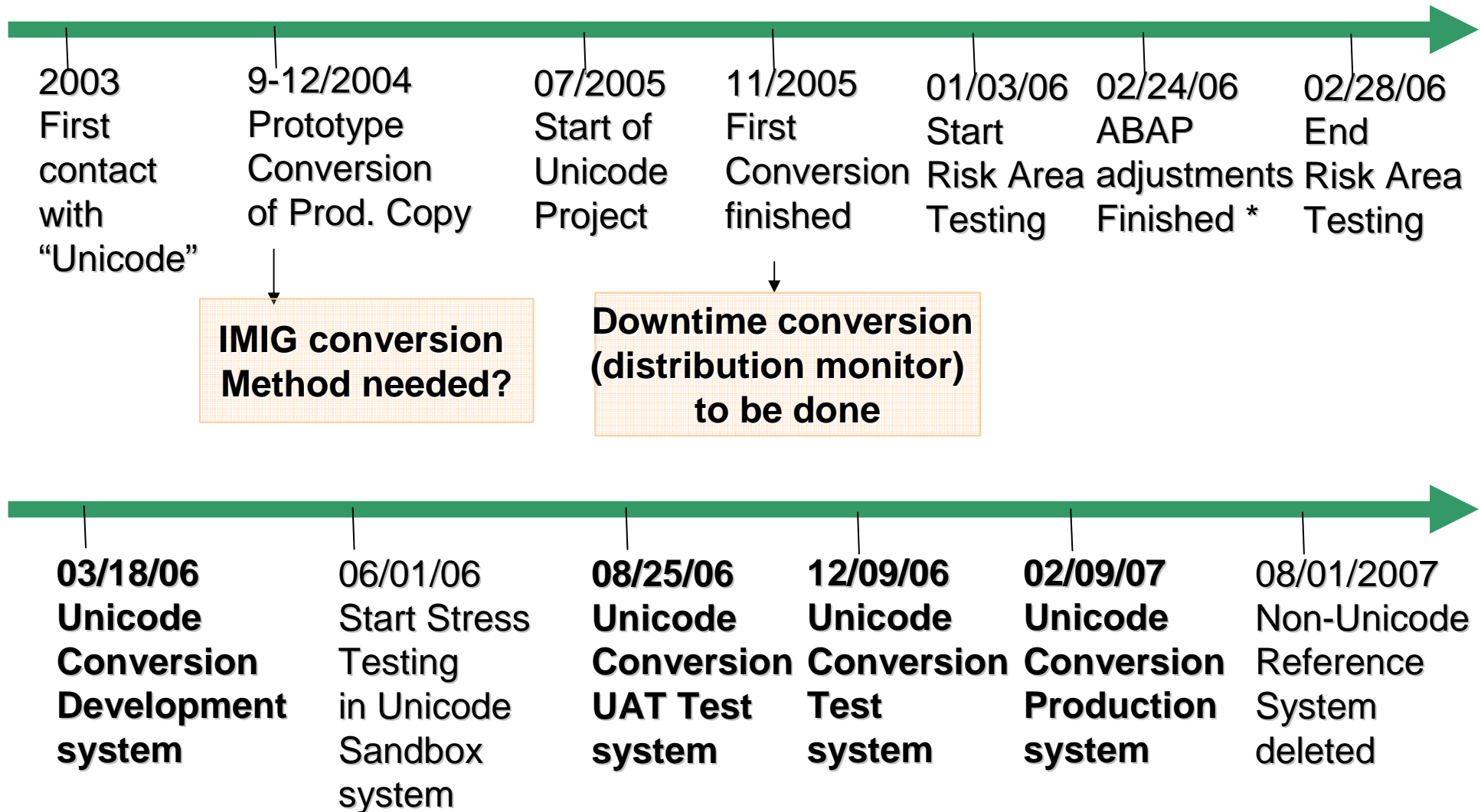




# **Unicode Conversion Project Microsoft**

**Steve Bury, Microsoft Corporation**

# Microsoft's Project Timeline



\* development system: ABAP/Unicode\_check=on

# Microsoft's Project Staffing

**Technical conversion: 2-3 Basis people**

**ABAP development: up to 12 developers  
including 10 external off-shore resources  
(Time frame: October 2005 until February 2006)**

**3 functional team contacts (FI, HR, SD)**

**1 cross-team analyst**

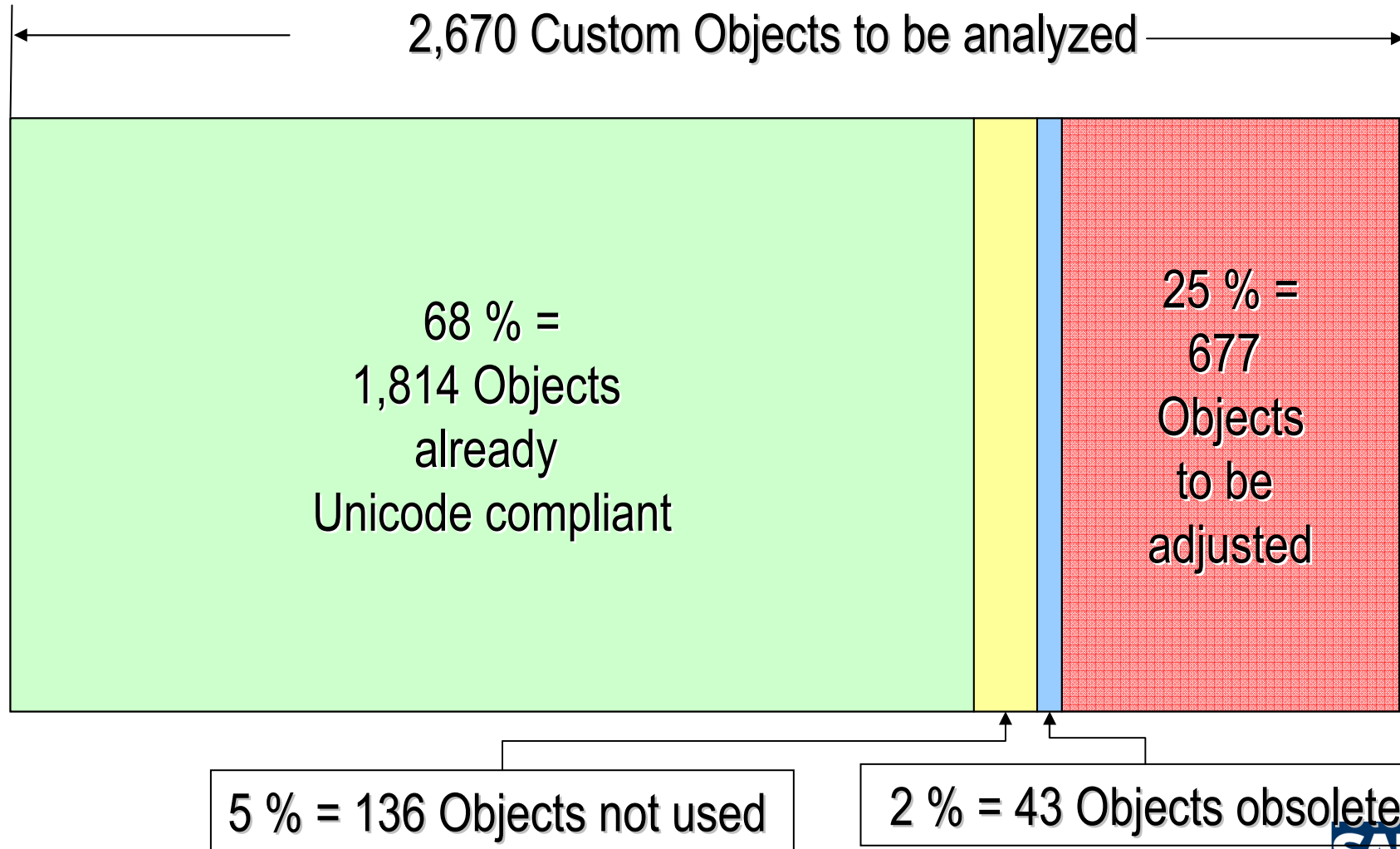
**3 testers**

**2 consultants (part time)**

**1 project lead**

**Extended team includes downstream system representatives,  
international IT, international/local business users**

# Metrics for Custom Development in SAP R/3



## Example Microsoft: PRD System

<b>SAP Release</b>	<b>R/3 Enterprise 4.7 Ext. Set 1.10</b>
<b>System type</b>	<b>Production System (PRD)</b>
<b>Platform (non-Unicode/Unicode)</b>	<b>Windows Server 2003 SP1 (x64)</b>
<b>Database version</b>	<b>SQL 2005 SP1/SP2</b>
<b>Hardware (non-Unicode)</b>	<b>All server: DL585 with 2.2 GHz CPU, DB: 4-way dual core, 32 GB RAM,x64 AS: 2-way dual core, 16 GB RAM,x64</b>
<b>Hardware (Unicode)</b>	<b>All server: DL585 with 2.2 GHz CPU, DB: 4-way dual core, 48 GB RAM,x64 AS: 4-way dual core, 32 GB RAM,x64</b>
<b>Database size (non-UC, in MB)</b>	<b>2,500</b>
<b>Database size (UC, in KB)</b>	<b>2,500</b>
<b>Export size (in KB)</b>	<b>Approx. 400 GB</b>
<b>Log database in import database</b>	<b>400 GB</b>
<b>SAP Basis 6.20 Support Package</b>	<b>SAPKB62058</b>

## Example Microsoft: Runtimes

### Runtimes of automated conversion steps

Step	Runtime	
Preparation for Unicode Conversion Scan runs	4 hours	
Scan Runs in Production (parallelization throttled to max. 5 jobs, to lessen impact onto production processes)	5 days	*
Preparation steps in downtime	3 hrs	*
Techn. Unicode conversion (Distribution Monitor)	13.5 hrs	*
Postprocessing in downtime (e.g. Index creation)	4 hrs	*
SUMG: Automatical Completion	?	

„\*“ = Parallelization possible by scheduling several Jobs.

## Unicode Conversion – Downtime Microsoft > 2 TB

Duration of downtime for first Unicode conversion in November, 2005: *1 week*

Now:

- 3 hours preparation (downtime)
- 16 hours conversion with Distribution Monitor (2.3TB test database)
- Approximately three hours for index creation (split tables)

→ Calculated downtime for Production system:

**24 hours** + time for database backup

## Location of Storage

- Export data attached to local application servers

## Database settings in import database

- Degree of parallelism
- Simple mode
- Additional log space for import phase

## Reorganization in export database

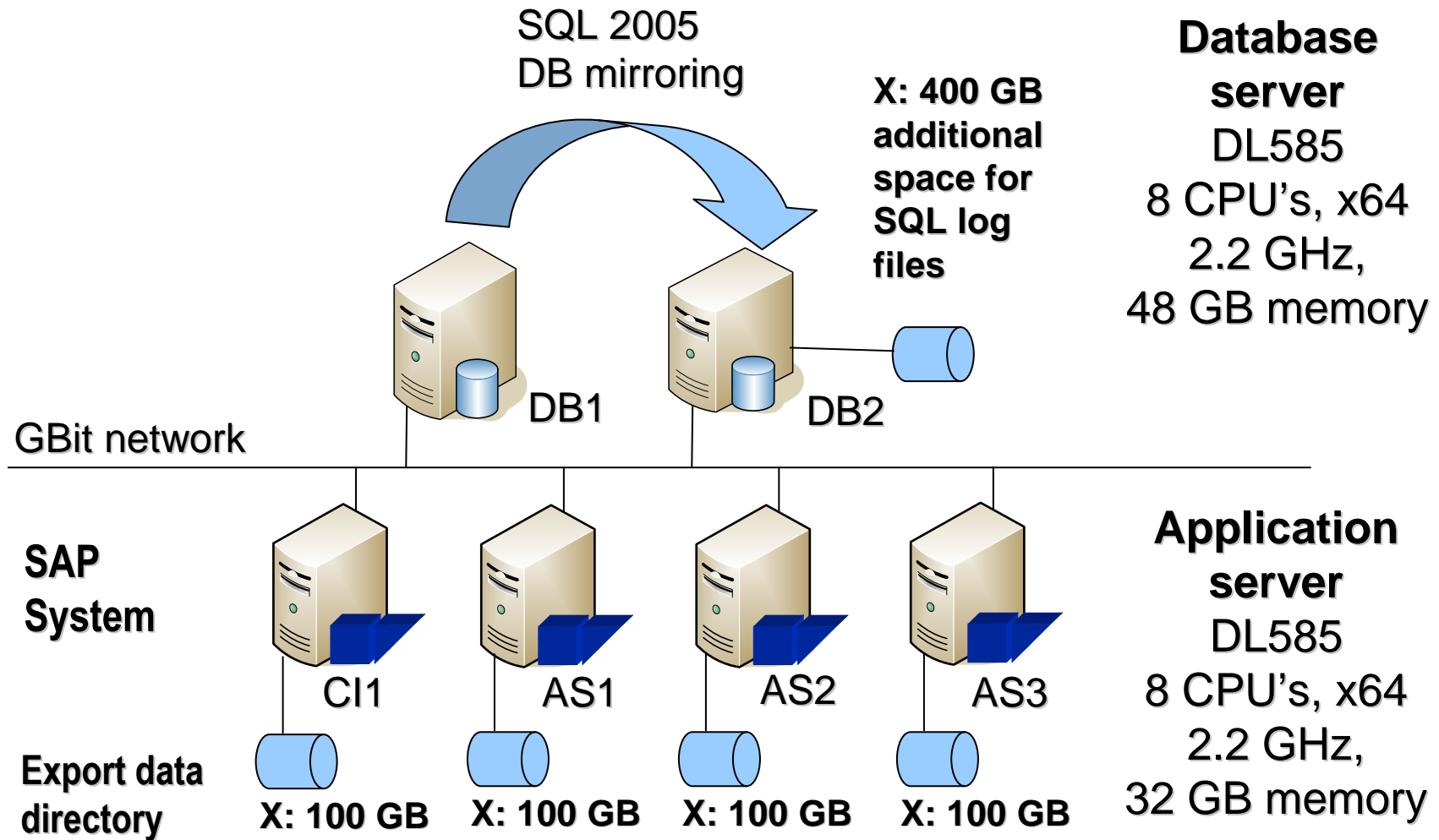
- Indexdefrag for some of the biggest tables

## Configuration of Distribution Monitor

- Number processes (export/import)
- Fastload option for SQL
- Split of biggest tables into smaller packages



# Hardware Change before Unicode Conversion



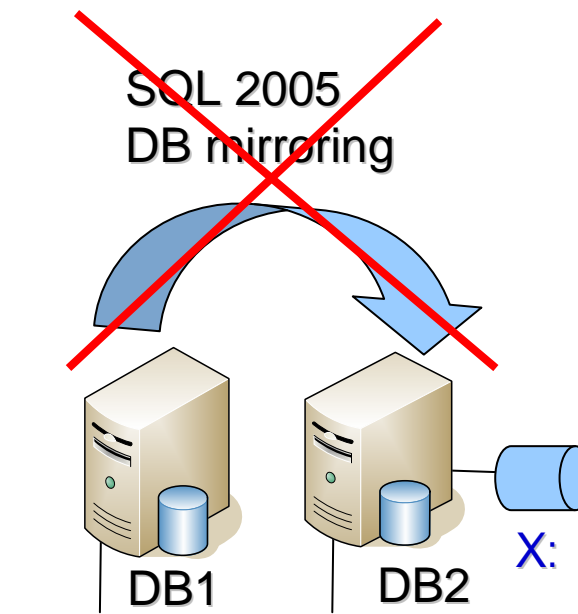
## Database Configuration (Conversion Downtime)

### Database server

- Backup of non-Unicode database
- Stop database mirroring, reconfigure Target SAN (2<sup>nd</sup> DB server)
- 1st DB for export; 2<sup>nd</sup> DB server as Unicode database for import
- Change SQL config. on 2<sup>nd</sup> DB server

#### Non-Unicode Database:

- SQL 2005
- 2.5 TB data (02/06)
- 12 data files
- SQL in Full mode
- Max degree of parallelism=1



#### Unicode Database:

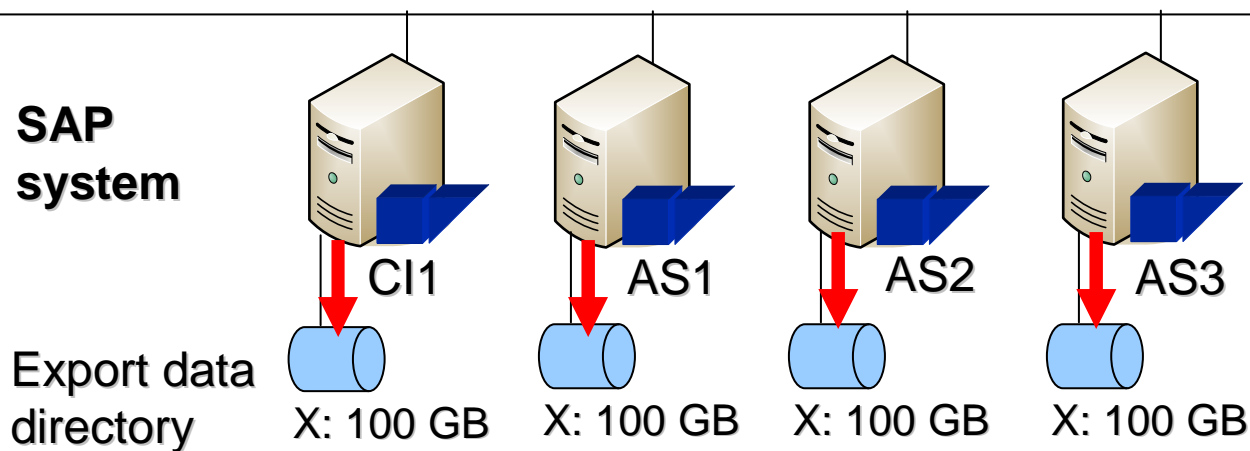
- 2.5 TB data (02/06)  
Files pre-allocated, but empty!
- 32 data files
- SQL in simple mode
- Max degree of parallelism=0
- Add new log data file on X: drive

# Application Server Configuration (Conversion Downtime)

## Application server

- SAP instances down
- 2 **distribution monitor** processes per server: export and import
- 8 export processes per server (R/3 load processes)
- 6 to 7 import processes per server (R/3 load processes)
- R3load.import.loadArgs=-loadprocedure fast
- Export to local X: drive on each server only – 100 GB limit!

Gbit network

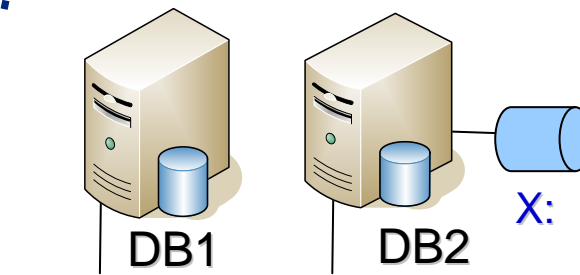


## Database Configuration (Post Conversion)

### Database server

- Comparison of non-Unicode and Unicode database done and ok:
  - Create indexes for split tables in Unicode database
  - Adjust SQL server configuration off Unicode Database
  - Create custom objects in database in Unicode Database

*Create index BKPF~2 on BKPF ...  
Create trigger  
ADR\_CHG\_DATE ...*



### Unicode database:

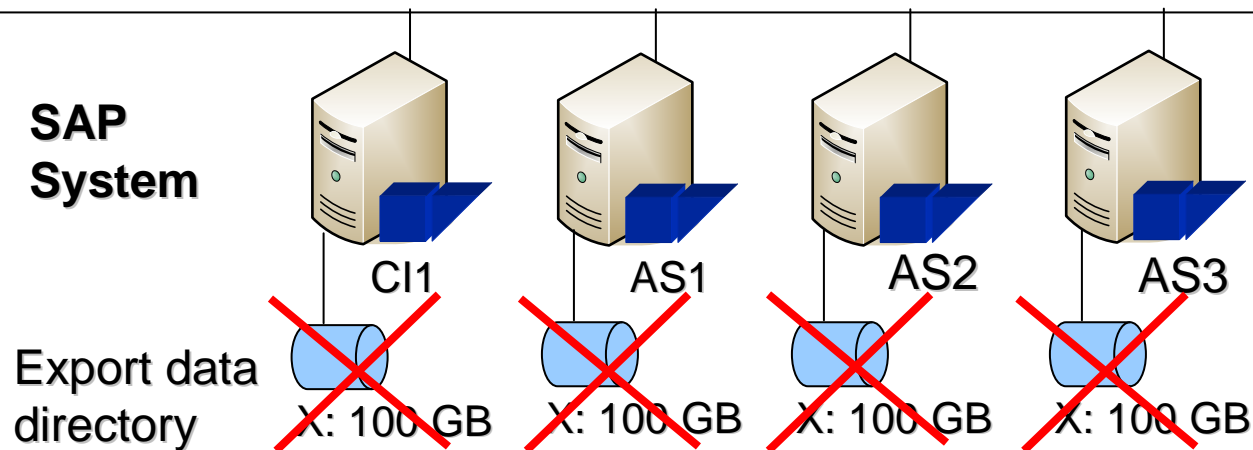
- 2.5 TB data (02/06)  
**WILL GROW FAST!**
- 32 data files
- SQL in Full mode
- Max degree of parallelism=1
- Delete log data file on X: drive

# Application Server Configuration (Post Conversion)

## Application server

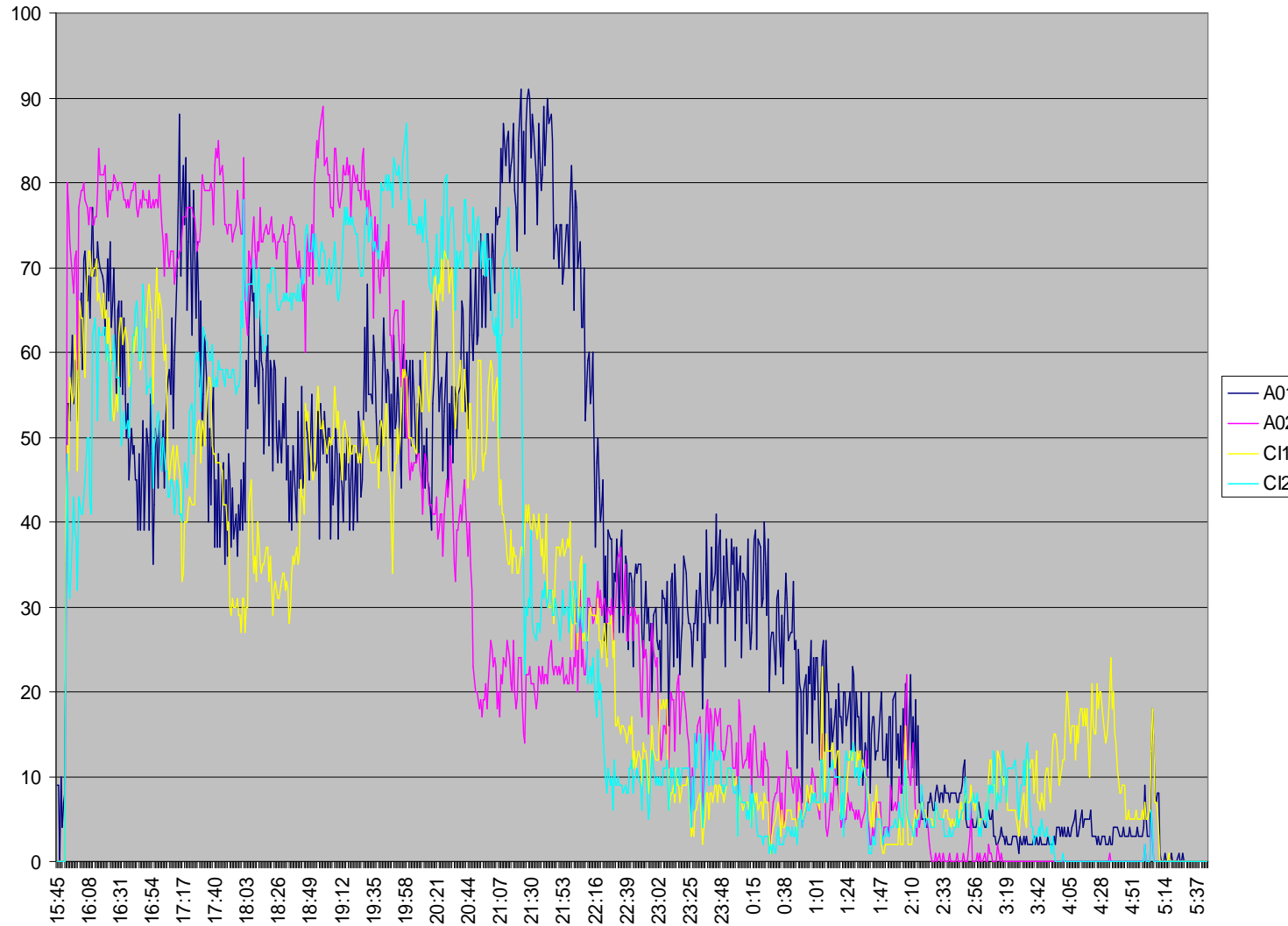
- SAP kernel for Unicode systems installed
- Memory configuration in SAP profiles adjusted
- SAP instances up
- X: drives deleted

GBit network



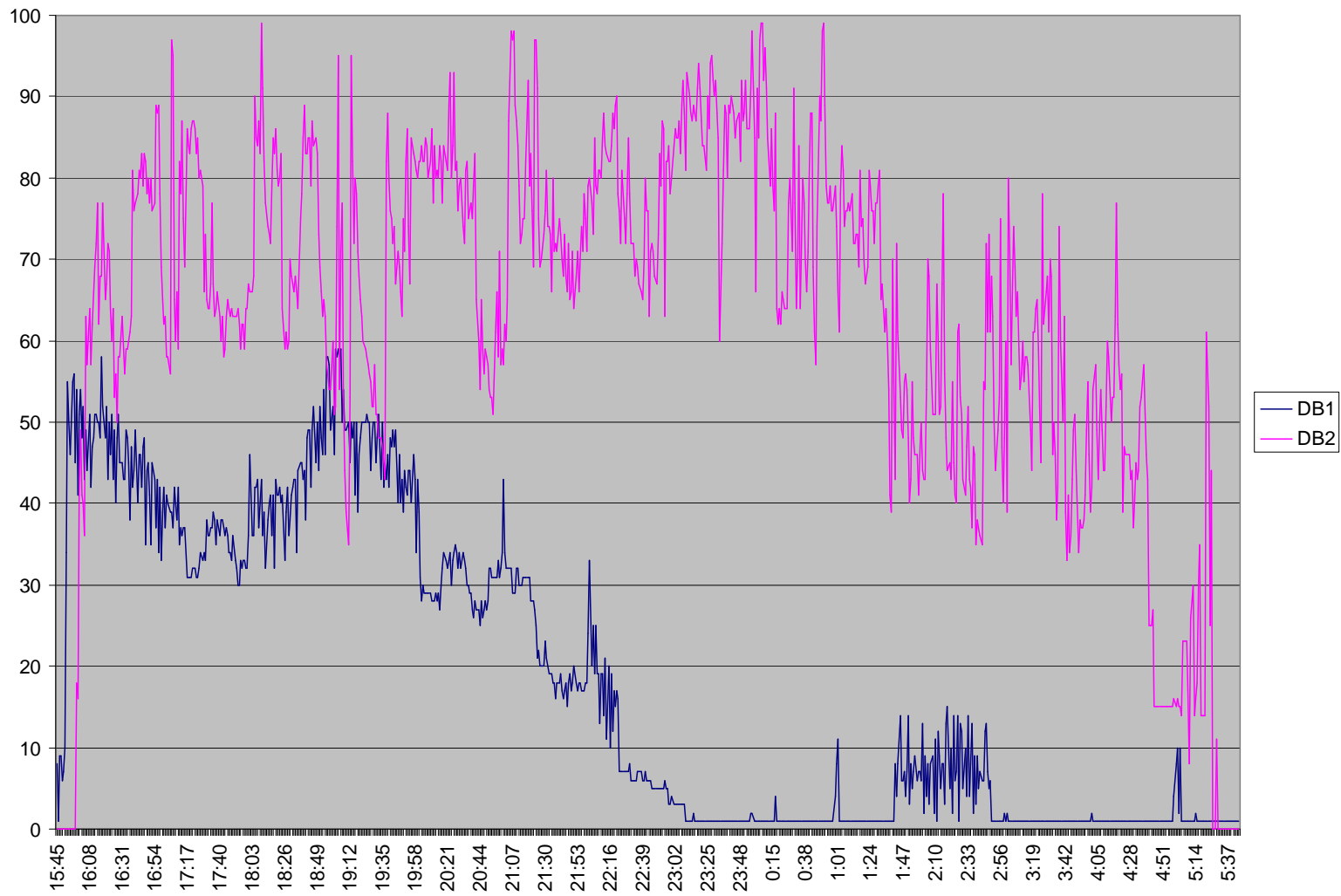
# CPU Util – Export/Import Servers (4 App Servers)

R/3 Unicode Test Conversion run on 9/3/06 - App Srvr CPU Util



# CPU Util, DB1=Source (Blue), DB2=Target (Red)

R/3 Unicode Test Conversion run on 9/3/06 - DB Server CPU Util  
DB1 = Source, DB2 = Target



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