

# Customizing KNOPPIX

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# Knoppix Background

- Live-On-CD Linux Distribution made by Klaus Knopper
  - Based on Debian (testing/unstable/others)
  - KDE, Apps, Servers, Dev
  - 2 GB root filesystem via cloop.o
  - Autodetects hardware, partitions, swap
    - Can use dos partition for swap (mkdosswapfile)
  - Big User Community, Active Forums



# More Background

- Trouble Booting? - Knoppix Cheatsheet
- Knoppix Derivatives
  - Morphix
  - Gnoppix
  - Quantian
  - Knoppix STD
  - MDK MiniCD
  - Freedux
  - KnoppiXMAME
  - Penguin Sleuth Kit
  - GNUMed
  - ClusterKnoppix
  - SQL-Ledger
  - OpenGroupware
- Knoppix Alternatives
  - Slackware Live
  - SuSe Live
  - Variety of other Rescue Disc Types



# Knoppix Disc Layout

- The Result:

**The KNOPPIX Bootable CDROM:**  
KNOPPIX\_V3.2-2003-09-05-EN.iso  
Mounted at: /cdrom

**The KNOPPIX Live Filesystem:**  
/cdrom/KNOPPIX/KNOPPIX  
Mounted at: /KNOPPIX

## ISO9660

/demos  
/KNOPPIX  
/Makingof  
/Talks  
...

## Cloop ISO9660: /cdrom/KNOPPIX/KNOPPIX

/bin  
/boot  
/cdrom  
/dev  
...



# Knoppix Disc Layout

- On Bootup:
  - /cdrom/Demos
  - /cdrom/LinuxTag
  - /cdrom/Makingof
  - /cdrom/Talks
  - /cdrom/autorun.(bat|inf)
  - /cdrom/cdrom.ico
  - /cdrom/index.html
  - /cdrom/KNOPPIX/background.jpg
  - /cdrom/KNOPPIX
  - /cdrom/KNOPPIX/KNOPPIX
  - /cdrom/KNOPPIX/boot.img
  - /cdrom/KNOPPIX/boot.cat
  - /cdrom/KNOPPIX/md5sums



# Customizing Knoppix

- Customizing - Add custom kernel, packages
  - Why?
    - Carry your OS/Apps with you
    - Demo your product/project
    - Rescue/Backup/Ghosting/Linux Hardware Test
    - Promote Linux
- Branding – Custom splash images and backgrounds
  - Why?
    - See Above
    - Promote your organization
    - Linux Live CD Resume
- Endless Possibilities



# Customizing and Branding

- Customizing from a booted Knoppix CD  
(See Forums and HOWTOs for more info)
  
- Branding from a Knoppix ISO on a Knoppix HD install using my scripts.  
(my scripts based on above, see my site for more info)



# Customization Requirements

- Software
  - Current Knoppix ISO
- Hardware
  - 1 GB Memory (RAM + swap)
  - At least a 3 GB Linux Partition (free)
  - CD Burner



# Customization Prep

- There are two ISO images we need to worry about:
  - CDROM ISO mounted at /cdrom
    - Contains KNOPPIX ISO, Bootdisk Image, X Background, Intro WebPage
  - KNOPPIX cloop ISO ( /cdrom/KNOPPIX/KNOPPIX )
    - Compressed loopback ISO9660 fs contains /
- These need to be copied to disk to work with them ...



# Customization Prep (cont)

- Boot From Knoppix CD
  - Knoppix 2 lang=us
    - This will boot you to console as root
    - Check network
- Partition HD (fdisk - swap and work)
  - /dev/hda2 500+ MB Swap
    - mkswap /dev/hda2
    - swapon /dev/hda2  
(existing swap partitions will be detected on boot)
  - /dev/hda1 4GB workspace (cont)



# Customization Prep (cont)

- Partition HD (cont)
  - /dev/hda1 4+GB workspace
    - mke2fs /dev/hda1
    - mount -o rw /dev/hda1 /mnt/hda1  
(if you see errors after chroot you didn't do the above, nodev)
    - mkdir /mnt/hda1/master
    - mkdir /mnt/hda1/master/KNOPPIX
- Copy KNOPPIX Contents to HD
  - cp -Rp /KNOPPIX /mnt/hda1/master/KNOPPIX



# Time to Customize

- Now lets chroot!
  - `chroot /mnt/hda1/master/KNOPPIX`  
(no errors here right! Default knoppix fstab is unfriendly)
- You are now in /  
(which is technically `/mnt/hda1/master/KNOPPIX` )
- You will need `/proc` and DNS
  - `mount -t proc /proc proc`
  - `vi /etc/resolv.conf`
- You are on your own here!
  - use `apt-get`, `dselect`, whatever!



# Customization Suggestions

- Just to spark your interest
  - Ditch X and KDE (368 MB ISO)
  - Grandmotherize Knoppix
  - Password Protect Your Secure Operating Environment (SYSLINUX may not support this)
  - KnoppixCA – Read Only Root Certificate Storage (must think very carefully about this)
  - Set user passwords
- Safely delete games, talks, demos, LinuxTag, MakingOf



# Wrapping it Up

- Clean Up Your mess
  - /var/cache/apt/archives/
  - /var/lib/apt/lists/
  - Tarballs and source code
  - .bash\_history
  - There are some cleanup scripts available (knoppix.clean)
- unmount /proc
- CTRL+D to leave chroot



# Remastering

- First, the cloop ISO fs, KNOPPIX
  - `mkdir /mnt/hda1/master/cdrom`
  - `mkdir /mnt/hda1/master/cdrom/KNOPPIX`
  - `mkisofs -R -U -hide-rr-moved -cache-inodes -no-bak -pad/  
mnt/hda1/master/KNOPPIX \  
| create_compressed_fs - 65536 > \  
/mnt/hda1/master/cdrom/KNOPPIX/KNOPPIX`
- Copy what you want from /cdrom/ into /mnt/hda1/master/cdrom (excluding KNOPPIX ISO)
- Now master final ISO
  - `mkisofs -r -J -b KNOPPIX/boot.img \  
-c KNOPPIX/boot.cat -o plugknoppix.iso cdrom`



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/cdrom  
/dev  
...



# Branding Requirements

- Software (these will change)
  - HD Install of Knoppix version X
  - Knoppix version X ISO
  - Branding Scripts
  - Imagedir
- Hardware
  - 1 GB Memory (RAM + swap)
  - At least a 3 GB Linux Partition (free)
  - CD Burner



# Imagedir Contents

- The contents of imagedir must be:
  - \$imagedir/background.jpg
  - \$imagedir/index.html (should link to ./knxindex.html)
  - \$imagedir/pics/splash\_active\_bar.png
  - \$imagedir/pics/splash\_inactive\_bar.png
  - \$imagedir/pics/splash\_bottom.png
  - \$imagedir/pics/splash\_top.png
  - \$imagedir/logo.16 (should be ~15k)



# Running Branding Scripts

- `knxprep.pl /path/to/iso`
- `cd $name`
- `knxbrand.pl /path/to/imagedir`
- `knxmaster.pl`



# Things to do with knx when you haven't used up all your time

- Ghosting
  - Samba Mount Server
  - Partimage (split at 2GB limit)



# References

- General Knoppix

- <http://www.knoppix.net/docs>
- <http://www.knopper.net/knoppix/index-en.html>
- <http://download.linuxtag.org/knoppix/knoppix-cheatcodes.txt>

- Knoppix Mastering

- <http://www.knoppix.net/docs/index.php/KnoppixRemasteringHowto>
- <http://gnubox.dyndns.org:8080/~sunil/knoppix.php>
- <http://www.stirnemann.com/mystuff/doc/knoppix.txt>

