Virtualization Software: Xen

Lab. 2

Overview

- Task 1: Xen setup
  - Pre-installation
    - Infrastructure Setup
  - Installation
  - Post-installation
    - Virtual environment configuration: dom0 and Xend
- Task 2: VM (*DomU*) creation
  - Snapshots
  - Clones
- Task3: *DomU* management and resource control
- Task4: KVM vs Xen

Task 1: Infrastructure Setup (20%)

- Pre-installation
  - Check if VT-x enabled if not enable it in BIOS
  - [*LAB*] Storage setup: setup a LVM in /dev/sda7 (delete GRUB entry in ubuntu)
  - [*BYOD*] Storage setup LVM of 20GB
- Installation
  - Install from repositories (up to Xen 4.1)
  - Install from Xenproject.org (up to Xen 4.4)
    - Some functionalities are only available in 4.4 (v.gr. PVH)
  - Configure Xen as default entry in GRUB
  - Configure vCPU and min-max for dom0 (1 CPU and 1GB-2GB)
  - Reboot and check dmesg or other log for errors or warnings in hypervisor or dom0
- Post-installation
  - Configure xend networking (either NAT of bridge)
  - Fix X11 glitch in dom0
  - Reboot and check dmesg or other log for errors or warnings

Task 2: DomU installation (30%)

- Installation
  - Create a Debian 7 (Wheezy) domU installation on a 5GB LV on sda7 (called base)
  - Install SpecCPU2006 in the domU
  - Clone the domU using a SAFE snapshot (called clon1)
  - Make a compressed backup in a file
  - Restore the backup to a monolithic file and use it for a third domU (called clon2)

Task3: DomU management (30%)

- Usage
  - Add all the domUs to xend-store
  - Boot/stop/destroy/checkpoint the domU base and compare the elapsed time in each operation
- Booting
  - Install the kernel from backports repository in base
  - Configure and use PV-GRUB in base
- Resource QoS (CPU)
  - Run concurrently three domU with of SpecCPU and compare with previous execution
  - Assign one physical core to each doumU and repeat
  - Restrict CPU #2 and #3 for domU and repeat
  - Increase the weight of base 16x times and repeat
- Clean-up
  - Delete snapshots and clones

Task 4: KVM vs Xen (20 %)

- Compare KVM and Xen performance impact with SpecCPU2006

- Will require autonomous work
  - I can help