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Castor

CASTOR is the acronym for CERN Advanced STORAge manager, a data storage system used at CERN, more on cern.ch/castor

Documentation

- CMS documentation for working with CASTOR
- TOTEM software howto
- CASTOR quick tutorial for beginners
- CASTOR documentation on project webpage
- CASTOR2 getting started

Useful commands

- rfcv
- xrvcv
- nsls [-l]
- nsmkdir
- nsrm
- nsgetacl , nssetacl
- stager_qry
- stager_get

Recursive copy

- `/afs/cern.ch/exp/totem/soft/bin/rfcv_r`

Sample usage:

```
> /afs/cern.ch/exp/totem/soft/bin/rfcv_r
Usage: ./rfcv_r [from_dir] <to_dir>
> /afs/cern.ch/exp/totem/soft/bin/rfcv_r /castor/cern.ch/user/l/lgrzanka /tmp
```

This script is stored in SVN repository:

`trunk/offline/cmssw/tools/config_splitter/workspace/input/templates/rfcv_r`

CASTOR1 vs CASTOR2

By default all commands are executed by CASTOR1 (old and deprecated). In order to use CASTOR2 one need to set some variables. In bash:

```
export RFIO_USE_CASTOR_V2=YES
export STAGE_HOST=castorpublic
export STAGE_SVCLASS=default
```

Copying single files

Remember to set proper variables for CASTOR2. You can use now rfcv command to copy file:

```
rfcv /castor/cern.ch/totem/.../somefile.root /home/user/workspace
```

Or new XROOT protocol (might be faster, no need to setup variables for CASTOR2):

```
xrdcp root://castorpublic//castor/cern.ch/totem/.../somedir/somefile.root /home/user/workspace/ -
xrdcp /home/user/workspace/somefile.root root://castorpublic//castor/cern.ch/totem/.../somedir/ -
```

If some of these commands hangs - read next section of this page.

Long waiting time with rfcpl

To check status of file, use `stager_qry` command:

```
stager_qry -M /castor/cern.ch/totem/.../somefile.root
```

In most cases, as a result you can get one of the following answers:

- STAGED
- STAGEIN
- Error 2/No such file

STAGED means that means "file on disk matrix (fast access)", so you should obtain it quickly with `rfcp` command.

```
Received 1 responses
/castor/cern.ch/totem/.../somefile.root
312327210@castorns STAGED
```

STAGEIN means that "file is on a tape" and need to be transferred to the disk matrix, which takes some time. You need to wait for the result of `rfcp` command.

```
Received 1 responses
/castor/cern.ch/totem/.../somefile.root
386766073@castorns STAGEIN
```

"Error 2/No such file" also means that "file is on a tape" and need to be transferred to the disk matrix, which takes some time. You need to wait for the result of `rfcp` command.

```
Error 2/No such file or directory (File /castor/cern.ch/totem/.../somefile.root not on this servi
```

This error is very similar to the one that you obtain when asking about not existing file. In such case (file really missing) you will see:

```
Error 2/No such file or directory (Filename /castor/cern.ch/totem/.../somefile.root)
```

You can check if file is existing with `nsls` command.

In second and third case you can ask `stager` directly to move files to the "disk matrix" by issuing following command:

```
stager_get -S default -M /castor/cern.ch/totem/.../somefile.root
```

More on this topic - read this [?](#)

Reporting errors

Switch on debugging for `rfcp` (bash/zsh):

```
export RFIO_TRACE=3
export STAGER_TRACE=3
```

or for tcsh/csh

```
setenv RFIO_TRACE 3
setenv STAGER_TRACE 3
```

To switch debugging for xrddcp, use `-d` switch (i.e. `-d 1`, `-d 2`, `-d 3`)

Resources

Global for TOTEM

- `/castor/cern.ch/totem/offline/` for simulation data and reconstructed data
- `/castor/cern.ch/totem/rawdata/` for real data (testbeams,...)
- `/castor/cern.ch/totem/LHCRawData/` for real data (calibration, physics - LHC)

See more here

Personal

- similar to AFS home directory, for example `/castor/cern.ch/user/l/lgrzanka`

Permissions

To set permission we use `nssetacl`, to get them `nsgetacl`.

Checking permissions

```
[lplusplus22] ~ > nsgetacl /castor/cern.ch/totem/offline/tmp
# file: /castor/cern.ch/totem/offline/tmp
# owner: totemcdr
# group: zj
user::rwx
user:lgrzanka:rwx          #effective:rwx
user:hniewiad:rwx        #effective:rwx
group::r-x                #effective:r-x
mask::rwx
other::r-x
```

Removing permissions

Remove ACL entry:

```
nssetacl -d u:jkaspar:rwx /castor/cern.ch/totem/offline
```

Changing permissions

Modify default ACLs to 775 (will be propagated).

```
nssetacl -m u::7,g::7,o::5 /castor/cern.ch/totem/offline/test
nssetacl -m d:u::7,d:g::7,d:o::5 /castor/cern.ch/totem/offline/test
```

For every directory (or file) created under `/castor/cern.ch/totem/offline/test` owner will be set up to the person who created it, but permissions of all directories will be set to 775. This way everybody in zj group will be able to write to any of subdirectories (whoever will create it).

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Let us do the same as above, but not for group zj, but for list of users.

```
nssetacl -m d:u::7,d:g::5,d:o::5 /castor/cern.ch/totem/offline/test
nssetacl -m u::7,g::5,o::5 /castor/cern.ch/totem/offline/test
nssetacl -m default:group:zj:rx,default:other:-,default:mask:rwx /castor/cern.ch/totem/offline/test
nssetacl -m default:user:lgrzanka:rwx,default:mask:rwx /castor/cern.ch/totem/offline/test
nssetacl -m user:lgrzanka:rwx,mask:rwx /castor/cern.ch/totem/offline/test
nssetacl -m d:u:hniwiad:7,d:m:7 /castor/cern.ch/totem/offline/test
nssetacl -m u:hniwiad:7,m:7 /castor/cern.ch/totem/offline/test
```

For every directory (or file) created under `/castor/cern.ch/totem/offline/test` owner will be set up to the person who created it, but permissions of all directories will be set to **755**. This way everybody in zj group will be able **just to read** from any of subdirectories (whoever will create it). Only users from the list can write to subdirectories.

The result is:

```
bash-3.00$ nsgetacl /castor/cern.ch/totem/offline
# file: /castor/cern.ch/totem/offline
# owner: totemcdr
# group: zj
user::rwx
user:jkaspar:rwx          #effective:rwx
user:glatino:rwx         #effective:rwx
user:bruecken:rwx       #effective:rwx
user:lgrzanka:rwx       #effective:rwx
user:brucken:rwx        #effective:rwx
user:fabferro:rwx       #effective:rwx
user:fgarciaf:rwx       #effective:rwx
user:hniwiad:rwx        #effective:rwx
group::r-x              #effective:r-x
mask::rwx
other::---
default:user::rwx
default:user:jkaspar:rwx
default:user:glatino:rwx
default:user:bruecken:rwx
default:user:lgrzanka:rwx
default:user:brucken:rwx
default:user:fabferro:rwx
default:user:fgarciaf:rwx
default:user:hniwiad:rwx
default:group::r-x
default:group:zj:r-x
default:mask::rwx
default:other::---
```

If after some time, new user needs to be added to the list, then we shall add him permissions to write to existing files. Following command will work only with bash.

```
nsfind /castor/cern.ch/totem/offline/test -type f > filelist.txt
cat filelist.txt | xargs nssetacl -m u:jkaspar:rw,m:rw
nsfind /castor/cern.ch/totem/offline/test -type d > dirlist.txt
cat dirlist.txt | xargs nssetacl -m d:u:jkaspar:rwx,d:m:rwx
cat dirlist.txt | xargs nssetacl -m u:jkaspar:rwx,m:rwx
```

Changing ownership

If recursive method for applying access rights was applied as it is described above, it might happen that newly created directories might have different owner as their parent directories. To change it one may use recursive version of `nschown` command, i.e.:

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```
nschown -R totemcdr /castor/cern.ch/totem/offline/test
```

IMPORTANT: such command might disable effective access rights (bug in CASTOR?). To bring them back, read from output of `nsgetacl` commands who has for example read access and grant again such access for one user. This will make effective access rights correct, i.e.:

```
nsfind /castor/cern.ch/totem/offline/test -type d > dirlist.txt
cat dirlist.txt | xargs nssetacl -m d:u:jkaspar:rx,d:m:rx
cat dirlist.txt | xargs nssetacl -m u:jkaspar:rx,m:rx
```

This topic: TOTEM > CompCastor

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