

SAGA-NAREGI Adaptor

Setup Guide

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1 Introduction

This document is the SNA (SAGA-NAREGI Adaptor for Job Management) environment setup guide.

2 SNA environment

SNA application host is located out of NAREGI middleware environment. Users can submit a job by SAGA application to the specified NAREGI middleware that is chosen by the user from several NAREGI middleware environments.

3 Setup procedure of SNA environment

This chapter describes how to setup SNA environment.

3.1 Setup NAREGI cluster system

Please refer to the install/setup instruction guide of NAREGI.

3.2 Setup SNA Application Host

This section describes how to setup SNA application host. The following software is required. Each setup procedure shows in the next.

- Globus Toolkit
- NAREGI command line tool
- Boost C++ library
- SAGA C++ API
- SNA

3.2.1 Software requirements

The following is required to setup SNA application host.

| | |
|-------------------|--|
| OS | Linux distribution |
| Apache Ant | Ant 1.6.1 or later |
| Compiler | GCC C/C++ 3.4.6 or later |
| Java SE SDK | Sun Java SE JDK 1.5 or later. (Strongly recommended Sun Java SE JDK 1.6 or later) |
| JDBC Compliant DB | PostgreSQL 8.0 or later |
| Perl | Perl 5.005 or later |
| xinetd | Don't care versions. |

3.2.2 Globus Toolkit

SNA requires Globus Toolkit on the SNA application host.

| | |
|----------------|-------------------------------|
| Globus Toolkit | Globus Toolkit 3.2.1 or later |
|----------------|-------------------------------|

The following is the steps to install Globus Toolkit.

(1) Create a user “globus”.

```
# useradd globus
```

(2) Create the directory to which Globus Toolkit is installed. The install directory is /usr/local/globus-4.0.8 in this example.

```
# mkdir -p /usr/local/globus-4.0.8
# chown globus:globus /usr/local/globus-4.0.8
```

(3) Extract the source archive of Globus Toolkit. The Globus source directory is /usr/local/src in this example.

```
globus$ tar jxvf gt4.0.8-all-source-installer.tar.bz2
globus$ su
# mv gt4.0.8-all-source-installer /usr/local/src/
```

(4) Compile and install the Globus Toolkit

```
globus$ cd gt4.0.8-all-source-installer
globus$ configure --prefix=/usr/local/globus-4.0.8
globus$ make
globus$ make install
```

(5) Put the host certification and host key in the directory, /etc/grid-security/.

| File Name | Owner | Permission |
|--------------|-----------|------------|
| hostcert.pem | root:root | -rw-r-r- |
| hostkey.pem | root:root | -rw----- |

(6) Put the CA certification, signing_policy file, certificate request file in the directory, /etc/grid-security/certificate. And specify the default CA.

| File Name | Owner | Permission |
|---------------------------------------|-----------|------------|
| <i>cert_hash.0</i> | root:root | -rw-r-r- |
| <i>cert_hash.signing_policy</i> | root:root | -rw-r-r- |
| <i>globus-host-ssl.conf.cert_hash</i> | root:root | -rw-r-r- |
| <i>globus-user-ssl.conf.cert_hash</i> | root:root | -rw-r-r- |
| <i>grid-security.conf.cert_hash</i> | root:root | -rw-r-r- |

```
# /usr/local/globus-4.0.8/bin/grid-default-ca -ca cert_hash
```

The above *cash_hash* can be verified by the following command.

```
$ openssl x509 -in CA_certificate -noout -hash
```

(7) Configure the gridftp server.

(a) Create the gridftp configuration file, /etc/xinetd.d/gridftp

```

service gsift
{
    instances = 1000
    socket_type = stream
    wait = no
    user = root
    env += GLOBUS_LOCATION=/usr/local/globus-4.0.8
    env += LD_LIBRARY_PATH=/usr/local/globus-4.0.8/lib
    env += PATH=/usr/local/globus-4.0.8/sbin:)
    /usr/local/globus-4.0.8/bin
    server = /usr/local/globus-4.0.8/sbin/globus-gridftp-server
    server args = -i -l /usr/local/globus-4.0.8/var/gridftp.log
    log_on_success += DURATION USERID
    log_on_failure += USERID
    per_source = 100
    nice = 10
    disable = no
}

```

(b) Enable xinetd and gridftp server, and start xinetd

```

# /sbin/chkconfig xinetd on
# /sbin/chkconfig gridftp on
# /sbin/chkconfig --list xinetd
xinetd          0:off  1:off  2:on   3:on   4:on   5:on   6:off
# /sbin/chkconfig --list gridftp
gridftp         on
# /etc/rc.d/init.d/xinetd start

```

(8) Create profile.d script for environment variables of Globus Toolkit

➤ /etc/profile.d/globus-4.0.8.sh

```
#!/bin/bash

export GLOBUS_LOCATION=/usr/local/globus-4.0.8

export GPT_LOCATION=/usr/local/globus-4.0.8

$GLOBUS_LOCATION/etc/globus-user-env.sh

$GLOBUS_LOCATION/etc/globus-devel-env.sh

export PATH=$GLOBUS_LOCATION/bin${PATH:+:$PATH}
```

➤ /etc/profile.d/globus-4.0.8.csh

```
#!/bin/csh

setenv GLOBUS_LOCATION /usr/local/globus-4.0.8

setenv GPT_LOCATION /usr/local/globus-4.0.8

source $GLOBUS_LOCATION/etc/globus-user-env.csh

source $GLOBUS_LOCATION/etc/globus-devel-env.csh

set path=($GLOBUS_LOCATION/bin $path)
```

3.2.3 NAREGI command line tool

SNA requires NAREGI command line tool on the SNA application host.

| | |
|--------------------------|-------------------------------|
| NAREGI command line tool | NAREGI V1.1 command line tool |
|--------------------------|-------------------------------|

The following is the steps to install NAREGI command line tool.

(1) Create a directory, /usr/naregi.

```
# mkdir -p /usr/naregi
```

(2) Extract the binary code, naregi-v1.1-CLT-081009.tar.gz. The install directory of the NAREGI command line tool is /usr/naregi in this example.

```
# cd /usr/naregi
# tar zxvf /somewhere/naregi-v1.1-CLT-081009.tar.gz
```

(3) The NAREGI command line tool requires `/usr/local/src/.java/deployment/deployment.properties` file in its executing. Create the following files in the directory, `/etc/skel`.

```
# mkdir /etc/skel/.java/deployment
# touch /etc/skel/.java/deployment/deployment.properties
```

(4) Create `profile.d` script for environment variables of NAREGI command line tool.

➤ `/etc/profile.d/naregi-ctl.sh`

```
#!/bin/bash

NAREGI_HOME=/usr/naregi ; export NAREGI_HOME

PATH=$NAREGI_HOME/bin${PATH:+:$PATH} ; export PATH
```

➤ `/etc/profile.d/globus-4.0.8.csh`

```
#!/bin/csh

setenv NAREGI_HOME /usr/nareg

set path=($NAREGI_HOME/bin $path)
```

3.2.4 Boost C++ library

Boost C++ library is required to compile SAGA. The following is the requirement of Boost C++ library.

| | |
|-------------------|-----------------------------------|
| Boost C++ library | Boost C++ library 1.34.1 or later |
|-------------------|-----------------------------------|

The following is the steps to install the Boost C++ library.

(1) Extract Boost C++ library package. The source directory is `/usr/local/src` in this example.

```
$ tar jxvf boost_1_34_1.tar.bz2
$ su
```



```
# mv boost_1_34_1 /usr/local/src/
```

(2) Compile and install Boost C++ library. The install directory is /usr/local/ in this example.

```
$ cd boost_1_34_1
$ ./configure --prefix=/usr/local
$ make
$ su
# make install
```

If you have some error messages that Boost Python cannot be detected at the next step (3), please try the following configure options. The Python install directory is /usr/local/python in this example.

```
$ ./configure --prefix=/usr/local --with-python=/usr/local/python/bin/python
```

3.2.5 SAGA C++ API

SAGA C++ API is required to use SNA. The following is a requirement of SAGA C++ API.

| | |
|----------|-------------------------|
| SAGA C++ | SAGA C++ 1.1.1 or later |
|----------|-------------------------|

The following is the steps to install the SAGA C++ API.

(1) Extract SAGA C++ package. The source directory is /usr/local/src in this example.

```
$ tar jxvf saga-cpp-1.1.1.src.tar.bz2
$ su
# mv saga-cpp-1.1.1.src /usr/local/src/
```

(2) Compile and install SAGA C++ API. The install directory is /usr/local/saga in this example.

```
$ cd saga-cpp-1.1.1-src
$ ./configure --prefix=/usr/local/saga
$ make
$ su
# make install
```

If you have some error messages that Boost Python cannot be detected, please try the following configure options. The Python install directory is `/usr/local/python` and the Boost C++ library is located at `/usr/local` in this example.

```
$. /configure --prefix=/usr/local/saga --with-python=/usr/local/python
--with-boost= /usr/local
```

3.2.6 SNA

The document, "SNA Installation Guide", describes how to install SNA.

3.3 Management of SAGA Application Host

3.3.1 User additions

Add the certification DN(Distinguished Name) of the new additional user and the user name to the `/etc/grid-security/grid-mapfile` file.

```
# useradd newuser
# /usr/naregi/globus-4.0.8/sbin/grid-mapfile-add-entry -dn DN_of_user_certificate -ln newuser
```