

# Cubbli Linux

The current version of Cubbli Linux is based mostly on Ubuntu 18.04. Cubbli Linux comes preconfigured to the University's environment, which means that accessing University's network services, like printers, file shares, virtual desktops, remote accessible Linux machines, High-performance computation (HPC) clusters and Virtual private networks (VPNs) should be easy.

If your own machine is using any other older Linux distribution, including older Cubbli Linux distributions, you should contact helpdesk to get an upgrade. In most situations the update can be done remotely and shouldn't take longer than 1-2 hours.

## News/Problems

- **Cubbli version 18** is now in production use. All features of old Cubbli are available. Interactive hosts **melkki**, **melkinkari** and **pangolin** have been upgraded to Cubbli 18.
- 2018-10-17: Thunderbird's Office 365 calendar plugin stopped working with Thunderbird version 62. We are working on a fix, but it isn't available yet.
- 2018-10-19: Stata version 15 is now available on Cubbli hosts. It is installed in **melkinkari** and **pangolin**.
- 2018-11-26: The Julia Programming Language has been packaged to Cubbli.
- 2018-12-03: SPSS version 25 has been packaged to Cubbli (package cubbli-spss). It uses University's licence server, so in order to use it you need to be in the University's network or use a VPN.
- 2018-12-18: NoMachine client 6.4.6 and Evolution email client with EWS (Office 365 calendar) support has been installed
- 2019-02-05: Rstudio has been updated to version 1.1.463. Heroku version 7.20 is now installed.
- 2019-02-11: qgis Open Source Geographic Information System has been updated to version 3.4.4.
- 2019-03-06: 2019-03-06 - NVidia GPU driver 418.39 and cuda release 10.1 are installed.
- 2019-03-06: Nextcloud client 2.5.1 is now part of default installation.
- 2019-03-11: The NVIDIA CUDA® Deep Neural Network library version 7.5.0 is now installed by default on Cubbli hosts with NVidia GPU. Remember to read the license before using it. <https://developer.nvidia.com/cudnn>
- 2019-03-28: VMWare Horizon VDI Client has been updated to version 5.0.0.
- 2019-04-29: Matlab is being upgraded to version 2019a. The upgrade will only be installed automatically over wired network (the upgrade is huge).
- 2019-04-30: Atom editor has been updated to version 1.36.1.
- 2019-05-10: Zotero 5.0.66 is now part of default installation.
- 2019-05-03: Old non-maintained and non-working Eclipse has been removed from Cubbli installations. You can download and install eclipse from <https://www.eclipse.org/downloads/>. Administrator rights aren't required for installation: it will install Eclipse to your home directory by default.
- 2019-09-24: Windows 10 virtual machine installations for Cubbli are now available. See [Windows 10 virtual machines in Cubbli](#).
- 2019-10-02: Zoom video conferencing and Eclipse IDE have been added to the default installation.
- 2019-11-05: Seaborn and Descartes python3 libraries have been added to the default installation.
- 2019-12-11: RStudio has been upgraded to version 1.2.5019
- 2019-12-11: Matlab has been upgraded to version R2019b in hosts that have been connected to wired network. Old Matlab R2019a will also be removed when not in use.
- 2020-01-14: R has been upgraded to version 3.6.2 and RStudio to version 1.2.5033.
- 2020-01-14: Nextcloud client has been updated to version 2.6.1
- 2020-01-14: ida2 command line tools for <https://www.fairdata.fi/en/> have been installed.

## Different Cubbli Linux flavors

- Classroom installations use shared network home directories. They are mostly located in publicly accessible spaces where there are multiple potential users, like classrooms and lecture halls.
- Remotely accessible VDI (Virtual Desktop Infrastructure) hosts share network home directories and default to Mate desktop environment, since 3D hardware accelerated graphics is not available in our current VDI environment.
- Workstation installations have local home directories, but network file shares are available by default. These are mostly staff's personal computers and can have multiple hard drives (a fast SSD drive and a slower but larger spinning hard drive) and sometimes GPUs for scientific computation.
- Personal laptop installations don't have network home directories available (mounted) by default. These include staff's laptops, but also freshment (fuksi) laptops.
- Remotely accessible with ssh (or mosh) interactive multi user Cubbli hosts, which use shared network home directories. Currently these are **melki.npaasi.cs.helsinki.fi**, **melkinkari.cs.helsinki.fi**, **melkki.cs.helsinki.fi** and **pangolin.it.helsinki.fi**. These hosts can also be used as a gateway host to other Linux hosts which provide ssh access, but are not visible outside University's firewall. They also listen for ssh connections in tcp port 443 to circumvent 3rd party firewalls.

## Home Directories

In a perfect world users would have only one home directory. However, we aren't living in a perfect world:

- Laptop and workstation Cubbli Linuxes use local home directories with a home directory path `/home/local/user` or sometimes just `/home/user`. **By default no backups are made of local home directories**, since we don't have enough shared disk space (or network capacity) to maintain them.
- Classroom, interactive and VDI Cubbli Linuxes use shared NFS **lxhome** directory with path `/home/ad/lxhome/u/user/Linux`. This home directory has a default quota of 50 gigabytes, but it is regularly backed up and you can access snapshots of older versions of files from a hidden `.snapshot` sub directory.
- Computer Science department CS home directory `/home/fs/user` is available to Computer Science department's staff and students. It has a much larger quota than the default **lxhome** directory. You can use the command line tool `cubbli-home-dir` to change your default Cubbli home directory to CS home directory instead of lxhome.

- Z-drive is the default IT department home directory for Windows hosts and is available for Linux users too. It is available from path `/home/ad/home/u/user`. If you are using classroom, VDI or interactive Linux, then `Desktop`, `Download` and `Documents` subdirectories in `lxhome` are symlinks pointing to your Z-drive to enable easy document and space sharing with Windows installations.
- Physics department's home, group and scratch directories are available from path `/home/phys-data/`
- If you had a home directory in the old and now defunct Unix servers (Kruuna, Klaava, Myntti, Cedi), the home directory is now available from path: `/home/ad/lxhome/u/user/HY-Unix`

## Group Directories

- University's P-drive group directories are available from path `/home/ad/dfs/group` in workstations and classroom installations. Laptop users can use command `mount /home/ad/dfs/group` command to mount it when they are inside University's network. Outside University's network you can use Pangolin and sftp with path `sftp://pangolin.it.helsinki.fi/home/ad/dfs/group` .
- Computer Science Department's group directories are available from path `/home/group/` in workstations and classroom installations. In laptop installations you can mount the group directory with command `mount /cs/group` but remember to unmount it before suspending the laptop or moving outside University's network (NFS is likely to crash the Linux hosts if NFS server gets lost).

## Desktop

The desktop environments available by default include:

- Cinnamon
- Mate
- Unity
- Gnome
- KDE
- XFCE

And also some windows managers which aren't available directly from the login screen.

Dropbox, Google Chrome, Skype (MS beta package), Spotify local client and Open Broadcast Streaming (<https://obsproject.com/>) are available by default.

## Programming

We try to have all open source and freely available Linux programming languages and programming environments installed by default (this is why default Cubbli installation needs about 50G of disk space). The programming languages include GNU C, C++, Perl, Python, OpenJDK, Oracle JDK, Haskell. Unlike in University's Windows environments, you are free to compile, install and run your own software (from your home directory). Nodejs, heroku and npm are installed.

If we have missed some useful programming languages, environments or utilities, please contact [helpdesk@helsinki.fi](mailto:helpdesk@helsinki.fi) so that we know that it should be installed.

NVidia CUDA drivers and programming environment with the NVIDIA CUDA® Deep Neural Network library is installed by default in Cubbli Linux hosts which have the required NVidia GPU (including VDI GPU hosts).

## Scientific Software

Cubbli includes lots of software intended for scientific usage, including some commercially licensed software using University's licenses (this list is not complete).

- R project for statistic computing version: <https://www.r-project.org/>
- RStudio Desktop open source version.
- GNU Octave Scientific Programming Language <https://www.gnu.org/software/octave/>
- Julia 1.0.2, [high-level](#), [high-performance dynamic programming language for numerical computing](#)
- Matlab version 2019b.
- IDL [Interactive Data Language](#) version 8.7.0
- SPSS version 25.
- Qgis Open Source Geographic Information System 3.4.4.
- NoMachine Enterprise client version 6.4.6.

Some software packages are too large to be installed in the default installation, but are however packaged and configured to work with Cubbli Linux. These include:

- FreeSurfer 6.0 open source software suite for processing and analyzing (human) brain MRI images. <https://surfer.nmr.mgh.harvard.edu/>
- Mathematica
- SPSS
- VMD Visual Molecular Dynamics 1.9.3: <http://www.ks.uiuc.edu/Research/vmd/>

Cubbli Linux is maintained by IT Center's IT for Science group.