



FLUPIX and VirtualBox

Beginners FLUKA Course

Introduction

- FLUPIX (**FL**UKA in KNOP**P**IX) is a **FLUKA** (www.fluka.org) + **Flair** (www.fluka.org/flair) Live CD based on **Knoppix** (www.knoppix.net), a Free and Open Source Live Linux CD.
- Knoppix is a GNU/Linux distribution that **boots and runs completely from CD**. It includes recent linux software and desktop environments
- The CD contains the minimum possible working version of Linux with KDE, with all the necessary packages for compiling and running FLUKA and Flair. Total size ~500MB
- The CD is specially configured for running under VirtualBox (www.virtualbox.org) an open source virtual machine by Sun. It is available under many platforms (all Linux, M\$ Windows, Mac OS, OpenSolaris)
- Software location inside FLUPIX
 - FLUKA: /usr/local/fluka
 - FLAIR: /usr/local/flair

VirtualBox

- **VirtualBox** is an [x86 virtualization](#) software package originally created Innotek and now being developed by [Sun Microsystems](#) as part of its [Sun xVM](#) virtualization platform.
- It is installed on an existing **host** operating system; within this application, additional operating systems, each known as a **Guest OS**, can be loaded and run, each with its own virtual environment.
- For example, [Linux](#) can be guest hosted on a single virtual machine running [Microsoft Windows XP](#) as the *Host OS*; or, XP and [Windows Vista](#) can run as guest OSes on a machine running [OpenSolaris](#).

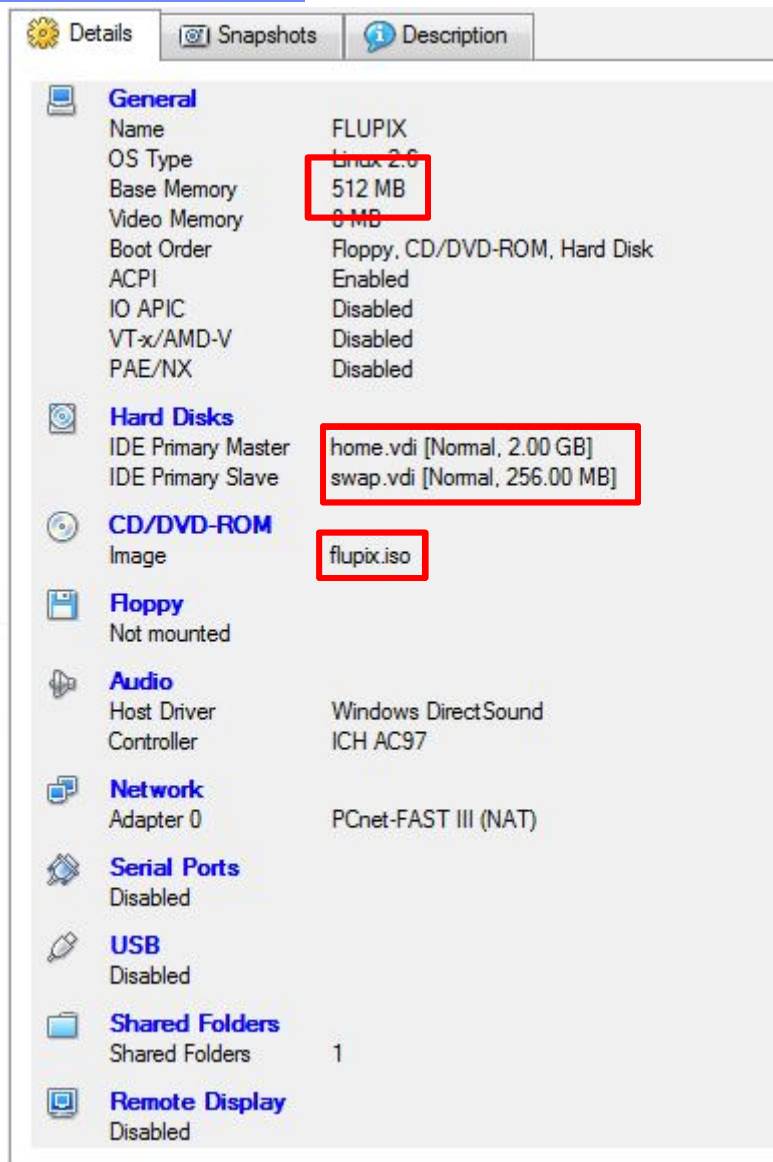
Installation of FLUPIX for Vbox

- A faster and easier way of running FLUPIX is through VirtualBox.
- You will need the following packages
 1. **VirtualBox-X.Y.Z-Win_x86.msi**
The windows setup program of VirtualBox. Install this program in your Windows OS or Mac OS.
 2. **flupix-200X-YYY.iso**
The FLUPIX bootable CD iso image. Copy this image in a directory where you have ~500MB of space
 3. **FLUPIX_VM_Vbox.zip**
The default configuration of FLUPIX for VirtualBox. Unpack the content of the zip file to copy them to
C:\Documents And Settings\username\.VirtualBox
or
C:\Users\username\.VirtualBox

Setting up

- The FLUPIX_VM_Vbox.zip contains a predefined VM named FLUPIX that is attaching two Virtual disks
 - **home.vdi** Dynamic size disk up to 8 Gb, formatted in ext2 used for working space
 - **swap.vdi** Fixed size disk of 256MB used for swapping
- The first time that you will start VirtualBox it will complain for the location of **flupix-XXXX-X.iso** image
 - Select the **CD/DVD Images** tab.
 - Select the flupix iso image and click on **Release** button
 - Click on **Remove** button
 - Click on **Add** button and locate the correct ISO image
- Then on the CD/DVD Rom tab
 - Check the **Mount CD/DVD Drive**
 - Check the **ISO Image File**
 - Select the flupix iso image

FLUPIX Settings



Memory Settings:

- Minimum requirement
RAM:512MB and **Swap:256MB**
 - Linux needs at least 256MB to run
 - FLUKA needs ~400MB with DPMJET ~500MB
 - Some FLUKA tools need ~500MB
 - FLAIR memory is dynamic

Starting the VM

- Click on the Start  button

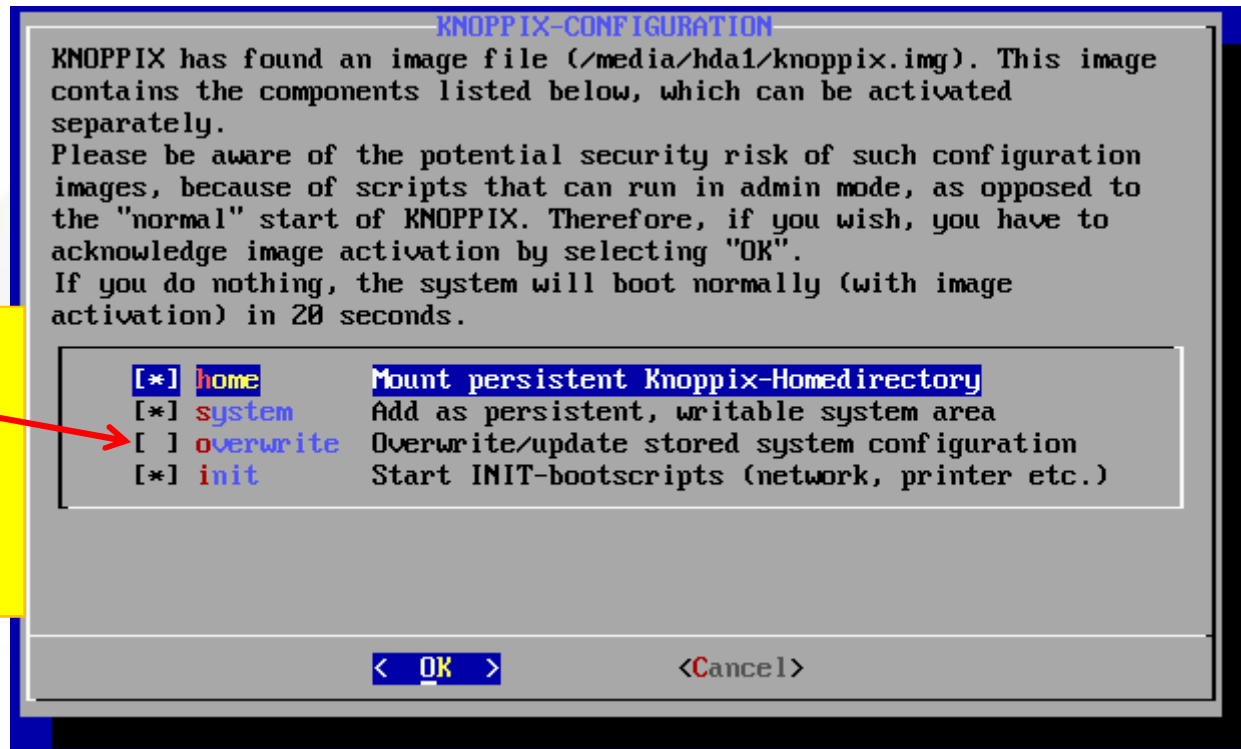


- Function keys **F1**, **F2**, **F3** will toggle between the available pages for booting options.
- It is sufficient to just hit the **Enter** key to continue booting

Booting

- During booting knoppix will try to identify your hardware and available devices

DO NOT SELECT
the **overwrite**
unless you want
to reset the default
settings



- Since the system is pre-configured, knoppix will find the persistent image on the first virtual disk and it will ask you to load it. Click on **Ok**

Working space

- The linux root directory "/" is mounted as readonly from the FLUPIX iso file.
 - However you have the possibility of writing and installing extra programs on the "/" directory using the persistent data image (see below)
 - The home.vdi is mounted as /mnt/hda1 or /media/hda1 and it contains the following:
 - **knoppix.img** an image disk of 100MB the persistent data image of knoppix.
 - **work** work directory assigned to user **knoppix**. This directory is accessible also from /home/knoppix/work
 - The swap.vdi contains a memory swap disk of 256MB
- REMEMBER** that your default home directory is located inside the **knoppix.img** and is limited to 100MB

For simulation use always the work directory

Interface

- FLUPIX has precompiled the utilities from VirtualBox that allows
 - **Mouse integration** (only in X11). The mouse of the host is used as such from the guest system. In all other displays the guest is getting the FULL control of the mouse
 - A special driver for **X11 video**, for faster and smoother graphics (Change the video driver in `/etc/X11/xorg.conf` to "**vboxvideo**")
 - **Time synchronization** with the host system
 - **Folder sharing** from the host to the guest system.
- **Remember** the "**Right-Ctrl**" key is the default **Host key** of your Virtual Machine. With the use of this key you can redirect all input (keyboard+mouse) from your host to your guest system and many other.

Accessing your host directories

- There are several ways of accessing directories from the host system.
- The easiest way is through the use of a Shared Folder
- Create a Shared folder from your VirtualBox and give a name e.g. *home*
- From FLUPIX call the command
`vboxmount home ~/home`
- The command will create a directory `~/home` and mount the Shared folder *home* to it
- Add the command to your profile script to be executed on every login.
- You cannot run FLUKA inside a shared folder since symbolinc links are not supported

Shutting down

- Always try to shutdown correctly the VirtualMachine, from the KDE menu.
Otherwise you can end up with a corrupted persistent image.
- You can even save the machine state, which is equivalent like StandBy. It will create a file equal to the size of the RAM defined 512MB