

# XrootD (extended ROOT daemon)

To use the XrootD protocol a voms-proxy is needed.

```
-bash-4.2$ voms-proxy-init --voms ams02.cern.ch
Enter GRID pass phrase for this identity:
Contacting voms-02.pd.infn.it:15008 [/DC=org/DC=terena/DC=tcs/C=IT/L=Frascati/O=Istituto Nazionale di Fisica
Nucleare/CN=voms-02.pd.infn.it] "ams02.cern.ch"...
Remote VOMS server contacted succesfully.

Created proxy in /tmp/x509up_u25071.

Your proxy is valid until Tue Sep 08 23:12:00 CEST 2020
-bash-4.2$ voms-proxy-info --all
subject : /DC=org/DC=terena/DC=tcs/C=IT/O=Istituto Nazionale di Fisica Nucleare/CN=Andrea Rendina arendina@infn.
it/CN=451777284
issuer : /DC=org/DC=terena/DC=tcs/C=IT/O=Istituto Nazionale di Fisica Nucleare/CN=Andrea Rendina arendina@infn.
it
identity : /DC=org/DC=terena/DC=tcs/C=IT/O=Istituto Nazionale di Fisica Nucleare/CN=Andrea Rendina
arendina@infn.it
type : RFC3820 compliant impersonation proxy
strength : 1024
path : /tmp/x509up_u25071
timeleft : 11:59:48
key usage : Digital Signature, Key Encipherment
=== VO ams02.cern.ch extension information ===
VO : ams02.cern.ch
subject : /DC=org/DC=terena/DC=tcs/C=IT/O=Istituto Nazionale di Fisica Nucleare/CN=Andrea Rendina arendina@infn.
it
issuer : /DC=org/DC=terena/DC=tcs/C=IT/L=Frascati/O=Istituto Nazionale di Fisica Nucleare/CN=voms-02.pd.infn.it
attribute : /ams02.cern.ch/Role=NULL/Capability=NULL
timeleft : 11:59:48
uri : voms-02.pd.infn.it:15008
```

Some VOs make use of dedicated xrootd endpoints which alias are in the public web page [https://www.cnaf.infn.it/~usersupport/XrootD\\_SA.html](https://www.cnaf.infn.it/~usersupport/XrootD_SA.html). In this case the user can contact directly the server or otherwise a redirector. Also, the starting part of the file system path, named *local root*, should be known. For instance, the server for the AMS experiment can be contacted at the 8082 port whereas 8083 is the port to contact the redirector. The local root is `/storage/gpfs_ams/xrootd`.

Let's see some examples of the xrd clients.

- **Listing directory**

```
-bash-4.2$ xrdls root://xrootd-ams.cr.cnaf.infn.it:8082// ls /

/eos
/storage
/test
/test_1906
/test_1906_2
/test_1906_3
/test_2105
/test_2105_2
/test_etc_0205
-bash-4.2$ xrdls root://xrootd-ams.cr.cnaf.infn.it:8082// ls /eos/ams
/eos/ams/Data
/eos/ams/MC
/eos/ams/cnaf-groups
/eos/ams/cnaf-users
```

- **Download**

```
-bash-4.2$ xrdcp root://xrootd-ams.cr.cnaf.infn.it:8082//test_1906 copia_locale
[654.6kB/654.6kB][100%][=====][654.6kB/s]
```

- **Upload**

```
-bash-4.2$ xrdcp copia_locale root://xrootd-ams.cr.cnaf.infn.it:8082//test_0809  
[654.6kB/654.6kB][100%][=====][654.6kB/s]
```

- **Removing a file**

```
-bash-4.2$ xrdfs root://xrootd-ams.cr.cnaf.infn.it:8083// rm /test_0809
```