



YaST2 Based Automated Linux Installation at DESY – Taking Central Linux Support to the Next Level

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Overview:

- Linux
- SuSE–Linux and DESY–Linux
- Automated Linux installation with YaST
- The new YaST2
- New features of YaST2 based Linux installation
- Outlook
- References



Linux:

“Linux is a UNIX-like operating system that was designed to provide personal computer users free or very low-cost operating system comparable to traditional and usually more expensive UNIX systems” [www.whatis.com]

- Commodity Intel hardware:
nice price/performance ratio
- Initial investment is small (But TCO?)
- Software (mostly) Open Source:
 - Write your own applications
 - Write your own kernel drivers
 - Debugging easier



- Free support from a huge user community
- Fast development and turnaround cycles
- Distributors (SuSE, RedHat) make use of Linux easy for everybody
- Users/experimental groups have brought Linux into farms and on the desktop at DESY
- Linux is a supported platform at DESY since end of 1997



SuSE–Linux and DESY–Linux:

- SuSE–Linux:
 - DESY supports SuSE Linux
 - SuSE is a german distributor (www.suse.de)
 - At the time of the decision (1997) SuSE Linux was preferred
 - SuSE provided DESY with an automatic Linux installation procedure:
They modified their installation tool (YaST)
 - Good co–operation between DESY and SuSE in the last 3 years
 - New project started this year
 - SuSE–Linux vs. eg. Red Hat–Linux:
 - * Not much different from a users point of view
 - * But different configurations → problems for admins



- DESY–Linux:
 - Linux is completely integrated in the existing UNIX environment:
 - * Application service
 - * Homogeneous user environment (like on Unix systems):
 - eg. AFS home directories and application software
 - * provided by own post installation
 - Support for different types of PCs:
 - * Farms (large number of equal PCs, dedicated users)
 - * Work Group Server (large PCs, many users)
 - * Desktop PCs (One user, different hardware and configuration)
 - Automated Linux installation:
 - * “Basic installation” (with YaST) installs SuSE Linux
 - * “Post installation” for DESY specific customisation



Automated Linux Installation at DESY:

- The users view:
 - Order a DESY standard PC
 - Registration (IP address, hostname, database entry) †
 - Get (or download) (auto-) installation floppy †
 - Boot with floppy
 - Confirm partitioning (for safety)
 - Software installation is done
 - Reboot (without floppy:)
 - Installation of DESY specific “Post installation”
 - Reboot again
 - Have fun



- The technical view:
 - Registration: Enter new PC in Database: †
 - * DNS (IP address, MAC address)
 - * Netgroups (for login, NFS mounts, etc.)
 - * For post installation
 - Boot from floppy:
 - * Load ramdisc, mount NFS directory from install server
 - * Read configuration from install server
 - * Install packages ($\approx 250 - 350$), kernel, create configuration
 - After reboot, install DESY specific environment:
 - * AFS, mail, printing, shell environment...
 - Reboot completely installed system
- † – these steps need IT expert intervention



- Drawbacks:
 - For each installation IT personnel interaction is needed:
host has to be added to “CLASSES” in order to get group specific setup
 - Global group setups, no user choice:
Good for farms, but not for individual desktops
 - Installation too unflexible to scale for hundreds of PCs
- Automatic installation is part of YaST:
 - YaST documentation: see references
 - ALICE: Automatic Linux Installation and Configuration Environment:
Further development of automatic installation and configuration by SuSE



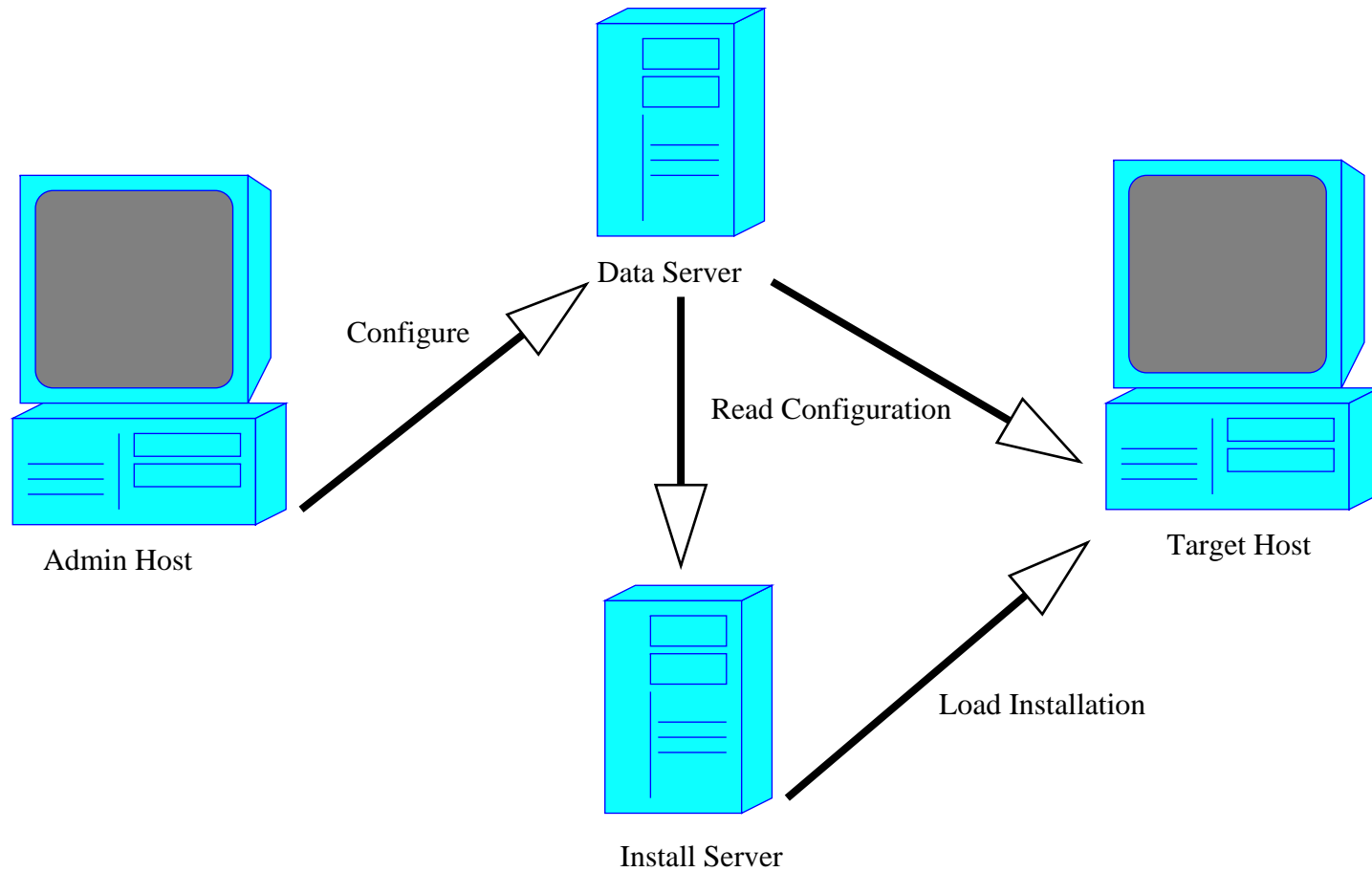
The new YaST2:

- YaST2 will replace YaST as installation tool for SuSE Linux
→ DESY needs a replacement for automated installation
- DESY-IT started negotiation with SuSE beginning of this year
- Concept paper from SuSE in summer this year
- Modifications of YaST2 are done right now
- YaST2 with DESY modifications available in November
- (Maybe) part of SuSE Linux 7.1 (expected around Christmas)
- This tool (with DESY modifications) will be Open Source

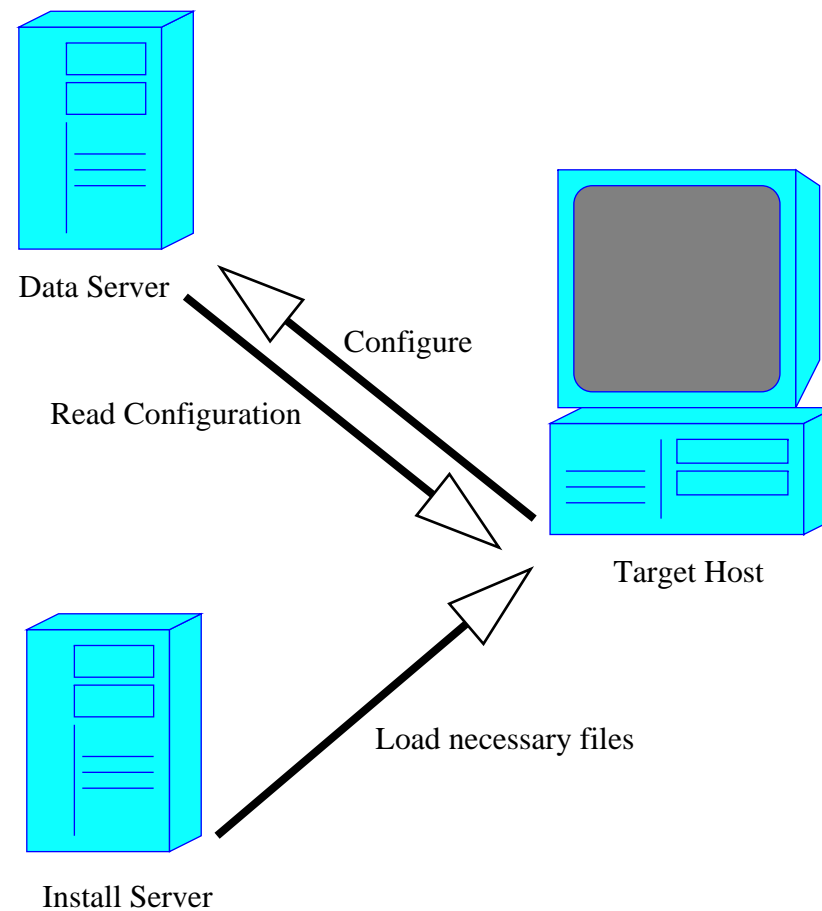


New Features of YaST2 Based Linux Installation:

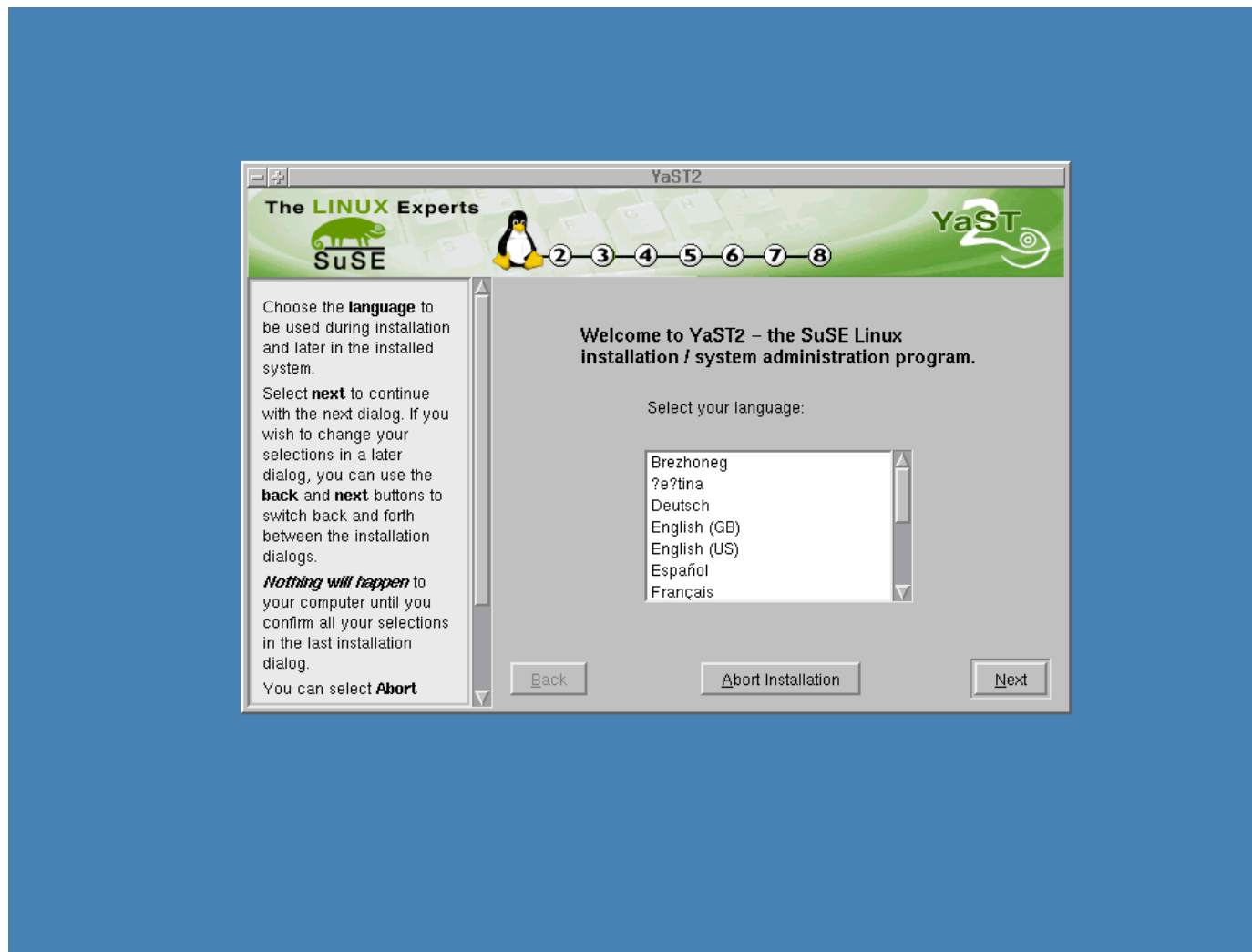
- YaST2 comes with its own scripting language (ycp):
 - Modular approach
 - Allows own moduls (in ycp, perl, c, shell script ...)
- User/Group/Admin configuration of desktop PC/PC cluster possible
- User interface for configuration of desktop PC setup
- Templates and building blocks for flexible customisation of hosts
- Allow (limited) end user administration without root access
- Provide means of updating and patching, both automatically or subscription based



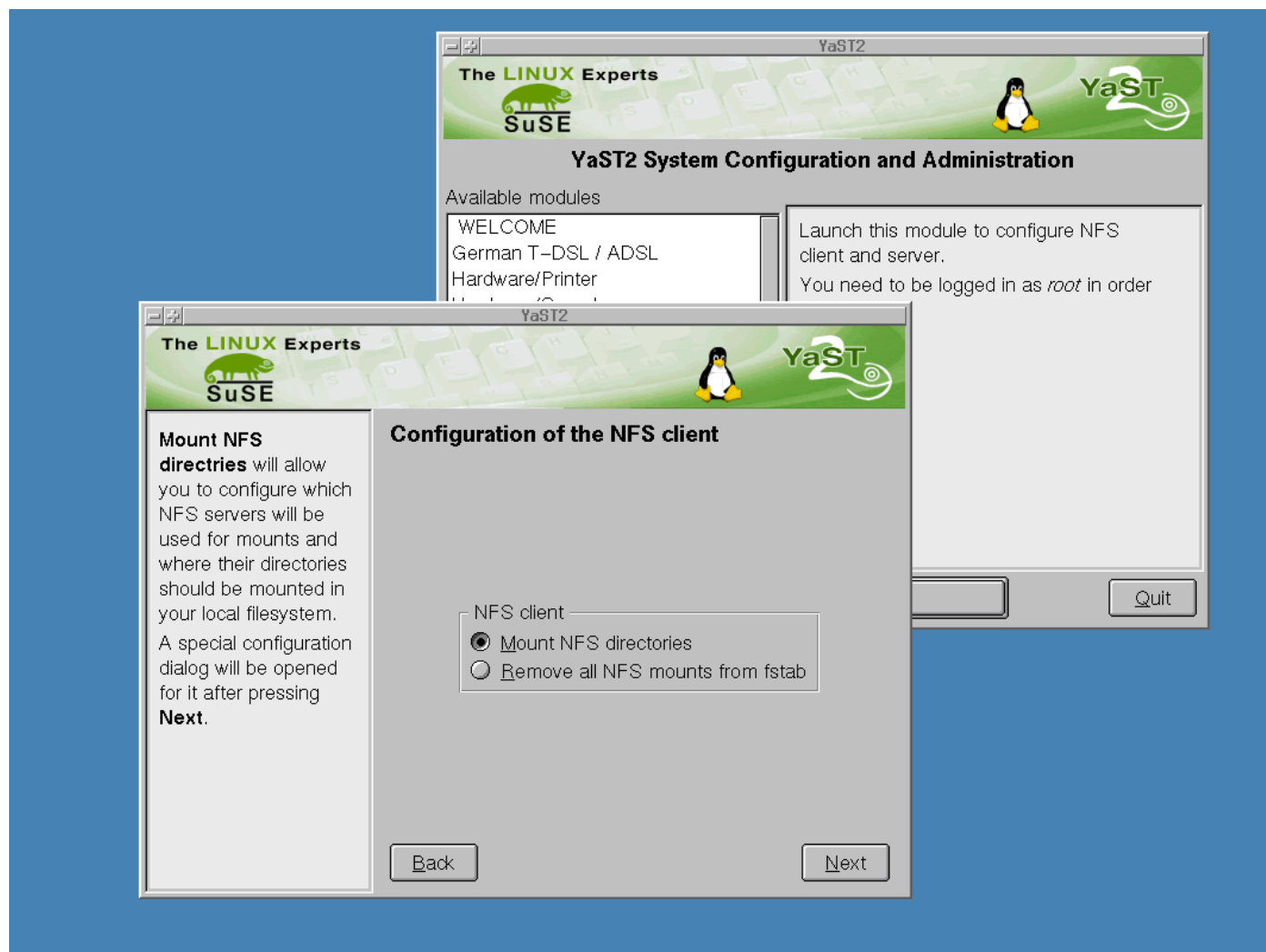
Setup of a new Linux Desktop PC



Administration of a Linux Desktop PC



Linux installation with YaST2



Linux administration with YaST2



Outlook:

- YaST has to be replaced by YaST 2, also at DESY
- The new automated installation reaches a new level of support
- Administration can be delegated from central IT to users and group admins
- New tool interesting for users/groups who refused YaST installation before
- First prototype end of this year
- YaST2 modifications available with SuSE Linux distributions
- People are invited:
 - To join the DESY IT project
 - To use this new tool at DESY



References:

- DESY Linux Web Pages:
 - <http://www.desy.de/unix/linux>
 - <http://www.ifh.de/computing/projects/linux/linux.html>
- Linux resources for High Energy Physics:
 - <http://hepwww.ph.qmw.ac.uk/HEPpc/>
- SuSE:
 - <http://www.suse.de> (germany) or <http://www.suse.com> (us)
 - YaST autoinstall documentation (package `yast.rpm`):
`/usr/share/doc/packages/yast/Auto-Install.english.ps.gz`
 - ALICE (Automatic Linux Installation and Configuration Environment, package `alice.rpm`):
`/usr/share/doc/packages/alice/alice.pdf`



- YaST2 and ycp documentation (packages y2...):
`/data/share/doc/packages/yast2/*`
- Previous presentations in 2000:
 - Knut Woller at HEPiX spring 2000 (TUBS):
“Automated Linux Installations at DESY”
http://www.desy.de/unix/papers/200004_woller_yast_ai.ps.gz
 - Stephan Mueller (SuSE) at HEPiX spring 2000(TUBS):
“Automatic Installation and Configuration with YaST2”
<http://www.tu-bs.de/rz/veranstaltungen/hepixonix-SUSE-muel-1.ps>
 - Knut Woller at the DESY Computing Seminar:
“Concept Of And Experience With The DESY Centrally Managed Linux Installations”
http://www.desy.de/unix/papers/200006_woller_desy_linux.ps.gz