



CVMFS server is operating in **TEST** mode. You are encouraged to use it and provide feedbacks, comments and requests.

# CVMFS client for LUIS cluster software repository

The article describes how to setup the CVMFS([CERN Virtual Machine File System](#)) client for LUIS HPC cluster software repository. CVMFS is a distributed *read-only* POSIX file system in user space(FUSE) based on HTTP protocol. Files and file meta-data are cached and downloaded on demand. CVMFS was originally developed for the LHC experiments at CERN to deploy software on a globally distributed computing infrastructure, replacing the software package management at local sites.

**Please note** that when installing CVMFS, only the software already available on the LUIS HPC cluster is provided. Service requests outside the HPC Cluster to install new software and/or update existing software will not be accepted at this time.

## CVMFS requirements

To access the cluster software stack using the CVMFS client, on an individual system(laptop, desktop or a single compute node) you will need:

- Outbound HTTP access (direct or via your local proxy server) to the Leibniz University network
- Linux operating system with a Kernel 2.6.32 or newer
- x86-64 compatible CPU supporting at least one of AVX, AVX2 or AVX512 instruction sets
- Approximately 50 GB of available local storage, for the cache

If many CVMFS clients are deployed, for example in a cluster, it is recommended that in addition you deploy forward caching HTTP proxy servers (such as Squid).

## Install CVMFS client, autofs and Lmod

Execute commands below as system(root) user

### RedHat/CentOS

```
[root@server ~]# yum install  
https://ecsft.cern.ch/dist/cvmfs/cvmfs-release/cvmfs-release-latest.noarch.r  
pm  
[root@server ~]# yum install  
https://docs.cluster.uni-hannover.de/files/cvmfs-config-luiscluster-1.0-1.no
```

arch.rpm

## Fedora

Download and install the CVMFS client RPM for your Fedora release from  
<https://cernvm.cern.ch/portal/filesystem/downloads>

```
[root@server ~]# yum install
https://docs.cluster.uni-hannover.de/files/cvmfs-config-luiscluster-1.0-1.no
arch.rpm
```

## Debian/Ubuntu (newer than 16.04)

```
[root@server ~]# cd /tmp
[root@server ~]# wget
https://ecsft.cern.ch/dist/cvmfs/cvmfs-release/cvmfs-release-latest_all.deb
[root@server ~]# dpkg -i cvmfs-release-latest_all.deb
[root@server ~]# apt update
[root@server ~]# wget
https://docs.cluster.uni-hannover.de/files/cvmfs-config-luiscluster_1.0-1_all.deb
[root@server ~]# apt install -f ./cvmfs-config-luiscluster_1.0-1_all.deb
```

**Note concerning AutoFS:** make sure the autofs config file /etc/auto.master contains the option +dir:/etc/auto.master.d

## CVMFS repository configuration

Execute commands below as system(root) user.

Apply the initial client setup:

```
[root@server ~]# cvmfs_config setup
```

Create the file /etc/cvmfs/default.local and add the lines below:

```
CVMFS_REPOSITORIES="cvmfs-config.cluster.uni-hannover.de,sw.cluster.uni-
hannover.de"
CVMFS_CACHE_BASE=/var/lib/cvmfs
CVMFS_QUOTA_LIMIT=5000
CVMFS_HTTP_PROXY=http://your_proxy_server:port
```

- CVMFS\_REPOSITORIES is a comma-separated list of the repositories to use (**order is important**).
- CVMFS\_QUOTA\_LIMIT is the amount of local cache space under CVMFS\_CACHE\_BASE in MB for CVMFS to use. Set it to about 15% less than the size of your local cache filesystem.
- If you have many CVMFS clients at your site, it is recommended that you deploy forward caching HTTP proxy servers (such as Squid) and specify them with CVMFS\_HTTP\_PROXY. See [the documentation](#) about this parameter.

Validate the configuration:

```
[root@server ]# systemctl restart autofs  
[root@server ]# cvmfs_config chksetup
```

Make sure to address any warnings or errors that are reported

## Test your setup

Execute commands below as normal user.

Check that the repositories are OK:

```
[user@server ]$ cvmfs_config probe
```

In case of problems, this [debugging guide](#) may help.

To list available software, first activate LUIS cluster software environment in your session

```
[user@server ]$ source /sw-eb/apps/activate.sh
```

.. and then execute the command:

```
[user@server ]$ module avail  
  
____ Core software: compilers, toolchains ____-  
Eigen/3.3.7                                  iccifort/2020.1.217  
(D)  
GCC/8.3.0                                  ifort/2018.3.222-GCC-7.3.0-2.30  
GCC/9.3.0                                  (D)  ifort/2019.3.199-GCC-8.3.0-2.32  
(D)  
foss/2019b                                  (D)  iimpi/2018b  
foss/2020a                                  iimpi/2019b  
(D)  
gompi/2019b                                  iimpi/2020a  
gompi/2020a                                  (D)  intel/2018b  
icc/2018.3.222-GCC-7.3.0-2.30            intel/2019b  
(D)  
icc/2019.3.199-GCC-8.3.0-2.32          (D)  intel/2020a  
iccifort/2018.3.222-GCC-7.3.0-2.30      lmod  
iccifort/2019.5.281                        settarg  
  
____ AIS: Architecture Independent Software ____-  
ABAQUS/2019-hotfix-1939                  Gaussian/g09.E01  
Mathematica/12.1.1  
ABAQUS/2020                                  (D)  Gaussian/g16.B01                  (D)  
Miniconda2/4.7.10  
ANSYS/2019.3                                Gurobi/9.0.1
```

VTune/2019\_update3

ANSYS/2020.2	(D)	Inspector/2019_update3	ipp/2019.3.199
ANSYSEM/20.2		Java/1.8.0_92	itac/2019.3.032
Advisor/2019_update3		MATLAB/2019b	tbb/2019.2.187
COMSOL/5.5		MATLAB/2020b	(D)
GaussView/6.0.16		Maple/2020.1	

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