Final review outline
IN720 Virtualisation

Introduction

We will end our study of virtualisation with a final examination on Friday, 22 November. The exam will include questions from any topic we explored during the semester. Rather than focus on implementation details (That's what the labs and assignments were for), the exam will test understanding of the underlying ideas. Questions will mainly have a short answer format along with a small number of long answer questions.

Things that may be on the exam:

- Questions about the major software systems we used during the semester
- Questions in which you are shown examples of code or configuration and have to explain what they do
- Questions that describe an error and problem and ask how you might troubleshoot them
- Questions about how networking works in virtual systems contexts
- Questions about the pros and cons of different virtualised systems
- Questions about recurring themes we saw more than once during the semester.
- Questions about *why* we do things (rather than how).

Things that **will not** be on the exam:

- Questions for which you will be expected to write code or configuration from memory
- Questions that require you to reproduce specific commands we used

Below is a chronological outline of topics that may be covered on the exam.

1 Virtual machines and hypervisors

- Comparison of emulation, full virtualisation, paravirtualisation
- Hosted and bare metal virtualisation
- Components that comprise a guest VM
- VM images
- Dom0 and DomU guests
- Networking for Xen guests
- Backend and frontend network drivers
- Bridged vs. routed networking
- Volumes

2 Managed cloud services

- Pros and cons of managed services vs. self-hosting
- Operational consequences of cloud services
- Networking of cloud hosted VMs
- Floating IP addresses
- Cloud service APIs and SDKs
- OpenStack's Python SDK
- Terraform

3 Containers

- Comparison of containers vs. VMs
- Container images
- Image creation
- Image repositories
- Volumes and bind mounts
- Networking in Docker
- Docker Compose
- Docker Swarm
- Kubernetes components
- Kubernetes pods
- Kubernetes service objects
- Service deployments with containers