

GNU/Linux Workstations

The standard Lorentz Institute workstation runs the [Fedora](#) GNU/Linux operating system. The workstations are configured with pre-installed scientific and non-scientific software to maximize your productivity. You are allowed to install and/or build packages locally (directories to which you have writing access), but for system-wide installations you must file a request through our [helpdesk](#) or via email at support@lorentz.leidenuniv.nl.

We perform upgrades of the operating system of all workstations once a year usually starting in December. This is crucial for both security and latest software availability.

Although the workstations might differ in their hardware specifications, they are set so that you can switch from one to the other flawlessly. For instance, the home directories are not local to a particular machine, but they are hosted on a remote server and served as network file system (NFS) to all workstations. One of the immediate advantages of this configuration is that you can access any files in your home directory no matter the workstation you are working on. On the other hand, having the home directories mounted over the network can result in problems if the home file system is not accessible, such as in the event of a network disruption.

Home disk

Mount Point	User Space	Redundancy	Notes
/home	/home/<username>	RAID, 12:00 PM Daily Snapshots with 7 day expiration	NFS, automounted, quota

Each user has an **allocated quota** on the home disk depending on their role within the Lorentz Institute. The standard quota is 4GB, nonetheless it is possible to request extra space. To check your home disk usage type `quota -s`. Use `du -h /home/<username> | sort -rh | head` to compile a list of the ten largest files in your home directory.

We advise you do not store large files in your home directory.

Home disk data availability

The Lorentz Institute home directories are hosted on a iSCSI array of disks arranged in a RAID configuration. Automatic snapshots (a sort of incremental backup) of the whole home disk are performed everyday at around 12:00 PM. Each snapshot has a 7-day expiration and as such the total number of snapshots stored on our system at any time is 7.

Data disks

Each workstation could have one or more local disks to offer large-data storage. The data disks of one workstation are also accessible from any other workstation

Mount Point	User Space	Redundancy	Notes
/data[1,...,n]	/data[1,...,n]	None or RAID. Backups are your responsibility	Local, no quota, mounted at boot
/net/<workstation-name>/data[1,...,n]	/net/<workstation-name>/data[1,...,n]	None or RAID*. Backups are your responsibility	NFS, no quota, automounted

In most cases, **but not always**, /data2 is configured as the mount point of a RAID[1|5] stack, meaning that data in it have a certain level of redundancy which can protect against disk failures. Note however, that storing all data on /data2 in RAID configuration will still not prevent data loss if all disks in the array `die', your computer tower gets destroyed by a fire or in any other disastrous event. **You are strongly encourage to keep your personal backup of any important data.**

To check if any of your workstation's disks are arranged in a RAID configuration type `cat /proc/mdstat`.

Note that in the table above <workstation-name> can either be a short workstation name or a full name including its domain with no difference. Disk mounting via the /net/<workstation-name> scheme is managed by autofs. This means that those disks will not be mounted until there is an attempt to access them, for instance by contents listing (ls) or change of working directory (cd).

The shell interpreter

The Lorentz workstations come with a set of pre-installed shell interpreters. Your login shell can be chosen upon registration of your Lorentz account (HL 409b) otherwise it will default to bash. In any case, it is possible to use a different shell interpreter at any time by just invoking it, e.g. `csh`.

If you want to change your default interpreter use `chsh` and follow the on-screen indications.

Access to other workstation disks

All data disks named `data1,...,datan` are network-shared among all the Lorentz Institute workstations. You can access /data1 on a machine called *bingo* via `/net/bingo/data1`. More generally, the pattern to access a data disk on a Lorentz machine is

```
/net/<workstation>/data<n>
```

Note that in the example above <workstation> can either be *bingo* or *bingo.lorentz.leidenuniv.nl* with no difference. TIP: The `mounting' of these network file systems is managed by autofs. This means that those disks will not be mounted until there is an attempt to access them, for instance by contents listing (ls) or change of working directory (cd).

Compilers and libraries

A variety of compilers and libraries are available on your workstation. Please refer to the following manual [pages](#) for more info.

Here we only give a summary of useful commands.

```
# shows which environment modules are available
module avail
# load module
module load <modulename>
# unload module
module unload <modulename>
```

NOTE: If [sfinx](#) was not installed under your account, you might see less modules on your workstation. In this case make a backup of your settings (for instance `.bashrc`, `.cshrc`, etc...) and install [sfinx](#).

Help

Should you need assistance operating your workstation, please do not hesitate to request help via our [helpdesk](#) application. You can also visit our offices in the Huygens Laboratory Room 409b at any time during working hours.

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