

samba eXperiences at City of Mannheim

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IBM Enterprise Linux Services
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Agenda

- Very short intro of IBM / it' / ELS and City of Mannheim
- IT strategy of the City of Mannheim - why Linux, OpenLDAP and Samba?
- Project “LiMAx”
 - Requirements, Architecture Overview
 - High Availability Cluster w/ SteelEye LifeKeeper - How to integrate Samba and CUPS?
 - Winbind Daemon and Domain Trusts - How to consolidate 3 NT domains into one?
 - Printing - How to get in trouble with 1100 brand new network printers?
 - Project Milestones
- Summary

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IT-Services and Solutions GmbH (it') and IBM Enterprise Linux Services at „IMT Germany“

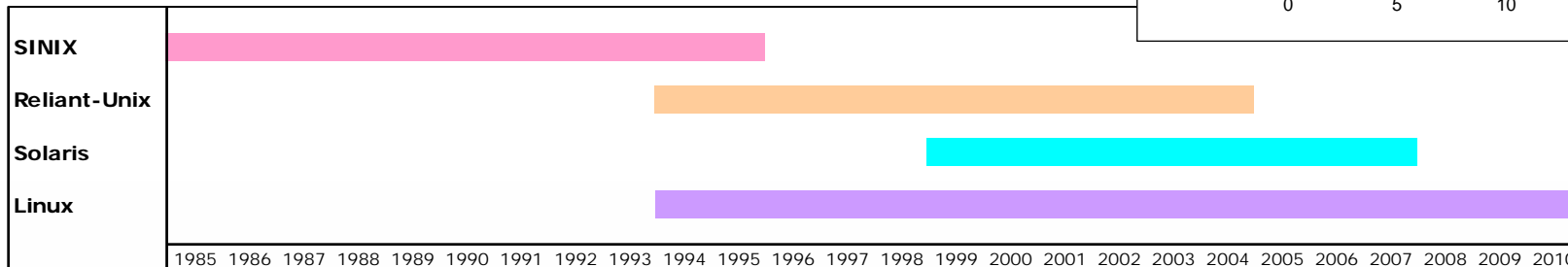
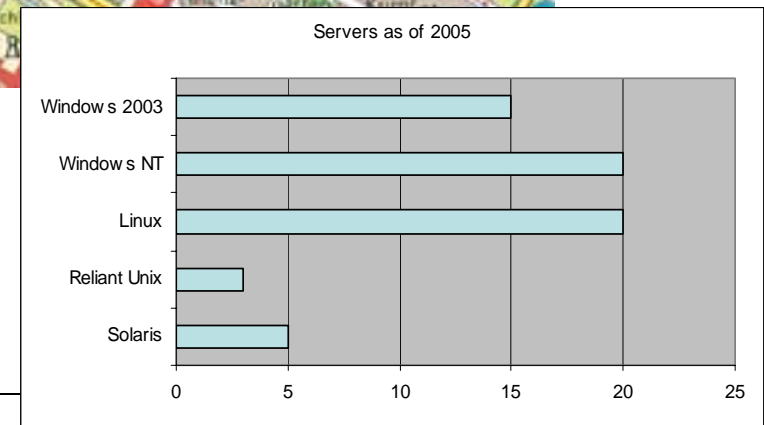


- it'... an IBM company (<http://www.itsas.de/>)
 - 1200 employees
 - 12 locations, HQ at Chemnitz
- Three solution areas
 - System Engineering (incl. ELS)
 - Application Innovation
 - SAP Services
- IBM Enterprise Linux Services (ELS)
 - a cross IBM team
it' (~80%), IBM GTS ITS, SerCon, csg, ...
 - “Enterprise Linux” projects
 - Linux Software Services a.k. IBM Linux Support

enterpriselinuxservices@de.ibm.com

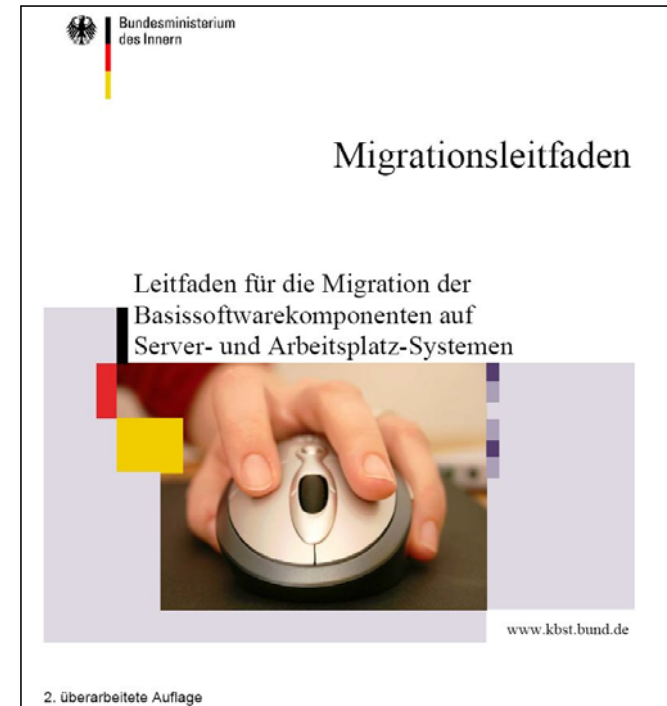
City of Mannheim

- 3rd largest city of Baden-Württemberg
 - warning: many squares! please use a city map :-)
- client environment
 - 3500 PCs, Windows 2k, Microsoft Office 2003
- server environment
 - Windows NT 4.0 (DCs), W2k and W2k3 w/o AD
 - Solaris 2.8 and Reliant Unix 5.45
 - Linux (SUSE LINUX and Red Hat)
- communication
 - Exchange Server 5.5
- databases
 - Informix 7.3, Oracle 8i / 9i / 10g, Microsoft SQL Server
 - MySQL



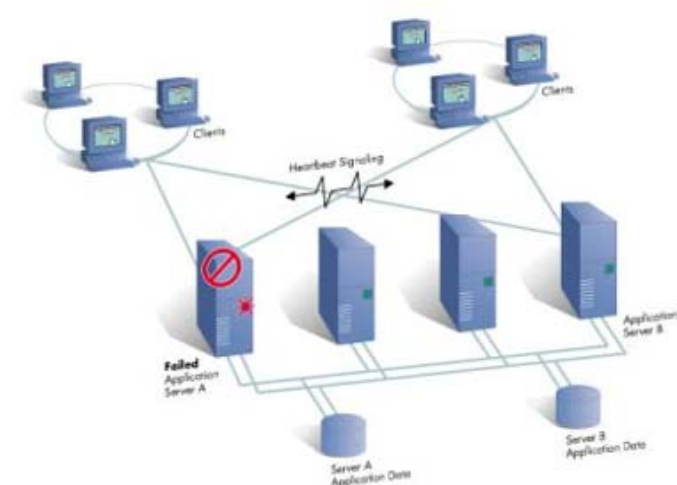
City of Mannheim IT strategy: „Open“ but not „OpenSource only“ project „LiMAx“ w/ key requirements

- based on BMI recommendations (“Migrationsleitfaden”)
 - “smooth migration”, no “big bang”
- create an “Open” environment
 - use open standards
 - no interlock w/ Microsoft Active Directory please
 - use OpenSource, if appropriated
 - use commercial products, where needed
- project “LiMAx”
 - driven by “out of support” of NT
 - server and operating system consolidation
 - centralization of various file servers
 - consolidation of (~5) NT domains into one management domain
 - storage consolidation and centralization
 - migration of any file server data to a central SAN infrastructure incl. a new file system structure and new ACL assignment
 - 7x24 requirement
 - fire department, home office users, ...
 - LDAP directory design and implementation
 - reuse of / new Fujitsu-Siemens hardware



Steeleye's „LifeKeeper“ – a commercial product to get High Availability“ (HA) functions

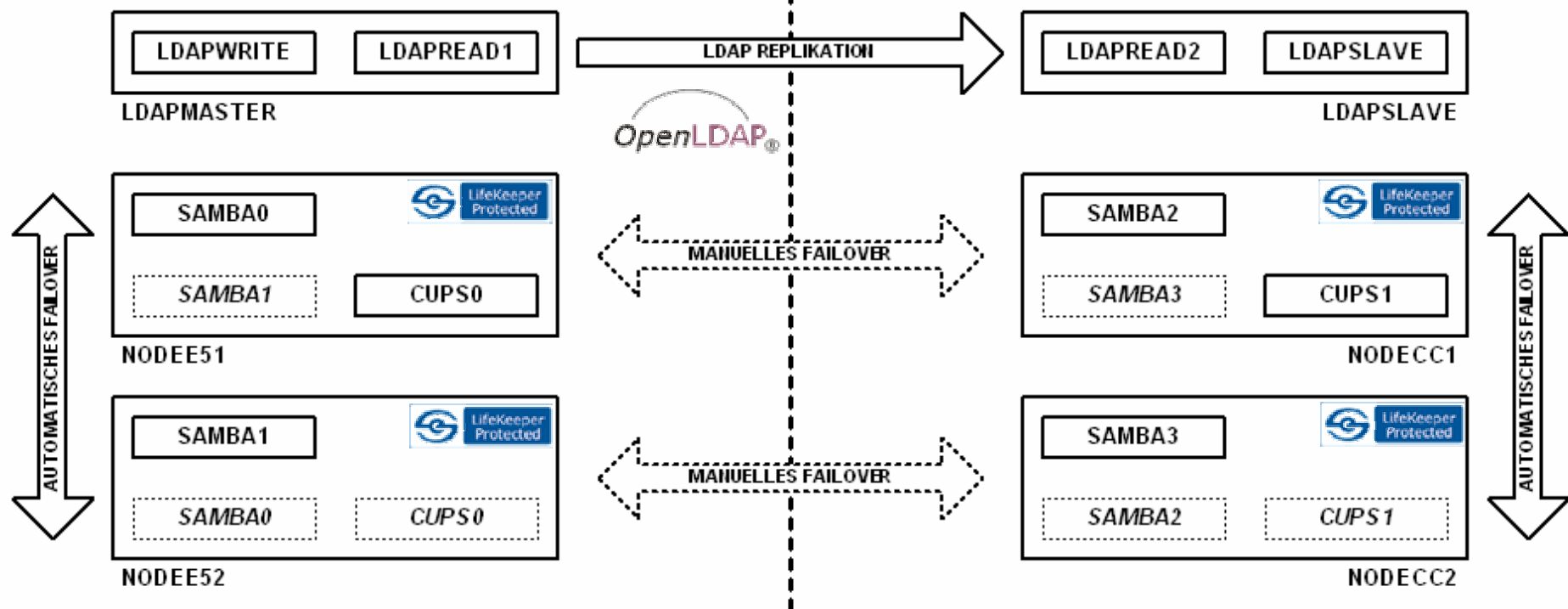
- Steeleye Technology, Inc.
 - more than 10 years experience (AT&T Bell Labs, NCR)
 - LifeKeeper v5.1.2 for Linux (Intel/AMD, PPC) and Windows (Intel/AMD)
- core system
 - Heartbeat, SCSI-Reservation, ...
 - GUI and base Application Recovery Kits (ARKs)
- optional ARKs
 - for almost all common datenbases, Sendmail, NFS, Samba, SAP, ...
- Application Recovery Kits (ARKs) used at project LiMAx
 - Software-RAID (MD-ARK) and Logical Volume Manager (LVM-ARK)
 - Samba (Samba-ARK) and CUPS (Generic ARK)
- Distribution and Support at Germany
 - CC Computersysteme und Kommunikationstechnik GmbH, Dresden



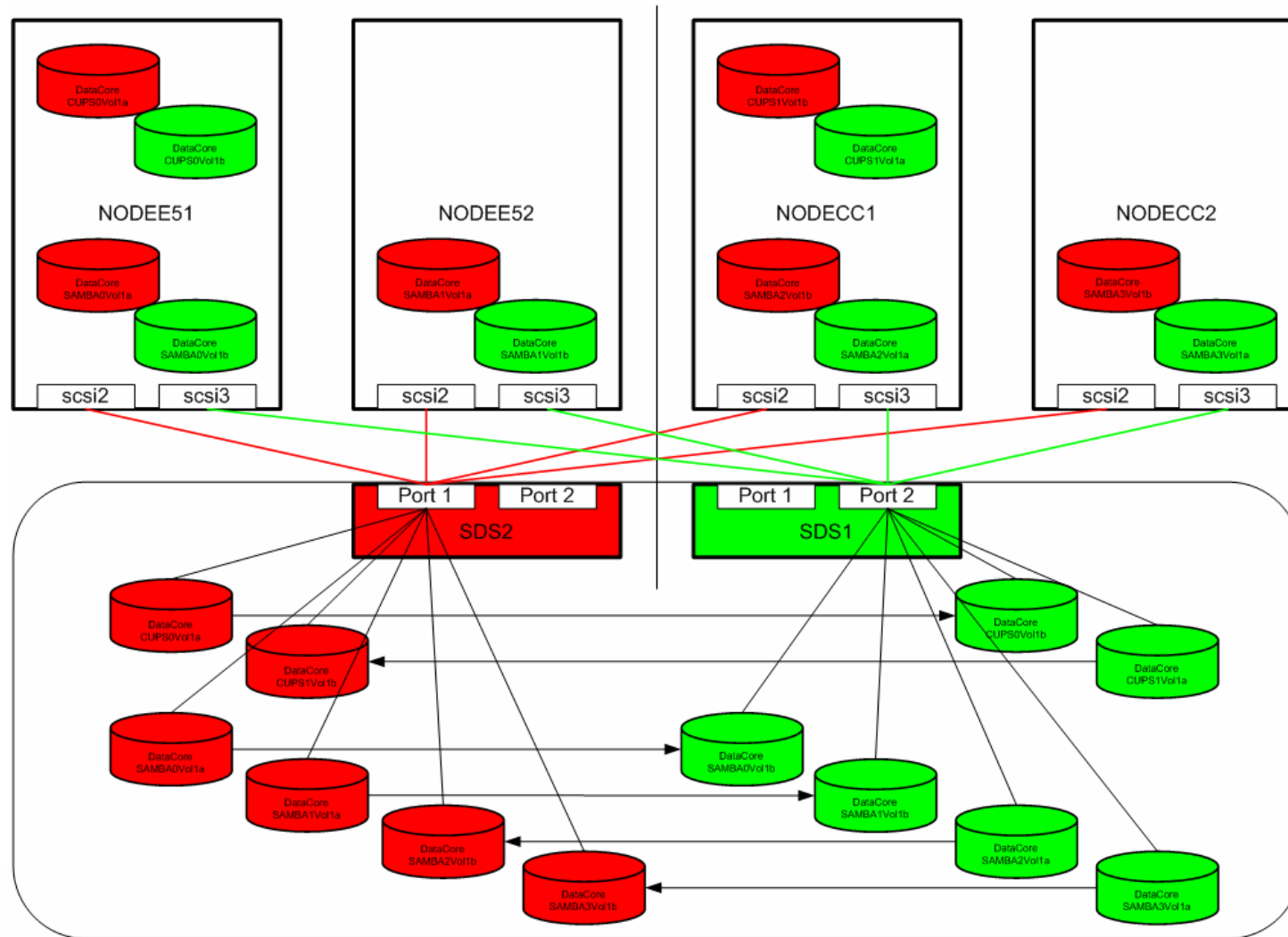
new environment: six new Intel based systems - two of them are running domain controllers based on OpenLDAP and Samba3 – four boxes providing print services based on Samba3 und CUPS

Rechenzentrum E5 (Rathaus)

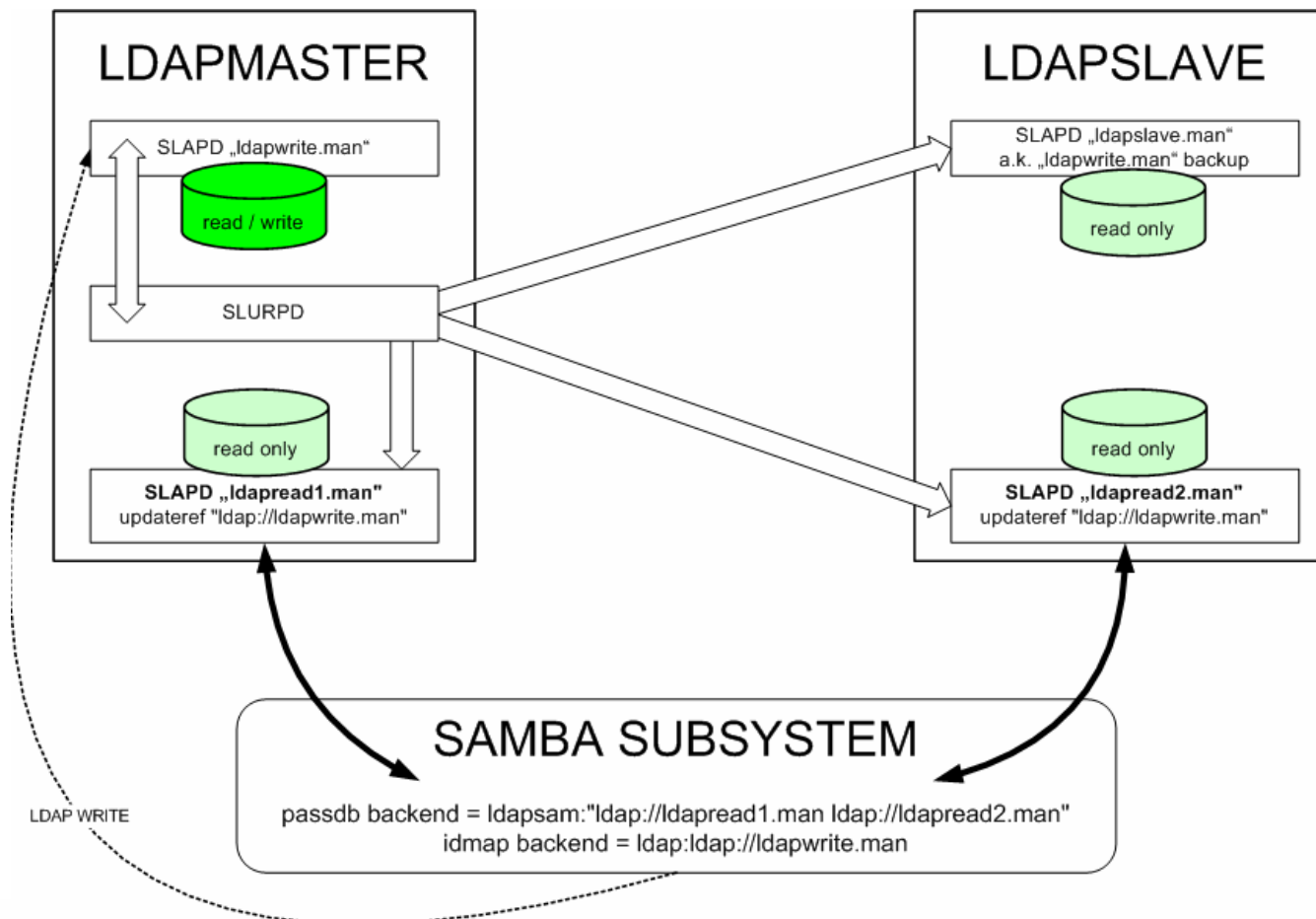
Rechenzentrum Collini Center



cluster nodes are attached w/ single path to a central SAN infrastructure based on DataCore SAN Symphony. An upgrade to multipath SAN attachment using Device Mapper Multipath is planned...



new directory services environment: two servers w/ four ldap instances
and w/ LDAP replication but w/o SAN attachment to avoid single point of failure
due to data corruption



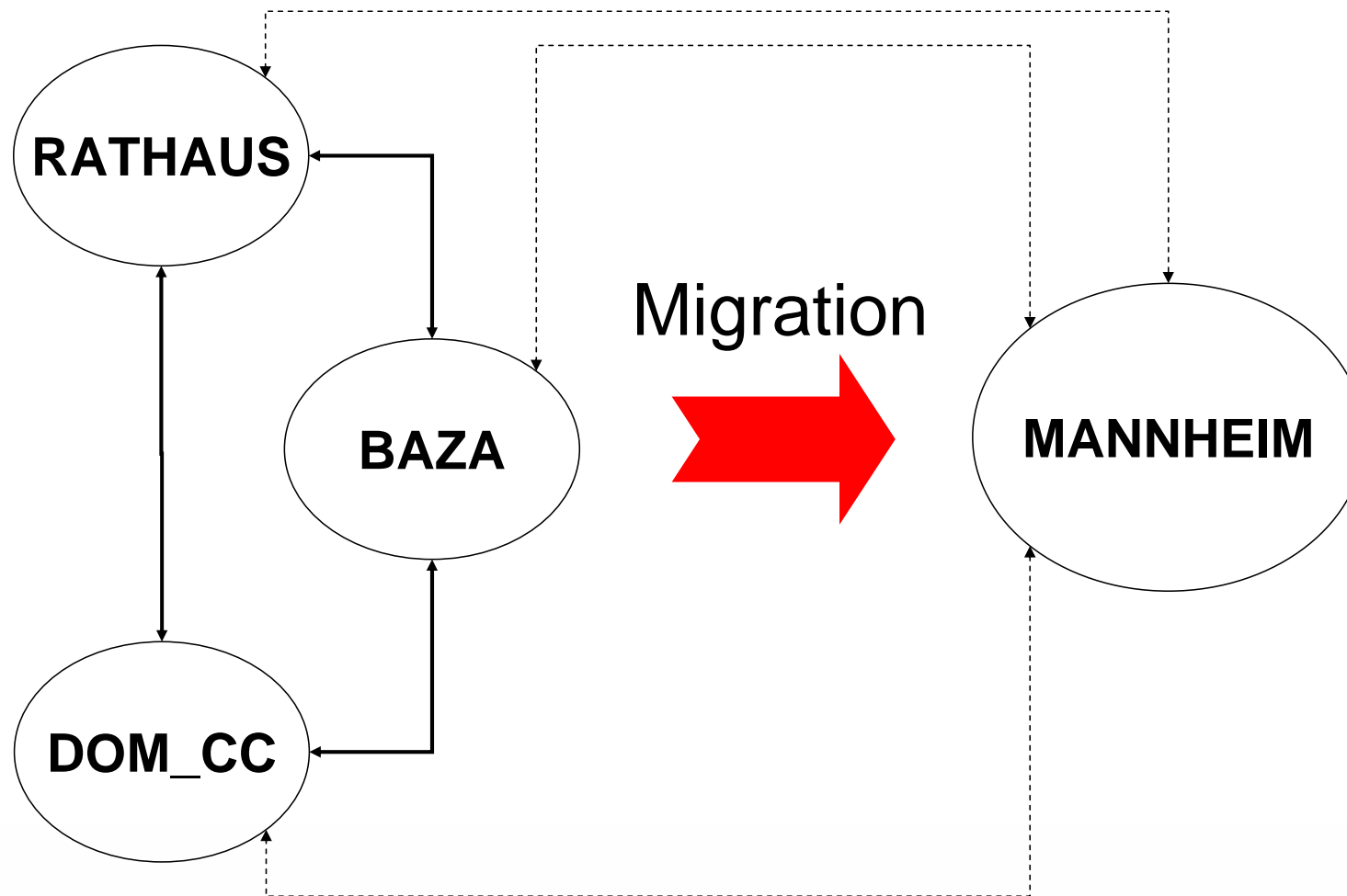
SteelEye LifeKeeper in action: the „resource hierarchy“ shown as a tree inside LifeKeeper GUI w/ dependencies between ressources

The screenshot displays the SteelEye LifeKeeper GUI. The main window shows a 'Resource Hierarchy Tree' on the left, listing various resources like 'samba0', 'ip-samba0', 'srv/samba/samba0/shares/11', etc. The central pane shows a detailed view of the 'Resource Hierarchy Tree' for 'samba0', showing its dependencies on 'ip-samba0', 'srv/samba/samba0/shares/11', 'lvmv26422', 'lvmv11519', 'md11578', 'mdComponent11581', 'disk11606', 'mdComponent11686', 'disk11711', 'srv/samba/samba0', 'lvmv11515', 'srv/samba/samba0/shares/12', 'samba1', 'samba2', 'ip-samba2', 'srv/samba/samba2/shares/42', 'lvmv8868', 'lvmv12464', 'srv/samba/samba2', 'samba3', 'samba-cups0', 'cups0', 'ip-cups0', 'srv/cups/cups0', 'lvmv18649', 'lvmv18654', and 'samba-cups1'. The right pane shows a 'Status for md20187' window, indicating that the device is resynchronizing (1 of 2 disks active) with a synchronization status of 1% at 41121K/sec. The component is '/dev/sdd, /dev/sdh'. The status window also shows 'OK' and 'Help' buttons.

migration plan considers other projects as well as the restructure of file store consolidation of data into a central SAN

- other projects
 - migration of Microsoft Exchange to Oracle Collaboration Suite (OCS)
 - replacement of any printer and rollout of ~1100 brand new HP printers
- LiMAx milestones
 - project definition workshop (assessment) and design phase, coaching, ...
 - implementation of base infrastructure services (install server, Nagios, ...)
 - implementation of directory services backend (OpenLDAP)
 - implementation of a new and „empty“ domain MANNHEIM (Samba3)
 - implementation of HA cluster environment (SteelEye LifeKeeper) and file and print servers (Samba3, CUPS) of domain MANNHEIM
 - interdomain trusts to existing NT4 domains (BAZA, DOM_CC, RATHAUS, ...)
 - production start for CUPS services due to printer rollout
 - **data migration, file system layout change, new ACL assignment** as a long term action (ongoing) using interdomain trusts to „old“ NT domains and winbindd
 - migration and consolidation of account information (scheduled for fall 2006)

old domains will be replaced by a new domain called „MANNHEIM“. During long data migration phase domain trust relations where established to minimize admin effort.



“Lessons learned“ and problems occurred

- no project w/o „unexpected errors“ and issues
 - issues w/ winbind daemon inside a cluster setup (solved by design :-)
 - issues w/ printer default settings after rollout of ~1100 new HP printers (fixed by HP)
 - issues w/ backup solution and ACLs (fixed)
 - SAN virtualisation w/ DataCore SAN Symphony and multipath issues (testing right now)
 - blocking Winbind daemon after 3-4 days (workarround, still open)
- no project w/o a strong team work – many thanks to our partners
 - City of Mannheim staff
 - SerNet Service Network GmbH
(Samba packages, consulting and support)
 - CC Computersysteme und Kommunikationstechnik GmbH
(SteelEye LifeKeeper packages, consulting and support)
 - DataCore and CEMA (a DataCore partner)
(SAN Symphony and hopefully DM multipath support)
 - Fujitsu Siemens (ServerView Agent) and HP (printer drivers)

summary and outlook

- 2004
 - 2004-07-02 Project Definition Workshop (PDW): assessment, discussions, ...
 - design and concept
- 2005
 - high availability cluster implementation, testing
 - LDAP implementation
 - various other projects (Exchange to OCS migration, printer rollout, ...)
- 2006
 - data migration
 - IT department runs on new domain MANNHEIM
 - single path to multi path SAN attachment
 - finish data migration until late summer, final domain migration and consolidation
- our key for success - very good partnering

questions?! thanks!



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