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LHCb software installation

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LHCb software installation

This page describes the steps needed to make a standalone LHCb software installation on a local or shared filesystem.

The recommended way to access LHCb software is however to mount the CernVM-FS filesystem, please refer to:

- The CVMFS client installation page: https://cernvm.cern.ch/portal/filesystem/quickstart
- the excellent CernVM-FS deployment page maintained by the UK GridPP.

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Supported software platforms

These instructions are intended for software managers installing the LHCb software at LHCb institutes on officially supported platforms.

See also these user recipes for hints on installing on non-supported platforms.

If you find problems with these instructions, or with the install_project.py script, please report them to the install_project category of the LBCORE Jira tracker.

Installation procedure

The following instructions assume you are using a sh-like shell. For bash like shells just replace command like `export XXX=YYYY` with `setenv XXX YYY` and use the script `LbLogin.csh` instead of `LbLogin.sh`.

You should first decide where to install the software and set MYSITEROOT to the full path:

- `export MYSITEROOT someDirectory`
- Install the `lbinstall` python module using pip and for example in a virtual environment:
  
  ```
  virtualenv install
  source install/bin/activate
  pip install lbinstall
  ```

- Install the LHCb base packages:
  ```
  lbinstall --root=$TMPDIR/myroot install LBSCRIPTS CMT COMPAT
  ```

- Install the packages requested. e.g. slc6/gcc62 packages for DaVinci v42r1:
  ```
  lbinstall --root=$TMPDIR/myroot install DAVINCI_v42r1_x86_64_slc6_gcc62_opt
  ```

For more information about the `lbinstall` tool: https://gitlab.cern.ch/lhcb-core/lbinstall

Installation procedure for historical stacks (pre-2014)

The installation is made of several steps. The order is very important and none of them can be skipped. Make sure that the step is correctly finished before to go to the next.
The following instructions assume you are using a csh-like shell. For bash like shells just replace command like `setenv XXX YYY` with `export XXX=YYYY` and use the script `LbLogin.sh` instead of `LbLogin.csh`.

You should first decide where to install the software and set `MYSITEROOT` to the full path (no softlink):

- `setenv MYSITEROOT someDirectory`
- `cd $MYSITEROOT`
- The python script will install
  - CMT and OpenScientist below $MYSITEROOT/contrib
  - LCG and externals below $MYSITEROOT/lcg/external and $MYSITEROOT/lcg/app/releases
  - scripts below $MYSITEROOT/scripts
  - LHCb software below $MYSITEROOT/lhcb

You should set the following environment variable:

- `setenv CMTCONFIG x86_64-slc5-gcc43-opt` : your binary directory name (if you can choose one of the CMTCONFIGs defined for the supported platforms you can then use the option to download the lcg software binaries)

Download the python scripts `install_project.py`

```
wget http://lhcbproject.web.cern.ch/lhcbproject/dist/install_project.py
python install_project.py -h
```

This will print the `install_project.py` help text, also shown here.

**Examples of using `install_project.py` to install DaVinci including binary code**

```bash
setenv MYSITEROOT /scratch/Install
cd $MYSITEROOT
setenv CMTCONFIG x86_64-slc5-gcc43-opt
python install_project.py -b DaVinci v20r3
```

will install all required projects by DaVinci v20r3 for the x86_64-slc5-gcc43-opt binary platform.

The `-b` option means the pre-compiled binaries are also included and the program should have all of the requirement to run immediately.

**Running DaVinci after downloading using the released version**

To use your locally installed copy of DaVinci:

```bash
setenv MYSITEROOT /scratch/Install
setenv CMTCONFIG x86_64-slc5-gcc43-opt
source $MYSITEROOT/LbLogin.csh ! this is essential to set all <project>_release_area environment
```

Then use `lb-run`, see `SoftwareEnvTools#Runtime`

To save a few lines of typing you can place the first three lines in a local script and source that instead. These need to be executed, one way or another, for each new terminal you start.

The example above is for csh like shells. For bash just use

```bash
export MYSITEROOT=/scratch/Install
```

**Installation procedure for historical stacks (pre-2014)**
export CMTCONFIG=x86_64-slc5-gcc43-opt
source $MYSITEROOT/LbLogin.sh ! this is essential to set all <project>_release_area environment variables

Similarly for the examples below.

**Accessing specific packages**

You should use Git. See Git4LHCb

**Running DaVinci after downloading using a private version**

```bash
setenv MYSTEROOT /scratch/Install
setenv CMTCONFIG x86_64-slc5-gcc43-opt
setenv User_release_area $HOME/cmtuser
source $MYSTEROOT/LbLogin.csh ! this is essential to set all <project>_release_area environment variables
```

Then use `lb-dev`, see SoftwareEnvTools#Development

You can also add any other package to DaVinci at the getpack step. See the LHCbSoftwareTutorials for examples of adding packages to DaVinci.

**Special Case for**

Read the instructions here

**Documentation**

- The LHCb Software distribution *(Hubert Degaudenzi)* Computing in High Energy and Nuclear Physics (CHEP 2009) Prague, Czech Republic, March 21-27, 2009 (abstract [1], poster [2]).

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