Virtualisation – Overview Sheet

Visualising Concepts

Virtualisation is a way to run an operating system (called the client operating system) which is not directly running on the computers hardware but which is running on top of the computers installed operating system (called the host operating system). This is a virtual operating platform which can be the same or different kind of platform as the host.

Change Root

The easiest way to use virtualisation is to use a linux/unix tool called 'chroot', this too changes the root of the operating system and allows a jail to be created.

Chroot Environments

You can chroot into any folder on your computer.

Security Concerns with chroot

It's not a good idea to use chroot often because of security concerns. Any chroot jail can be circumvented so long as the user inside the jail is root.

Hardware Enabled Virtualisation

Modern virtualisation works by creating a separate section of memory which is used by the client operating system, which the host operating system can't control or process. This means that the speed of the visualised client operating system can be as fast as it would be on the hardware directly.

Hardware enabled virtualisation depends upon the processor supporting memory paging instructions that separate out memory areas. Only select modern CPUs support this kind of paging.

Virtual Hardware

Modern virtualisation also creates visualised hardware devices which emulate each of the features to the host operating system's hardware. Everything from video drivers to networking. If the hardware doesn't work with the host operating system, then it can not be emulated and passed to any of the client operating systems.

Using Virtual Box

VirtualBox is an easy to install virtualisation environment for Ubuntu, it can be installed via the repositories and it will emulate all basic devices to the client operating system. It includes a set of kernel modules which enabled hardware virtualisation.

Please see teacher at this point as there wasn't enough time to write this course fully.