

Version v02-07-MC

Last update: 04 Nov 2021

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Operating system

Start from a CentOS8 machine (tested on CentOS Linux release **8.4.2105**)

```
sudo yum -y install epel-release yum-utils wget git
```

```
sudo yum-config-manager --set-enabled powertools
```

```
sudo yum-config-manager --set-enabled appstream
```

New INFN CA

```
sudo wget -O /etc/yum.repos.d/EGI-trustanchors.repo http://repository.egi.eu/sw/production/cas/1/current/repo-files/EGI-trustanchors.repo
```

```
sudo yum -y install ca-policy-egi-core
```

```
sudo ln -s /etc/grid-security/certificates/USERTrustRSACertificationAuthority.pem /etc/pki/ca-trust/source/anchors/
```

```
sudo ln -s /etc/grid-security/certificates/GEANTeScienceSSLCA4.pem /etc/pki/ca-trust/source/anchors/
```

```
sudo wget -O /etc/pki/ca-trust/source/anchors/GEANT-OV-RSA-CA-4.pem https://pandora.infn.it/public/483fb5/dl/GEANT-OV-RSA-CA-4.pem
```

```
sudo update-ca-trust extract
```

Setting yum repositories

```
sudo wget -O /etc/yum.repos.d/mc-extras.repo https://nexus.pd.infn.it/artifacts/repository/repo-files/mc-extras.repo
```

```
sudo wget -O /etc/yum.repos.d/acts.repo https://portal.nersc.gov/cfs/atlas/kkrizka/repos/acts/acts.repo
```

Some useful packages.. and some extras

```
sudo yum -y install binutils-devel boost173-devel bzip2 chrpath cmake doxygen eigen3-devel emacs eog expat-devel freeglut-devel gcc gcc-c++ gedit giflib-devel glibc glibc-common glibc-devel glibc-headers glibc-static glibc-utils graphviz http libjpeg-turbo-devel libpng-devel libquadmath-devel libSM-devel libstdc++-devel libtiff-devel libX11-devel libXext-devel libXft-devel libXmu-devel libXpm-devel make mesa-dri-drivers mlocate mysql mysql-devel openmotif-devel patch python2 python3-devel rsync screen sshpass subversion tbb-devel texlive texlive-multirow texlive-sectsty texlive-tocloft texlive-xtab valgrind vim-enhanced xorg-x11-xauth xrootd-devel zip zlib-devel
```

Framework

Install geant4 and others dependencies:

```
sudo yum -y install clhep-devel eigen3-devel geant4 geant4-devel gsl-devel HepMC3-devel  
sudo geant4-dataset-download
```

Install ROOT



Due to a [bug](#) on the released rpm packages as temporary solution install ROOT from this repository:

```
sudo wget -O /etc/yum.repos.d/root.repo https://nexus.pd.infn.it/artifacts/repository/repo-files/root-cl7.  
repo
```

```
sudo yum -y install root root-gdml root-genvector root-geom root-graf3d-eve root-graf3d-eve7 root-gui-browserv7  
root-minuit2 root-smatrix root-tmva root-tpython root-unuran python3-root root-gui-fitpanel root-roofit root-  
roofit-more root-tmva-gui
```



Check if it installs the version: **6.22.06-1**

Workarounds

```
sudo alternatives --set python /usr/bin/python3  
sudo sed -i 's|include_next|include|g' /usr/include/c++/8/cstdlib  
sudo sed -i 's|include_next|include|g' /usr/include/c++/8/bits/std_abs.h  
sudo sed -i 's|include_next|include|g' /usr/include/c++/8/cmath
```

```
sudo wget -O /usr/include/c++/8/x86_64-redhat-linux/bits/c++config.h https://raw.githubusercontent.com  
/MuonColliderSoft/MuonCollider-docker/v.1.5/CentOS8/c%2B%2Bconfig.h
```

```
sudo wget -O /usr/include/c++/8/x86_64-redhat-linux/32/bits/c++config.h https://raw.githubusercontent.com  
/MuonColliderSoft/MuonCollider-docker/v.1.5/CentOS8/c%2B%2Bconfig_32.h
```

Installation

Build setup

If you decide to follow these instructions and to install under /opt you need superuser privileges

```
sudo su -
```

Move to installation directory

```
cd /opt  
git clone https://github.com/MuonColliderSoft/MuonCutil.git  
cd /opt/MuonCutil && git checkout v02-07-MC  
cd /opt  
git clone https://github.com/MuonColliderSoft/iLCInstall.git  
cd /opt/iLCInstall && git checkout v02-03-01-MC
```

Copy the last configuration files

```
cd /opt/iLCInstall/
```

```
mkdir releases/development
cp /opt/MuonCutil/releases/development/* releases/development
```

Software installation

```
./ilcsoft-install releases/development/release-base.cfg --install-prefix=/opt/ilcsoft -v -i
./ilcsoft-install releases/development/release-ilcsoft.cfg --install-prefix=/opt/ilcsoft -v -i
```

Install the last geometry

For the MuonCollider we update the detector's geometry

```
cd /opt/ilcsoft/muonc
git clone https://github.com/MuonColliderSoft/detector-simulation.git
cd /opt/ilcsoft/muonc/detector-simulation && git checkout v01-02-MC
```

Post installation

Change ced2go to force to use python2

```
sed -i 's|/bin/env python|/usr/bin/env python2|g' /opt/ilcsoft/muonc/CEDViewer/v01-18/bin/ced2go
```

Define the init file for profile

```
wget -O /etc/profile.d/ilcsoft.sh https://raw.githubusercontent.com/MuonColliderSoft/MuonCollider-docker/v.1.5/CentOS8/profile.d_ilcsoft.sh
```

Install via rpms – experimental --

This is a working in progress method to install the software, alternative to the [manual installation procedure](#), use at your own risk.

BTW With this installation you need to modify the geometry's path in the configuration file: `/usr/share/muonc-detector-geometry/MuColl_v1/MuColl_v1.xml`, also for ACTs the geometry and the material description files are in the `/usr/share/ACTSTracking/data/` directory.

Setting yum repository

```
sudo wget -O /etc/yum.repos.d/muoncollider.repo https://cld-smact-02.pd.infn.it/artifacts/repository/repo-files/muoncollidersoft.repo
```

Install the required packages

```
sudo yum -y install python3-dd4hep muonc-detector-geometry ilc-marlin-dd4hep ilc-marlin-fastjet ilc-marlin-kinfit-processors ilc-overlay ilc-lcfi-plus ilc-conformal-tracking ilc-marlin-reco ilc-forward-tracking ilc-marlin-trk-processors ilc-ced-viewer ilc-ddmarlin-pandora ilc-lctuple ilc-clic-performance ilc-acts-tracking
sudo geant4-dataset-download
```

Test

To check your installation you can use the following simple tests. You need again the utils repository, so login as user and clone it again:

```
git clone https://github.com/MuonColliderSoft/MuonCutil.git
cd MuonCutil/SoftCheck/
```

Simulation

```
ddsim --compactFile /opt/ilcsoft/muonc/detector-simulation/geometries/MuColl_v1/MuColl_v1.xml --steeringFile sim_steer.py > sim.out
```

Reconstruction

```
Marlin --InitDD4hep_mod4.DD4hepXMLFile=/opt/ilcsoft/muonc/detector-simulation/geometries/MuColl_v1/MuColl_v1.xml  
reco_steer.xml > reco.out
```

Event display

```
ced2go -d /opt/ilcsoft/muonc/detector-simulation/geometries/MuColl_v1/MuColl_v1.xml Output_REC.slcio
```