Open Source Adoption of the German Federal Office for Information Security

At the Linux Tag 2005 in Karlsruhe, Horst Samsel, the person in charge of the Federal Office for Information Security (BSI), presented details of the recently realised open source adoption at his agency. The German Federal Office for Information Security is the central IT security service provider for the German government. BSI focused on a mixed client IT environment based on Linux and Windows XP systems.

Introduction

The BSI investigates security risks associated with the use of IT and develops preventive security measures. It provides information on risks and threats relating to the use of information technology and seeks out appropriate solutions. This work includes IT security testing and assessment of IT systems, including their development, in co-operation with industry.
To perform activities in this field of operation, the agency runs and provides several mainframe computers and laboratory systems. In addition, employees use personal computer to fulfil their office tasks. All systems are networked with a central communication net. The head office is located in the German city of Bonn. Altogether about 440 people are working for BSI.

Migration Motives

In summer 2002, the IT strategy was determined. Due to the following reasons, BSI decided to realise a server as well as desktop sided mixed migration to open source and proprietary software applications.

- Free software allows BSI to decrease dependences on software vendors. The agency wants to determine its cycle of investment in software independently, based on its own needs, rather than have them dictated by software vendors. BSI gets to choose its own time to upgrade software. Updates can be installed if necessary and they fit the general planning within the administration.
- The adoption of Open Standards increases software interoperability and the diversity in the scope of software selection.
- A mixed migration allows the BSI to gain new IT related knowledge and to keep gathered skills about proprietary systems.
- The agency wants to demonstrate the operability of a mixed IT environment (use of open source and proprietary client systems).

First Step

To define the potentialities accompanying the use of open source applications and coexistent proprietary software, BSI evaluated the defined migration scenario. The Federal office analysed the feasibility of a migration to a mixed environment within the agency and aimed to identify the current IT situation of the office providing a basis for a migration, migration costs and operating efficiency of open source software, suitable open source products as well as risk and strategy considerations. Resulting from the study, a mixed migration was evaluated as feasible.

On the grounds of the determined priorities, the study constitutes also the basis for the client sided migration decision.

- A centralises directory service and virus protection has to be inserted.
- The integration of automated software allocation as well as a central message and groupware solution were defined.
- BSI constituted a common office solution for open source based and proprietary client systems.
- The allocation of specific applications for Linux clients has to be ensured.
- Furthermore the new software environment has to be run on mobile computers.
- BSI specific security aspects have to be considered.

The starting point

The IT environment of the German agency was particularly based on Windows NT 4.0 systems. Altogether 400 workplaces are used for office tasks. Linux, based on Debian, was installed on about 60 desktop workplaces. Microsoft Outlook and Office 97, MS Access and diverse graphic applications and tools are among the most important field of applications.

In 2002, BSI used about 35 server systems. Communication services executed by Microsoft's Exchange 5.5 and print, authentication as well as file services run on Windows NT 4.0 servers. DNS and DHCP network services were provided via Linux servers.

Migration Scenario

The migration process is split up in six phases.
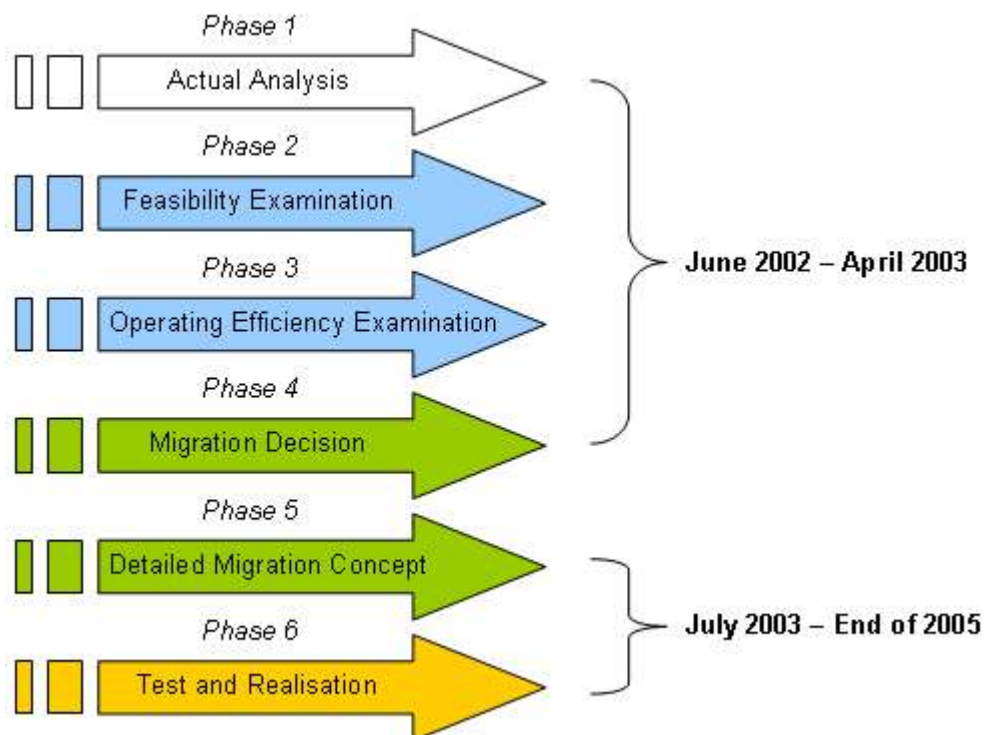
The German Office for Information Security decided to replace Microsoft Exchange 5.5 by their self developed platform spanning groupware solution Kroupware (KOLAB) and to adopt the developed Sphinx plug-in that provides signature and decrypting mechanisms for emails. Through the adoption of the KOLAB server, Microsoft Outlook 2003 can be used beyond by implementing the TOLTEC plug-in into Outlook 2003. Microsoft Office 97 will be performed as primary application for office tasks. Under Linux, the suite will be implemented with the aid of the Crossover plug-in. OpenOffice.org will be adopted system wide but determined as secondary office application for workplaces. A decision about a migration to MS Office 2003 or OpenOffice.org will be reached in 2005/2006.

The agency determined that 50 percent of the required client systems will be migrated to Linux.
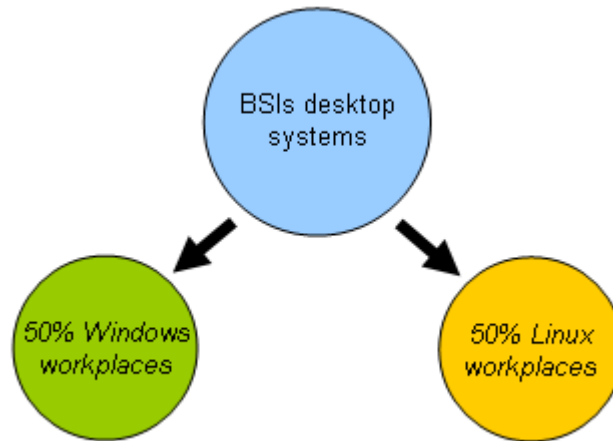
The following figure gives an overview over the elaborated client configuration based on Linux and Windows XP.

Software Type	Open Source Client Systems	Proprietary Client Systems
Operating System	Debian Linux based on KDE	Windows XP Professional
Office Suite	MS Office 97 via Crossover plug-in + OpenOffice.org	MS Office 97 + OpenOffice.org
Email Client	KOLAB client	MS Outlook 2003 (Toltec plug-in as connector for KOLAB server)
Email Plug-in	Sphinx encryption plug-in	Sphinx encryption plug-in
Browser	Mozilla Firefox	Mozilla Firefox
Antivirus Software	H&B-AntiVir	Symantec AntiVirus Corporate Edition
Miscellaneous	VNC-Client; Citrix ICA Client; various viewers e.g. PDF	Terminal Services; Application Clients; various viewers e.g. PDF

Server systems are configured with Debian Linux as operating system and replace the Windows NT 4.0 servers. Open source systems are adopted for print, authentication, file as well as communication services via KOLAB.
Network monitoring, executed with the open source application NAGIOS, and DNS / DHCP network services are running under Linux servers. Samba is used as Domain Controller for the Windows and Linux client authentication and as file server.

Due to numerous used applications, software alternatives were not available for every required task. The department of IT decided to insert MS Terminal servers for non-replaceable software.
Terminal servers are based on Windows 2003, needed to provide applications that can not migrated to open source software systems. These include amongst others graphic editing applications or software for document entry tasks. Software allocation for Windows XP and Linux clients is realised via the application ASDIS. The central administration is build up on a directory service based on OpenLDAP and the directory management system DirActory aiming to administrate DNS, DHCP and groupware configurations, users or system information.

System Architecture
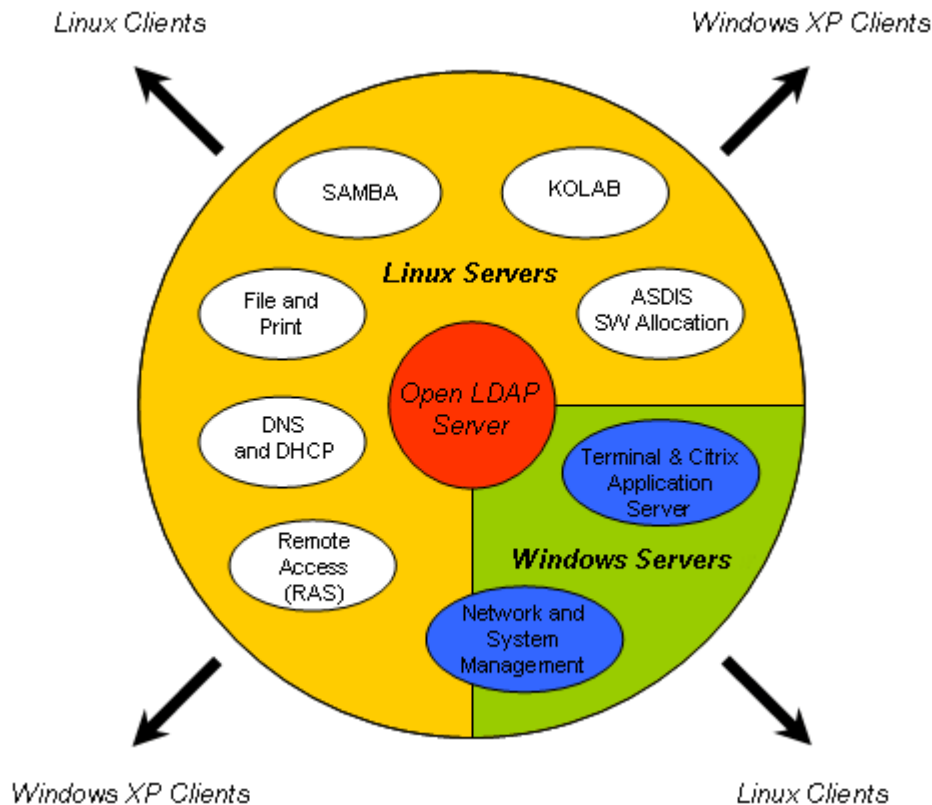
BSI started to reorganise the IT environment in November 2004. The IT department converted and updated the DNS, DHCP and file servers and integrated the first version of the new elaborated directory service. By February 2005, the agency implemented the needed MS Terminal servers and software allocation services. In May 2005, the migration to Windows XP clients was largely finished. One month later, the German security provider put the KOLAB server, integrated into the central directory service, into operation. At this point of time, July 2005, the agency starts to migrate the defined client systems to Linux. Following this milestone, the IT department connects the Windows clients with the KOLAB groupware server. In the end of 2005, BSI plans to activate the IPSEC encryption aiming to allow a secure dial up into the BSI network via the public telephone network.

Evaluation

At present, the Linux desktop migration has not yet been realised but the migration of the German Federal Office for Information Security seems like it will be a success. The project also shows that a mixed IT environment, based on Linux and Windows clients, has the potential to succeed. The adopted self developed groupware application KOLAB serves with the aid of a plug-in the two different platforms and decreases administration efforts. Through the built-on open source as well as client environment, the agency preserves knowledge of both sides coming along with the flexibility to extend independently the different used systems in the scope of its needs – either to more proprietary or more open source based systems.

22 July, 2005

Michael Nagler
MERIT, University of Maastricht

Further Information:

German Federal Office for Information Security

http://www.bsi.de/

Sphinx Encryption Project
http://www.bsi.bund.de/fachthem/verwpki/aegypten/index.htm