



# FLUPIX and VirtualBox

7<sup>th</sup> FLUKA Course  
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# Introduction

- FLUPIX (**FLUKA** in **KNOPPIX**) is a **FLUKA** ([www.fluka.org](http://www.fluka.org)) + **Flair** ([www.fluka.org/flair](http://www.fluka.org/flair)) Live CD based on **Knoppix** ([www.knoppix.net](http://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](http://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](#).

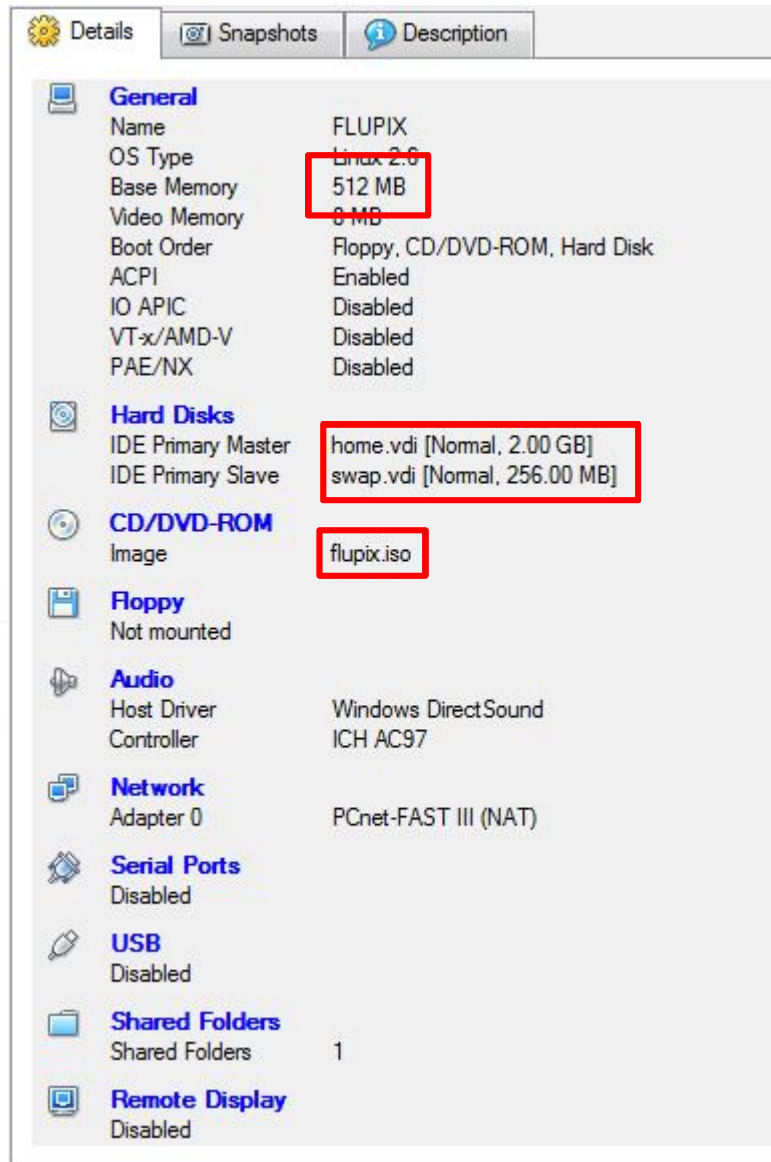
# Installation of FLUPIX for Vbox

- 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

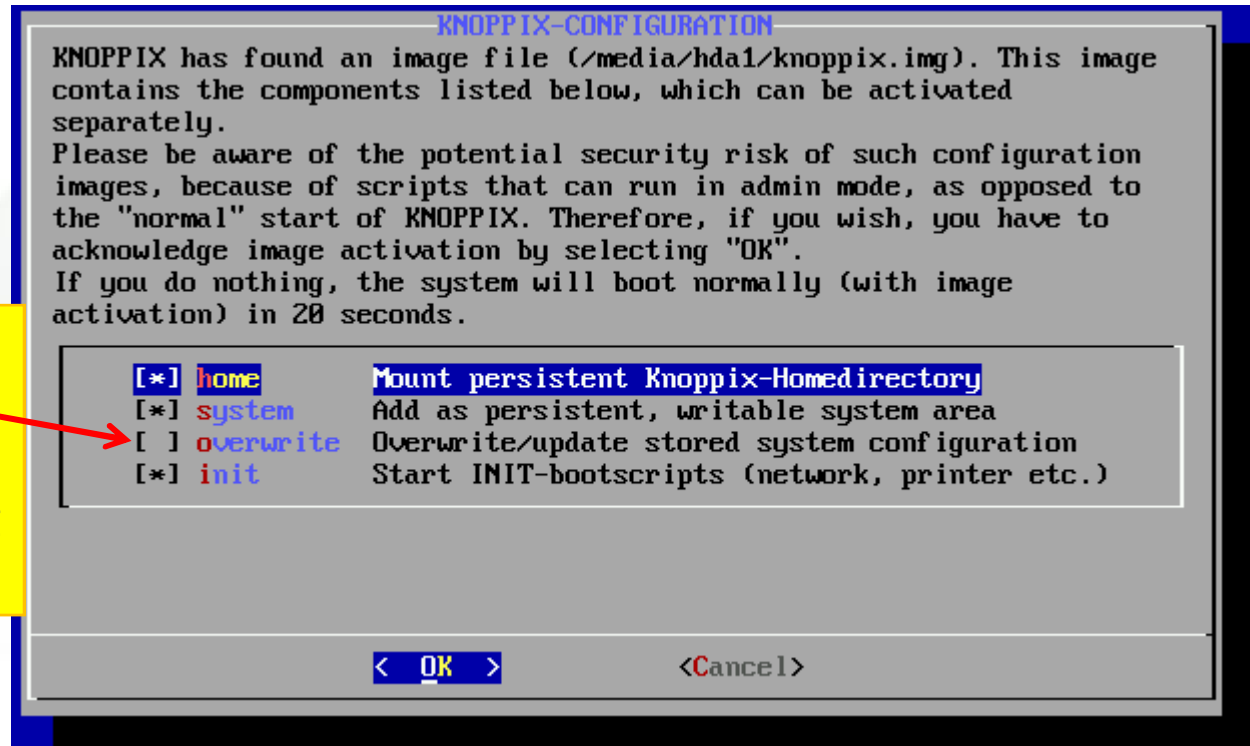
- Click on the Start  button



- 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 symbolic 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