Computing and GRID related information

Software development with git

- git workflow: tips and tricks

CRAB and GRID links

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  - Best source of information for getting started with the GRID WorkBookStartingGrid
  - SWGuideRunningGridPrerequisites
  - WorkBookRunningGrid
  - SWGuideLcgAccess
  - VoRegForExistingMember
  - VoRegForExistingMemberNew
  - T2CHCERN
  - CERNGridCertificateIssues
  - Good instructions, but may have some problems with chrome on linux PersonalCertificate

Obtaining your GRID certificate (quick and dirty, collected from several of the aforementioned pages)

- Follow these instructions to trust the CERN certificate authorities
- Check your eligibility for a CERN issued certificate here
- If you are eligible request your certificate here
- Using your browser, export to p12 format (save it in **`$HOME/.globus`**)
- Once you have the certificate in p12 format, separate into usercert.pem and userkey.pem (the import password is the password you used to export from the browser) for the userkey, you need to specify the password that you will eventually authenticate to the GRID with.

```
cd $HOME/.globus/
openssl pkcs12 -in gridcert.p12 -clcerts -nokeys -out usercert.pem
openssl pkcs12 -in gridcert.p12 -nocerts -out userkey.pem
chmod 400 $HOME/.globus/userkey.pem
chmod 600 $HOME/.globus/usercert.pem
```

Other computing links

- USCMS computing links (LPC)
  - Getting started
  - USCMS GRID computing
  - Store user
  - LPC computing environment

Code debugging

Building debugging symbols

When a seg fault occurs, often times all you get out is the stack trace, being able to translate this into a part of your code is very useful. The way to do this is to compile your code such that debguging symbols are generated.

In the CMSSW framework

To do this in CMSSW add the following to your BuildFile.xml

```
CFLAGS="-O0 -g3 -fno-inline"
CXXFLAGS="-O0 -g3 -fno-inline"
```

Alternatively, you can just add it to your **`scram`** command by doing the following:

```
scram b -j n USER_CXXFLAGS="-O0 -g3 -fno-inline"
```

Note that this will only affect the compilation done with this command, any future scram b without this option will be compiled without debug symbols

For more information see SWGuideScram and SWGuideBuildFile

In a Makefile

To do this in a Makefile, add the following line:

```
CFLAGS +=-O0 -g3 -fno-inline
CCFLAGS +=-O0 -g3 -fno-inline
```

Using gcc on the command line

When building an executable on the command line using gcc do:

```
gcc -O0 -g3 -fno-inline <other options>
```

Using the ROOT command line

When compiling a ROOT macro, do one of the following:

```
root -L yourMacro.C+g
root -L yourMacro.C++g
```

Using GRID tools (lcg/srm, xrootd, etc.)

Useful commands to list/copy files on remote sites

LCG toolkit (lxplus)

```
lcg-cp --verbose -b -D srmv2 file://$PWD/filename srm://cmseos.fnal.gov:8443/srm/v2/server?SFN=/e
lcg-ls --verbose -b -D srmv2 srm://cmseos.fnal.gov:8443/srm/v2/server?SFN=/eos/uscms/store/user/<
```

SRM toolkit (cmslpc)

Open remote file with ROOT

You may need to find the correct redirector

```
root root://cms-xrd-global.cern.ch//store/path/to/file.root
```

xrdcp

```
xrdcp root://cms-xrd-global.cern.ch///store/path/to/file $PWD/file
## or with more debugging information
xrdcp -d 1 -f root://cms-xrd-global.cern.ch///store/path/to/file $PWD/file
```

eosmount

Mount connected EOS pool to local machine

```
eosmount --help
usage: fuse mount  <mount-point> [-o <fuseparamaterlist>] [-l <logfile>] : mount connected eos po
       fuse umount <mount-point>                                          : unmount eos pool from

mkdir ~/myeos
eosmount ~/myeos
```

bsub jobs and XRootD

- WorkBookXrootdService

-- JaredSturdy - 2015-08-14

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