HPS
https://hps.vi4io.org

Julian Kunkel, Jonathan Decker,
with support of many from the GWDG

HPC System Administration

Welcome to the Block Course

Overview

High-Level Goals

- To practice (Linux) administration in a safe environment
- To gain proficiency in managing your own computer systems effectively
- The goal is NOT to become expert in ONE tool but rather to gain an overview

Attendees

- Computer science students from the University of Göttingen
  - Will receive ECTS credits
- (Young) researchers, IT experts, data center employees
  - May receive a certificate, must provide us with your email to give consent

Practical: Learning Objectives

- Discuss theoretic facts related to networking, compute and storage resources
- Integrate cluster hardware consisting of multiple compute and storage nodes into a “supercomputer”
- Configure system services that allow the efficient management of the cluster hardware and software including network services such as DHCP, DNS, NFS, IPMI, SSHD
- Install software and provide it to multiple users
- Compile end-user applications and execute it on multiple nodes
- Analyze system and application performance using benchmarks and tools
- Formulate security policies and good practice for administrators
- Apply tools for hardening the system such as firewalls and intrusion detection
- Describe and document the system configuration

Practical – Perspective of University Students

- The module consists of the parts:
  - 5-day block course (07.10.24 - 11.10.24)
    - Hands-on building a cluster with its software stack
  - Practical on an administrative topic
    - Individual work on a topic - but collaborate!
  - 100% marks: Report about the topic and your results
    - 10-15 pages (core content, without appendix)
- We aim to publish all presentations and reports on our webpage
  - Please consider and agree
- Please check also organisational remarks
  - Also slides on Scientific Writing
- A supervisor for formative assessment will be assigned per student
- Pick topics from the webpage anytime - assignment is on FCFS base

University Studenty – Practical Aspect

- Agenda: https://hps.vi4io.org/teaching/autumn_term_2024/hpcsa
- Typically from 9:00-18:00

Breaks

- During lectures/between sessions explicitly scheduled
- Can be taken during exercise anytime!

Types of sessions

- Lecture: Presentation by the lecturer
- Tutorial: Step-by-step exercise "on rails"
  students replicating steps of the lecturer
- Exercise: Interactive/collaborative work done in learning groups

Supporting Learning

Study Group

- We'll group peers into learning groups of ∼5 people each
- Purpose: to discuss tasks and help each other, also it is fun
- Groups for: Students, GWDG academy users
- Supported by one GWDG staff each
- Practically: we will create one breakout group per study group

Support Strategy

- Level 1 support: Talk within your study group
- Level 2 support: Utilize our hpcsa-support channel to discuss issues
- Level 3 support: Lecturers will join your breakout group if necessary
- Don't worry if something doesn't work, 80% is definitively good enough

A Typical Session (1 hour)

- 15 min Lecture – lecturer introduces basics/tool/how to install/use
- 15 min Tutorial – lecturer walks you through typical starting issues
- 20 min Exercise – students work in study group on exercise sheets
- 10 min Plenary – 1-2 students show their result, discussion of issues

How you interacted

- (main) The lecture/tutorial is given in this main room
- (support) You discuss in your study group in breakout rooms using screen sharing and mic – problems are posted in the support room chat
- (main) Lecturer announces something in the otherwise quiet main channel
  - Example: several groups had problem X, solution is Y
- (main) Lecturer reminds that we now share results in the plenary
  - You volunteer and screen share or post any remaining question on the chat

Interactivity

Advise to attendees

- You will have to use Linux and learn it, persevere, it is not easy!
- Engage! Interact with the lecturer and the material
- Volunteer for the plenaries or post (difficult) questions
- Post questions in the chat anytime
- Interact with your peers in the learning group
- Don’t feel afraid to post a question
- Don’t feel afraid to break sth. try it!
- You can screen share in the study group and/or work together

With other words

- We want to empower you to DO stuff, to practice means to DO stuff

Week Agenda

- Mo, Tue, Wed, Thu are virtual events
- Friday is in-person meeting at the RZGö in the Burkhardweg 4
  - Optional, please register in the poll you received by email
  - If you are not participating, use the time well to recap previous days
- Detailed agenda
  https://hps.vi4io.org/teaching/autumn_term_2024/hpcsa

The First Exercise

- Goal: get used to the format, introduce yourself in the learning groups
- Time: 20 minutes
- Exercise sheet is linked on the webpage next to our session

Advertisement – GWDG Academy

- Find more course offerings via `https://academy.gwdg.de/`
- Most courses take half a day or less
- Also available to University students / PhDs for free
  - Useful as preparation for project work or final thesis
  - Do not give uni credits