



**Seminar:**

Linux at DESY Zeuthen

**Thorsten Kleinwort**

([tkleinw@ifh.de](mailto:tkleinw@ifh.de))

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- Linux (SuSE)–AutoInstallation
- Three Classes of Linux–PC’s:
  - Work–Group–Server
  - The Farms
  - The Desktop–PC
- Linux and Security
- Self–administered Linux–PC’s
- Outlook



## History:

- Linux investigation started spring '97 (CHEP & HEPiX)
- DESY mainly uses SuSE–Linux (Version 5.0, Kernel 2.0.30)
- Summer '97: Discussion about “supported Linux from ZDV”
- Big & urgent needs from the experiments to have PC’s as compute–farms (under Linux)
- Also need for Linux on the desktop as a replacement for X–Terminals
- Some PC’s are already set up by the users/groups themselves



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## Linux–AutoInstallation

- In fall '97 we contacted SuSE for having a tool that provides an automatic installation for SuSE–Linux over the net
- This tool installs Linux from scratch:
  - Partitioning of discs
  - Configuring the network
  - Installing the selected packages
  - Installing the selected kernel
- But: This is only half the way to set up a DESY–Zeuthen Linux–PC



- The second step is done by the PostInstallation with the tool cfengine:
  - Setting up profiles:  
Your shell-environment looks the same as on other Unix-machines
  - Automounter, data-discs (local & external):  
On compute-farms, you want to see your data discs and you want to share the local discs
  - AFS:  
On Linux, all user home-directories are in AFS, for several reasons:
    - \* no local home-directories
    - \* much higher performance than NFS-homedirectories
    - \* local caching
    - \* world-wide availability (thru: /afs/ihf.de/user)
  - Security:  
Because Linux is the most affected platform by hackers, the security standards have to be very high, even higher than on other Unix platforms



- Printing:  
You want to use the known printer in the Institute
- X11:  
The usual X11–environment is set up (HEPiX 3.2), again Linux looks like other Unix–flavours, but with a new standard WM: fvwm(2)
- mail:  
Mail can be sent, but not be received by a Linux–host
- PATROL controls the “running status” of the system and invokes actions on unusual events:
  - \* disc usage
  - \* daemon checking
  - \* load checking
  - \* services checking
- miscellaneous other services:
  - \* osm for dedicated hosts
  - \* networker
  - \* ini
  - \* tools for cleaning of tmp–space



## Three Classes of Linux-PC's:

- Linux Work-Group-Server (WGS):
  - “Public Login Machines” for the Linux-Platform
  - for testing and working purposes
  - Up to now this type is realized but not yet launched
  - There are still some unsolved problems:
    - \* load balancing
    - \* User handling
    - \* X11-connections from X-terminals, other PC's, ...



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## Three Classes of Linux–PC’s (cont’d):

- Linux–Farm–PC’s:
  - This type is already set up at DESY–Zeuthen
  - There was an urgent need for running PC–farms under Linux
  - These farm–PC’s are set up like WGS, but with restricted access:
    - \* There is no X11–Environment running (no X11–login)
    - \* Runlevel = 2
    - \* There is limited access to these farm–PC’s to dedicated users from the belonging experiment
  - Own subnet 141.34.15 (fast–ethernet)
  - Up to now only slow connections to the “rest” of the world





- Linux-farms up to now:
  - Husky-Farm (Amanda):
    - \* 20 Pentium II PC's 266 MHz  
(husky1 – husky20)
    - \* 128 MB RAM (256 MB SWAP)
    - \* 2 & 4 GB SCSI-discs
    - \* Fast-Ethernet
  - Elan-Farm (H1):
    - \* 8 Pentium II PC's 333 MHz  
(elan1 – elan8)
    - \* 128 MB RAM (256 MB SWAP)
    - \* 2 & 4 GB SCSI-discs
    - \* elan1 additional 4(8) × 9 GB SCSI-discs
    - \* Fast-Ethernet



- Beauty-Farm (HERA-B):
  - \* 4 Pentium II PC's 333 MHz  
(beauty1 – beauty4)
  - \* 128 MB RAM (256 MB SWAP)
  - \* 2 & 4 GB SCSI-discs
  - \* {3 Pentium Pro PC's 166 MHz, 32 MB RAM, 2GB EIDE-discs}
  - \* Fast-Ethernet

All farms are set up with Fast-Ethernet (100MBit/s), although they currently run 10MBit/s, due to problems with the auto-negotiation between the HUB and the networkcard. With installing the new router we get rid of these problems and can run all farms with 100 MBit/s.



## Three Classes of Linux–PC's (cont'd):

- Linux–Desktop–PC's:
  - **This type is still under investigation** —
  - (They should be) full supported by ZDV
  - The User has no root access (except some sudo–commands)
  - ZDV installs, upgrades and supports the PC's centrally
  - ZDV takes care of the security measures and guarantees a safe running machine
  - There are already requests for this type of Linux–PC, but we are not ready to support it and there are still some general studies to make
  - One big problem is the variety of different hardware (network–card, type of discs, graphic–card, monitor, CD, ...)
  - My hope is to launch Linux–Desktop–PC's–support this summer :)



## Linux-Desktop-PC's (cont'd):

- Some features:
  - 253 Packages are installed from SuSE-distribution
  - Rest of software via AFS (cached)
  - User home-directories in AFS (no local files, no local backup)
  - fvwm(2) standard window-manager
  - (restricted) CD- and floppy-access
  - ...



## Linux and Security:

- Linux needs the same security level than the other Unix–flavours
- Linux is even more vulnerable: The code is free and everybody can install it on a home–PC → everybody can hack it
- Because it's so widely spread there are much more hackers
- Each Linux–PC on the net is endangered
- Linux is installed by users on there 'own' PC in the Institute:  
They don't care/know about security
- But they are responsible!
- We try to set up our (supported) PC's as secure as possible
- We can give recommendations for other PC's  
(They'll may be enforced in the future)



## Self-administered PC's:

- There are already a lot of (Desktop-)PC's in the Institute running Linux
- Even if I gave some installation help, they are absolutely unsupported
- That means: The User is responsible for her/his PC: For damage that is made on the PC and from that PC!
- If you don't want that, make your PC a smart X-Terminal by installing wnt with eXceed or disconnect it from the net :)
- Beside the support for the Linux-Desktop-PC we (ZDV) want to give advice for the unsupported ones:
  - Help for installing the newest Linux-version (from a server)
  - Help for setting up a (secure) network-connection
  - help for installing security tools/patches
  - This help will be given by using web-pages/news/mailing lists



## Outlook:

- The next steps are:
  - Upgrade to the newest Linux-version (5.2)
  - Release Linux-Desktop-PC support
  - Setting up a Linux-WGS-Cluster for user login
  - Setting up security-guidelines for all types of Linux-PC's
  - Providing the help for the non-supported Linux-PC's
  - Setting up more & more & more PC's...