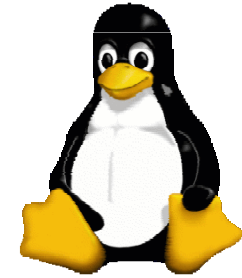




# DESY Linux 4 at Zeuthen

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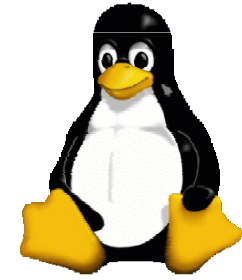
Linux is no longer a project but a workhorse

- It's providing
  - Desktop computing
  - Workgroup / public login servers
  - Batch farms (clusters: not yet DL, see next week)
  - Cheap large scale mass storage
  - Web server, directory services, ...
- The goal: a single, stable, well defined setup



# Outline

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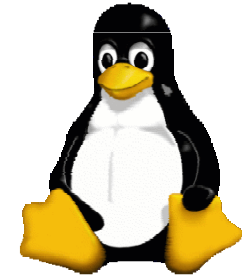


- What DL4 is
- Host configuration and maintenance
- Support model and policies
- Application Software
- Upgrading to DL4
- Common Problems
- Outlook



# What DESY Linux 4 is

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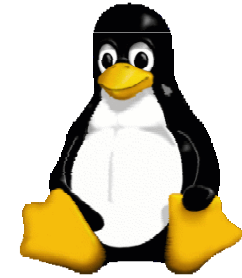


- An effort to make Linux similar in Hamburg and Zeuthen
  - But no more similar than other Unices
- Based on SuSE Linux 7.2
  - With a few **changes** and additions
    - **No SuSEconfig** except once at installation time
    - **Stock Kernel** with few patches + **OpenAFS**
    - **Hepix**, patched **ssh**, own **printing**
    - Much **application software** from /products
      - Compilers, TeX, kerberos, HEP software, Xemacs,...



# Why use a distribution?

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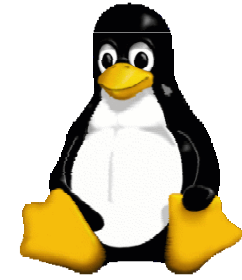


- Many software packages are perfectly usable as they come with the distribution
  - At least the ones where we don't have to be compatible to the other unices (like TeX)
  - We install some **350 optional packages**
- Distributors provide *security upgrades*
  - They often fix the distribution version (good **compatibility** with software installed on top)
  - They also provide security **announcements**
  - But for a **limited time only**: about 2 years



# Why SuSE?

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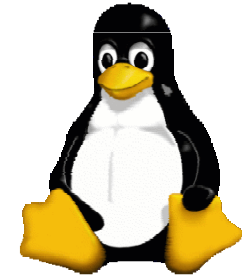


- It's what many use **at home**
- Best **auto installation** for some time
- **Distribution** complete, sound and up to date
- Lately best response to **security** problems
- **But:**
  - The rest of **HEP** is doing RedHat
  - More and more **software** fits best with RedHat
- **To be revisited** before DL5



# DL4 technicalities

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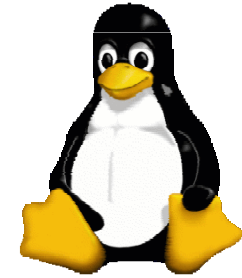


- **Important changes** against DL3:
  - Kernel 2.4, currently 2.4.17, 2.4.18
    - Better SMP performance
    - Ext3 journaling file system, smooth migration from ext2, decent fsck
  - OpenAFS 1.2.2
  - Xfree 4.0 (much easier to configure)
  - **Glibc 2.2.2** (backward binary compatible)
  - **KDE 2.1** (nice & stable, but heavy on resources)
  - **Gcc 2.95.3**



# Desktop Improvements

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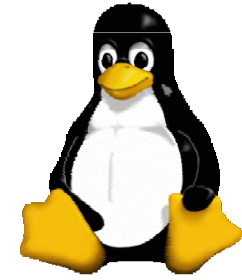


- Improved desktop setup:
  - direct access to graphics hardware for local X server
    - **faster graphics**, requisite for hardware accelerated 3d graphics (not yet), **full screen mode** in some applications
  - **audio support**
    - ES5880 chip only (see **`/sbin/lspci`**)
  - full **access to** floppy, CD-ROM and audio devices
    - to local user only (**privacy**)



# Where we are:

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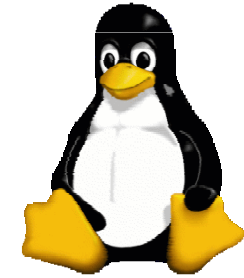


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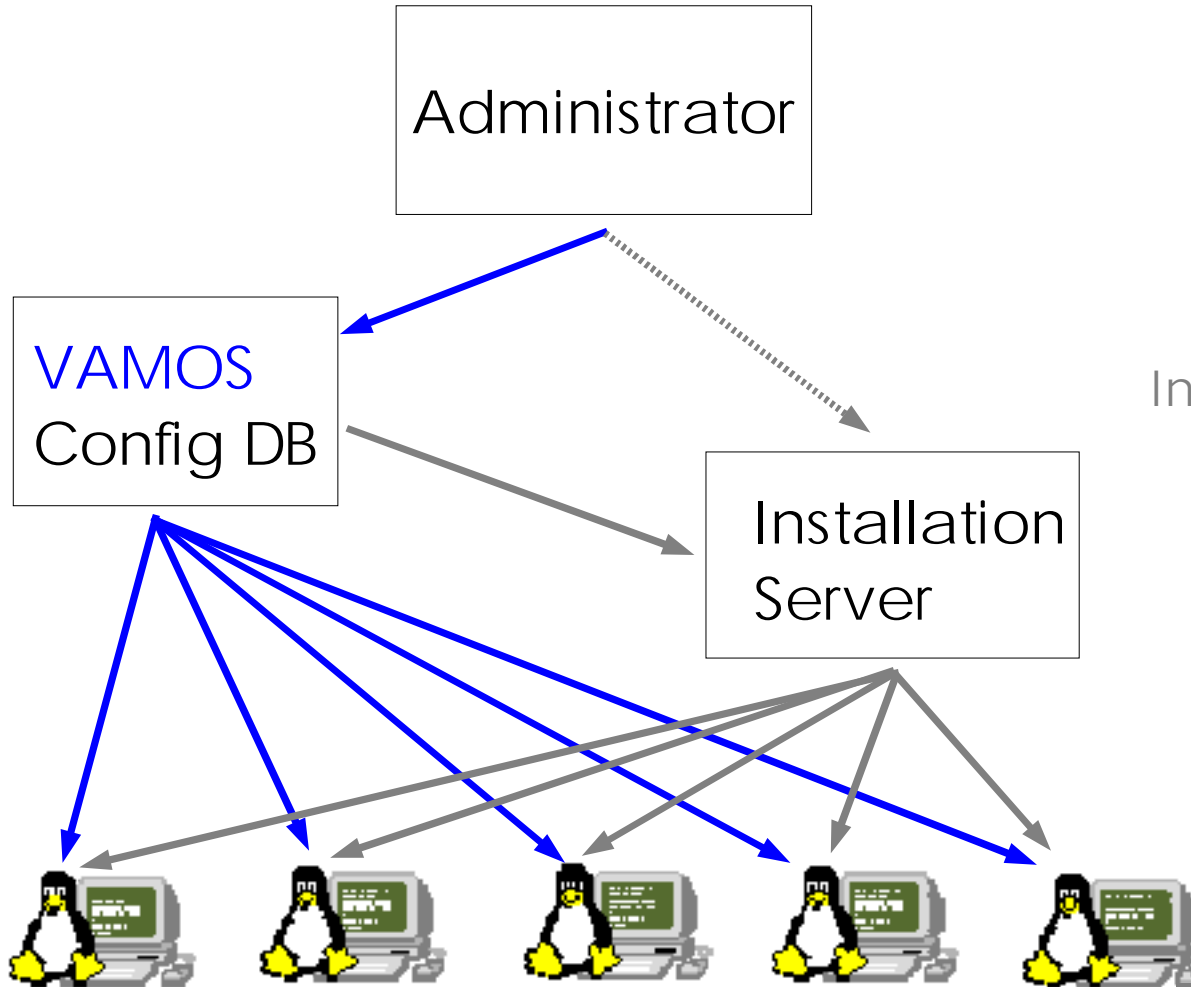




# Host configuration and maintenance



Operation

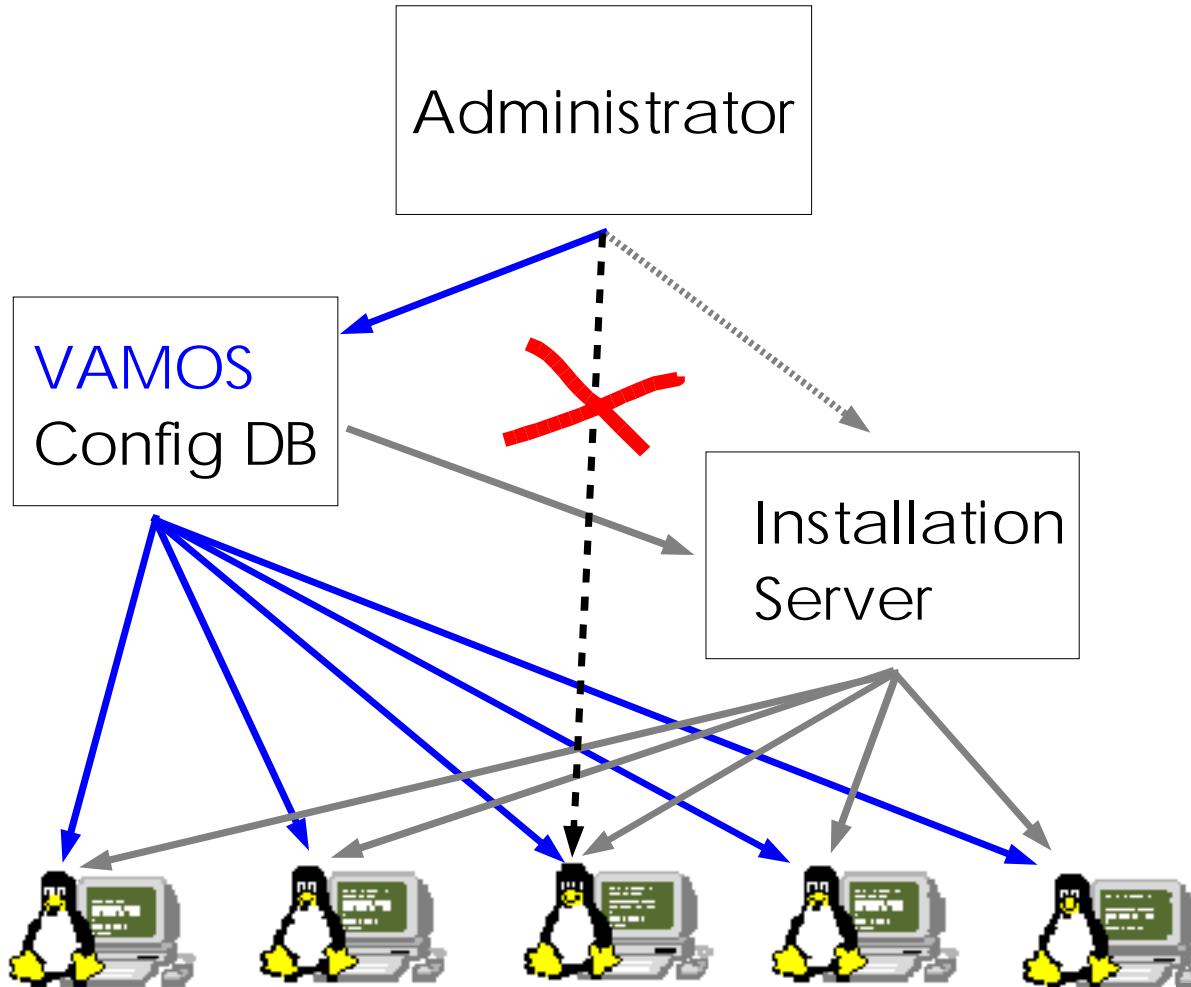
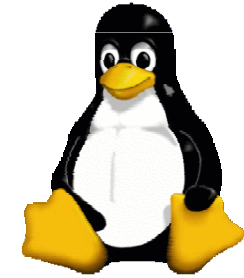


Stephan Wiesand

May 14 2002



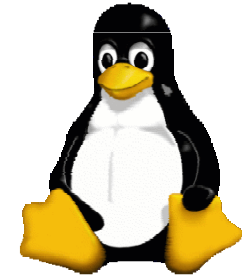
# Host configuration and maintenance





# Host configuration and maintenance

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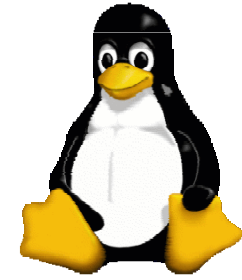


- VAMOS: a **V**ersatile **A**dministration tool for **M**ultiple **O**perating **S**ystems
- Flexible frontend to MySQL Database
- Data is fed (currently still via GenuAdm) to
  - Hosts
  - DNS, DHCP
  - NIS, LDAP
- Hosts periodically run maintenance tasks (**cfengine features**) using the data



# Host configuration and maintenance

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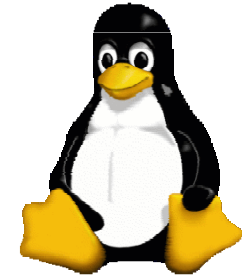


- **Automatic maintenance** examples:
  - Login restrictions (to groups)
  - Disk space access restrictions (to groups)
  - X server configuration (resolution)
  - Installation of additional software packages
  - Update of installed software packages
- **Well defined, reproducible state of hosts**
- **Little to no room for user customization**



# Support Model

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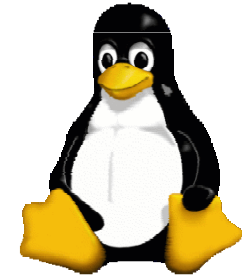


- supported hosts are fully maintained by -DV-
- customization is provided on request
  - examples:
    - screen resolution on individual desktops
    - set of symbolic links for all group hosts
    - additional software packages
  - fully reproducible
    - no additional work after upgrade, disk crash, ...
  - planned / in progress:
    - allow customization by user access to VAMOS



# Policies

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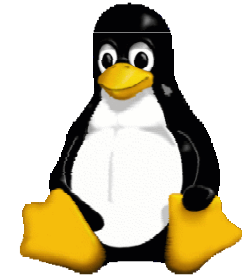


- general:
  - [login](#) on desktops and workgroup servers restricted to owning group
  - [desktops](#) are assigned to one person
  - [customization](#) may be requested by this person or group admin
- due to security reasons:
  - only AFS [home directories](#) on Linux
  - no additional [daemons](#) on desktops
  - [login from outside](#) DESY only to login servers
- due to per-client license fee:
  - no [backups](#) of local disks



# Where we are:

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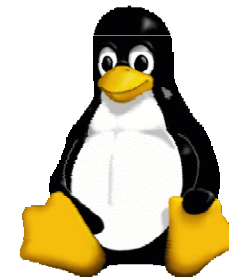


- What DL4 is
- Host configuration and maintenance
- Support model and policies
- **Application Software**
- Upgrading/Migrating to DL4
- Common Problems
- Outlook



# Application Software

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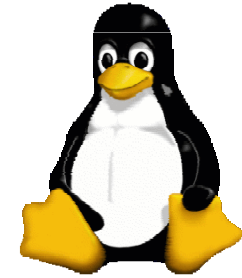
- **Essentials** for scientists:
  - Editor
  - Compiler suite
  - Scientific/HEP specific applications / frameworks
  - LaTeX
  - Web browser
  - Document viewers
  - Office suite (capable of reading and writing MS office formats)





# DL4 supported Editors

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## – XEmacs

- latest stable version 21.1.14, in **/products**
- common configuration across all platforms

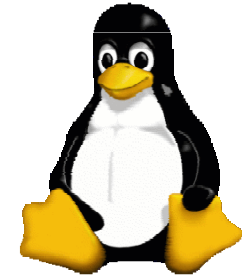
## – GNU Emacs

- **nominally unsupported** for years, but ...
- local package, version 20.7, no custom configuration
- **HP addicts** insert **(load "desy-start" 'NOERROR)** into **~/ .emacs**
- **AucTeX**: insert **(require 'tex-site)** into **~/ .emacs**
- support level to be established, depends on demand
- 21.2 looks very competitive



# DL4 compilers

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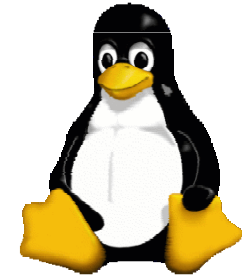


- default: `gcc 2.95.3`
- available through **ini**:
  - `gcc 2.91.66 = egcs 1.1.2` (DL3 default)
  - `gcc 3.0`
  - `Intel 6.0` (includes F95), supposed to be compatible with gcc
  - `Pgi 3.3-2`, supposed to be compatible with gcc
- on cluster only, expensive:
  - **KAI**



# HEP specific Software

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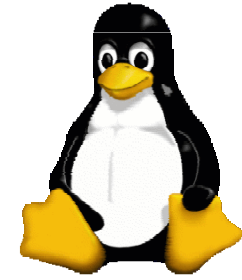


- [cernlib](#)- several versions, [default 2001](#)
- [ROOT](#) - becoming popular
  - C++ framework by cernlib authors
  - Experiments start relying on it
  - installed in **/cern/root/<version>/<compiler>**
  - now available: **v3.02\_7/gcc-2.95.3**
  - links make **ROOTSYS=/cern/root** provide default
  - change of default will be announced
  - old versions will be kept available, deletions will be announced
  - [rootd/proof](#) to be evaluated



# Web browsers

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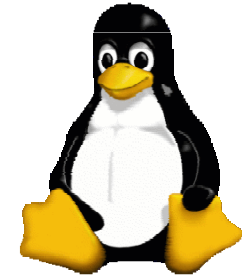


- default is still [netscape4](#) (version 4.79)
- alternative: [konqueror](#) (KDE browser)
  - can be called from fvwm session
  - can trick servers into believing it's IE
  - per-site cookie / javascript
- pending evaluation:
  - mozilla
  - Netscape6
- no option: Opera



# Document Viewers

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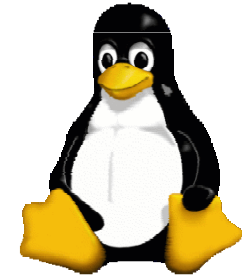


- Postscript:
  - `gv`
- PDF:
  - `acroread4`
  - `acroread5` not available for unix
  - `gv` (sometimes ugly output, but can rotate)
  - not yet: `xpdf`
    - good quality of graphics
    - recent versions have all desirable features
    - needs freetype2, some work



# Office Suite

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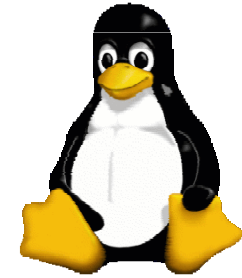


- Staroffice 5.2 available
  - beginning to show it's age
- Staroffice 6.0 still beta
  - will be commercial
- OpenOffice 1.0 = free StarOffice 6.0
  - sans Adabas D database
  - sans most cliparts & templates
  - released in May
  - should be in **/products** rsn



# No RealPlayer

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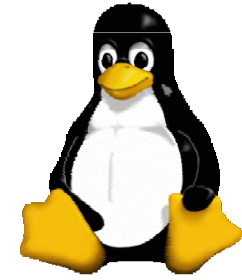


- No commercial version for Unix
- License of free version prohibits
  - central installations
  - sharing the downloaded archive
- Must be downloaded from [www.real.com](http://www.real.com) by each user
  - private data required
- Installation is simple, works well on DL4



# Where we are:

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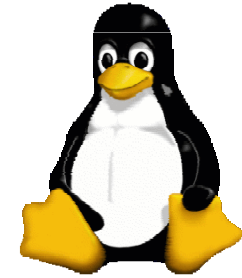
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# Upgrading to DL4

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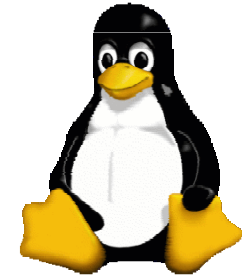


- few **desktops** remain
  - running linux hosts can be upgraded **remotely** and **unattended**
  - **customer can execute** upgrade herself by reboot, after preparation
  - takes 20-50 minutes
  - **data on local disks preserved**
    - **No guarantees!**
  - DDC capable monitor is detected and X configured accordingly (or safe default)



# Upgrading to DL4

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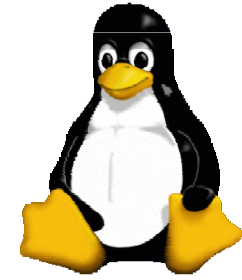


- **farms** can be upgraded in parallel
- **older farms** have small root file systems
  - default setup needs at least 2 GB, options:
    - replace root disk (with IDE)
    - use part of data disks (tedious if data must be saved)
    - use non-default selection (should be avoided)
- **test nodes** with special queues possible



# Common Problems

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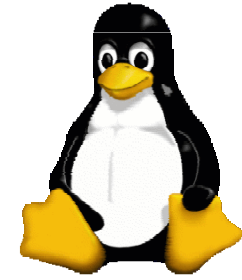


- most are due to **AFS particularities**
  - the **sysname** is `i386_linux24`
  - note `~/bin` points to `~/.sys/bin`
  - Users coming from other platforms often only used their NFS home before
  - AFS **token lifetime** is limited to 25 hours
  - If things look weird, the token should be checked first
    - could probably reduce desktop reboots by 50%



# Common problems

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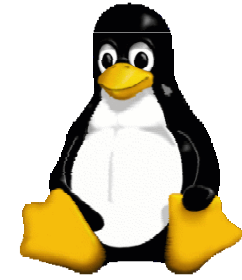


- AFS continued
  - token is refreshed by executing `klog`, or `unlocking the screen` from `xlock`, `xscreensaver` or KDE screen lock
  - `zapping the X Server` makes things worse
    - there are processes trying to write to AFS home
  - `rebooting` seems to help, but is not necessary and messes up the home volume
    - Delays AFS server restarts



# Common Problems

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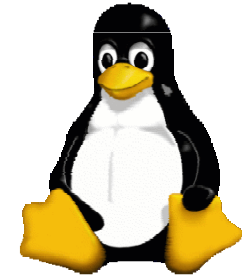


- **Linker warnings** about use of unsafe **tmpnam**
  - while linking fortran code
    - apply only to SCRATCH files
    - old problem, new warning
    - needs fix in libg2c
- **\$DISPLAY** for local display is now :0
  - some scripts expect <host>:0
- handcrafted **.fvwm2rc**, **.Xsessions** etc
  - may stop working (new paths)



# Common Problems

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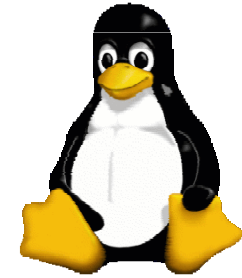


- **Xemacs** thinks .inc files are php code
- **GNU emacs** key bindings not customized
  - Find workarounds for both on DL4 web page
- **r commands** no longer supported
  - **rsh, rcp** insecure, use ssh instead
  - **rsync**: use **-e ssh** switch
- known bug: **newgrp** resets environment
  - It's man page says it shouldn't



# Outlook

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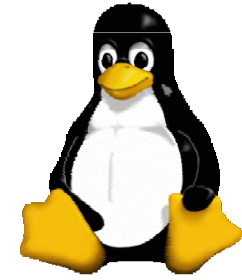


- Things to do:
  - allow for **customization of desktop PCs by user**
    - software, displays, keyboard
  - **DL5**, about a year from now
    - SuSE or RedHat ?
  - Hardware **accelerated 3d graphics**
    - contemporary event displays
  - **desktop video** conferencing?
  - further improve **automatic setup**
    - needs PXE and machine readable hardware data



## See also

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- on the web:
  - [www-zeuthen.desy.de/computing/projects/linux](http://www-zeuthen.desy.de/computing/projects/linux)
  - [.../DL4/DL4.html](http://.../DL4/DL4.html)
  - [www.desy.de/unix/linux](http://www.desy.de/unix/linux)
- mailing lists
  - [linux@ifh.de](mailto:linux@ifh.de)
    - discussion list
  - [linux-announce@ifh.de](mailto:linux-announce@ifh.de)
    - low traffic, one way