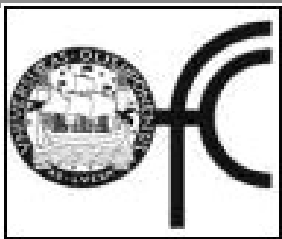


Making available the ECMWF tools,
including METVIEW, in a restricted version
of the PAIPIX scientific live linux



IM



FCUL – António Amorim
IM Lúgia Amorim

PORTUGAL

INSTITUTO DE METEOROLOGIA

Integrated with TIDB2 from João Simões & Maria Monteiro

Edição especial para o IM - António Amorim & VPN

Can not be circulated!



PAIPIX

is running



<http://www.bicycle-stuff.com/>

Live, Based on Debian: - Boots directly from DVD
.. Also .. Simple to install on disk

Freely available from
<http://www.paipix.org>

.Translations by Helmut Wolters (german), Vinc. Vangoni (Italian),
Pedro Ferreira (French), Oscar Diaz Fouces (Spanish) ...

By Antonio Amorim using DEBIAN and KNOPPIX

PAIPIX Motivation (students)

- A live system *that requires no installation*
- *Including latex* to be able to understand the source arXiv scientific papers.
- Including *code development* environments
- Supports English, German, French, Italian, Spanish and Portuguese

State of the art

Several live systems available based either on Debian: KNOPPIX...or Gentoo.

The major Linux releases like REDHAT or SUSE include a live DVD.

While KNOPPIX was by far the best and most used, it did not meet our goals

Scientific Packages Selected from Debian

Development/Prog	Visual Studio e .net	gcc; g++; g77; .. Kdevelop	Development	
Debugger and profiler	Visual Studio e .net	ddd valgrind	Development	
Development (test)	Visual Fortran and .net	gcc-4.0; g++-4.0; gfortran-4.0; g95	Development	fortran
Java	JDK Sun ...	jikes kaffe-pthreads ; gcj-4.0 ; JRE ; ant	Notes (2) e (3)	
Software testing	...	qntest	Development	
Numerical Mathematics	IMSL, Numerical Rec.	Gnu Scientific Library, LAPACK		gsl-ref Gsl
Algebraic Mathematics	Mathematica; Maple , etc	Maxima (xmaxima); ...	Utilities	maxima
Calculus	Mathcad	Octave , scilab	Utilitários	Octave scilab
Distributed Systems	implementações de CORBA, rpc	... OmniOrb4 ..		OmniOrb4
Parallel Computation	MPI, PVM	lam4, pvm, mpich	MPI	ROMIOMPIHO PVM3
Scientific Documentation	...	Latex; Kile; TeXmacs	Office (Help -	
UML case tool	Rational Rose , ...	Umbrello	Development	Umbrello
Electronics	Orcad ...	kicad; pcb; geda; ngspice; verilog	Utilities/Technical	kicad GEDA
3dModel/2D	Autocad; SolidWorks ; Pro-Eng	kpovmodeler gmsh	Graphics	gmsh
FiniteElements	Ansys; Cosmos; pro-Mechanica	FreeFem FreeFem3D		Exemples
Animation 3D	3dStudio, etc.	blender, k3d	Graphics	Blender k3d
Database (DBMS)	Access; SQL Server; Oracle; ...	mysql; postgres; ..	(mysql postgresql	mysql postgresql
Data Analysis	Origin; Statistica; ...	root (much more than) paw		Root root-htmldoc root-manual
Simulation of radiation	...	geant3 isajet pythia herwig		Pythia herwig
Earth Science charts	Origin; Metview, ...	gmt		GMT Manual GMT
Meteorology field maps	...	Grads, vis5d		Grads Vis5d
GIS- Geographic infor. S	...	Grass		Grass
Statistics	Statistica; S-Plus; ...	R	Manual	R
medicam images (DICOM)	...	amide, xmedcon, medcon		amide xmedcon
AFS file-system client	AFS for windows	openafs		boot promp afs=cell afsuser=<user> (5)

New scientific packages created/included

Earth Physics – VIS5D, GRADS, GRIB and BUFR from ECMWF
Mathematics, Statistics, Chemistry

Electronics

Particle Physics – ROOT, CERNLIB, GEANT3, MONTECARLO

amide-0.8.11	ng-spice-15	bufr-2.7	ng-spice_15.0-2.dsc		
care2x-2.1	etcskel-paipix-0.1	evaristo-2.2	g95-4.0		
paipix-bookmarks-0.5	grads-1.9	paipix-patches-3.8	gribex-2.8	paipix-remaster-1	
kernel-hs-paipix-2.6.11	paipix-webcam-1.0	kicad-1.0	phpmybibli-2.0		
kile-templates-paipix-2	knoppix-terminalserver.patch	root-5.03.01	ktidbexplorer		
sermenu-paipix-01	labjack-1	tidb2	tikiwiki-1.9.1	mpich2-1.0.2p1	tikiwiki-
secplugin-0.1	myspell-pt-paipix_1.0	vis5d-tcl-5.2	NFORCE-Linux		

Terminalserver: Instant Instalation farms

Terminal-server tool

- 1) introduced in KNOPPIX
- 2) extended by clusterknoppix (openmosix)
- 3) Paipix further extends with about 25 corrections/improvements ranging from ssh access to farm nodes to proper DNS configuration, mpi configuration, etc.

Terminal-server includes

- 1) PXE boot and miniroot image creation
- 2) sharing the compressed file system trough nfs
- 3) optional local dns server and iptables routing
- 4) ssh validation

Pre-configured MPI (mpich): Used in meteorological model running in LISBOA



Motivation for bringing ECMWF tools inside:

- IM spent a lot of resources installing and maintaining digital-alpha based platforms that were not supported.
- The operations still rely on VAX/VMS machines
- The available Metview was:
 - very old version
 - Only remotely available (performance problems)
 - The PC linux version was almost not used

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Building metview in debian version “sarge”

To build it requires packages including:

libgl-dev, xlibs-dev, netcdfg-dev, libmotif-dev, libgd2-dev,
libdb1-compat, vis5d-tcl, libgdbm-dev

To install it requires packages (automatically found)

pdksh, vis5d-tcl, libc6, libfreetype6, libgcc1, libgd2-xpm, (libgdbm3
or libice6), xlibs, libjpeg62, libmotif3, libpng12-0, libsm6, libstdc++5,
libx11-6, libxext6, libxmu6, libxp6, libxpm4, netcdfg3, xlibmesa-g1, mesag3,
mesag3+ggi, (mesag3-glide2 or libgl1-mesa-glide3), (xlibmesa-glu,
libglu1-mesa or libglu1-xorg or xlibmesa-glu), zlib1g

PAIPIX includes g77, gfortran and g95,

none includes the CRAY type of pointers used in libemos.

The Portland fortran compiler is used but only the runtime environment
is included

Standalone libraries

Compiled using:

```
MAG_DIALECT    = MAGICS  
EMOSLIB_NAME   = MagEmos  
MAG_OGL_NAME   = Magics  
DRIVER_LIB_NAME = MagDrivers
```

EMOSLIB: (from the Metview installation)

```
Package file: emoslib_3.7-1_i386.deb  
/usr/local/apps/Metview/lib/libMagEmos.a  
/usr/local/apps/Metview/example_Make_magics gribex_example.F readbufr_example.F
```

link using Portland pgf, g77 or g95

MAGICS: (from the Metview installation)

```
Package file: magics_3.7-1_i386.deb  
/usr/local/apps/Metview/lib/libMagDrivers.a libMagics.a  
/usr/local/apps/Metview/example_Make_emoslib setup_emosmag
```

link using Portland pgf, g77 or g95

Available

- 1) iso images always available from <http://www.paipix.org>
together with forums, instruction pages, etc.
- 2) All individual packages specifically for PAIPIX also available at the site both in source and compiled.
- 3) Several DVD's in English, German, Italian here...
- 4) Feel free to provide feedback, help in the translation
to other languages *or*
- 5) Re-use the material to build your own better “XXXPIX”

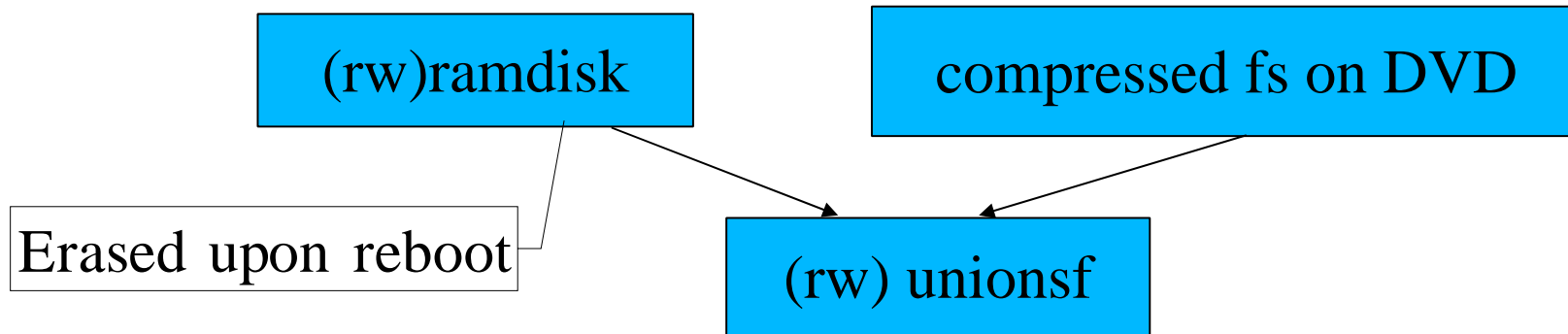
Metview PATCHES

Memory addressing for kernel 2.6:

src/libMagics/sys/PGRA1A.F

lines 116 and 156 -> IF (IPOINT1.NE.0) THEN

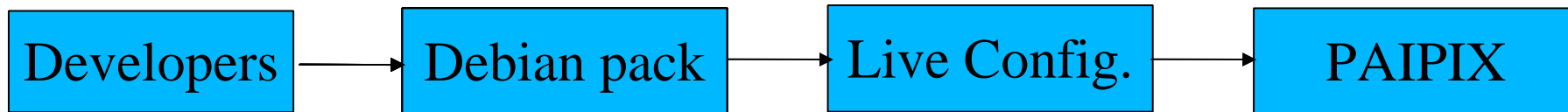
How to deal with /home persistency?



At the boot prompt one can use:

- a) knoppix home=scan (looks in harddisks or pen drives
single file with your home dir)
- b) knoppix afs=cell afsuser=user

Keeping in sync: the PAIPIX-PATCHES



All versions are constantly changing

All patches kept in one package:

(apply) `dpkg -i paipix-patches-....deb`

(undo) `dpkg -P paipix-patches`

etc/apt/sources.list usr/bin/openoffice etc/init.d/knoppix-autoconfig etc/menu-methods/zzz-update-menus-knoppix
etc/php4/apache/php.ini etc/skel/.kde/share/config/kickerrc etc/skel/.kde/share/config/konsolerc
etc/skel/.kde/share/config/profilerc etc/skel/.kde/share/config/kcmnspluginrc etc/X11/XF86Config-4.in
etc/apache/httpd.conf usr/share/applnk/OpenOffice.org1.1____.directory usr/share/applnk/OpenOffice.org1.1/calc.desktop
usr/share/applnk/OpenOffice.org1.1/draw.desktop usr/share/applnk/OpenOffice.org1.1/impress.desktop
usr/share/applnk/OpenOffice.org1.1/math.desktop usr/share/applnk/OpenOffice.org1.1/printeradmin.desktop
usr/share/applnk/OpenOffice.org1.1/template.desktop usr/share/applnk/OpenOffice.org1.1/web.desktop
usr/share/applnk/OpenOffice.org1.1/writer.desktop etc/init.d/mysql etc/init.d/postgresql etc/kde3/kdevelop3rc
usr/share/hwdata/pci.ids usr/share/hwdata/pcitable etc/X11/Xsession.d/45xsession usr/share/knoppix-
installer/modules/install/02-install-tools.bm etc/motd usr/sbin/update-rc.d etc/exim4/exim4.conf.template
etc/squirrelmail/config.php etc/imapd.conf usr/lib/zope2.7/skel/etc/zope.conf.in etc/postgresql/pg_hba.conf
etc/init.d/knoppix-hd-config etc/openoffice/psprint.conf etc/init.d/knoppix-reboot usr/sbin/knoppix-terminalserver
usr/share/knoppix-terminalserver/templates/miniroot/linuxrc usr/share/wine/skel/config etc/default/ntpdate
etc/init.d/openafs-client usr/sbin/mkxf86config etc/init.d/xsession usr/share/applications/kde/kdevelop_c_cpp.desktop
usr/share/applications/kde/kdevelop_ruby.desktop usr/share/applications/kde/kdevelop_kde_cpp.desktop
usr/share/applications/kde/kdevelop_scripting.desktop usr/share/applnk/Knoppix/Config____.directory
usr/share/applnk/Knoppix____.directory usr/share/applnk/Knoppix/Services____.directory etc/mysql/my.cnf
etc/default/mpd usr/sbin/netcardconfig usr/lib/menu/tuxmath etc/modprobe.d/nvnet etc/mkinitrd/mkinitrd.conf