Cloud Computing

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Tutorial Session 2

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Organization

- Group assignments done
- Exam registration done
- First submission done
- Any open questions?

Last Assignment

- Open questions? Comments?
- We will have a look at your submissions and enter your points in ISIS
- Group work during pandemic?
  - Currently, it is not easy to work as a team (we know that)
  - Try to solve individually and discuss/merge solutions
  - Approach us concerning group issues but first to try to solve your problems using your communication skills

Next Assignment

- Now we know how to use cloud platforms
- But as Master’s students, we also want to understand what lies behind
- Switch roles from cloud user to cloud provider
- We are doing this by setting up and configuring an OpenStack instance
- Normally, you would do this on your own server cluster
- Since you don’t have one, we will use the infrastructure we learned to use in the last assignment
  - ➢ Nested virtualization

OpenStack

- Free open standard cloud computing platform
- Used for IaaS service models
- Made up of many components for:
  - Computing
  - Hardware provisioning
  - Storage
  - Networking
  - Identity management
  - Orchestration
  - …
- We will deploy it using kolla-ansible

Ansible

- Open-source tool for the orchestration and automatic administration of computers using a descriptive language
- Works using temporary ssh connections to nodes
- Infrastructure “playbooks” defined in text files
- Enables infrastructure as code models
- We will use kolla-ansible which deploys OpenStack components and infrastructure in Docker containers
- Usable without any prior knowledge about ansible

Nested Virtualization

- We will deploy a could platform on a cloud platform and hence need nested virtualization
- Not all gcp VMs support this!
- Technical details in the lecture

Practical Assignment 2

- Task 1: Prepare virtual machines for OpenStack
  - Use gained experiences with the Google Cloud Platform
  - Again, create a shell script that sets up a virtual machine environment
  - This time, two VPC networks will have to be created and configured
  - Start multiple VMs that allow nested virtualization
  - Connect the VMs to the created networks and configure firewall rules
- Task 2: OpenStack setup
  - Install Ansible and kola-ansible (this requires Python3 and pip)
  - Deployment script is provided **but use with care!**
  - You might to do some debugging and googling to make everything work
  - Further hints on the assignment sheet

Practical Assignment 2

- Task 3: Configure OpenStack
  - Install openstack CLI
  - Configure it to work with your instance
  - Upload images to your OpenStack instance
  - Create security groups and configure firewall
- Task 4: Performance Benchmarks
  - The same as in Assignment 1
  - Reuse the benchmarking script
  - Have an eye on your credits

Assignment Submission: ISIS

- Submit all required files on ISIS
- Resubmissions are possible: only the last submission will be counted
- Submission will be partially validated automatically:
  - Use exactly the correct file names
  - Submit exactly the 12(+1) required files described in the assignment
  - Use the text field to enter your answers to the final questions

Last Reminder

Always remember to shut down your unused VMs!