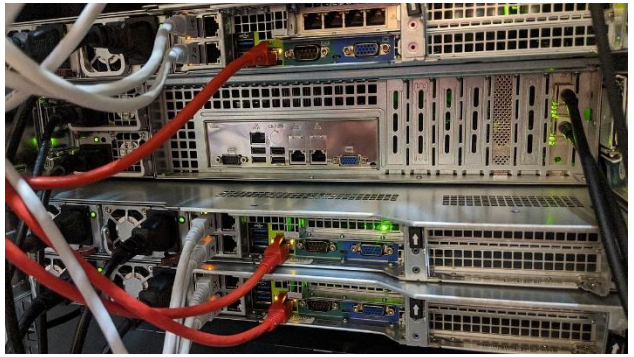
SWZ Clausthal – Göttingen
Simulationswissenschaftliches Zentrum

Computing resources TU Clausthal

Alexander Herzog
(Simulation Science Center Clausthal-Göttingen)







Computing resources at TU Clausthal

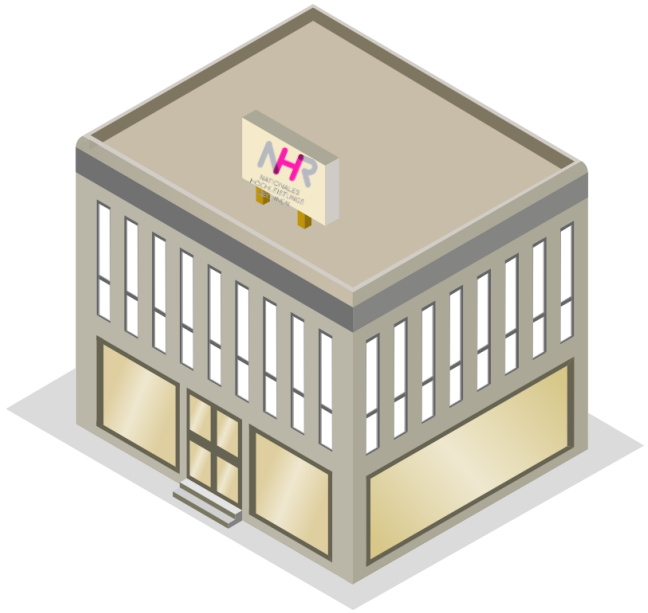
Performance classes



Computer in the Institute
(typical values)
- 6-16 CPU cores
- 16-64 GB system RAM
- 8-16 GB GPU RAM (or only iGPU)



SWZ compute cluster
5 machines with each:
- 32-64 CPU cores
- 512 GB-1.1 TB system RAM
- 80 GB GPU RAM (not in all nodes)



NHR-Alliance
(National alliance for high-performance computing)
Current stage of development:
- approx. 250,000 CPU cores
- approx. 1000 TB system RAM

Computing resources at TU Clausthal

Fields of application



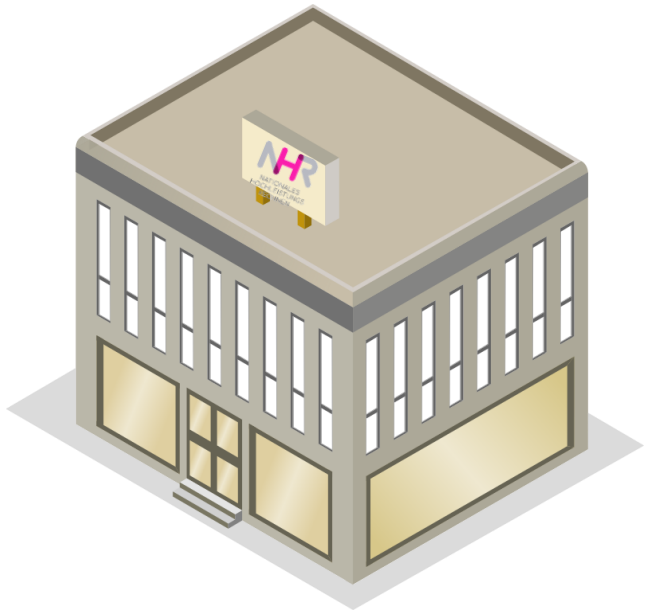
Computer in the Institute
- Interactive usable
- Use of any self-installed software

Typical scenarios:
- Testing of small models
- Short-running computing tasks



SWZ compute cluster
- Informal registration required (E-Mail)
- Interactive usable
- Software installation via the computing center

Typical scenarios:
- Tasks that run for several hours or days
- Task that require more CPU cores and/or memory



NHR-Alliance
- Computing time has to be requested and approved (test account available without project application)
- Batch operation

Typical scenarios:
- Tasks that require a lot of computing power

SWZ compute cluster

Organizational overview



- Organized by the SWZ.
- Physically operated by computing center of TU Clausthal.
- Acquired primarily for SWZ members, but open to all members of TU Clausthal.

- Currently 5 computing nodes:
  - **`as.rz.tu-clausthal.de`** („Application server“): Open to all TU accounts without additional registration.
  - 4x **`cloud-*.rz.tu-clausthal.de`**: After registration, can be used for longer computing tasks (research projects, theses, etc.).

- Further expansion in preparation:
  - 2 more GPUs for node no. 5
  - Node no. 6 in tender
  - Nodes no. 7-10 in planning

SWZ compute cluster

Techncal overview



- All machines are dual-socket AMD Epyc systems with 2x16 or 2x32 physical CPU cores each, 512, 1024, or 1152 GB of system RAM.
- GPUs: 1x Nvidia T4 (32 GB), 1x Nvidia A100 (80 GB), 1x Nvidia H100 (80 GB).
- Operating system on all nodes: Linux.
- Login from within the TU net by using the TU account.
- Connected to the storage system of the computing center (**`\\nas.tu-clausthal.de\unix-home$`**).
- Various scientific software packages are already installed; additional software can be requested from the computing center if needed.

- Further information about the machines: **`https://www.simzentrum.de/en/infrastructure/computing-cluster`**

First steps
Login

- The machine **`as.rz.tu-clausthal.de`** is suitable for initial tests.
- No further registration is required here; anyone with a TU account can use this machine immediately.
- Activation requests for additional machines to: alexander.herzog@tu-clausthal.de.

Options for accessing the machines:

1. SSH:
   - Windows+R, then „cmd“ and Return, then: „ssh <OwnRZ-ID>@as.rz.tu-clausthal.de”
2. Graphical use via X2Go:
   - See **`doku.tu-clausthal.de`** -> Infrastruktur -> Compute-Cluster -> Grafischer Zugang
3. Date exchange:
   - Enter “**`\\nas.tu-clausthal.de\unix-home$`**” in the Windows Explorer adress bar.
4. Program locally, execute code remotely:
   - Visual Studio Code can connect to the compute node via an SSH channel.
   - The graphical user-interface then runs locally, but the resources of the remote computer are used.