

# samba eXperiences at City of Mannheim

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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“

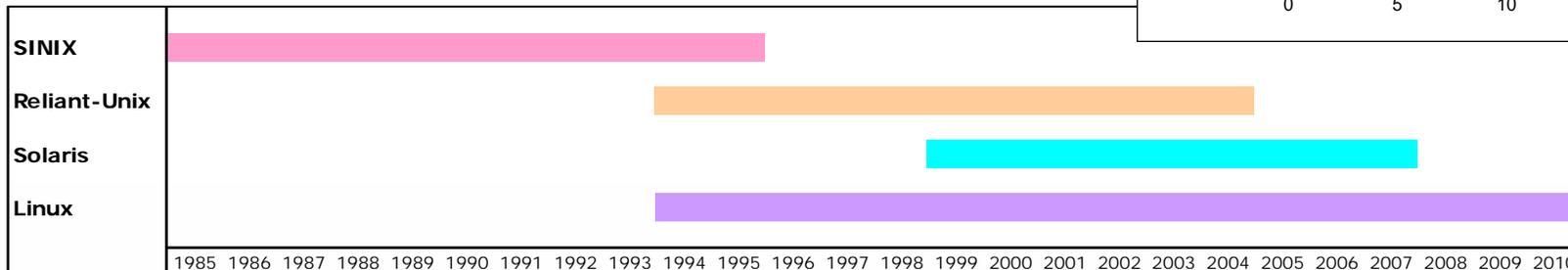
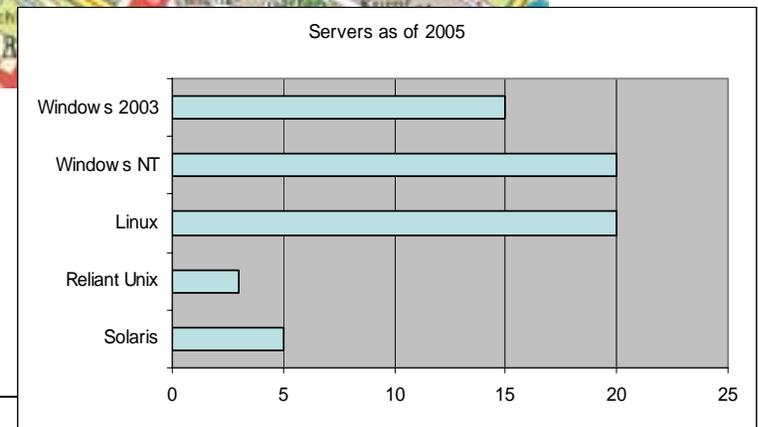
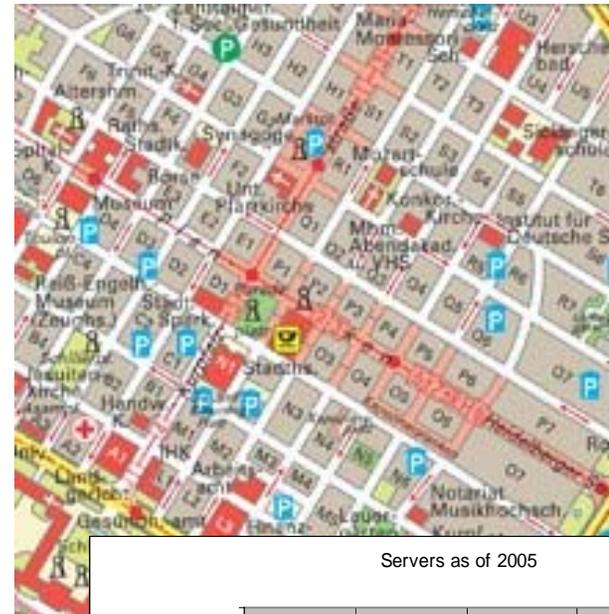


- it'... an IBM company (<http://www.itsas.de/>)
  - 1200 employees
  - 12 locations, HQ at Chemnitz
  
- Three solution areas
  - System Engineering (incl. ELS)
  - Application Innovation
  - SAP Services
  
- IBM Enterprise Linux Services (ELS)
  - a cross IBM team  
it' (~80%), IBM GTS ITS, SerCon,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

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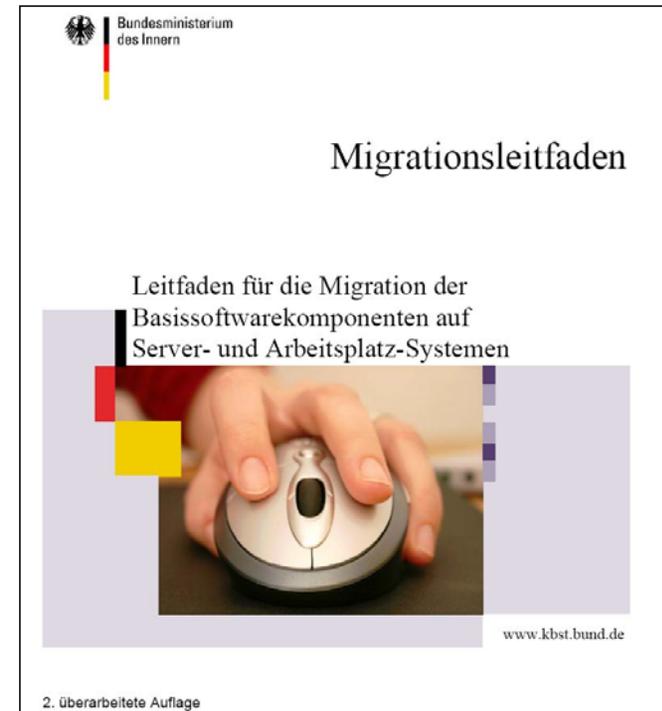
# City of Mannheim

- 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



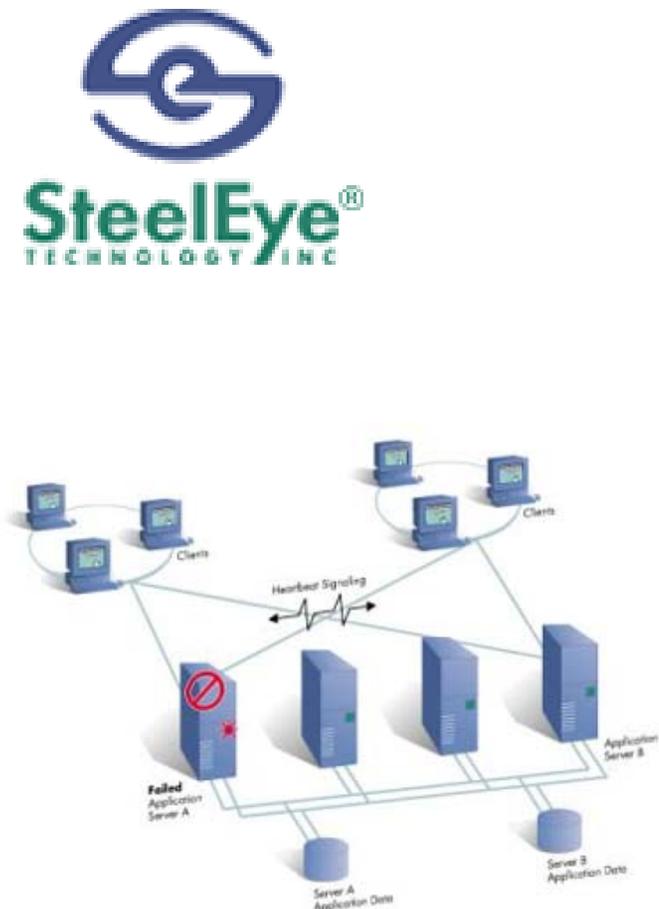
## City of Mannheim IT strategy: „Open“ but not „OpenSource only“ project „LiMAx“ w/ key requirements

- 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

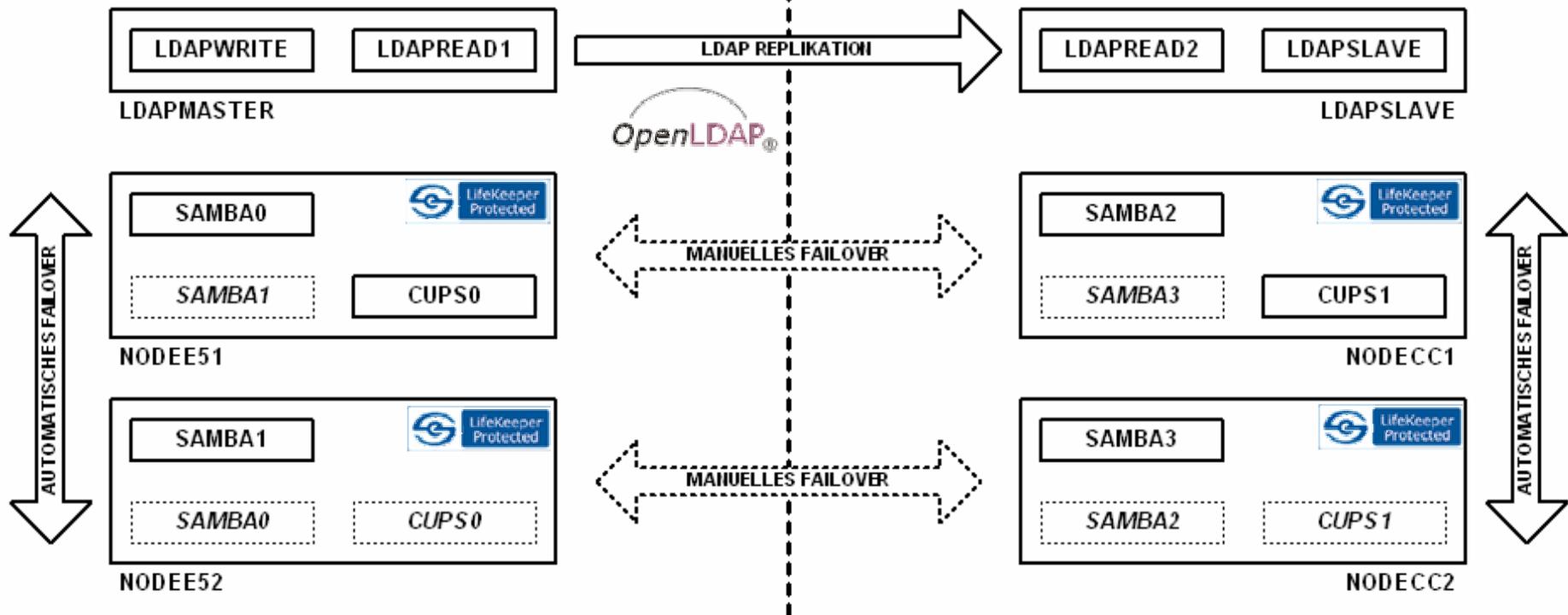
- Steeleye Technology, Inc.
  - more than 10 years experience (AT&T Bell Labs, NCR)
  - LifeKeeper v5.1.2 for Linux (Intel/AMD, PPC) and Windows (Intel/AMD)
- core system
  - Heartbeat, SCSI-Reservation, ...
  - GUI and base Application Recovery Kits (ARKs)
- optional ARKs
  - for almost all common datenbases, 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



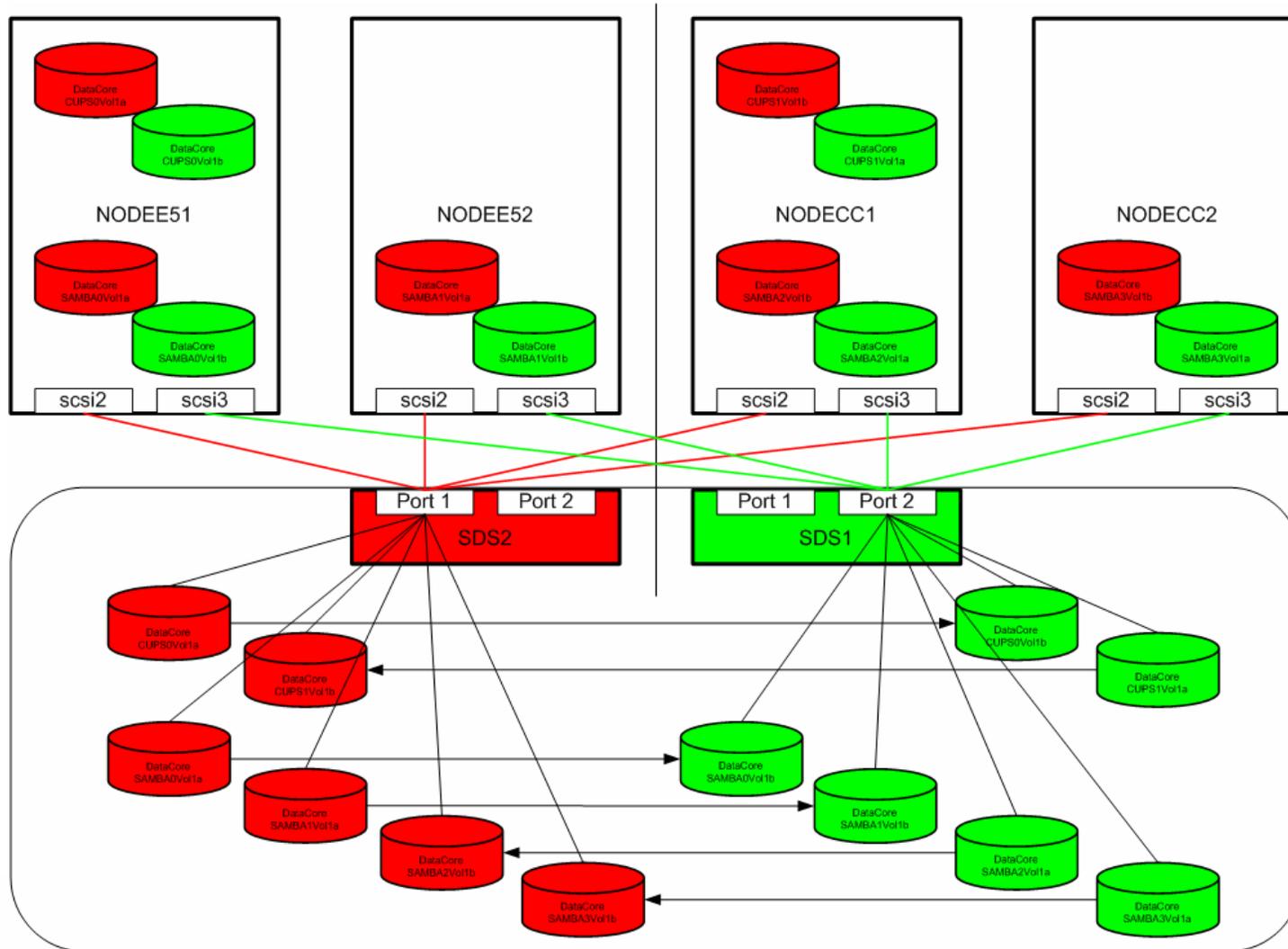
new environment: six new Intel based systems - two of them are running domain controllers based on OpenLDAP and Samba3 – four boxes providing print services based on Samba3 und CUPS

## Rechenzentrum E5 (Rathaus)

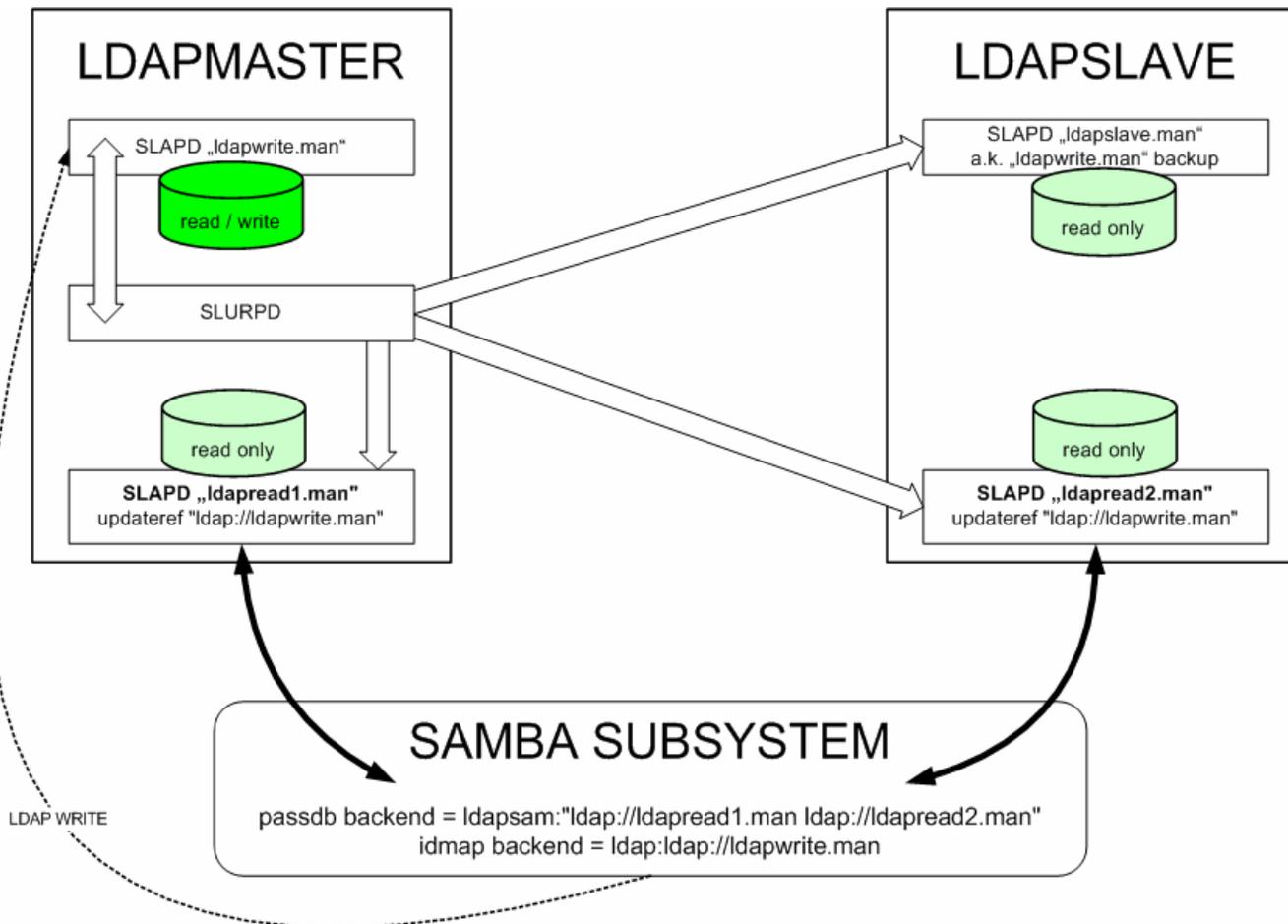
## Rechenzentrum Collini Center



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 resources

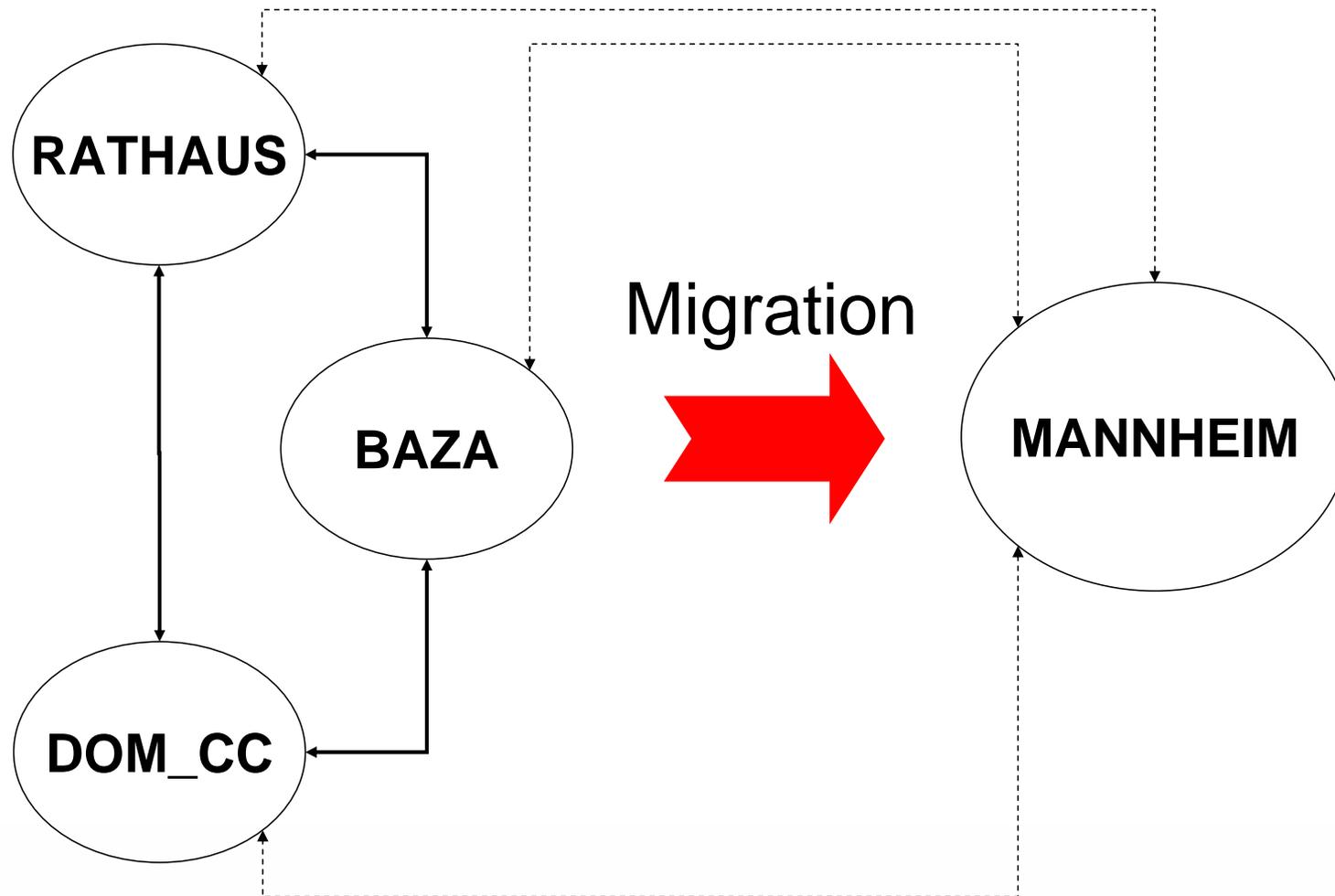
The screenshot displays the SteelEye LifeKeeper GUI. On the left, a 'Resource Hierarchy Tree' shows a tree structure of resources including samba0, samba1, samba2, samba3, cups0, and cups1, with their respective sub-resources like ip-samba, srv/samba, and disks. A status bar at the top of the tree indicates 'All Resources Active and Protected'. In the center, a table shows the status of resources across three nodes (node51, node52, nodecc1). On the right, a 'Status for md20187' dialog box is open, showing a yellow progress bar and the text: 'Device is resynchronizing (1 of 2 disks active)'. Below this, it shows 'Synchronization Status: 1%' with a progress bar and '41121K/sec'. At the bottom, it lists 'Component Disks: /dev/sdd, /dev/sdh'. The background shows a detailed view of the resource hierarchy tree with some resources marked as inactive (red X).



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)



questions?! thanks!



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