

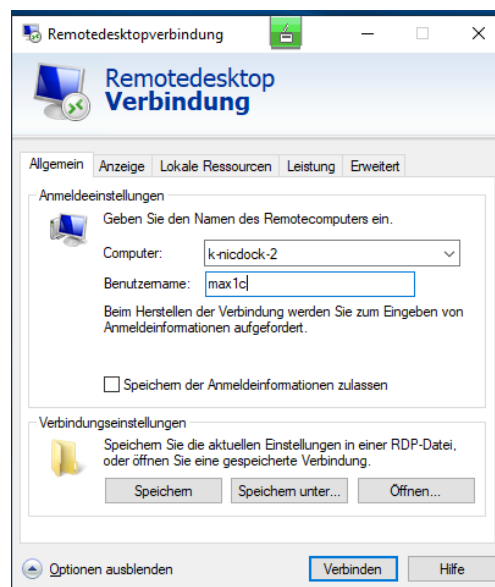
User guide to the Linux VMs

k-nicdock-1 and k-nicdock-2

k-nicdock-1 and *k-nicdock-2* are Ubuntu virtual machines (Ubuntu 24.04, codename: noble) hosted on a Hyper-V Windows server. The Hyper-V server is located in the Rechenzentrum of the University Medical Center Mainz. *k-nicdock-1/2* are accessible from any ROOT-KLINIK PC in the Neuroimaging Center (NIC). Both VMs have access to a 80 TB network drive (nicshare).

How to connect to the VM:

1. If you do not already have an account, please send an email that includes your full name, your ROOT-KLINIK username, and the project(s) you plan to work on to the VM admin (contact details are provided below).
2. Your user account will be created, and projects will be mounted to */mnt/nicshare/projectname*. If multiple users need access to the same project folder, please provide a list of users (Full Name, Usernames, Projectname). Each user will receive an email with login credentials for both VMs.
3. To connect to the VM via RDP from your PC, choose “Remotedesktopverbindung”. Type *k-nicdock-1* or *k-nicdock-2* in the field labeled “Computer”, and enter your username in “Benutzername”.



Usage:

Your data will be stored on a network drive (nicshare), which may create problems if you process it directly there, as multithreading is not always supported. A common

workaround is to first copy the data to your home directory (which is located on the host server). Please be aware that local disk space on the server is limited to 4 TB, so please avoid large (group) datasets (>100 GB) in your home directory and keep it as small as possible. You can check the current storage utilization by entering `df -h (/dev/mapper/ubuntu--vg-ubuntu--lv is the local disk space)`. It is recommended to familiarize yourself with the most important Linux commands before you start working on the VM (`cd`, `cp`, `mv`, `less`, etc.). All applications are launched from the command line (i.e., you must open a terminal to start an application). Below is a brief description of how to start the most critical applications on the VM.

- **ANTs**

- **Docker**

- docker is available on the VM
- In order to use docker, you must be added to the docker group by the VM admin.
- Only the VM admin is allowed to pull docker images. Unknown images will be deleted immediately. Please inform your VM admin about the docker image you need.
- Please only run docker with the `-u` argument otherwise your output will only be accessible with root permission. Please also use `--rm` to remove the container when it exits:

```
docker run -ti --rm -u $(id -u {USER}):id -g {USER})
```

- **Freesurfer**

- **FSL**

- To open the FSL GUI type: `fsl`

- **Matlab**

- To run Matlab R2021 type: `matlab2021`
- To run Matlab R2025 type: `matlab2025`
- Please store additional Toolboxes in your home directory

- **Python**

- When using Python it is highly recommended to work with project-specific virtual environments. Here is a common way to set up and activate a virtual environment using the python module `venv`:
 - `mkdir myproject` (`myproject` should be located in your home directory)
 - `cd myproject`
 - Create a virtual environment (`venv`)

```
python3 -m venv venv
```

It is important to use the latest version of python installed on the server, which is currently (July 8, 2024) python3.12

- A directory named `venv` will be created. To activate the virtual environment type: `source venv/bin/activate`
- Now every new package will be installed to the virtual environment directory `venv`, which also contains the python interpreter. To deactivate the virtual environment enter `deactivate`

- If Spyder is your preferred IDE, the easiest way to use it is to install spyder to a virtual environment. For this, type `pip install spyder` after activating the virtual environment. To launch spyder type `spyder`
- If you prefer VS code, simply type "code" in a terminal

- **R**

- To run R type: `R`
- R packages can be installed without root-privileges by the user (by default to `/home/USER/R`) or you may inform the VM admin to install the packages you need to the R system library. When there is a need for a project-specific R environment (comparable to virtual environments in python, see below) you may check out the `packrat` package

Common Problems and Solutions:

- If nothing happens when you start Google Chrome, try to kill all running google-chrome processes with "`pkill -f google-chrome`"

Contact details:

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System administrator:

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