

Upgrading a Consortium to V.16.02

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A Brief Excursion into the HBZ

- Founded 1973 to serve 5 new universities in NRW
- Responsibilities:
 - Service center for library automation and catalog production
 - R&D in library automation, consultant for libraries
 - Host for a bibliographic database to function as bibliographic utility for co-operative cataloging AND as an electronic subset of the existing Union Catalog
- Today HBZ is serving 1,195 libraries in the consortium
- ALEPH-500-Database: 72,000,000 records (statistics by Dec 2003)
 - 12,500,000 title records
 - 6,300,000 authority records
 - 850,000 subject headings
 - 50,000,000 holdings and items

Setup and Migration of Data

- **Motives**
- **Organisational Matters and Project Status**
- **Setup Steps**
- **Alterations of Data Model**
- **Setup of Indexing**
- **Experiences - Setup and Migration**
- **Setup WWW-OPAC**

Motives: Current Situation

- **ALEPH 500 Version 12.3**

- We had to run a setup mainly based on functionalities of the pre-ALEPH System – no re-engineering of „HBZ-Verbund“ while migrating to ALEPH 500 in April 2000
- „Last“ ALEPH 500 system in version 12.3
- Heterogeneous Local Library Systems connected: Non-ALEPH systems and ALEPH systems in version 14.2

- **Functionalities of a Consortial Database**

- Cataloging with 12.3 and 14.2 GUI clients needs emulation 14.2→12.3
- Import of customers databases with de-duplication programs
- Data replication
 - MAB2 services for Non-ALEPH local library systems (title, holdings, items, and authorities)
 - ALEPH-Cluster: Data replication between central database and ALEPH local systems
 - CAT-Download for SISIS local systems (i.e. Copy function from GUI to SISIS acquisitions module)
- WEB-OPAC as gateway for external search services: virtual catalogs, metasearches
- HBZ inter library loan (DigiBib): gateway via Z39.50 server

Motives: upgrade to higher version - 1

- **Reasons**

- Ex Libris: support of ALEPH 500 version 12.3 will be discontinued
- Changes in ALEPH Kernel to improve performance
- To enhance breakdown safety of the central system

- **Consequences from HBZ demands**

- Skip version 14.2, because only version 16.2 seems to be suitable
- Hardware upgrades (new generation of machines)
- Upgrades of OS etc. (Solaris 9, Oracle 9i, ...)

- **Disadvantages of running an „early“ version 16**

- HBZ is one of the „pilots“
- „Uncertain“ state of the programmes (e.g. english version), frequent updates
- Unsatisfactory documentation and handbooks, no „how to“-information from ICAU
- 2 steps at one time: Unicode (14.2), new GUI-Client (16.x)
- Status: Improvements in documentation and quality of released version

Motives: upgrade to higher version - 2

- **K.o. criteria**

- No long falling off in production during migration
- Test of the complete system (all data, all Indexing)
- Test of all functions before start of production
- Test of performance

- **Implementing lessons learned**

- Experiences with migration to ALEPH version 14.2 (DACH)
- Time frame: V. 14.2 would run only for a short period (V. 16 „ante portas“)
- Migration + production running parallel was considered critical with existing hardware

Organisational Matters and Project Status

- **Staff**

- Kernel of 4 (Setup, Decisions): 2 librarians, 2 computer scientists
- Supported by experts from other teams – librarians and technicians

- **Test migrations**

- Objective: Test of data migration with all data, Index setup, test of performance:
A (HBZ): Indexing: small but representative, consistent subset of data
B (ExL): Migration, Indexing: large, representative, consistent subset of data
C (HBZ+ExL): Migration, Indexing, Performance: All data

- **Status**

- Migration, Indexing: Tests A, B and C completed
- Ex Libris testing of performance: 4/2004 completed: 0.82 sec / transaction
- Implementation/test of all functionalities: in progress
- **Start of production of training system ALEPH v. 16.02 pre-release: April 2004**
- **Start of production with ALEPH version 16.2 final release: July 26, 2004**

Organisational Matters and Project Status: Schedule - 1

- Start of project: May 27/28, 2003 Kick-off workshop with Ex Libris
- First release v. 16 english: End of May 2003
 - Start of **basic setup**: basically an upgrading of HBZ version 12.3 concerning formal aspects, i.e. changed structures of tables etc.
- First release v. 16 deutsch: July 17, 2003
 - Copying of basic setup into German version
 - Improvements on basic setup implemented
- Pre-release v. 16.02: Feb 19, 2004 + Hotfix 01 Mar 30, 2004
- Final release ALEPH 500 v. 16.02: Feb 27, 2004

Organisational Matters and Project Status: Schedule - 2

- April/May 2004: Training of library staff by HBZ
- July 2 –22, 2004: Migration of data in 2 steps, consequences are
 - restricted cataloging (no deletions of records)
 - No data services to upgrade the bibliographic utility (imports of third party data) during this period (DB, BNB, Casalini libri, etc.) or export data (other than ALEPH-Cluster)
- July 26, 2004: Start of production with ALEPH version 16.2
- Aug-Sep, 2004: Re-start of data imports in version 16.2
- August 2004: Re-start of data exports in version 16.2
- August 2004: Synchronizing authority files with ALEPH local systems

Organisational Matters and Project Status: Schedule - 3

- Why are we not ready at NAAUG meeting?

Importing data with de-duplication of customers failed its schedule:

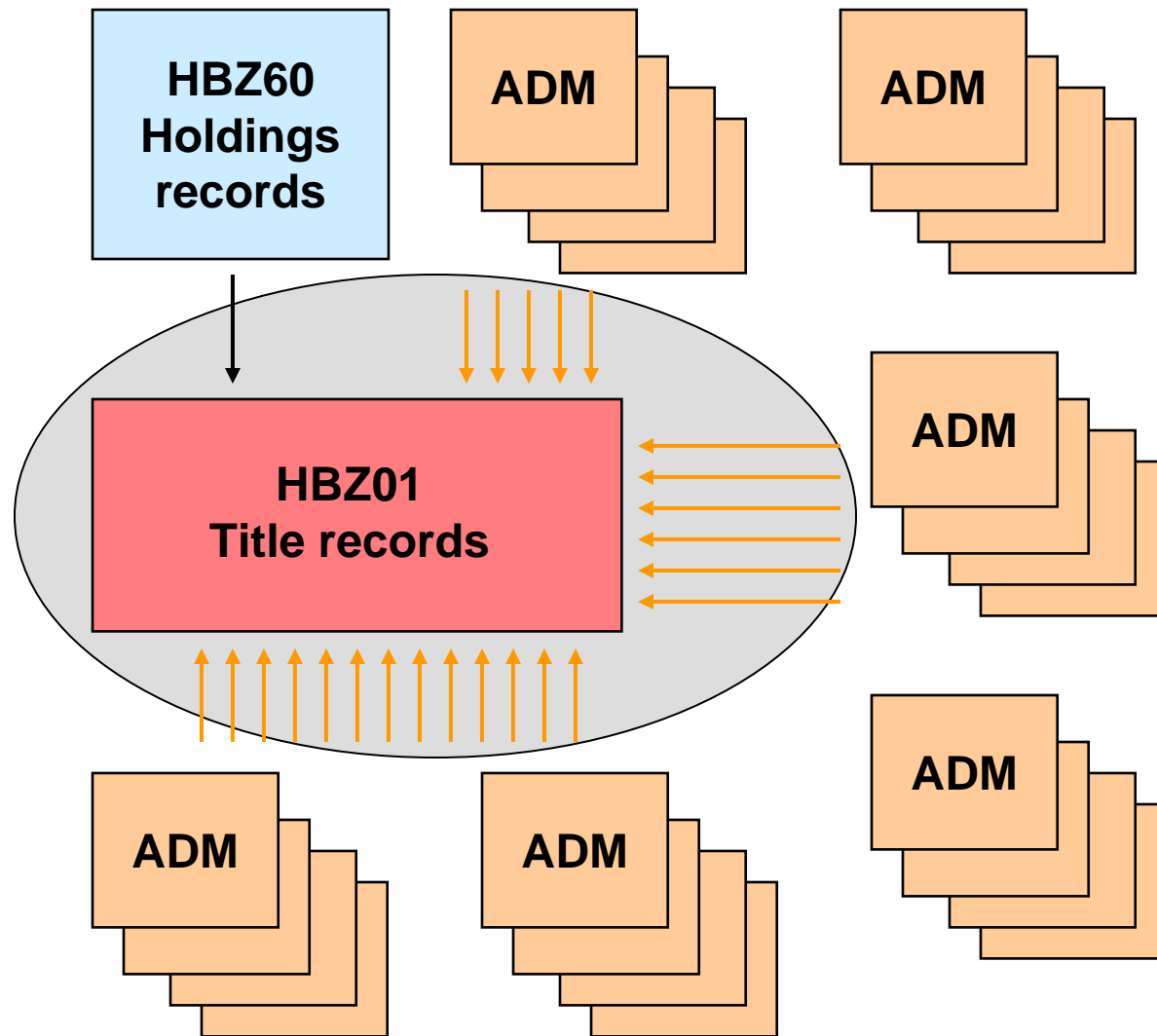
- Kunst- und Musikhochschulen (Köln, Essen, Detmold): completed
- Bibliothek des Ruhrgebiets: completed
- UL Koblenz-Landau: June 2004
- Institutes at Bochum and Münster universities: June 2004

Holdings and Items: HBZ Data Model 12.3

HBZ60
Holdings records
stored centrally

**Relations
and
Indexing**

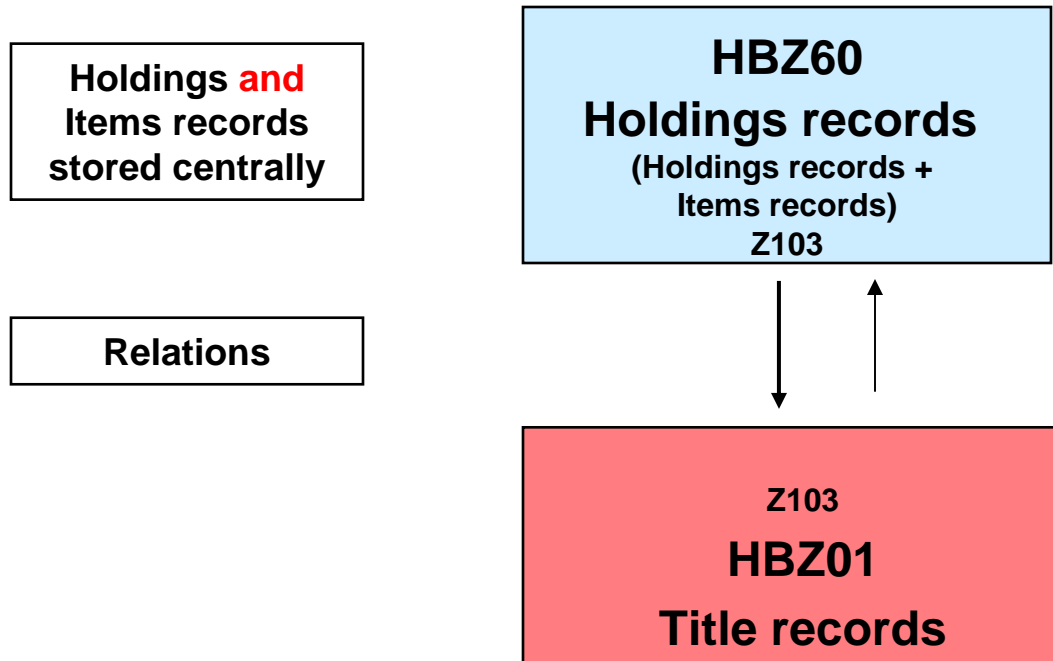
37 ADMs
Items records
stored centrally
Shortcoming:
**Every user has
own ADM**



Alterations of Data Model

- **Data model Holdings and Items**
 - Items will be part of holdings records (MEX-Fields, repeatable)
 - Indexing of holdings and items informations in HBZ60 (a separate library, no longer in main library HBZ01)
- **Data manipulations during migration**
 - HBZ delivers demands, Ex Libris does the job
 - „Synchronizing“ central and local systems (synchronizing record identifiers)
- **Changes in authority file linking for ALEPH local systems**
 - Local ALEPH systems will hold their authority holdings, changes are replicated via ALEPH-Cluster
 - In v. 12.3 local ALEPH systems had no authority files, but had to uplink into the central database at HBZ whenever a name or subject heading had to be displayed in the local OPAC (expand functions)

Holdings and Items: HBZ Data Model 16.2



Relations

External:

Local data (holdings and items) are linked via HBZ-record-Id in field 012 of a holdings record (HBZ60) to the title record in HBZ01.

Internal:

ba) Internal table Z103 in ALEPH-Library HBZ01: Relation of Title records to Holdings (and Items) records

bb) Internal table Z103 in ALEPH-Library HBZ60: Relation of Holdings record to Title records

Holdings and Items: HBZ Data Model 16.2

- We achieved with the new data modelling:
- No ADM data bases required
 - No ADM records to manage
- HBZ60 includes all local data
 - Holdings and items information in one HBZ60 record
- Indexing of local information solely in HBZ60
- Gathering of items information in GUI's items workspace
(no changes of librarian's workflows)

Local data: Holdings and Items records

Owner encoding

```
LDR L 00115vM2.01200024-----1
FMT L ML
001 L $$aLA000148531
002a L $$a20000118
004 L $$a20030805
012 L $$aHT006213739$$IHBZ01
030 L ||5d|||||||
070 L $$a82
OWN L $$aA0001
CAT L $$aHBZ-SETUP$$b60$$c20030812$$IHBZ60$$h1651
```

```
MEX L $$aHBZ60000002473-000010$$cHB C$$dBeschreibung$$e123456789_Signatur1$$gSignatur2-
123456789$$iInventarnummer$$j20040416$$k01$$mBOOK$$nBestellnummer$$o20040416$$rInterne
Notiz$$sHBZ-SETUP$$u20040416$$vOPAC-Notiz$$wAusleihnotiz
```

```
MEX L $$aHBZ60000002473-000020$$cHB
DX$$dBeschreibung$$eSignatur3$$gSignatur4$$iInventarnummer$$j20040416$$k01$$mBOOK$$nBestellnum
mer$$o20040416$$rInterne Notiz$$sHBZ-SETUP$$u20040416$$vOPAC-Notiz$$wAusleihnotiz
```

Items data

\$\$a – Identifier
\$\$c – location (e.g. branch lib)
\$\$e – call number

...

Setup of Indexing - 1

2 Steps:

- **1. Step: functional equivalent to current status in v. 12.3**
 - Taking over of setups of current productive version (12.3 -> 16.01)
 - Modifications are only made if technically required
- **2. Step: Revision**
 - Motive: „Everything is evaluated according to current Best Practice in customer libraries and may require a re-design.“
 - Indexing algorithms have high priority (performance)

Setup of Indexing - 2

- Aspects for decisions made on Direct (system ID, record ID, ISBN etc.), Word, and Phrase indexes:
 - Experiences of using current version 12.3, useful?
 - Use in GUI, WWW, Z39.50, internal?
 - Browse and/or search?
 - Customer's demands
 - Standardization and „clearing-up“
- New concept in HBZ60 (local data):
 - Complete new setup für indexing (Indexes built, Sort keys)
 - Direct indexes for browsing
 - Different Filing routines (alphabetic and numerical)

Experiences following Setup and Migration in V. 16

- Positive on running times for Indexing
 - But: No experiences for production scenario yet to report
- Local ALEPH systems in libraries: Need to change matters concerning
 - Synchronization between local and central indexing concepts (filing), authority replication
 - **Lessons learned:** Upgrades of central ALEPH system requires coordinated maintenance and/or upgrade of connected local ALEPH systems and, maybe, vice versa?

Setup WWW-OPAC

- **Status:**

- Realization of a first test version March 2004: completed
- Motive: Performance testing utilizing this setup

- **Objectives:**

- Provide access to total HBZ data (Union Catalog function)
- Make search and presentation in GUI and WWW „identical“
- Make presentation of data according to the demands of reference librarians (the world-wide-user has access to these data via many portals anyway)
- Future: Make integration of new/other functionalities possible (e.g. linking a search to remote sources/datenbases)

Setup WWW-OPAC: Standard Search

The screenshot shows a Mozilla browser window titled "Gesamtkatalog - Suche über mehrere Felder - Mozilla". The interface includes a menu bar (Datei, Bearbeiten, Ansicht, Gehe, Lesezeichen, Tools, Fenster, Hilfe) and a toolbar. The main content area is titled "Gesamtkatalog" and features a logo for HBZ (Hochschulbibliothekszentrum des Landes Nordrhein-Westfalen) on the left. To the right of the logo are two rows of buttons: "Standardsuche", "Multipool-Suche", "Expertensuche", "Indexsuche", "Datenbanken", "Neustart" in the first row; and "Ergebnisliste", "Einstellungen", "Suchverlauf", "Korb", "Feedback", "Hilfe" in the second row.

The "Standardsuche" section contains three search input fields, each with a dropdown menu set to "— Direktindizes —". Between the first and second fields, and between the second and third fields, there are "und" dropdown menus. Below the input fields are "OK" and "Verwerfen" buttons.

The "Suche beschränken auf:" section includes a "Sprache:" dropdown set to "alle", a "Jahr von:" input field, a "Jahr bis:" input field, and a note "JJJJ (Nutzen Sie ? für Trunkierung, wenn Sie nicht mit von/bis suchen)". Below this is a "Zweigstelle:" dropdown set to "alle".

The "Suchtipps:" section contains a list of search tips:

- Füllen Sie so viele Felder aus wie Sie möchten. Je mehr Zeilen Sie belegen, desto kleiner wird die Zahl Ihrer Suchergebnisse sein. Wenn Sie die Option *Exakte Wortfolge* wählen, können Sie eine Wortfolge wie *Sankt Pauli* eingeben, und das System wird nur Titel suchen, in denen diese Wörter direkt nebeneinander stehen.
- Sie brauchen Klein- und Großschreibung nicht zu beachten. Die Eingabe von *computer* findet sowohl Titel mit *computer*, *Computer* als auch *COMPUTER*.
- Zwischen den Wörtern wird eine UND-Verknüpfung angenommen. Sie können auch die Booleschen Operatoren AND, OR und NOT in Ihrer Suchanfrage verwenden. Zum Beispiel können Sie *Farm OR Bauernhof* eingeben, um alle Titel zu finden, die entweder *Farm* oder *Bauernhof* enthalten.
- Nutzen Sie das *?*, um Titel zu finden, die Wortteile enthalten. Die Eingabe von *Arch?* findet *Archäologie*, *Archäopteryx*, *Arche*, *Archiv* etc. Mit *?ologie* finden Sie *Anthropologie*, *Zoologie*, *Archäologie* etc.

At the bottom of the search tips section, it says: "Sie können den Platzhalter auch verwenden, um unterschiedliche Schreibweisen zu finden. Geben Sie *Schif?ahrt* ein, um sowohl die alte Schreibweise (*Schiffahrt*) als

The browser's status bar shows "Fertig" and the taskbar at the bottom includes icons for Start, Internet Explorer, Mozilla, and several open applications like "M:\alle\Pr...", "Novell-deli...", "Pegasus Mail", "Windows ...", "193.30.11...", "Version16...", and "Gesamtk...". The system clock shows "11:55".

Setup WWW-OPAC: Short List Titles

The screenshot shows a Mozilla browser window titled 'Gesamtkatalog - Ergebnisliste - Mozilla'. The page content includes a navigation menu with buttons for 'Standardsuche', 'Multipool-Suche', 'Expertensuche', 'Indexsuche', 'Datenbanken', 'Neustart', 'Ergebnisliste', 'Einstellungen', 'Suchverlauf', 'Korb', 'Feedback', and 'Hilfe'. Below the menu, the search criteria are displayed: 'Ergebnisliste für Titel= "Beckmann"; Sortiert nach: Urheber, dann Titel'. There are buttons for 'Vollanzeige', 'Speichern/Senden', 'Auswahlliste', 'In den Korb', and 'Modifizieren'. The search results are shown as a table with 3 items. The first item is 'Beckmann, Max [Ill.]' with a list of call numbers: 386-TR:-UB, 468-W:-UB, 836-MS:-FHB, and Tr-6-TR:-FHB. The second item is 'Beckmann, Thomas:' with 'Beckmann / Interview Alex Hibert. 1991'. The third item is 'Selz, Peter:' with 'Max Beckmann. - 1. ed. / Peter Selz New York [u. a.] : Abbeville Press, 1996'. At the bottom, there is a search modification section with the text 'Sie können Ihre Suchanfrage ändern:' and a text input field containing 'PTI ='. The Windows taskbar at the bottom shows various icons and the system clock at 11:44.

Gesamtkatalog

HBZ

Standardsuche Multipool-Suche Expertensuche Indexsuche Datenbanken Neustart

Ergebnisliste Einstellungen Suchverlauf Korb Feedback Hilfe

Ergebnisliste für Titel= "Beckmann"; Sortiert nach: Urheber, dann Titel

Vollanzeige Speichern/Senden Auswahlliste In den Korb Modifizieren

Titel 1 - 3 von 3

Gehe zu Text Gehe zu #

Vorherige Seite Nächste Seite

#	Sortieren nach: Urheber Titel Jahr	Bestand
1	<input type="checkbox"/> Beckmann, Max [Ill.]: Max Beckmann / [hrsg. vom Frankfurter Kunstverein und vom Kunstverein in Hamburg] Hamburg, 1965	386-TR:-UB 468-W:-UB 836-MS:-FHB Tr-6-TR:-FHB
2	<input type="checkbox"/> Beckmann, Thomas: Beckmann / Interview Alex Hibert. 1991	
3	<input type="checkbox"/> Selz, Peter: Max Beckmann. - 1. ed. / Peter Selz New York [u. a.] : Abbeville Press, 1996	294-BO:-UB

Vorherige Seite Nächste Seite

Sie können Ihre Suchanfrage ändern:

PTI =

Setup WWW-OPAC: Short List Holdings

Lokal- Exemplardaten - Ergebnisliste - Mozilla

Datei Bearbeiten Ansicht Gehe Lesezeichen Tools Fenster Hilfe

Lokal- Exemplardaten

HBZ

Standardsuche Multipool-Suche Expertensuche Indexsuche Datenbanken Neustart
 Ergebnisliste Einstellungen Suchverlauf Korb Feedback Hilfe

Ergebnisliste für Signatur + OWN= "EGM*"; Sortiert nach: Owner, dann ZDB-ID

Anzeigelimit erreicht ! Angezeigt werden 1000 zufällig aus den Gesamtreffern gewählte Datensätze. Für ein besseres Ergebnis: Schränken Sie die Suche über **Modifizieren** ein, um eine Ergebnisliste mit weniger als 1000 Treffern zu erhalten.

Vollanzeige Speichern/Senden Auswahlliste In den Korb Modifizieren

Titel 1 - 20 von 18747

Gehe zu Text Gehe zu # Vorherige Seite Nächste Seite

#	Titel	Owner	ID	ZDB-ID
1	<input type="checkbox"/> Eckstaedt, Anita: "Der Struwwelpeter", Dichtung und Deutung. - 1998. [HT007279985]	K7001	LL007196344	
2	<input type="checkbox"/> Brockert, Siegfried: Heilende Märchen für Kinder und Eltern. - 1997. [HT011157265]	K7001	LL007196526	
3	<input type="checkbox"/> Planning London's transport. - 1996. [HT011120601]	U0001	LU000821933	
4	<input type="checkbox"/> James Martin & Company, Gawler, Perry Engineering Company Ltd, Mile End and Gawler, South Australia. - 1987. [HT011120637]	U0001	LU000821935	
5	<input type="checkbox"/> Transportation technology Berlin-Brandenburg. - 1996. [HT011120667]	U0001	LU000821937	
6	<input type="checkbox"/> Stock, Wolfgang: 150 Jahre Köln-Mindener Eisenbahn. - 1997. [HT011120688]	U0001	LU000821941	
7	<input type="checkbox"/> 110 Jahre Straßenbahnverkehr in Budapest. - 1997. [HT011119945]	U0001	LU000821697	
8	<input type="checkbox"/> Richter, Anni: Großvater und sein Dampfroß. - 1999. [HT011178846]	U0001	LU000849506	
9	<input type="checkbox"/> Kleine Typenkunde deutscher Triebfahrzeuge. - 1999. [HT011178869]	U0001	LU000849533	
10	<input type="checkbox"/> Bd. 1. HT011178890. Dampf oder Elektrizität?. - 1999. [HT011178894]	U0001	LU000849546	
11	<input type="checkbox"/> Dampfparadies Wollstein. - 1999. [HT011178922]	U0001	LU000849562	
12	<input type="checkbox"/> Diedrich, Albert: 140 Jahre Eisenbahn Hannover-Lehrte. - 1984. [HT011178939]	U0001	LU000849572	
13	<input type="checkbox"/> 150 Jahre Waggonbau in Görlitz. - 1999. [HT011178948]	U0001	LU000849578	

Fertig

Start M:\alle\Pr... Novell-deli... Pegasus Mail Windows ... 193.30.11... Version16... Lokal- Ex... 11:52

SUN Cluster 3.0

- **Motives**
- **Concepts**
- **Configuration**
 - **Hardware**
 - **Storage**

SUN Cluster 3.0: Motives

- **Motives to cluster machines**
 - Safety (no single-point-of-failure)
 - Performance (optimized utilization of resources)
- **Safety**
 - Machines: Monitoring and cluster-failover (agents: hw, oracle, aleph)
 - Storage: Raid-5, Raid-1 (sds instead of veritas, SAN from SE3510)
- **Performance**
 - Experiences of running V. 12.3 (KVK, Digibib): Mass remote retrievals
 - Processes (server / background processes) negatively influenced
 - Resources (CPU, disks, network) heavily tied up

SUN Cluster 3.0: Concepts

- **2 clustered machines**
 - These machines are in charge for production. They identify themselves virtually as one system to the outer world (Okeanos).
 - During normal loading of the system the load of the application ALEPH 500 is distributed nearly symmetrical on both machines (e.g. WWW-OPAC on the left, Z39.50 on the right machine) using agents.
 - If one machine encounters a failure the other machine automatically takes charge of all functions and processes allone (failover).
- **Standard agents**
 - Hardware: cpu, memory, ... (SUN, Cluster functionality)
 - Oracle: server, listener, ... (SUN)
- **Special agents**
 - Developments (ExLibris, HBZ)
 - Representations: ALEPH-Modules -> run processes -> handled by agents
 - Agent-builder (SUN)

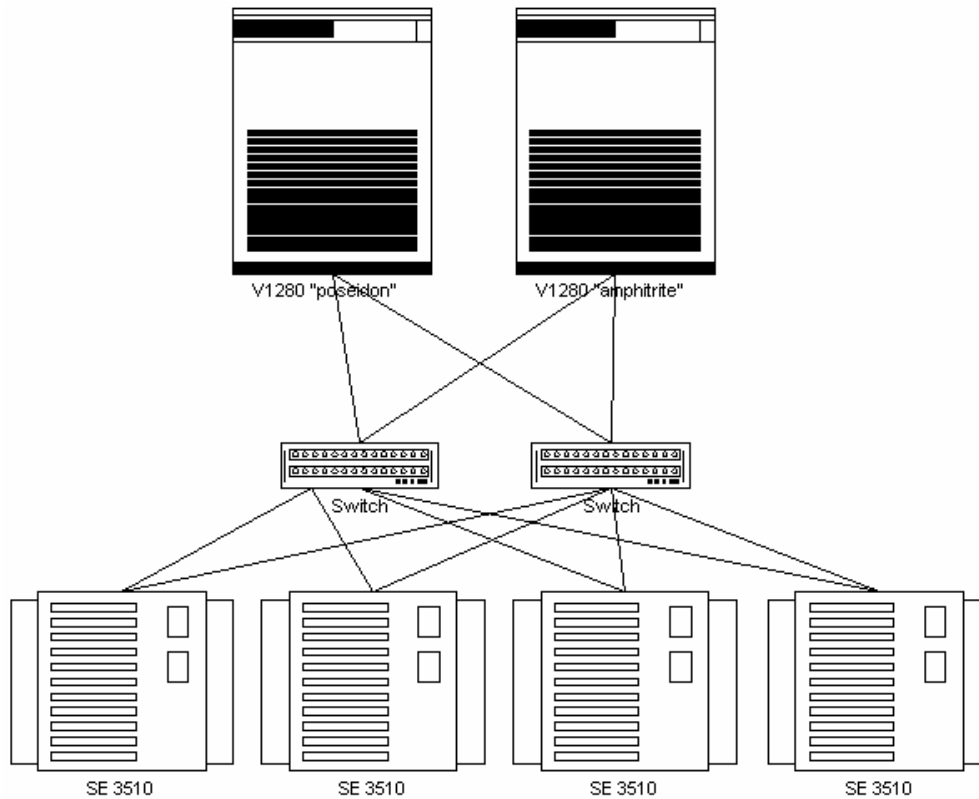
SUN Cluster 3.0: Configuration - 1

- **Hardware**

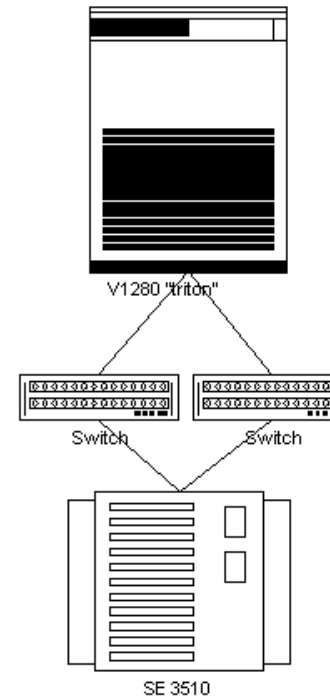
- Production system „2-node-failover-cluster“
 - Machines: 2 * V1280 (12 CPU, 24GB RAM)
 - Storage: 4 * SE 3510 (12*73 GB), controller, switches
- Test system (development)
 - Machine: 1 * V1280 (12 CPU, 24GB RAM)
 - Storage: 1 * SE 3510
- Data services (batch downloads)
 - Machine: 1 * V880 (4 CPU, 8GB RAM)
 - Storage: 1 * SE 3510
- Consequences for your computing center
 - Space, UPS (USV), air condition, dimension of mains

SUN Cluster 3.0: Configuration - 2

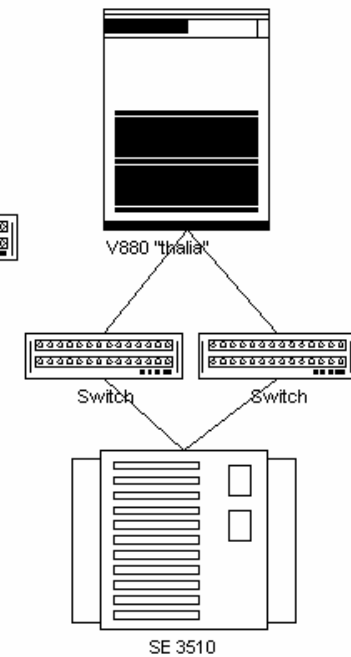
Okeanos



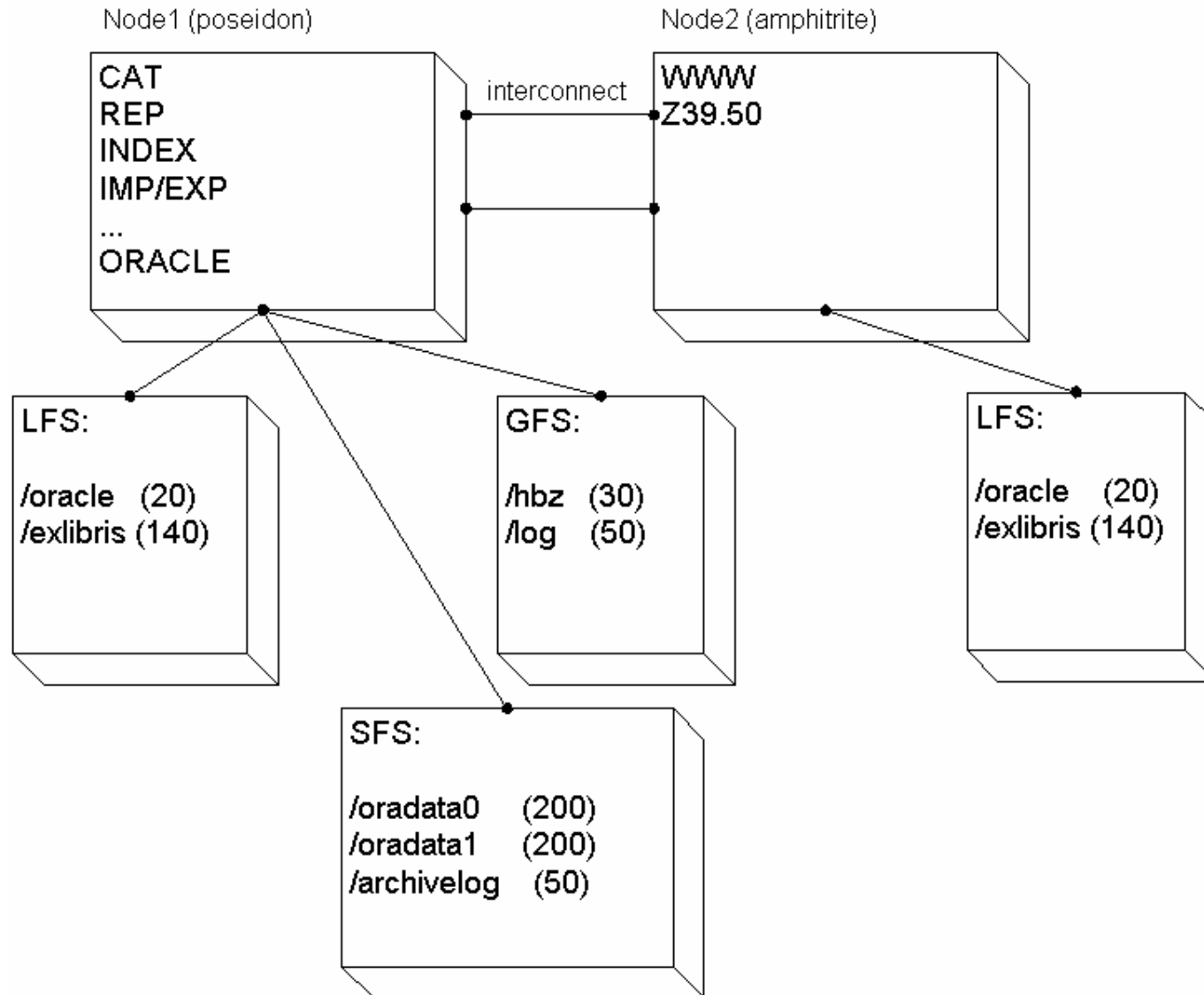
Triton



Thalia



SUN Cluster 3.0: File systems



Oracle 9i

- **HBZ-Specifics**
- **Applications**
 - **RMAN-Backup**
 - **Duplicate-DB**
 - **Standby-DB**
 - **Alternative Oracle-RAC**

Oracle 9i: HBZ-Specifics

- **Current situation**
 - Data to handle (400 GB / 260 GB in 2000), availability (23h x 7d)
 - Responsibility for database administration (design, install, backup, upgrade, ...)
 - Support by Oracle (Licence)
- **Hardware configuration and other changes**
 - Version 9.2.0.3.0 64bit (instead of 8.0.6.2.0 32bit)
 - shared-server (instead of dedicated)
 - datafiles (File system instead of Raw-Devices)
 - backup (netvault instead of networker)
 - others

Oracle 9i: Applications - 1

- **RMAN-Backup**

- Concept: rman utilizing rcvcat
- Advantages:
 - open-db backup, PIT-recovery
 - Differential-backup (full, inc, archive)log)
- Disadvantages:
 - Archivelog, no disaster-recovery

- **Duplicate-DB**

- Duplicates Oracle-Instance from RMAN-backup
- Options: PIT, target (computer, datafiles)
- Applications
 - Parall test systems (test functionalities, performance, etc.)
 - Consistent exports of data (MAB-Service, Retrieval-DB)

Oracle 9i: Applications - 2

- **Standby-DB**
 - Concept: copy & apply archivelog
 - Advantages:
 - Availability (fast activation in course of a fault)
 - Safety: (timely) decouple from user-dml („drop“)
 - Disadvantages: Costs (Disks)
- **Alternative Oracle-RAC**
 - Concept:
 - HA (high availability): seperated node-instances
 - RAC (real application cluster): integrated cluster-instance
 - Advantages :
 - Performance („cache fusion“)
 - Disadvantages: Costs (Licence, veritas)

Thank you for Your Attention!

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Web-Server of HBZ: www.hbz-nrw.de

ALEPH project at HBZ: www.hbz-nrw.de/produkte_dienstl/aleph500/aleph.html

Online-Interface: www.hbz-nrw.de/produkte_dienstl/schnittstelle/schnittstelle.html

Digitale Bibliothek: www.hbz-nrw.de/produkte_dienstl/DigiBib

Automated ILL: www.hbz-nrw.de/produkte_dienstl/digibib/fernleihe/fernleihe.html