

Commands for completing a simple CE installation

1. Pacman:

```
# cd [install directory]
```

Install directory in the above command refers to the directory where PACMAN is to be installed. For eg. if one plans to install it in the /nfs/pacman directory, the command would be cd /nfs/pacman.

```
# wget http://physics.bu.edu/pacman/sample\_cache/tarballs/pacman-3.21.tar.gz
```

```
# tar --no-same-owner -xzvf pacman-3.21.tar.gz
```

```
# cd pacman-3.21
```

```
# source setup.sh
```

2. Installing Condor Batch System:

We shall now use Pacman to install the Condor Batch system. The first thing would be to create a directory where the Condor Batch system would be installed.

For e.g if one plans to install Condor in /nfs/batch_system, then we use the appropriate mkdir in the /nfs/ directory. This is then followed by the Pacman command.

```
pacman -get http://www.cs.wisc.edu/vdt/vdt\_161\_cache:Condor
```

However, if the operating system is not one that is supported by Pacman, then one must use the -pretend-platform option. If one has CentOS4.x installed, then he can type in the command as follows

```
pacman -pretend-platform linux-rhel-4 -get  
http://www.cs.wisc.edu/vdt/vdt\_161\_cache:Condor
```

Note that one has to answer 'y' to the question of trusting caches and yes to condor running automatically. Also respond r when asked where to install CA files.

The VDTSETUP_CONDOR_LOCATION, VDTSETUP_CONDOR_CONFIG need to be

exported. If Condor has been installed in /scratch/local/batchsystem and Condor is the name of the directory above etc,lib and so on in the batchsystem directory then he needs to type in the following commands

```
export VDTSETUP_CONDOR_LOCATION=/scratch/local/batchsystem/Condor/
```

```
export
```

```
VDTSETUP_CONDOR_CONFIG=$VDTSETUP_CONDOR_LOCATION/etc/condor_config
```

3. Installing OSG CE services:

We need to choose an installation directory. For eg:
/scratch/local/osg (osg is user defined so we need to create it with mkdir command). We need to go to that location(using cd)

set umask to 0022 using the command

```
#umask 0022
```

Now, one can install the OSG services using the following command. Please make use of the -pretend-platform option with Pacman if necessary.

```
# pacman -get ITB:ce      ... for the ITB test version
```

OR

```
# pacman -get OSG:ce      ... for the OSG production version
```

Please note that one has to trust caches again here so that the required software can be retrieved.

If installation is complete without fatal errors we must be able to source the OSG setup environment using the command

```
$ source setup.sh
```

OR

```
% source setup.csh
```

Finally, to interface your batch system to the OSG-Software, from the same directory execute the following command

```
pacman -get OSG:Globus-Condor-Setup
```

(use -pretend-platform if necessary).

4. Obtaining and configuring PKI certificates

The command for doing this is

```
cert-request -ou s -dir . -label my-host
```

Processing OU=Services request.

Give reason (1 line) you qualify for certificate, such as
member of CMS experiment or
collaborating with Condor team, etc.

reason: **installing gatekeeper for ZZZZZZ VO on OSG**

input server administrator's name: **Joe Admin**

input full hostname: **my-host.some.domain**

Generating a 2048 bit RSA private key

.....+++
.....
.....+++
writing new private key to './my-hostkey.pem'

input your email address: **joe@some.domain**

input your complete phone number: **9991234567**

Choose a registration authority to which you are affiliated.

If nothing else applies, pick OSG.

Enter this_ for this registration authority

anl	ANL: Argonne National Lab
esg	ESG: Earth System Grid
esnet	ESnet: DOE Science network
fnal	FNAL: Fermilab host and service certificates
fusiongrid	FusionGRID: National Fusion Collaboratory Project
lblnl	LBNL: Berkeley Lab
lcg	LCG: LHC Computing Grid Catchall
nersc	NERSC: computer center
ornl	ORNL: Oak Ridge National Lab
osg	OSG: Open Science Grid (choose this if nothing else applies)
pnnl	PNNL: Pacific Northwest National Lab

(choose from left column): **osg**

osg

OSG

Choose a virtual organization under your OSG affiliation:

bnl	BNL: Brookhaven lab researchers not in an OSG registered VO
cdf	Collider Detector at Fermilab
cms	Compact Muon Solenoid
compbiogrid	
des	Dark Energy Survey
dosar	Distributed Organization for Scientific and Academic Research
dzero	D0 Experiment at Fermilab
fermilab	Fermi National Accelerator Center
fmri	Functional Magnetic Resonance Imaging
gadu	Genome Analysis and Database Update
geant4	Geant4 Software Toolkit
glow	Grid Laboratory of Wisconsin
gpn	Great Plains Network
grase	Group Researching Advances in Software Engineering at UC Santa Cruz
gridchem	Computational Chemistry Grid
gridex	Grid Exerciser (GEx)
grow	Grid Research and Education Group at Iowa
gugrid	Georgetown University Grid
i2u2	Interactions in Understanding the Universe Initiative
ivdgl	International Virtual Data Grid Laboratory
jlal	JLab: Jefferson Lab researchers
ligo	Laser Interferometer Gravitational-Wave Observatory

```
      mariachi      Mixed Apparatus for Radar Investigation of Cosmic-rays of
High Ionization Experiment
```

```
      mis      OSG Monitoring Information System
      nanohub nanoHUB Network for Computational Nanotechnology (NCN)
      nwigc     Northwest Indiana Computational Grid
      ops      OSG Operations Group
      osg      Open Science Grid
      osgedu   OSG Education Activity
      sdss     Sloan Digital Sky Survey
      slac     SLAC: Stanford Linear Accelerator Center researchers
      star     Solenoidal Tracker at RHIC
      usatlas  United States ATLAS Collaboration
```

(Choose from left column; pick osg if nothing else applies): **ZZZZZ**

OSG:ZZZZZ

You must agree to abide by the DOEGrids pollicies,
at

and you assert that you are authorized to request and install this
certificate on the specified host.

Do you agree (y,N): **y**

Your Certificate Request has been successfully submitted

Your Certificate Request id: 2394

You will receive a notification email from the CA when your certificate
has been issued. Please disregard the instructions to download your
certificate though a web browser and use the cert-retrieve script instead.

5. Configuring the OSG CE software

To configure OSG, you'll run the \$VDT_LOCATION/monitoring/configure-osg.sh script. Some information is required to configure your OSG CE NODE. These are collected as variables. The different variables and the type of information they represent are given in the following link.

<https://twiki.grid.iu.edu/twiki/bin/view/ReleaseDocumentation/PrepareForComputeElementConfigure>

Once you have decided on the variables and their values, we can use the following commands to type in the values.

```
# cd $VDT_LOCATION/monitoring
# ./configure-osg.sh
```

6. Starting Services

We need to get into the directory of the VDT and run the following commands

```
#source setup.(c)sh
#vdt-control -on
```

'c' in paranthesis should be included for csh shells.

6.1 Condor Batch system

We need to go to the location pointed to by VDTSETUP_CONDOR_LOCATION and go up one location and source the Condor setup and we need to start condor. Again changing to the location pointed to by VDTSETUP_CONDOR_LOCATION and sourcing the setup.sh file there. The sequence of commands is shown below.

```
# cd $VDTSETUP_CONDOR_LOCATION
# cd ..
# source setup.[c]sh
# vdt-control --on condor
# cd $VDT_LOCATION    ###This variable isn't defined properly at this
point; use the path name to this location
# source setup.[c]sh
```

6.2 Set up Managed Fork

To set up the Managed Fork jobmanager, run:

```
# cd $VDT_LOCATION
# source $VDT_LOCATION/setup.sh
# pacman -get OSG:ManagedFork
```

To set the managed fork jobmanager as the default, execute the following command.

```
# $VDT_LOCATION/vdt/setup/configure_globus_gatekeeper --managed-fork
y --server y
```

7. Commands for Testing CE NODE(using grid map file)

7.1 Set up your credentials

The first step is to configure the CE to allow access using your own Grid credentials.

Make sure you have a grid proxy for yourself. This is based on your certificate. As a normal user run

```
> source $VDT_LOCATION/setup.(c)sh
> grid-proxy-init
  (you will be prompted for your GRID pass phrase)
```

Then, to get the subject (DN) of your proxy, run:

```
> grid-proxy-info -identity
```

```
Output....
```

```
/DC=gov/DC=fnal/O=Fermilab/OU=People/CN=Joe Blow 830711
```

As root again, take the identity string and pre-pend it to the /etc/grid-security/grid-mapfile and assign it to a local user account (you can use any of the VO accounts you've created at the beginning to test; you cannot use root). So the grid-mapfile should have at least one entry like:

```
"/DC=org/DC=doegrids/OU=People/CN=Joe Blow 830711" usatlas1
```

7.2 Simple Test of the Fork-Queue

Try executing the following command

```
globus-job-run $(hostname -f):2119/jobmanager-fork /usr/bin/id
```

7.3 Simple test of the Job Manager Queue

Try executing the following command

```
globus-job-run $(hostname -f):2119/jobmanager-condor /usr/bin/id
```

7.4 Simple test of the GSIFTP Services

A simple test of the gsiftp services requires creating a simple file and then copying it from one location on your machine to the default storage element available for your CE. When you configured the OSG attributes, you defined a default SE as a shared storage space with read-write access for all users. We will use this as the destination directory for the file we are copying.

Create a temporary file to be copied:

```
> echo "My test gsiftp file" > /tmp/gsiftp.test
```

Copy the file to the \$OSG_DATA directory. First source the configuration file in order to set this variable.

```
> source $VDT_LOCATION/monitoring/osg-attributes.conf
```

```
> globus-url-copy file:/tmp/gsiftp.test
```

```
gsiftp://$(hostname){OSG_DATA}/gsiftp.test
```

Verify that the file was copied to the \$OSG_DATA directory:

```
> ls -l $OSG_DATA/gsiftp.test
```

```
-rw-r--r-- 1 usatlas1 usatlas1 20 Jan 9 13:29
```

```
/storage/local/data1/osg/OSG.DIRS/data/gsiftp.test
```

7.5 Site Verification:

At this stage it is assumed that you have tested the job-manager queue, gsiftp and are ready to do the site-verify

```
./site_verify.pl -host = osg.hpc.ufl.edu is the command to be  
executed in the VDT_LOCATION/verify
```

Check whether this command returns a bunch of results as untested.
Look up to ensure essential services have not failed

8 Installing and configuring GUMS

This is again a 5 step process. In the first step we do a pacman installation of GUMS. Then we create a GUMS administrator. This is then followed by replacing default configuration with the OSG configuration. Next we test the install and the config files. Finally, we set up the CE authorization to use GUMS.

8.1 Installing GUMS Server

We use pacman in the directory where OSG was installed to install both the GUMS server and GUMS client. It is strongly recommended to do this install as root.

```
# pacman -get OSG:gums
```

We then source the setup and the vdt-control script to start the services. The commands for these are

```
# source $VDT_LOCATION/setup.sh  
# vdt-control -on
```

8.2 Creating a GUMS server

Login to the GUMS host as root and perform the following commands.

```
# source $VDT_LOCATION/setup.sh  
# gums-add-mysql-admin "your DN"
```

This gives you administrative access through your GUMS web interface. You are prompted to check the DN provided by you once again and you may have to enter the root password if you have one for mysql.

8.3 Replacing default Configuration with OSG configuration

For this part we have to download the gums-create-config script and place it in the folder \$VDT_LOCATION/tomcat/v55/gums/webapps/WEB-INF/scripts.

This is done as follows

```
# cd $VDT_LOCATION/tomcat/v55/gums/webapps/WEB-INF/scripts
# wget https://www.racf.bnl.gov/Facility/GUMS/1.2/gums-create-config
# ./gums-create-config - -osg-template
```

8.4 Configuration Testing

On your GUMS web interface at <https://your-gums-server:8443/gums>,

- * Click "Update VO Members" in the left pane.
- * Click the "Update VO Members Database" button.

This retrieves the members of the VOs and inserts them into the MySQL GUMS database.

Still on your GUMS web interface,

- * Click on "Generate Grid Mapfile".
 - * Enter the DN of the hostname that you want to generate the grid mapfile for (e.g.
/DC=org/DC=doegrids/OU=Services/CN=gateway.bnl.gov).
 - * Click "generate grid-mapfile."
- You should get the text of a grid-mapfile formatted output (as of this writing):

```
#---- members of vo: osg ----#
"/DC=org/DC=doegrids/OU=People/CN=Alexis Rodriguez 233072" osg
"/DC=org/DC=doegrids/OU=People/CN=Andrew Zahn 730598" osg
"/DC=org/DC=doegrids/OU=People/CN=Craig Phillip Prescott 50911"
osg
```

If you get errors and need to look in log files, they're kept under \$VDT_LOCATION/tomcat/v55/logs. The first one to check is the gums-service-admin.log, and second the gums-service-developer.log

8.5 Authorizing Users: Full Privilege

The following steps assume that the GUMS-client package was already installed and the gums-host-cron job is already started.

Now two files namely, gsi-authz.conf and prima-authz.conf are to be copied into /etc/grid-security. They are found in the folder \$VDT_LOCATION/post-install/gsi-authz.conf

```
cp $VDT_LOCATION/post-install/gsi-authz.conf /etc/grid-security.
cp $VDT_LOCATION/post-install/prima-authz.conf /etc/grid-security.
```


Note that the `imsContact` attribute in the `prima-authz.conf` file should point to the GUMS service.

Then, the `$VDT_LOCATION/gums/etc/gums-client.properties` file to point to the appropriate GUMS server. Upon installation this contains the CE node's hostname we are configuring. Since, in this example it is the same we continue with the same.

Finally, we test the Full privilege mode using `grid3-user-vo-map` generation as follows.

```
# source $VDT_LOCATION/setup.sh
# cd $VDT_LOCATION/gums/scripts
# ./gums-host generateGrid3UserVoMap
```

We see something like this on the stdout

#User-VO map

#comment line, format of each regular line line: account VO

Next 2 lines with VO names, same order, all lowercase, with case (lines starting with #voi, #VOc)

#voi xxx test3

#VOc OSG TEST3

#---- accounts for vo: osg ----#

osg01 xxx

#---- accounts for vo: Test3userGroup ----#

osg01account test3

.... and so on

To test GUMS one can now become a normal user and try submitting jobs or simply run the `site_verify` script described earlier.