya S : package size  
y: H veya N : hold veya nohold  
n: 1,2,3,4 : 1=UR, 2=CS, 3=RS, 4=RR

SYSLH3xx, SYSLH4xx  
SYSSH3xx, SYSSH4xx

odbc.ini (WithHold=1)



Insert ONLY Uygulama  
Member Cluster

Trackmod NO

FREEPAGE 0 & PCTFREE 10

DB2 for z/OS

Optimizing INSERT Performance

John Campbell

Insert Performance in DB2 UDB for  
z/OS V7/V8

Akira Shibamiya

## Optimistic Locking

1. Read row
2. Modify data
3. Try to write back data
4. Before updating the row check whether it has been changed in the meantime; if so return with error

Lock Avoidance

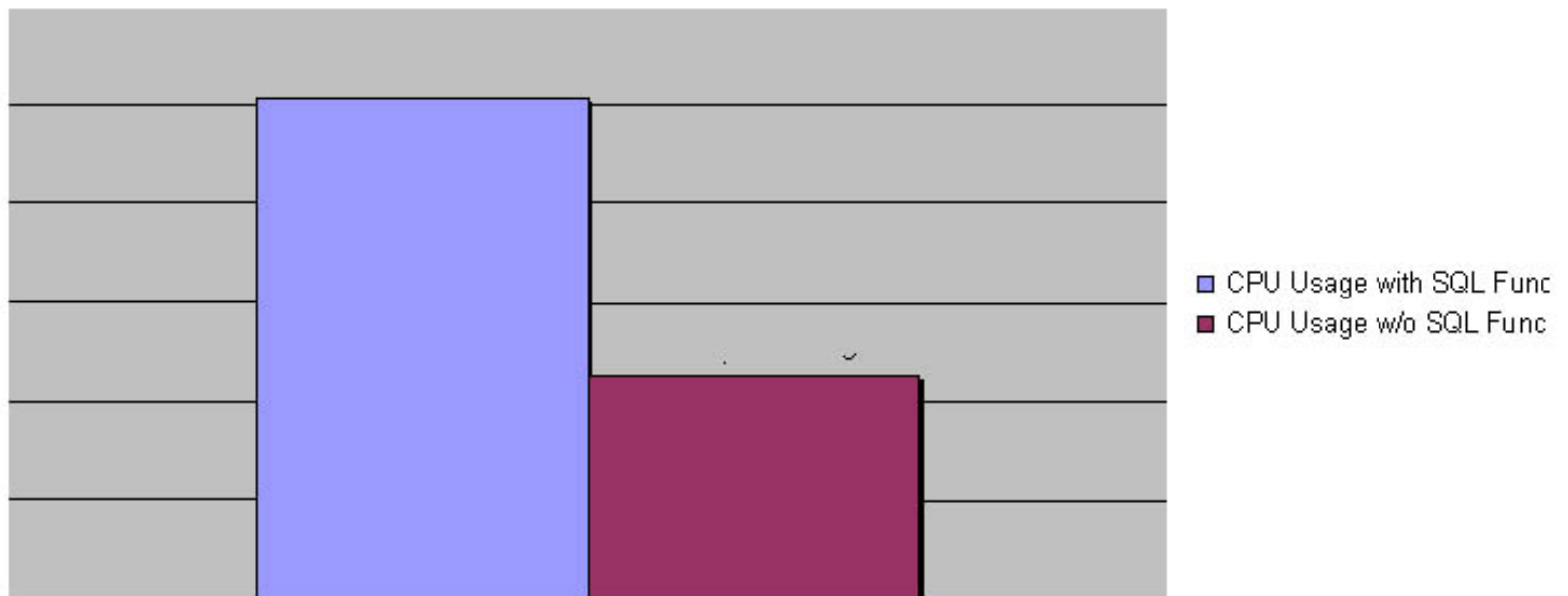
Dirty Read on package level or statement level

 Date, Time, TimeStamp, Optimistic Locking ve Java

Timestamp → STRING Datatype in Java

```
SELECT ..., CHAR (START_DATE), CHAR  
(EFCTV_DATE), ..., CHAR (LOCAL_TS),  
USER_ID, SYSTEM_ID, FROM TABLEXYZ
```

Avg CPU Cost of retrieving a row  
with SQL Function is  $\langle \text{cpu1} \rangle$   
without SQL Function is  $\langle \text{cpu2} \rangle$   
 $\text{cpu2} < \text{cpu1}$



J2EE - Admin Console - Rational Application Developer

File Edit Navigate Search Project Admin Data ClearCase Run Window Help

SoftResponseDataA... | IsbankAdmincmi.xml | ccawelcome.jsp | contextmap.xml | CampaignUpdateReq... | Admin Console | MasterStatelessSe... | Admin Console x 14

Integrated Solutions Console Welcome Help | Logout

View: All tasks

- Welcome
- Guided Activities
- Servers
- Applications
- Resources
  - Schedulers
  - Object pool managers
  - JMS
  - JDBC
    - JDBC Providers
    - Data sources
    - Data sources (WebSphere Application Server V4)
  - Resource Adapters
  - Asynchronous beans
  - Cache instances
  - Mail
  - URL
  - Resource Environment
- Security
- Environment
- System administration
- Users and Groups
- Monitoring and Tuning
- Troubleshooting
- Service integration
- UDDI

Data sources

Data sources > chordiantMDM > WebSphere Application Server data source properties

Use this page to set WebSphere(R) Application Server connection management-specific properties that affect a connection pool.

Configuration

**General Properties**

Statement cache size  
10 statements

Enable multithreaded access detection

Enable database reauthentication

Enable JMS one-phase optimization support

Manage cached handles

Log missing transaction context

**Pretest connection properties**

Pretest existing pooled connections  
 Retry interval  
0 seconds

Pretest new connections  
 Number of retries  
100  
 Retry interval  
3 seconds

Pretest SQL string  
SELECT 1 FROM DUAL

Field help  
For field help information, select a field label or list marker when the help cursor appears.

Page help  
[More information about this page](#)

Close page

Publishing to WebSphe...calhost... 4:27 P

Pretest connection properties

Pretest existing pooled connections

Retry interval  
 seconds

Pretest new connections

Number of retries

Retry interval  
 seconds

Pretest SQL string

Pretest'e dikkat!!!



```
SELECT ....  
FROM ...  
WHERE ? BETWEEN C1 AND C2
```

Non-Indexable

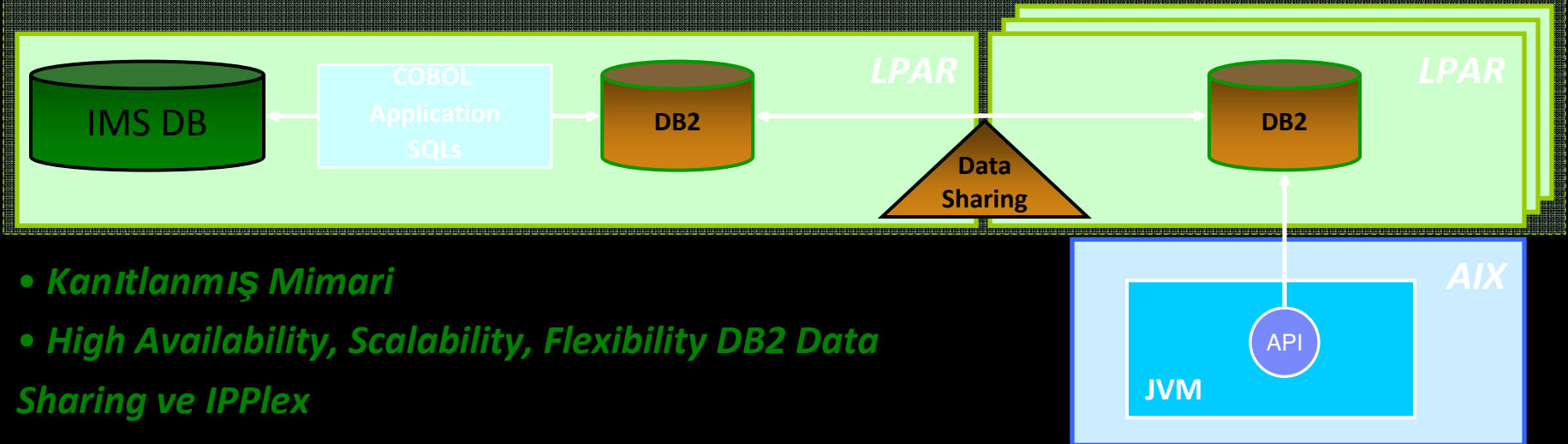
```
SELECT ....  
FROM ...  
WHERE C1 <= ? AND C2 >=?
```

Indexable

## IMS DB2 Co-existence

- All DB2s in Data Sharing

z-OS



- **Kanıtlanmış Mimari**
- **High Availability, Scalability, Flexibility DB2 Data Sharing ve IPlex**

- **IMS LPARında ek SQL yükü var!!**

CREATE TABLE ... CCSID UNICODE



Unicode Support in Enterprise COBOL

Compiler option : NSYMBOL(NATIONAL)  
BIND : ENCODING(UNICODE)



DATE Datatype

77 W-TARIH-YYAG      PIC N(10).

DISPLAY ' → ' FUNCTION DISPLAY-OF  
(W-TARIH-YYAG, 1026).

 MOVE N'SABIT' TO W-INDV-USER-ID.

 77 V-IDTYP-MUSNO PIC N(4).

...

```
MOVE N'csid' TO V-MUSNO.  
SELECT COUNT(*)  
FROM TABLEXYZ  
WHERE IDTYP = :V-MUSNO
```



```
UNLOAD TABLESPACE DB1.TS1  
PUNCHDDN TEMP_2 UNLDDN TEMP_1  
FROM TABLE TABLEXYZ WHEN  
(USER_ID<>'USER12')
```

IP\_USER\_ID → GRAPHIC(6)



IP\_USER\_ID<>x'444D55534552'



MR1030081910



IDTHTOIN → Idle Thread Timeout in seconds

IDTHTOIN = 0 ; Disables Timeout!



IDTHTOIN = 900



MR1122081733 : Farklı IDTHTOIN değerleri.



DB2 V10 & Profile Tables...



DB2 V10 Beta...

## SYSIBM.DSN\_PROFILE\_TABLE

PROFILEID : unique identifier for the profile

AUTHID, PLANNAME, COLLID, PKGNAME, IPADDR : Monitored Items

## SYSIBM.DSN\_PROFILE\_ATTRIBUTES

PROFILEID : unique identifier for the profile

KEYWORDS, ATTRIBUTE1, ATTRIBUTE2 =  
MONITOR IDLE THREADS, WARNING or EXCEPTION, threshold value



SQL TEXT1



SQL TEXT2



Tested with DB2 for z V9, DB2 for LUW & Oracle



PMR - 20549,001,862  
Apar Fix: AM05402



CLASS 2 TIME DISTRIBUTION

NOTACC !===== > %48

← DB2 Accounting  
Raporları



SQL ve Index Tasarımı



Buffer Pools



Fiziksel tasarım, Partitioning vb...

DASD AVG RESP TIME : 2-3 ms

CPU

LPAR Busy: 40.04

**MVS BUsy: 100.0**

← RMF Raporları



Fiziksel CPU "saturated"



Az Paging...

CLASS 2 TIME DISTRIBUTION

-----  
NOTACC !==> 6%

← DB2 Accounting  
Raporları



%500 iyileşme!!

ODS Uygulaması



Near 7/24 Application

Cobol Stored Procedure

Data Migration → DRDA & XLoader & Parallelism



DSNL030I -PR4B DSNLILNR DDF PROCESSING FAILURE FOR  
LUWID=GA521E67.E4ED.000000000000  
AUTHID=-N/A-, REASON=**00D31034**

The MAX REMOTE CONNECTED limit was reached

ETL Jobs

Feeding ODS from OLTP, DW and more!...

Idle Thread → 3600 !

- ✓ RSU0908 Applied to V8
- ✓ Migration/fallback : II14401 ve II14464
- ✓ Development and Prod DB2 in Sandbox Lpar
- ✓ V9 Order Arrived
- ✓ V9 CM Install to Sandbox Lpar
- 🔄 Fallback, Remigrate, ENFM, NFM
- 🔄 ....

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Teşekkürler