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Install Manual

ISLE User Portal

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Install Manual

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1 ISLE User Portal Installation

Introduction

The ISLE User Portal is installed on the head node of the cluster. The installation includes the ISLE User Portal application and supporting third-party applications. The main items installed include:

- ISLE User Portal web application
- JBoss application server
- Java Development Kit
- PostgreSQL Database
- LDAP server

1.1 ISLE User Portal Requirements

The following lists the hardware and software requirements for running the ISLE User Portal on a cluster. Ensure that these requirements are met before beginning the ISLE User Portal installation process.

Hardware requirements for the cluster:

- Head node: x86_64 processor
- A homogeneous set of compute node(s)
- A Gigabit Ethernet or InfiniBand switch for the high-speed interconnect
- Network accessibility to the head node from the compute node(s)

Software requirements for the cluster:

- SUSE Linux Enterprise Server 10.x (SLES 10.x)
- SGI ProPack 5 for Linux Service Pack 5 or SGI ProPack 6 for Linux (or later)
- GNU GCC Compiler
- User home directories NFS mounted on to the compute node(s)
- Altair PBS Professional 9.x, or CRI Moab 5.x for UNIX batch scheduling
- Password-less RSH and/or SSH between the head node and compute node(s)
- A local or remote lightweight directory access protocol (LDAP) server must be available for user authentication
- Environment module package installed and functional (See http://modules.sourceforge.net, for more information about environment modules.)
- The head node must have the following distribution packages installed: PyXML, Python, OpenSSL, Xerces-c (Xerces-c is available from the SLES10 SDK)

The following software packages must be installed and functional for applicable features of the ISLE User Portal to be utilized:

- FLUENT 6.3.x
- Abaqus 6.7-x Standard/Explicit
- Intel MPI 3.1 (or later)
- SGI MPT 1.19 (or later)
- Intel C/C++/Fortran Compiler Suite

Web browser requirements for users:

- Firefox 2.0.4 (or later)
- Safari 3.0.4 (or later)
- Microsoft Internet Explorer 6 or 7

ISLE User Portal functionality in other browsers or browser versions is not guaranteed.

1.2   Installation

Installation is performed from a directory containing installation materials. These installation materials may be on a DVD or downloaded from the SGI web site.

Perform the installation in the order described since later steps depend on prior steps.

Follow the installation instructions using the directory names, user names, and passwords supplied. Failure to do so can result in malfunction of one or more components.

Unless otherwise specified, perform all operations as **root user**.

- Java Development Kit
- PostgreSQL Database server
- LDAP Server
- Install the License
- JBoss
- ISLE User Portal
- ISLE PBS Module

1.2.1   Java Development Kit

The Java Development Kit (JDK) is a set of java tools used by the ISLE User Portal and some of the third-party applications employed by the ISLE User Portal.

The ISLE User Portal requires that JDK version 1.5.0_12 be installed in /usr/java. Check to see if this version is installed using the following commands:

```
# rpm --query jdk
jdk-1.5.0_12-fcs
# ls -l /usr/java
total 12
drwxr-xr-x   3 root root 4096 Oct 31 15:23 .
drwxr-xr-x 16 root  root 4096 Oct 27 00:00 ..
drwxr-xr-x   9 root root 4096 Oct 31 15:23 jdk1.5.0_12
lrwxrwxrwx   1 root root   11 Oct 31 15:00 default -> jdk1.5.0_12
```

To install the JDK version 1.5.0_12, log in as **root user**, and from the directory containing the ISLE User Portal RPM(s), enter the following command:

```
# rpm -ivh jdk-1_5_0_12-linux-amd64.rpm
```

Agree to the license agreement when prompted.

Create a symbolic link called "default" in /usr/java using the following command:

```
# ln -s jdk1.5.0_12 default
```

1.2.2   PostgreSQL Database server

To install the PostgreSQL Database server, log in as **root user**, and from the directory containing the ISLE User Portal RPM(s), enter the following command:

```
# rpm -ivh postgresql_jwx-<version>.sgi.x86_64.rpm
```

1.2.3   LDAP Server

The ISLE User Portal uses LDAP to authorize and authenticate users. Your LDAP server must have a "Roles" Organizational Unit (OU) defined, and the users who will be using the ISLE User Portal should belong to the role of "Administrator", "User", or both.

If you are using an already configured remote LDAP server, please skip to the next section, "JBoss". The following instructions will allow you to create a local LDAP server. For troubleshooting or more information about LDAP, see http://openldap.org.

Install Packages

From your Linux distribution DVD or software repository, install the following packages:
- openldap2
- openldap2-client
- nss_dap
- pam_ldap

Edit the Configuration File

Edit the OpenLDAP daemon `slapd.conf` configuration file, which is typically located in the `/etc/openldap` or `/etc/ldap directory` (depending upon your Linux distribution). The following is an example of example of a `slapd.conf` file, with comments removed.

```
include     /etc/openldap/schema/core.schema
include     /etc/openldap/schema/cosine.schema
include     /etc/openldap/schema/inetorgperson.schema
include     /etc/openldap/schema/nis.schema

loglevel    256
pidfile     /var/run/slapd/slapd.pid
argsfile    /var/run/slapd/slapd.args

TLSCipherSuite  HIGH
TLSCertificateFile /etc/openldap/ssl/ldapserver.cert TLSCertificateKeyFile
/etc/openldap/ssl/ldapserver.key

access to attrs=userPassword,shadowLastChange
        by dn="cn=Manager,dc=foo,dc=bar,dc=com" write
        by anonymous auth
        by self write
        by * none

access to dn.base="" by * read

access to dn.base="cn=Subschema" by * read
```

```
access to *
        by dn="cn=Manager,dc=foo,dc=bar,dc=com" write
        by * read

database    hdb
suffix      "dc=foo,dc=bar,dc=com"
checkpoint  32  30 # <kbyte> <min>
rootdn      "cn=Manager,dc=foo,dc=bar,dc=com"
rootpw      {SSHA}sni2KYBnOaIyT4bJ1We5PUbr/5QPyjSk
directory   /var/lib/openldap-data
index       objectClass     eq
index       cn,sn,mail      eq,sub
index       departmentNumber    eq
```

Change the LDAP administrative password, as follows:

- Run the `slappasswd` command. Enter the desired administrative password for `ldap`. It will return a hashed password, such as {SSHA}6/Sd1n6wGTgTzk2zujyOaJJnWr/KTjoa.
- Add this to the `slapd.conf` file for the `rootpw` value

Install a Self-signed SSL Certificate

LDAP needs a Secure Sockets Layer (SSL) Certificate installed (unless you choose not to use to turn off TLS/SSL, which is not recommended.) If you need to use a self-signed certificate, you can run the following commands to create the key and certificate:

```
# mkdir /etc/openldap/ssl
# cd /etc/openldap/ssl
# openssl req -new -x509 -nodes -out ldapserver.cert -keyout ldapserver.key
```

Next, a basic structure for the LDAP database is needed. The code example below is a good starting point for a blank database. It provides the following:

- Creates a top level entry for a server "foo.bar.com", whose organizational unit is "Foo Bar Widgets Emporium"
- Creates a "Group" entry
- Creates a group named "users" underneath Group, with a GID of 100 and a user named "fbarr" as a member of "users"
- Creates a "People" entry
- Adds a user named "fbar" to "People", with UID 1012, and GID of 100
- Creates a "Roles" entry
- Adds the roles "Administrator" and "User" - each having the user "fbarr" as a member.

```
dn: dc=foo,dc=bar,dc=com
dc: foo
objectClass: dcObject
objectClass: organizationalUnit
ou: Foo Bar Widgets Emporium
structuralObjectClass: organizationalUnit

dn: ou=Group,dc=foo,dc=bar,dc=com
ou: Group
objectClass: organizationalUnit
entryUUID: a9e43208-96e7-102c-91ff-f7ec5e060c07

dn: cn=users,ou=Group,dc=foo,dc=bar,dc=com
```

```
objectClass: posixGroup
objectClass: top
cn: users
gidNumber: 100
memberUid: fbarr
structuralObjectClass: posixGroup

dn: ou=People,dc=foo,dc=bar,dc=com
ou: People
objectClass: organizationalUnit
structuralObjectClass: organizationalUnit

dn: uid=fbarr,ou=People,dc=foo,dc=bar,dc=com
uid: fbarr
cn: Foux Barr
sn: Barr
objectClass: inetOrgPerson
objectClass: posixAccount
objectClass: shadowAccount
loginShell: /bin/bash
uidNumber: 1012
gidNumber: 100
homeDirectory: /home/fbarr
gecos: Foux Barr
structuralObjectClass: inetOrgPerson
userPassword::secret

dn: ou=Roles,dc=foo,dc=bar,dc=com
objectClass: organizationalUnit
ou: Roles
structuralObjectClass: organizationalUnit

dn: cn=admin,ou=Roles,dc=foo,dc=bar,dc=com
cn: admin
objectClass: top
objectClass: groupOfUniqueNames
uniqueMember: uid=fbarr,ou=People,dc=foo,dc=bar,dc=com
structuralObjectClass: groupOfUniqueNames

dn: cn=user,ou=Roles,dc=foo,dc=bar,dc=com
cn: user
objectClass: top
objectClass: groupOfUniqueNames
structuralObjectClass: groupOfUniqueNames
uniqueMember: cn=users,ou=Group,dc=foo,dc=bar,dc=com
uniqueMember: uid=fbarr,ou=People,dc=foo,dc=bar,dc=com
```

To import the LDIF file to your LDAP server, you must meet the following conditions:

- No pre-existing LDAP database.
- The `slapd` daemon must not be active.

Now perform the following steps:

1. As **root user**, execute the following:

   ```
   # slapadd -v -l /path/to/ldif
   ```

You should see output verifying that the various entries are added.

2. Start up the `slapd` daemon. This is usually done by performing either of the following commands:

   # **/etc/init.d/ldap start**

   # **/etc/init.d/slapd start**

3. To verify that LDAP is working, perform the following command:

   # **ldapsearch -x -b "dc=foo,dc=bar,dc=com" "objectclass=*"**

4. Enable the LDAP server to run when the server starts up. This is usually done by performing either one of the following commands:

   # **chkconfig --add ldap**

   # **chkconfig --add slapd**

The LDAP database has now been added.

Login Authentication Using LDAP

In order for jobs to run on the ISLE User Portal properly, the same user you use to log in to the ISLE User Portal should be accessible from Linux also. To do this perform the following:

1. Use YAST to configure Linux to log on using LDAP. Open YAST, go to Network Services, LDAP Client. Enable logins and populate the server name/address and LDAP Base DN

(for example, `dc=foo,dc=bar,dc=com`)

2. Open `/etc/nsswitch.conf` and make sure that LDAP lookup is enabled. For example:

```
passwd: files ldap
shadow: files ldap
group:  files ldap
```

For more information about LDAP or for troubleshooting information, please see http://www.openldap.org or consult other LDAP documentation.

1.2.4   Install the License

To install the SGI LK Java bindings, log in as **root user**, and from the directory containing the ISLE User Portal RPM(s), enter the following command:

rpm -ivh lkSGI-java-<version>.x86_64.rpm

You will need to obtain a license from SGI. For information on the SGI LK licensing mechanism, see the *SGI Foundation 1 Service Pack 2 Start Here* available at http://docs.sgi.com

Open the `/etc/lk/keys.dat` file in a text editor. Copy and paste the license string, exactly as given, and save the file.

1.2.5 JBoss

JBoss is the application server for the ISLE User Portal.

To install jboss, log in as **root user**, and from the directory containing the ISLE User Portal RPM(s), enter the following commands:

```
# rpm –ivh jboss-<version>.sgi.x86_64.rpm
# rpm –ivh jbossws-<version>.sgi.x86_64.rpm
```

Start JBoss using the following command:

```
# /etc/init.d/jboss start
```

Verify JBoss operation by entering URL "https://hostname:8443". The ISLE User Portal login page will appear.

You can now log in to the ISLE User Portal using the accounts established in the LDAP server.

1.2.6 ISLE User Portal

To install and activate the ISLE User Portal, log in as **root user,** and from the directory containing the ISLE User Portal RPM(s), enter the following commands:

```
# rpm –ivh userportal-<version>.sgi.x86_64.rpm
# /etc/init.d/userportal start
```

You can log in to ISLE User Portal using the accounts established in the LDAP server.

1.2.7 ISLE PBS Module

If the cluster is using PBS Professional Unix Job Scheduler, the ISLE PBS module also must be installed.

To install and activate the ISLE PBS module, log in as **root user**, and from the directory containing the ISLE User Portal RPM(s), enter the following commands:

```
# rpm -ivh apache-log4cxx-<version>.sgi.x86_64.rpm
# rpm -ivh islepbs-<version>.sgi.x86_64.rpm
# /etc/init.d/islepbs start
```

1.3 Configure the ISLE User Portal

This section describes how to configure the ISLE User Portal.
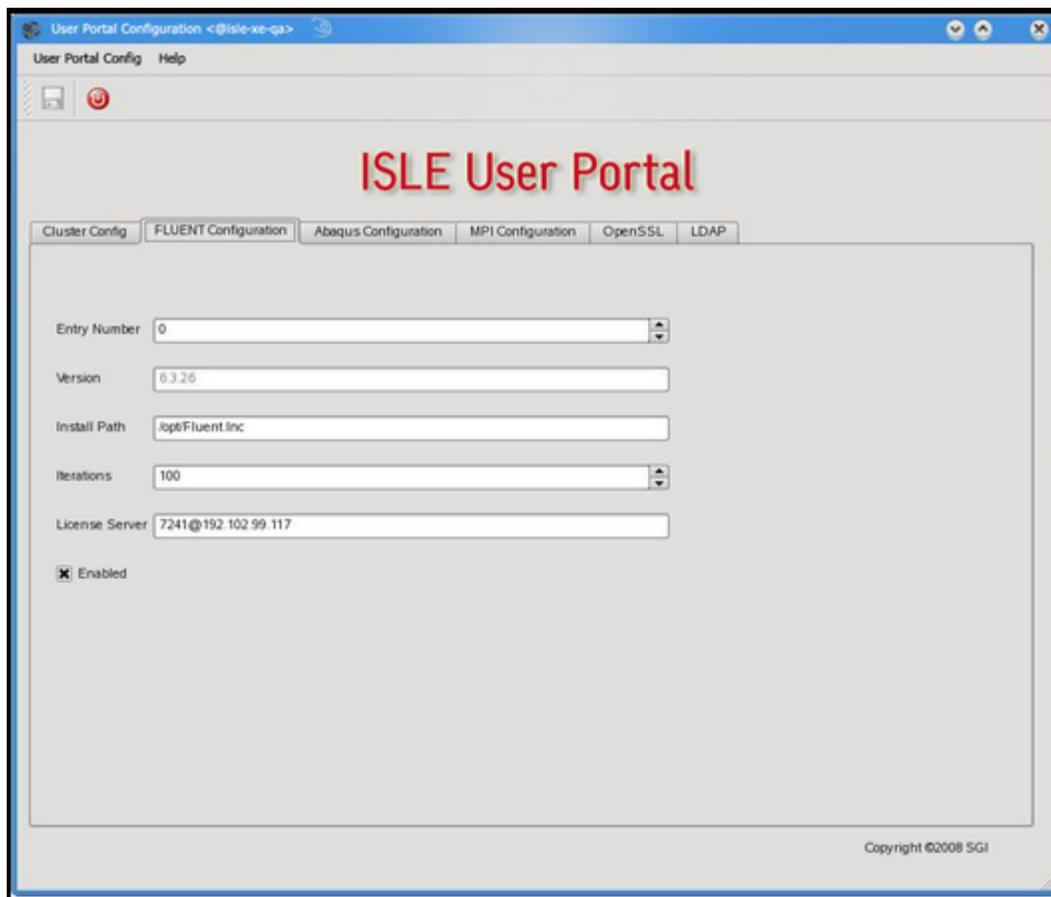
- To install the ISLE User Portal configuration GUI, run the following command from the directory containing the RPM(s):

```
# rpm –ivh portalcfg-<version>.sgi.x86_64.rpm
```

- Execute the following command to start the Configuration GUI:

```
# /opt/userportal/portalcfg/portalcfg.py
```

The ISLE User Portal Configuration GUI appears. Use the arrow button on the right to view all of the configuration tabs. Use the red button on the left to exit the GUI.

ISLE User Portal Configuration GUI

- On the **Cluster Config** tab, change the "**Maximum Nodes**"
value to match the number of nodes in your cluster. Change the "**Cores/Node**" value to match the number of
CPU cores available on each node in your cluster. Choose the default high-speed interconnect for your cluster.

- On the **FLUENT Configuration** tab, you can change the install path, default number of iterations, and
  License Server value for your FLUENT installation. You can also enable or disable configured versions of
  FLUENT here.

- On the **Abaqus Configuration** tab, you can set the Abaqus Home, Abaqus Binary and License server for
  each configured version of Abaqus. You can also enable or disable configured versions of Abaqus here.

- On the **MPI Configuration** tab, you can enable and disable configured MPI(s) on the system.

- Click on the **OpenSSL** tab to Generate a **Self-Signed Key**. Use the **Update userportal SSL Config**
  button to install the certificate.

- On the **LDAP** tab, enter the Search Base DN, LDAP URI, LDAP Admin DN, LDAP Password,
  Authentication Method, and Roles DN for the LDAP Server that will be providing authentication for the
  ISLE User Portal.

Note: The If your environment modules or installed Message Passing Interface (MPI) applications differ from
the versions supported by SGI, please edit the
/opt/userportal/userportal/admin/userportal_config.xml file and review the <*module*> or <

---

home> sections for each of your installed MPI(s).

1.4   Uninstall the ISLE User Portal

Perform the following commands, to stop the ISLE User Portal services:

NOTE: The "islepbs" package only applies if you are using the PBS Professional job scheduler.

```
# /etc/init.d/islepbs stop
# /etc/init.d/userportal stop
# /etc/init.d/jboss stop
# /etc/init.d/postgres stop
```

Uninstall the ISLE User Portal by using the following commands:

```
# rpm -e jdk
# rpm -e userportal
# rpm -e islepbs
# rpm -e jbossws
# rpm -e jboss
# rpm -e portalcfg
# rpm -e postgresql_jwx
```

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