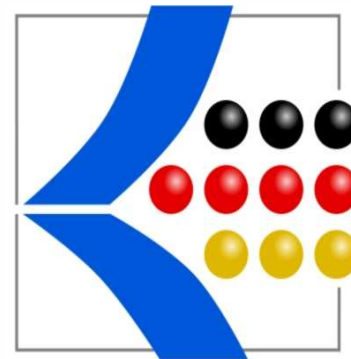


# Migration from Windows NT to Samba at the German Federal Cartel Office



samba eXPerience, April 15<sup>th</sup> 2003



 BUNDESKARTELLAMT

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# Agenda:

- *Starting situation at the Federal Cartel Office*
- *Reasons for the decision to use Linux*
- *Infrastructure used*
- *Script-based, automatic migration*
- *Problems and solutions*
- *Bottom line: comparison before and after*
- *Outlook*

# About the Federal Cartel Office

- Mission: protection of competition
- Independent higher federal authority, responsible to the Federal Ministry of Economics
- Approx. 270 employees (130 lawyers and economists)
- Located in Bonn since 1999



# About univention\_

- *Linux system- and software-house with the following core competencies:*
  - Software products to simplify the deployment and administration of Linux (**univention\_ desktop server**)
  - Individual Linux solutions
  - Migration from Windows to Linux
  - Integration of Linux and Windows
  - Samba, directory services, thin clients, Linux on the desktop

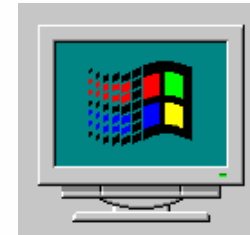


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# Starting Situation

- Approx. 20 servers, mainly running under NT 4.0 and W2K (e-mail and web-proxy under Linux)
- Windows domain KARTELLAMT
- Data on one server
- A range of Windows-based database applications
- Approx. **300 client systems**: Windows NT 4.0 with some exceptions (W2K)
- **Administration** with management-tools from Microsoft failed. Third-party-tools exist, but are very expensive.
- Microsoft will drop support for Windows NT, migrating to W2K  
Active Directory is expensive



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# Reasons for the decision

Political: Federal Ministry of the Interior tries to strengthen the role of OSS in consistency with the EU.



Orderer BSI (Federal Office for IT Security): Developing a guide for migration from Windows to Linux



Federal Cartel Office: “Ministry of the Interior demands improvement of IT-security (as a consequence of September 11<sup>th</sup> 2001). That was our chance for the migration.“

**Good experiences** with the Linux-servers already in use (proxy and e-mail).



# The mission

1. Changeover of the Windows domain to **Samba / OpenLDAP**
2. Changeover of the database application to **free databases**
3. Changeover of the content management system to a **free CMS**
4. Consolidation of the servers (goal: **6 servers**)

*contractor – a consortium of the companies:*

science+computing AG (CMS)



Linux Information Systems AG (databases)



univention\_ GmbH (Samba/LDAP)



# Agenda:

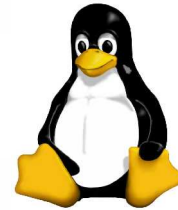
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# Linux infrastructure used

Linux with XFS-Patch

XFS - File System

Debian GNU/Linux



Samba

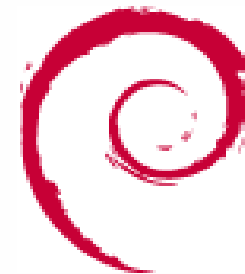


OpenLDAP



# Operating System Debian GNU/Linux

- Widespread as a server operating system
- A very high number of packages available
- Very modular
- Filed package management system
- (Relatively) easy to upgrade (low down-times)



<http://www.debian.org>

# File System XFS

- ACL-support (required to adopt the system of rights in use)
- Journaling
- Well tested
- No (known) problems with quotas or NFS

XFS - File System

<http://www.sgi.com/software/xfs/overview.html>

# Directory Service OpenLDAP

- Directory service compatible to LDAP V3
- Organization-wide database for user-, group- and host-specific information
- Single point of administration
- Hierarchical structure
- Alternative to Active Directory
- Kerberos-support

OpenLDAP<sup>®</sup>  
PROJECT

<http://www.openldap.org>

# Samba 3.0

- Samba: file-, print- and authentication-services for Windows-based clients (comparable to NT 4 server)
- Directory service can be used as a backend for storing the user (and client) database

Samba 3.0:

- Free assignment of RIDs
- Support of domain groups

**BUT: alpha-software at this time**



<http://www.samba.org>

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# Take-over of the SAM database

- One Samba server is configured as a member server of the existing domain
- Import of UNIX users and groups via winbind
- Transfer to the LDAP directory
  
- Gather the Windows-specific user attributes via rpcclient
- Import into LDAP
  
- Gather the password hashes via pwdump2
- Import into LDAP
  
- Gather the machine accounts via rpcclient
- Import into LDAP
  
- **Reconfigure the server as a PDC: clients can login immediately (no reboot required)!**

# Migration procedure

- Catalogize the shares
- Migrate them away from the DCs
- Assign them to new Linux-based servers
- Installation of the servers
- Configuration of PDC and BDCs
- Take-over of the SAM-database, LDAP-replication to the BDCs
- Shut-down Windows-DCs and start the Samba-DCs

**Attention:** All Windows-based DCs must shut down within a short time.

- Migration of the shares with Windows-tools (scopy.exe / robocopy.exe)

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# Problems and solutions

- LMHOST-files
- File-locking with some applications (Hoppenstedt)  

```
blocking locks = no  
strict locking = yes  
veto oplock files = /*.lc?
```
- File system rights
- Machine account passwords were changed on the BDCs
- nmbd problems
- Administrators had problems finding error causes (printer cable)
- LDAP-administration (solution: **univention\_admin**)

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# Bottom line

- Higher performance with 6 servers than with 20 serves before
- Higher availability and stability
- Administration is easier
- Costs are lower than with Active Directory
- Time is needed
- Administrators need to learn new things
- Training and support is needed

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# Outlook

The first step to

more security,  
higher stability,  
lower costs  
and higher flexibility

has been done.

Now the cartel office examines the second step, the introduction of Linux on the desktop.



# Thank you!

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