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This installation guide will provide instructions about how to install an ESGF data/compute node. In order to do it, the VM should have 1 core, 2GB of RAM memory and 20GB of Hard Disk.

For the installation process, it is highly recommendable to provide more than 1 core

Pre-requisites

TCP and UDP [ports](#) firewall configuration

Corporate Firewall

| Port | Direction | Type | Application | Description |
|---------------|-----------|------|----------------------|---|
| 80 | in | tcp | Tomcat | Web server access |
| 443 | in | tcp | Tomcat | SSL - Secure Web Server Access. |
| 5432 | in | tcp | Postgres | Postgres Access. (not external: by default bound ONLY TO LOCAL INTERFACE) |
| 2811 | in | tcp | GridFTP | user-configured GridFTP Server control channel |
| (60000-61000) | in/out | tcp | GridFTP | user-configured GridFTP Server data channel (or as defined in the global variable GLOBUS_TCP_PORT_RANGE) |
| 2812 | in | tcp | GridFTP | BDM-configured GridFTP Server control channel. May run together with the user-configured one though not recommended - system resource intensive! |
| (60000-61000) | in/out | tcp | GridFTP | BDM-configured GridFTP Server data channel. May run together with the user-configured one though not recommended - system resource intensive! |
| 7512 | out | tcp | MyProxy | MyProxy client access to the certificate repository |
| 8984 | - | tcp | esgf-search (Tomcat) | local connection to the Solr master instance (not external!!) |
| 8983 | in/out | tcp | esgf-search (Tomcat) | Connection to remotes Solr slave instance. Used in distributed search (shard). |
| 80 | out | tcp | esgf-publisher | Local connection to THREDDS server (e.g., to check catalogs) and other nodes (node-manager) |
| 443 | out | tcp | esgf-publisher | Local secure connection to THREDDS server (e.g., to restart the application) and to the idp |

IPTables configuration

Add the rules below to the IPTables configuration file, i.e. /etc/sysconfig/iptables

```
-A INPUT -m state --state NEW -m tcp -p tcp --dport 22 -j ACCEPT
-A INPUT -m state --state NEW -m tcp -p tcp --dport 80 -j ACCEPT
-A INPUT -m state --state NEW -m tcp -p tcp --dport 443 -j ACCEPT
-A INPUT -m state --state NEW -m tcp -p tcp --dport 2811 -j ACCEPT
-A INPUT -m state --state NEW -m tcp -p tcp --dport 2812 -j ACCEPT
-A INPUT -m state --state NEW -m tcp -p tcp --dport 8984 -j ACCEPT
-A INPUT -m state --state NEW -m tcp -p tcp --dport 8983 -j ACCEPT
-A INPUT -m state --state NEW -m tcp -p tcp --dport 60000:61000 -j ACCEPT
```

then, restart the IPTables services

```
$ services iptables restart
```

Install RPM packages

First, install the sourceforge RPM repository for the *ExtUtils* packages:

```
$ rpm -iv http://dag.wieers.com/packages/rpmforge-release/rpmforge-release-0.3.6-1.el4.rf.x86_64.rpm
```

after that, the ESGF required RPM packages :

```
$ yum install autoconf automake bison file flex gcc gcc-c++ gettext-devel libtool libuuid-devel libxml2 libxml2-devel libx
```

Please make sure that the ntp package is installed \$ rpm -qa | grep ntp, otherwise instal it \$ yum install ntp

Install the ESGF data/compute node

The instructions have been provided by the [IPSL¹](#).

```
$ cd /usr/local/bin
$ wget -O esg-bootstrap http://198.128.245.140/dist/esgf-installer/esg-bootstrap
$ diff <(md5sum esg-bootstrap | tr -s " " | cut -d " " -f 1) <(curl -s http://198.128.245.140/dist/esgf-installer/esg-bootstrap)
$ chmod 555 esg-bootstrap
$ esg-bootstrap --devel
```

In our case, we are going to configure only data and compute types:

```
$ ./esg-node --type data compute --install
-----
```

During the installation, you will have to fill in several questionnaires:

```
Welcome to the ESGF Node installation program! :-)

What is the fully qualified domain name of this node? [data.meteo.unican.es]:
What is the admin password to use for this installation? (alpha-numeric only) []:
Please re-enter password:
What is the name of your organization? [unican]:
Please give this node a "short" name: []: data-unican
Please give this node a more descriptive "long" name []: data-unican
What is the namespace to use for this node? (set to your reverse fqdn - Ex: "gov.llnl") [es.unican.meteo]:
What peer group(s) will this node participate in? (if not sure, use default) [esgf-test]:
What is the default peer to this node? [esgf-node1.llnl.gov]: data.meteo.unican.es
What is the hostname of the node do you plan to publish to? [esgf-node1.llnl.gov]: vesgdev-idx.ipsl.jussieu.fr
What email address should notifications be sent as? []: meteo@unican.es
Is the database external to this node? [y/N]:
Please enter the database connection string...
```

```
(form: postgresql://[username]@[host]:[port]/esgct)
What is the database connection string? [postgresql://dbsuper@localhost:5432/esgct]: postgresql://
entered: postgresql://dbsuper@localhost:5432/esgct
What is the (low priv) db account for publisher? [esgct]:
```

```
Finished processing dependencies for esgct==2.12.1
Would you like a "system" or "user" publisher configuration:
-----
*[1] : System
  [2] : User
-----
  [C] : (Custom)
-----
select [1] >

You have selected: 1
Publisher configuration file -> [/esg/config/esgct/esg.ini]

Is this correct? [Y/n]
```

```
Looking for keystore [/esg/config/tomcat/keystore-tomcat]... (don't see one)...
Keystore setup:
Launching Java's keytool:
store_password = *****
Would you like to use the DN: (OU=ESGF.ORG, O=ESGF) ? [Y/n]:
Using keystore DN = CN=data.meteo.unican.es, OU=ESGF.ORG, O=ESGF
Enter key password for <my_esgf_node>
  (RETURN if same as keystore password):
Re-enter new password:
Do you wish to generate a Certificate Signing Request at this time? [Y/n]
```

```
Please enter the password for this keystore :
Please re-enter the password for this keystore:
```

```
Create user credentials
Please enter username for tomcat [dnode_user]:
dnode_user
Please enter password for user, "dnode_user" [*****]: 73769edbd97410aacfb3560ebb817f882d141517
Would you like to add another user? [y/N]:
```

```
Please Enter the IP address of this host [134.157.179.48]:>

Using IP: 134.157.179.48
Please select the IDP Peer for this node:
-----
*[1] : ESGF-PCMDI-9 -> pcmdi9.llnl.gov
  [2] : ESGF-PCMDI -> pcmdi3.llnl.gov
  [3] : ESGF-JPL -> esg-gateway.jpl.nasa.gov
  [4] : ESGF-ORNL -> esg2-gw.ccs.ornl.gov
  [5] : ESGF-BADC -> cmip-gw.badc.rl.ac.uk
  [6] : ESGF-DKRZ -> ipcc-ar5.dkrz.de
  [7] : ESGF-PNNL -> esg1-gw.pnl.gov
  [8] : ESGF-ANL -> dev.esg.anl.gov
  [9] : ESGF-PCMDI-TEST3 -> esgf-node3.llnl.gov
```

```

-----
[C] : (Manual Entry)
-----

select [1] > C
Please enter the IDP Peer's name [ESGF-PCMDI-9] ESGF-TEST
Please enter the IDP Peer's hostname [pcmdi9.llnl.gov] vesgdev-idx.ipsl.jussieu.fr

You have selected: (Manual Entry)
ESGF-TEST -> vesgdev-idx.ipsl.jussieu.fr

Is this correct? [Y/n] Y

```

```

Creating directory /esg/content/thredds/esgcat
INFO      2013-08-02 16:48:46,144 Writing THREDDS ESG master catalog /esg/content/thredds/esgcat/catalog.xml
INFO      2013-08-02 16:48:46,173 Writing THREDDS root catalog /esg/content/thredds/catalog.xml
THREDDS dataset root directories (option=thredds_dataset_roots)
Each entry has the form 'path_identifier | absolute_directory_path':
Current value is:

esg_dataroot | /esg/data

Enter lines, or <RETURN> to end
Add new line:

```

```

# ESGF cronjob BEGIN ###
35 0,12 * * * ESG_USAGE_PARSER_CONF=/esg/config/gridftp/esg-bdm-usage-gridftp.conf /esg/tools/esg_usage_parser
# ESGF cronjob END ###
Is this ok ? [Y/n]Y

```

```

# ESGF cronjob BEGIN ###
35 0,12 * * * ESG_USAGE_PARSER_CONF=/esg/config/gridftp/esg-bdm-usage-gridftp.conf /esg/tools/esg_usage_parser
5 0,12 * * * ESG_USAGE_PARSER_CONF=/esg/config/gridftp/esg-server-usage-gridftp.conf /esg/tools/esg_usage_parser
# ESGF cronjob END ###
Is this ok ? [Y/n]Y

```

```

Server sent 2 certificate(s):

1 Subject CN=vesgdev-idx.ipsl.fr, OU=simpleCA-vesgdev-idx.ipsl.fr, OU=GlobusTest, O=Grid
Issuer CN=Globus Simple CA, OU=simpleCA-vesgdev-idx.ipsl.fr, OU=GlobusTest, O=Grid
sha1   cf f9 20 2b ce a6 bc b0 5d b4 a7 bb 0c 08 18 99 14 47 a6 86
md5    bd 6d ab cb 0b 75 58 fb 54 52 89 60 8e 1b 44 b8

2 Subject CN=Globus Simple CA, OU=simpleCA-vesgdev-idx.ipsl.fr, OU=GlobusTest, O=Grid
Issuer CN=Globus Simple CA, OU=simpleCA-vesgdev-idx.ipsl.fr, OU=GlobusTest, O=Grid
sha1   06 09 9b cc b6 70 6f 3e 59 00 34 b9 fa 0a ba 87 0b f1 16 10
md5    0b b0 a3 56 f6 a7 c7 32 7e 35 b5 b9 e3 bb cd 26

Enter certificate to add to trusted keystore or 'q' to quit: [1] > 1

```

After that, you should restart the esg-node:

```

$ ./esg-node restart

```

If you want to re-install it, you have to use the `force` option :

```
$ ./esg-node --type data compute --install --force
```

Index peer configuration

Do it as `root` user

In order to configure the host certificate and CA public key, you have to send the csr file located under `/esg/config/tomcat/` directory to the CA.

```
$/esg/config/tomcat/data.meteo.unican.es-esg-node.csr
```

Then you should put the signed csr under the `/etc/grid-security/` directory.

```
$ /etc/grid-security/data.meteo.unican.es-esg-node-globus.csr.signed.pem
```

And, if the tomcat key is not in `/etc/grid-security` directory, copy it inside:

```
$ cd /etc/grid-security
$ cp /esg/conf/tomcat/hostkey.pem ./
```

Install the key pair in tomcat. You will be prompted to enter the cacert file; enter the url to the index node cacert.pem:

```
$ cd /usr/local/bin
$ ./esg-node --install-keypair data.meteo.unican.es-esg-node-globus.csr.signed hostkey.pem
Please enter your Certificate Authority's certificate chain file(s):
[enter each cert file/url press return, press return with blank entry when done]
certfile> http://vesgint-idx.ipsl.jussieu.fr/cacert.pem
.....
.....
```

Set auto fetch certs false, otherwise `/etc/grid-security/certificates/*` will be overwritten by `esgf-prod` peer groups certificates

```
$ cd /usr/local/bin
$ ./esg-node --set-auto-fetch-certs false
$ ./esg-node restart
```

Register connects to desired node, fetches and stores their certificate to enable ingress SSL connections

```
$ ./esg-node --register vesgint-idx.ipsl.jussieu.fr
```

```
$ cd /etc/grid-security/certificates/
$ grep vesgint-idx.ipsl.jussieu.fr *
373bd876.signing_policy: access_id_CA      X509      '/O=ESGF/OU=ESGF.ORG/OU=ESGF-vesgint-idx.ipsl.jussieu.fr/CN=ESGF C
373bd876.signing_policy: cond_subjects    globus     '/O=ESGF/OU=ESGF.ORG/OU=ESGF-vesgint-idx.ipsl.jussieu.fr/*'
```

This process should fetch the CA cert to `/etc/grid-security/certificates`

Then rebuild the Tomcat's truststore

```
$ cd /usr/local/bin
$ ./esg-node --rebuild-truststore
```