



## E15 - Part II

Enable DB2 VSE Applications to access a remote DB2 UDB Database

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**zSeries® EXPO**  
**FEATURING Z/OS, Z/VM, Z/VSE**  
**AND LINUX ON ZSERIES**

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**This presentation is based on the true story**



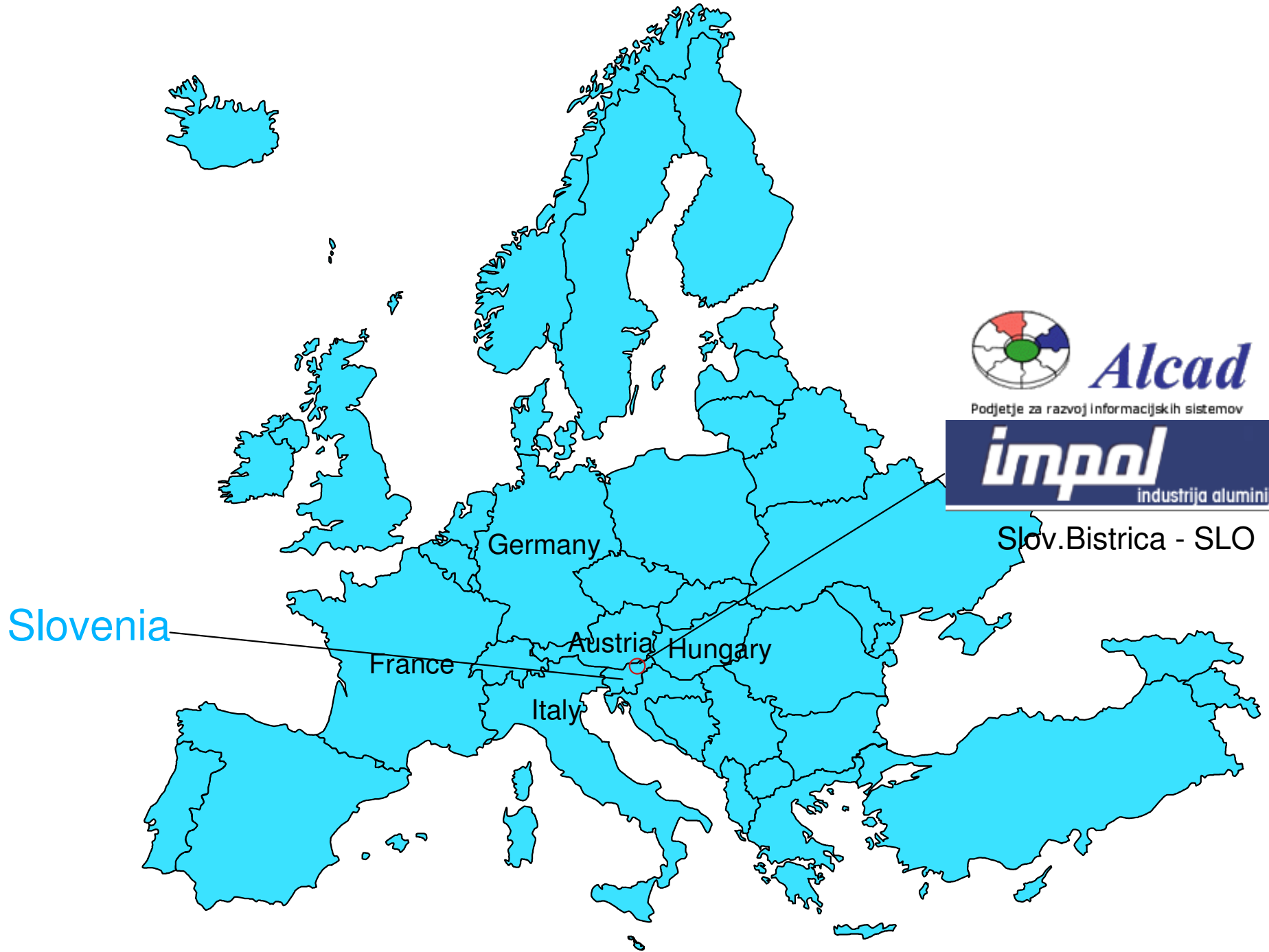
# Agenda

- Who are we?
- Environment and Database Design
- Testing and Results

# Agenda

- **Who are we?**
- Environment and Database Design
- Testing and Results

# Who are we?



*Alcad*

Podjetje za razvoj informacijskih sistemov



Slov.Bistrica - SLO

## About Alcad ...

- IS engineering & data processing company
- Outsourced IT service provider for Impol
- IBM Business Partner
  - ▶ S/390 or zSeries (z/VSE, Linux on zSeries and z/VM)
  - ▶ Development tools (WebSphere, VisualAge, Rational)
  - ▶ Information Management Software (DB2, OLAP, Warehouse)
- Project oriented team
- Reference customer for IBM (Linux on zSeries)
- 19 highly skilled employees
- Using only IBM software and hardware

## About Impol ...



- One of Europe's leading aluminium manufacturers
- Producing a wide variety of specialized alloys, which are in turn used by manufacturers in the auto, aerospace and industrial sectors
- Producing more than 80,000 tons of rods, bars, tubes, foils and ingots
- Have more than 400 customers in 25 countries around the World
- 900 + 900 employees



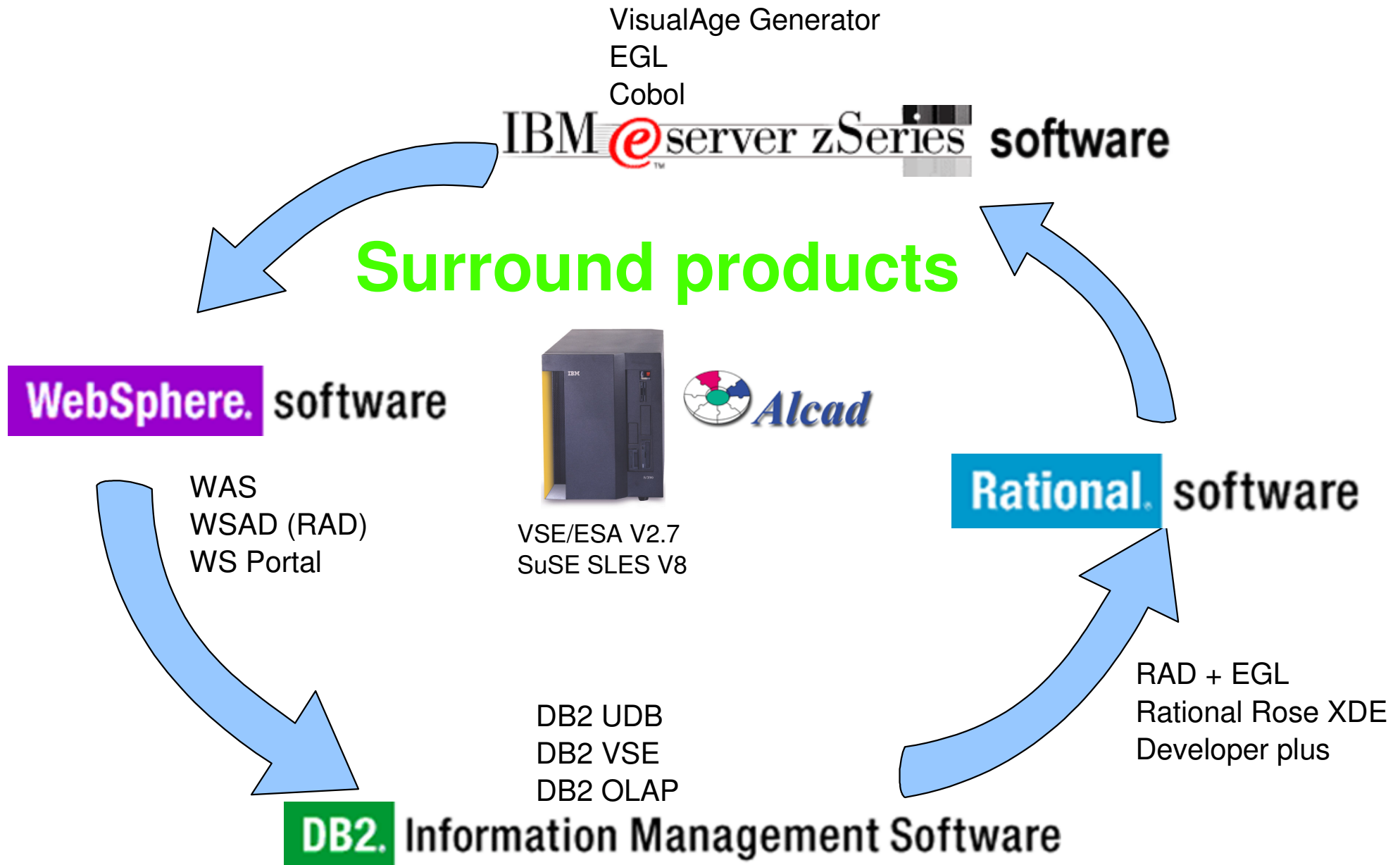
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- **Environment and Database Design**
- Testing and Results

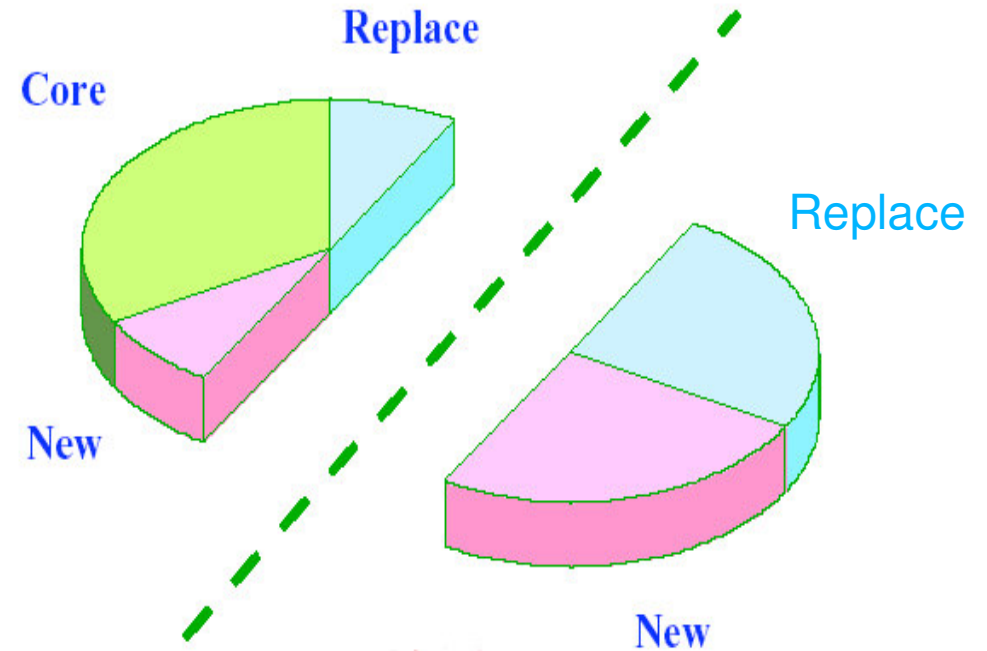
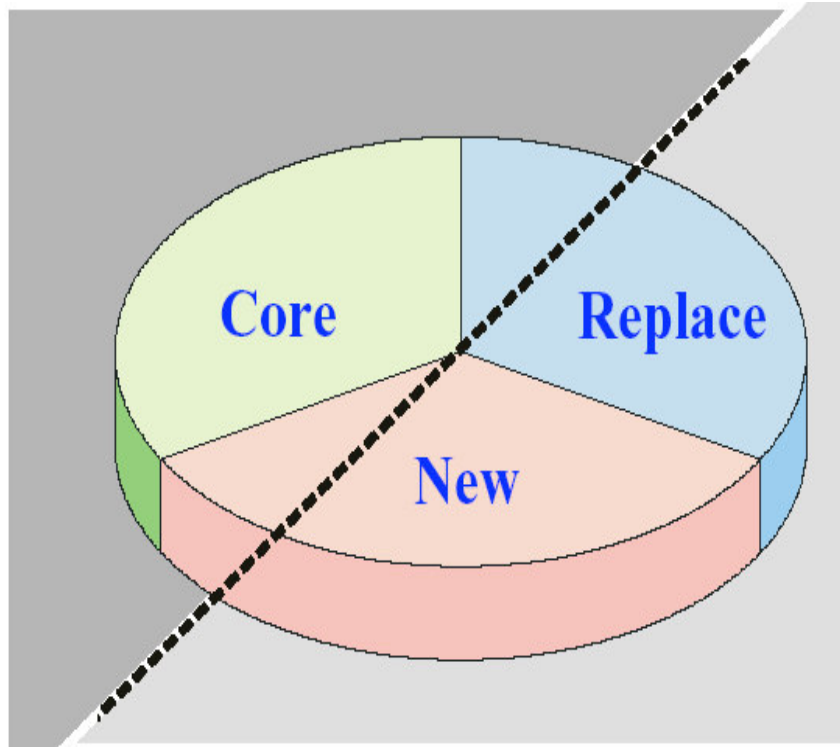


	1995
Employee	10
S/390	4381 - R14
Operating System	VSE/SP, VM/SP, OS/2
Application Server	CICS/VSE
Database	SQL/DS, VSAM,DL/1, DB2/2
Application Development Tools	CSP, PL/1 VisualAge SmallTalk

	1995	2005
Employee	10	19
S/390	4381 - R14	Multiprise 3000-H30, Multiprise 3000-H55
Operating System	VSE/SP, VM/SP, OS/2	VSE/ESA V2.7, z/VM V4.2, SuSE SLES V8, Windows
Application Server	CICS/VSE	CICS/TS V1.1, WebSphere Application Server (WAS) V6 WebSphere Portal Server V5
Database	SQL/DS, VSAM,DL/1, DB2/2	DB2 Server for VSE V7.4, DB2 UDB ESE V8.2, Rational Rose XDE Developer Plus, DB2 OLAP Server V8.2, DB2 OLAP Server Analyzer V8.1
Application Development Tools	CSP, PL/1 VisualAge SmallTalk	VisualAge Generator V4.5, Rational Application Developer for WebSphere Software (RAD) V6 <b>Beta team for EGL on VSE</b>



## Applications and Solutions

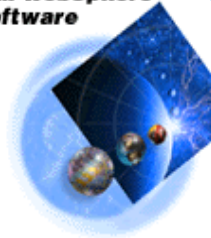


## Applications and Solutions

Application Development Environment  
Session E17

**WebSphere** software

IBM WebSphere  
Software



**Rational** software



VisualAge Generator  
V4.5

Core

Replace

Connectors

Replace

New

New

**DB2** Information Management Software

**DB2** Information Management Software

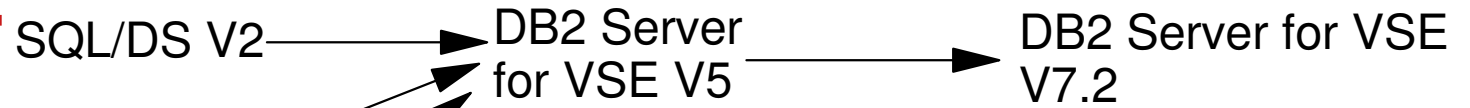
DB2 Server for VSE



Database Environment  
Session E15

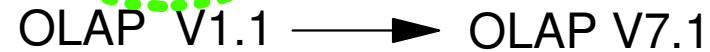
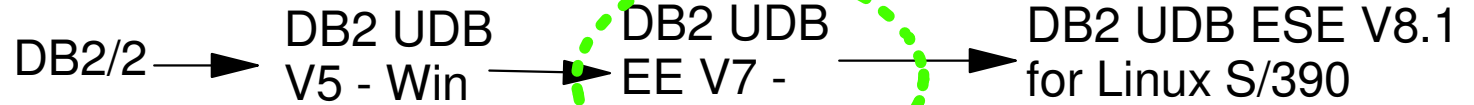
## DB2 History in Alcad

### Database:

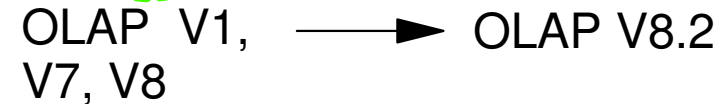
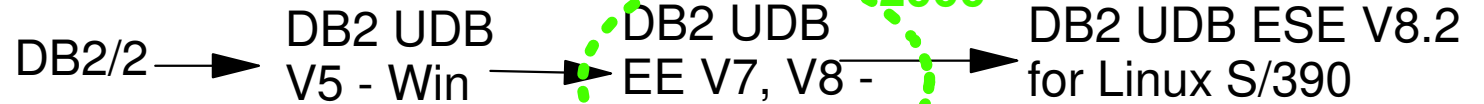
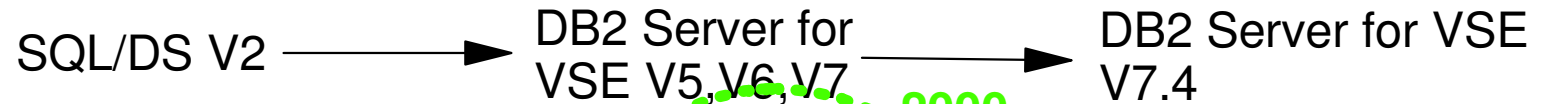


VSAM → DB2 Server for VSE V5

DL/1 → DB2 Server for VSE V5



2001



2000



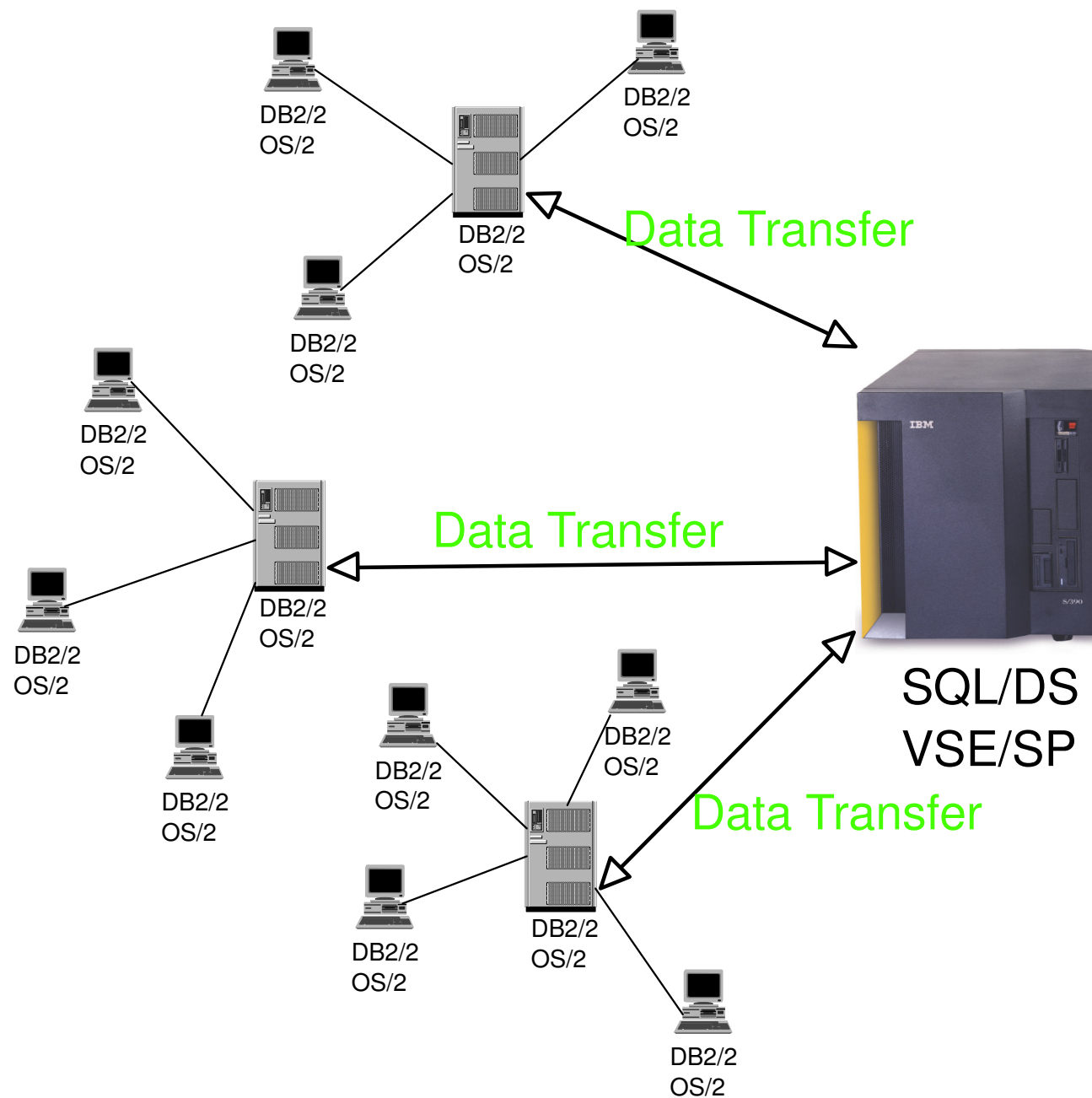
IBM Rational Rose XDE Developer plus V2003

1995



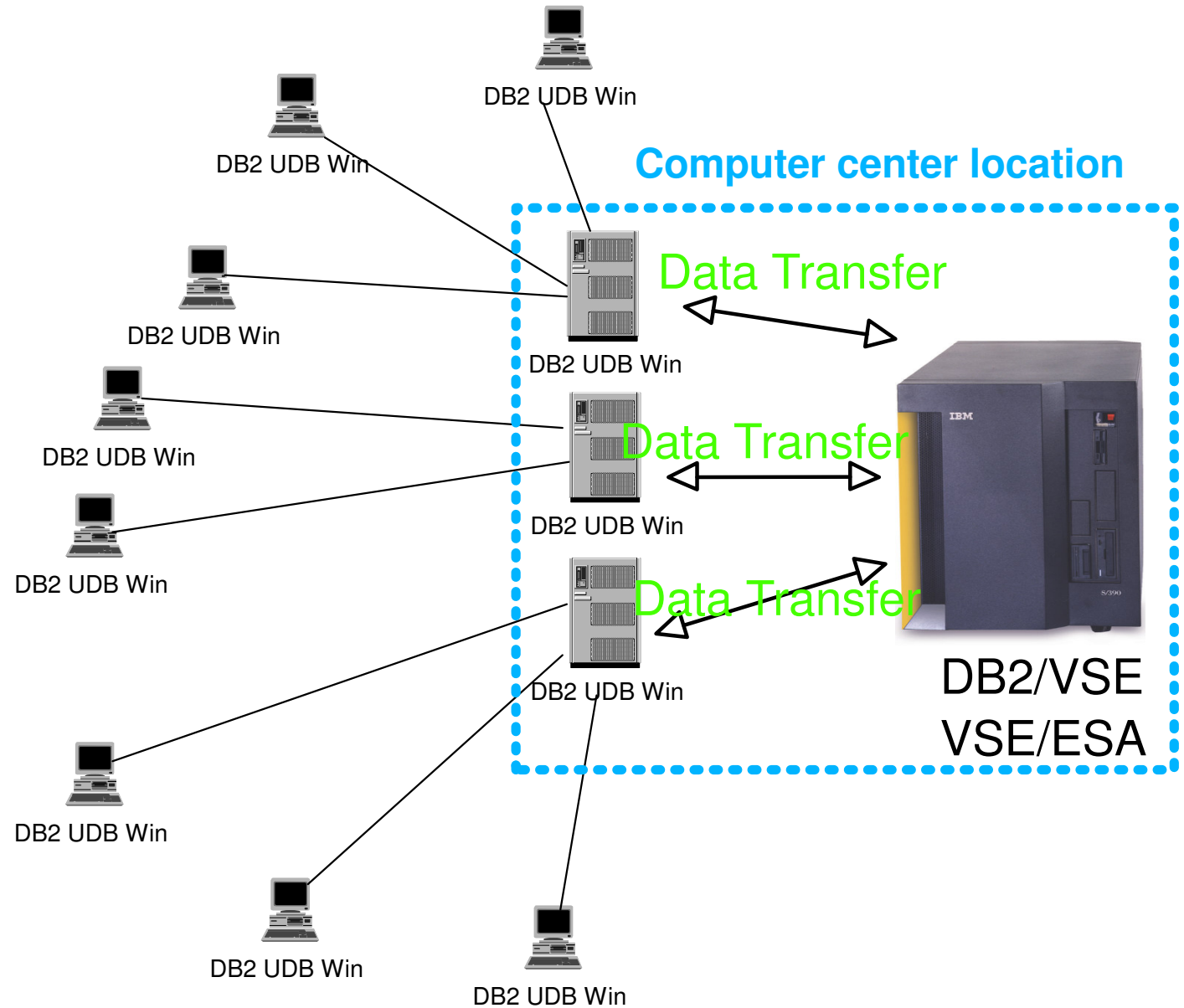
2005

## Database design - Client Server option



1995

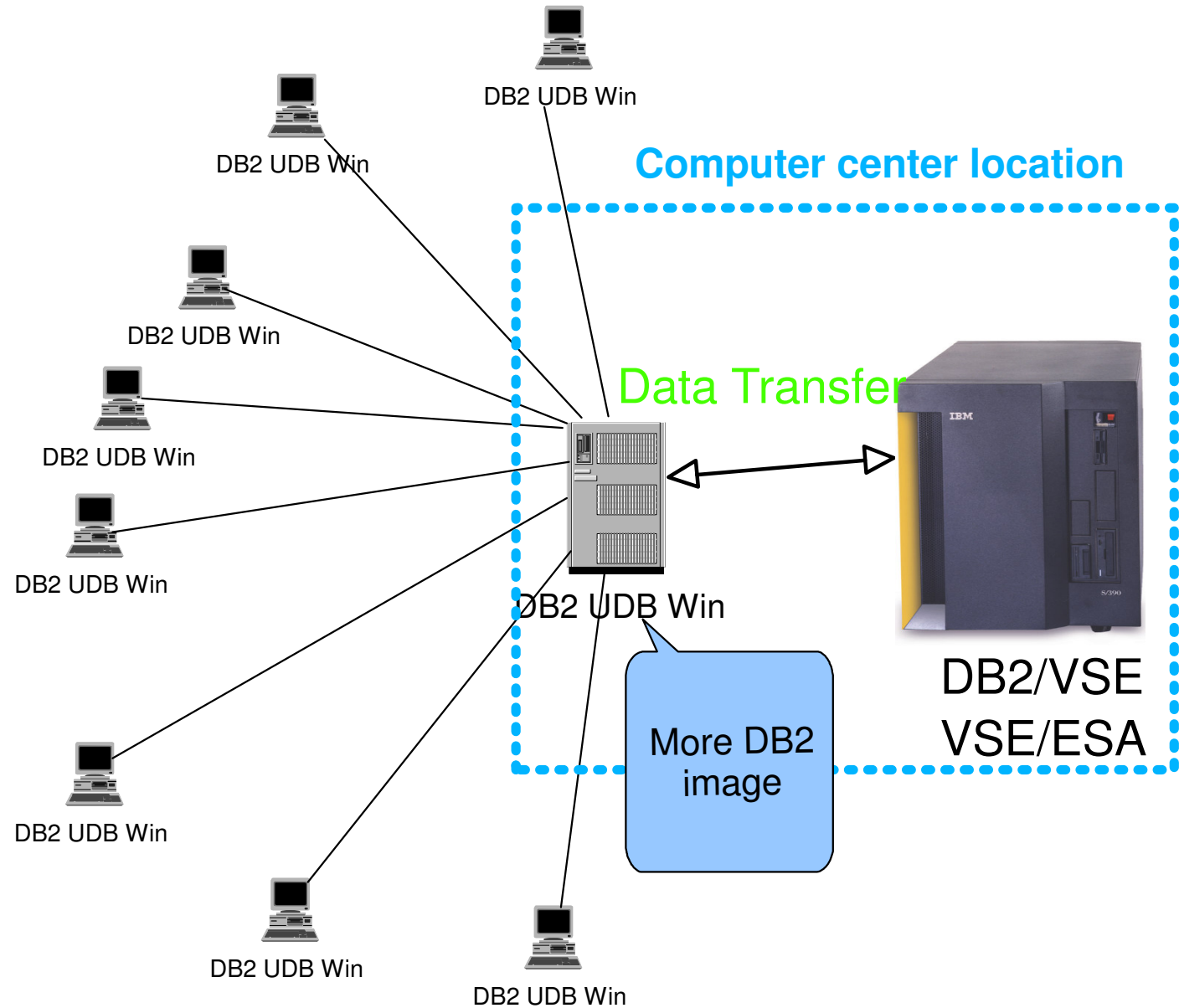
## Database design - Client Server option



1998

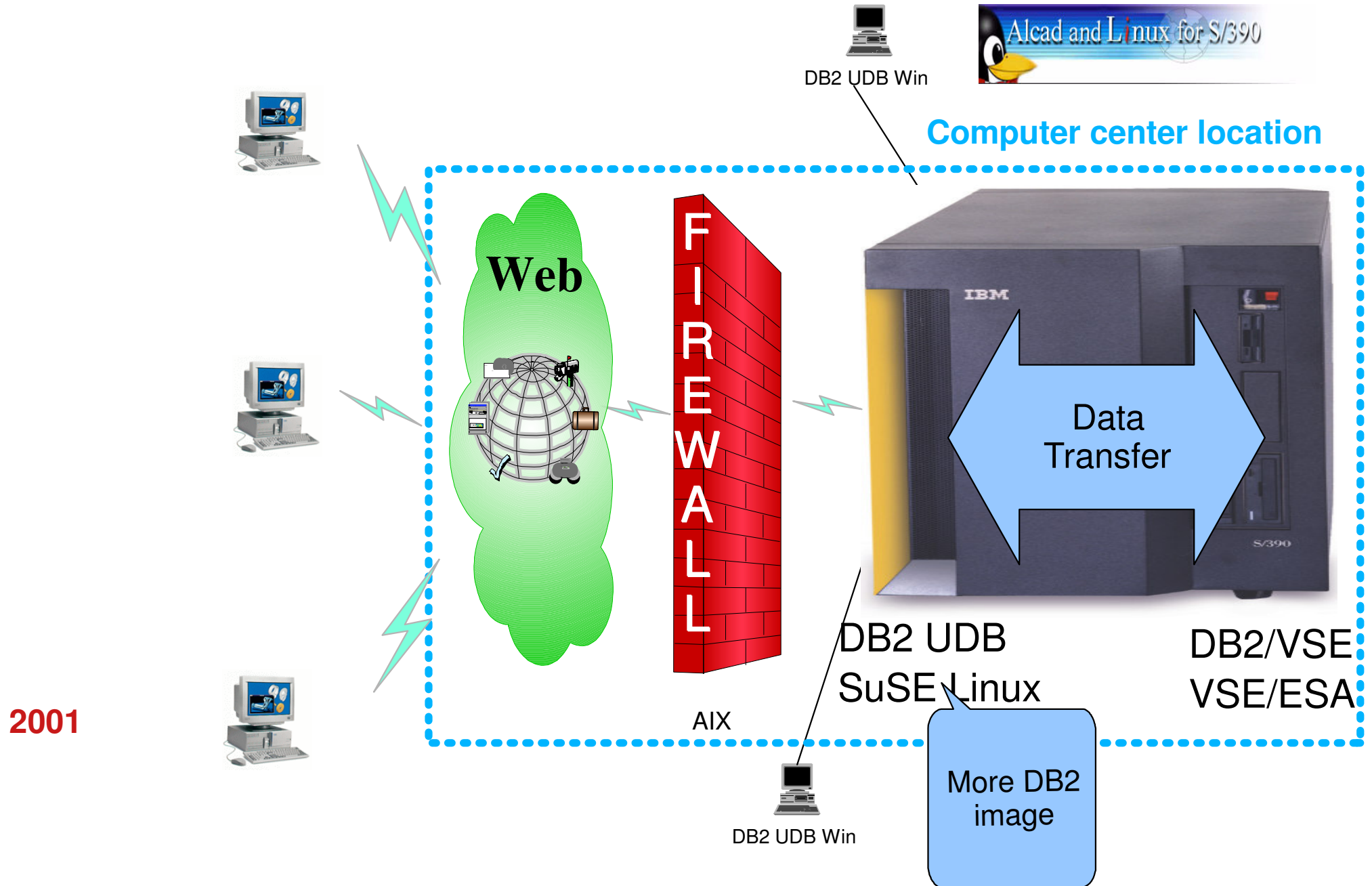


## Database design - Client Server option

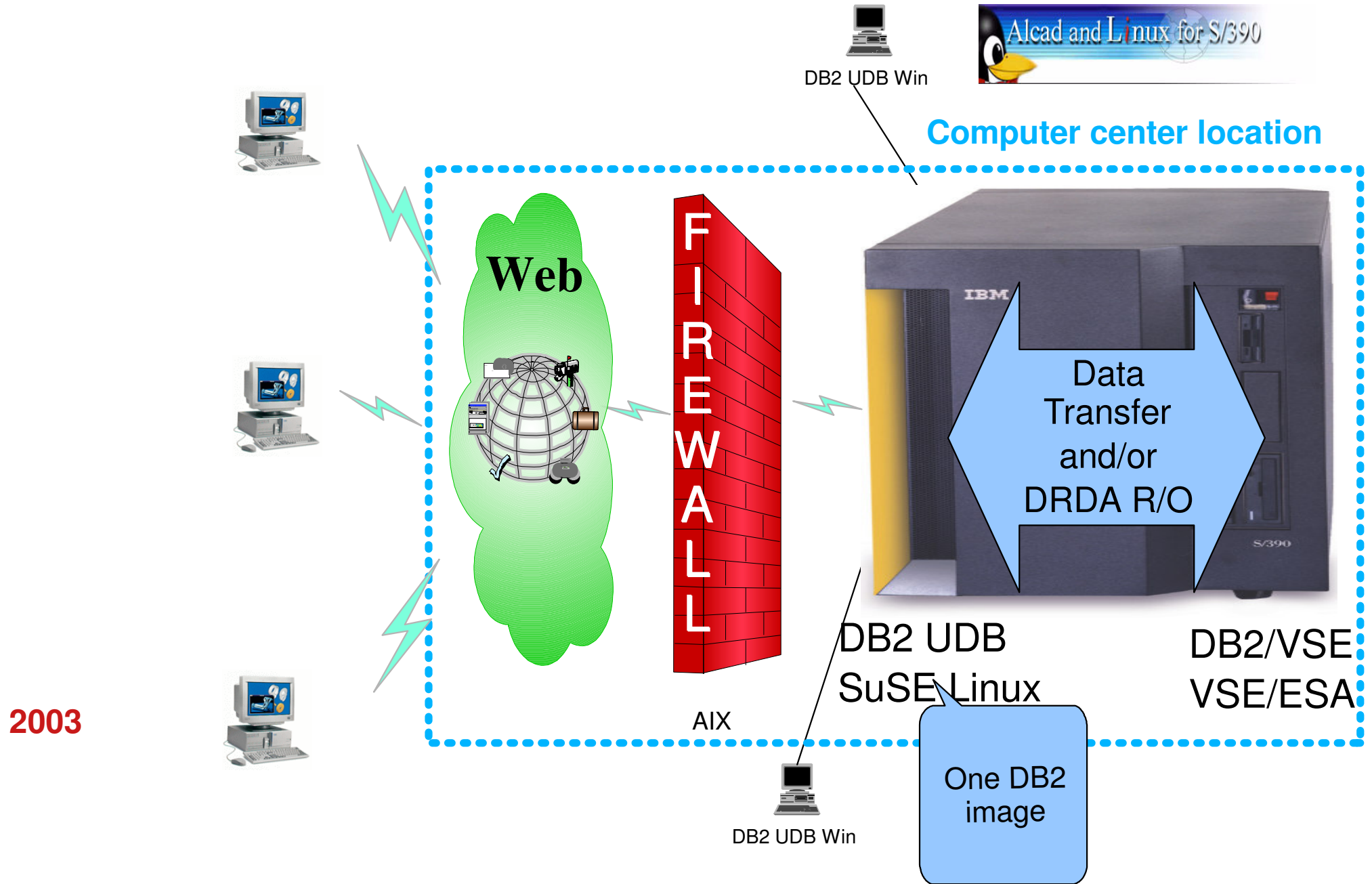


1999

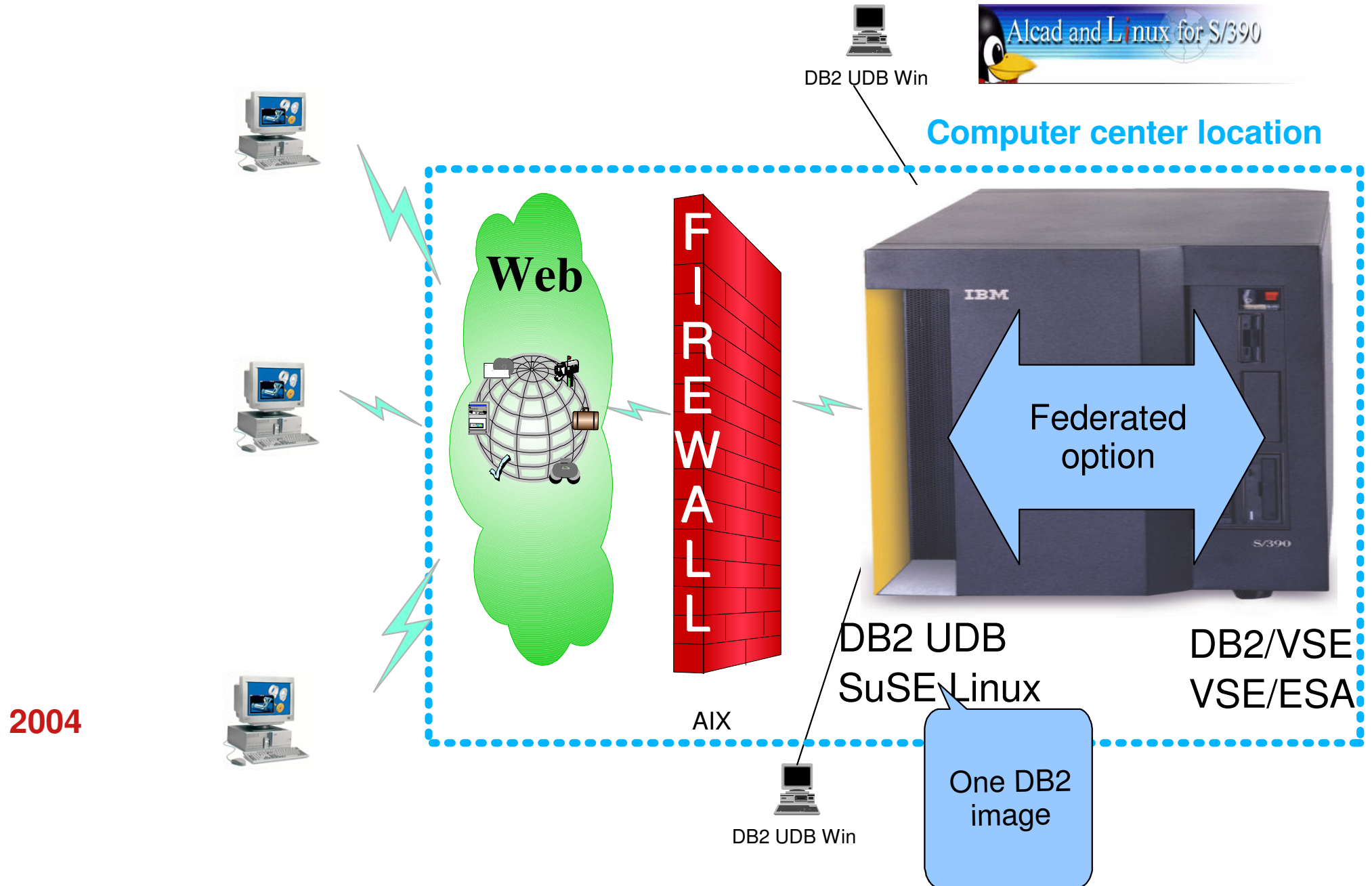
## Database design



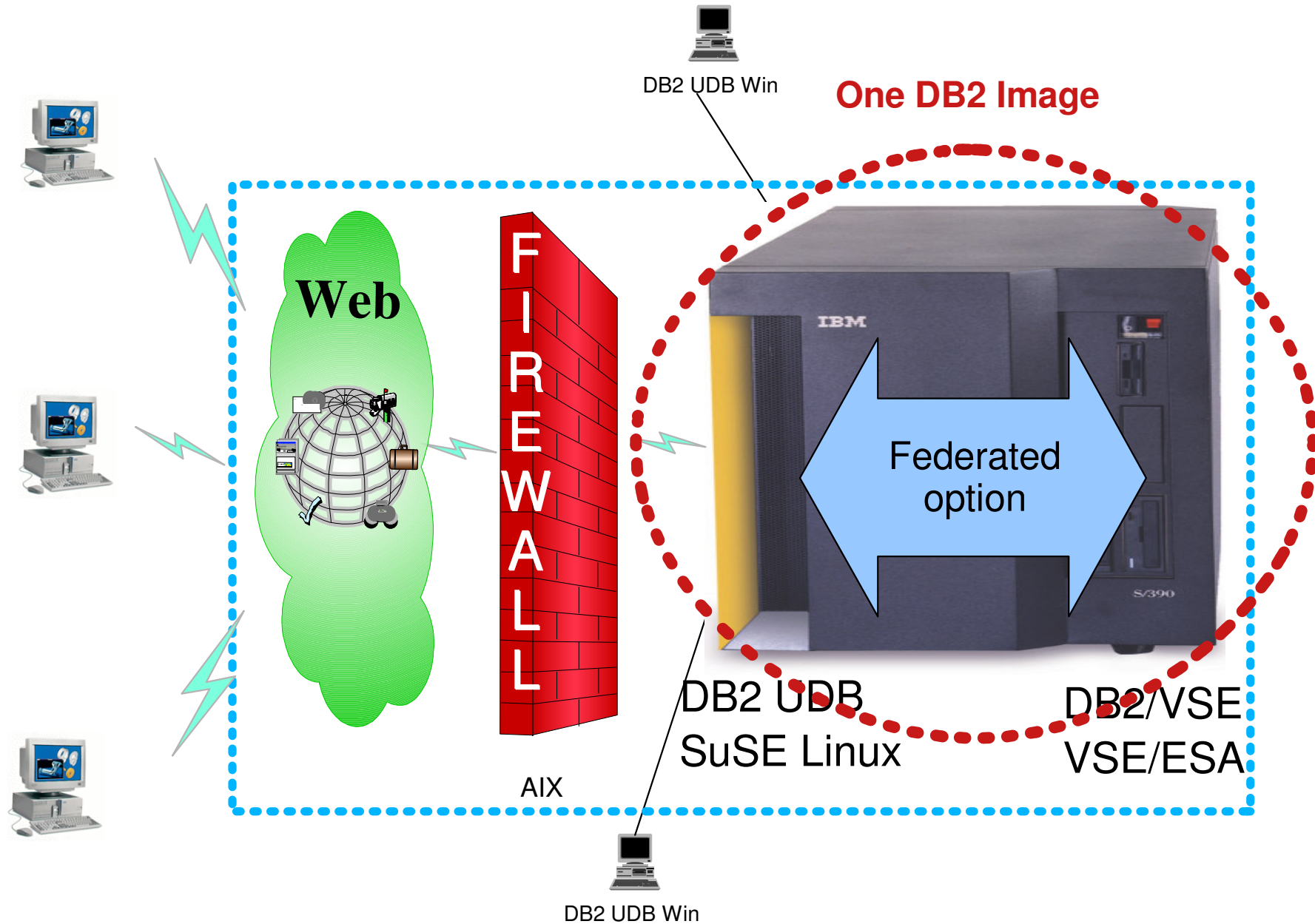
## Database design



## Database design



## Future



## Future

### Questions about One DB2 Image?

- Where to put DB2 ?
  - ▶ VSE
    - most of production data already exist here
    - core applications and data
    - more experience with DB2 VSE
  - ▶ zLinux
    - advanced SQL
    - faster IBM development for DB2 UDB
    - newest technology (64-bit)
- What we need?
  - ▶ HW (zSeries?)
  - ▶ SW (DB2 VSE, DB2 UDB, DB2 Connect?)
- How to do?
  - ▶ no change for developers and customers
  - ▶ no change for exists applications
  - ▶ equal or better performance

### Our decision?

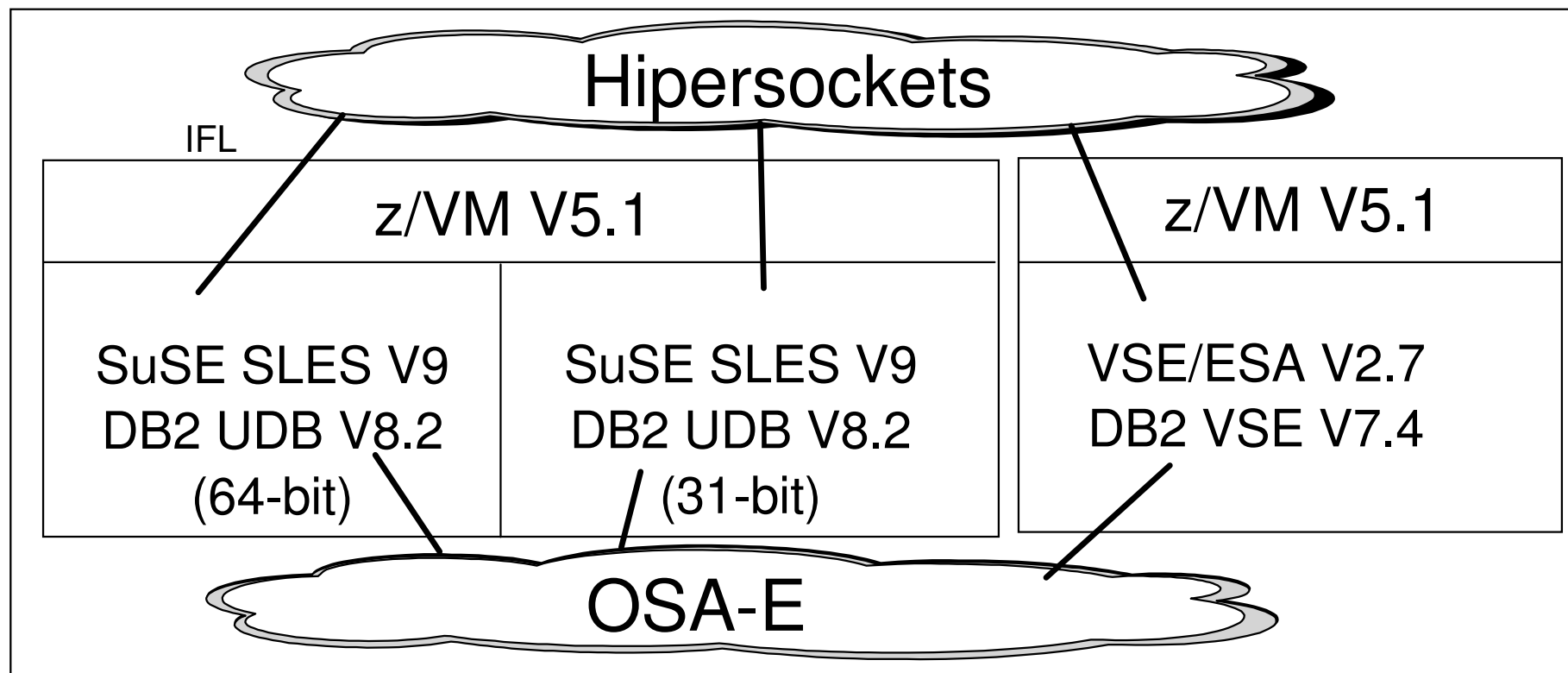
- DB2 UDB zLinux V8.2
- 64-bit environment
- z890
- test in IBM lab in Boeblingen

# Agenda

- Who are we?
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- **Testing and Results**

## Environment in LAB:

z890 model 140



## What we tested?

1. configuration for CICS applications and remote DB2 UDB database
2. performance of CICS application to DB2 (all options)
3. performance of VSE batch application to DB2 (all options)
4. performance of zLinux batch applications to DB2 UDB zLinux (all options)



## 1. Configuration for CICS applications and remote DB2 UDB database

### ■ VSE environment

- configure DB2 VSE database directory
  - configure ARISDIRD
- install DB2/VSE PTF UK02011 (Performance PTF for DRDA batch)
- configure DRDA code (batch and online)
  - link edit ARIS74LD (batch), ARIS745D (AR)
- configure VSE environment for default userid
  - used default userid=CICSUSER

### ■ zLinux environment

- configure database manager on DB2 UDB zLinux
  - authentication parameters changes in DBM (AUTHENTICATION, TRUST\_CLNTAUTH, TRUST\_ALLCLNTS)
- create remote packages for VSE batch and ISQL options
  - ARIISQL for ISQL and ARIDSQL for Batch
- **not need to have DB2 CONNECT product on Linux on zSeries**

## 1. Configuration for CICS applications and remote DB2 UDB database

### Now you can:

- migrate tables from DB2 VSE to DB2 UDB zLinux
  - UDB export/import options

### Use applications to access remote DB2 UDB on Linux on zSeries:

- old CICS/DB2 VSE applications
  - **no changes in source code**
  - recompile the program with SQL precompiler against the remote database (create new packages on DB2 UDB Linux on zSeries)
- new CICS/DB2 UDB applications
  - recompile the program with SQL precompiler against the remote database (create new packages on DB2 UDB Linux on zSeries)
- old VSE batch DB2 VSE applications
  - **no changes in source code**
  - change CONNECT options
- new VSE batch DB2 UDB applications
  - change CONNECT options

## Results:

### 2. Performance of CICS application to DB2

Test description - VAG-CICS application and	Time (seconds)
<i>Local MP3000 - H30 DB2 VSE</i>	0
<i>Remote MP 3000-H30 DB2 zLinux 31-bit OSA-X</i>	2
Local z890 DB2 VSE	0
Remote z890 DB2 zLinux 31-bit Hipersockets	0
Remote z890 DB2 zLinux 31-bit OSA-E	0
Remote z890 DB2 zLinux 64-bit Hipersockets	0
Remote z890 DB2 zLinux 64-bit OSA-E	0

**No difference between local and remote database access from CICS applications on z/890 processor**

## Results:

### 3. Performance of VSE batch applications to DB2

Test description (Inserts of 356.133 rows)	Time (seconds)	Comparison to DB2 VSE MP3000
<i>Inserts to local MP 3000-H30 DB2 VSE</i>	517 (8'37")	100,00 %
<i>Inserts to remote MP 3000-H30 DB2 zLinux 31-bit OSA-X</i>	1105 (18'25")	213,73 %
Inserts to local z890 DB2 VSE	356 (5'56")	68,85 %
Inserts to remote z890 DB2 zLinux 64-bit Hipersockets	272 (4'32")	52,61 %
Inserts to remote z890 DB2 zLinux 64-bit OSA-E	317 (5'17")	61,31 %
Inserts to remote z890 DB2 zLinux 31-bit Hipersockets	350 (5'50")	67,69 %
Inserts to remote z890 DB2 zLinux 31-bit OSA-E	350 (5'50")	67,69 %

## Results:

### 4. Performance of zLinux batch applications to DB2 UDB zLinux

Test description	z890 31-bit DB2	z890 64-bit DB2	G5 31-bit DB2
Joining 10 tables and 1 subselect	14,8854 sec (0'14") - 6,58%	16,9256 sec (0'16") - 7,48%	226,1293 sec (3'46") - 100%
Subselects with sums, unions	1,2781 sec (0'1") - 22,06%	1,3489 sec (0'1") - 23,28%	5,7920 sec (0'5") - 100%
with temp with left outer join	1,2366 sec (0'1") - 8,75%	1,3059 sec (0'1") - 9,24%	14,1188 sec (0'14") - 100%

Test description	z890 31-bit DB2	z890 64-bit DB2	MP 3000-H30 31-bit DB2
Inserting 1 million records with SQL	50 sec (0'50") - 6,41%	55 sec (0'55") - 7,05%	780 sec (13'0") - 100%
100 conc. app inserting 30 records into table	85 sec (1'25") - 13,03%	41 sec (0'4") - 6,28%	652 sec (10'52") - 100%

## **Solutions with DB2 UDB with Linux on zSeries enable modern possibilities with VSE:**

- no change in source code for core (old, existing) VSE applications
- no performance problem
- easy to configure environment
- easy migration process from DB2 VSE to DB2 UDB zLinux
- faster IBM development for DB2 UDB (tools based)
- newer SQL standard on DB2 UDB than DB2 VSE
- more options for DB2 UDB integration to other Development tools (Rational, WebSphere, ...) than on DB2 VSE

## **z/890 vs. MP3000 (or older processor):**

- newest technology
- much faster response time
  - ▶ using the same programs
  - ▶ accessing remote DB2 UDB on Linux on zSeries
- advanced components (Hipersockets, IFL, connectivity,..)

**Thank you!**

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