Moab-SGE
Integration Notes

Moab-SGE Integration Notes

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This document provides information on the steps to integrate Moab with an existing functional installation of SGE.

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Overview

Moab's native resource manager interface can be used to manage an SGE resource manager. The integration steps simply involve the creation of a complex variable and a default request definition. The Moab tools directory contains a collection of customizable scripts which are used to interact with sge. This directory also contains a configuration file for the sge tools.

Moab Integration Steps

You should follow the regular steps for installing Moab with the following exceptions:

Run Configure with the --with-sge option

When running the configure command, use the --with-sge option to specify the use of the native resource manager interface with the sge resource manager subtype. This will place a line similar to the following in the Moab configuration file (moab.cfg):

RMCFG[clustername]   TYPE=NATIVE:sge

Example 1. Running configure

```
$ ./configure --prefix=/opt/moab --with-homedir=/var/moab --with-sge
```

Customize the moab configuration file

In order to allow the specification of a parallel environment (-l pe) via msub, you will need to tell Moab to pass through arbitrary resource types.

Example 2. Edit moab.cfg

```
# vi /var/moab/moab.cfg

# Transmit arbitrary resource types (ie. pe) from msub into the job-start script
CLIENTCFG[Moab] FLAGS=AllowUnknownResource

# Allow regular users to awaken the scheduler for responsive msubs
ADMINCFG[5] USERS=ALL SERVICES=mschedctl:resume
```

Customize the sge tools configuration file

You may need to customize the $MOABHOMEDIR/etc/config.sge.pl file to include the correct SGE_ROOT and PATH, and set other configuration parameters.

Example 3. Edit config.sge.pl

```
# vi /var/moab/etc/config.sge.pl

# Set the SGE_ROOT environment variable
$ENV{SGE_ROOT} = "/opt/sge-root";

# Set the PATH to include directories for sge commands -- qhost, etc.
$ENV{PATH} = "$ENV{SGE_ROOT}/bin/lx24-x86:$ENV{PATH}";
```

SGE Integration Steps

After installing SGE on your cluster and verifying that it is running serial and parallel jobs satisfactorily, you should perform the following steps:

Define a new complex variable named nodelist

Use the qconf -mc command to edit the complex variable list and add a new requestable variable of the name nodelist and the type RESTRING.

```
# qconf -mc

nodelist          nodelist    RESTRING    ==    YES        NO        NONE  0
```

Add a default nodelist request definition

This step will set the nodelist complex variable for all jobs to the unassigned state until they are ready to run, at which time the job will be assigned a nodelist directing which nodes it can run on.

Example 4. Edit sge_request

```
# vi /opt/sge-root/default/common/sge_request

# Set the job's nodelist variable to the unassigned state until it is ready to
# start at which time it will be reset to the list of nodes it is designated to
# run on
-l nodelist=unassigned
```

Populate the node's nodelist variable

This step will set the nodelist complex variable for all exec hosts to their own short hostnames. This will allow jobs to start when their nodelist value matches up with a set of nodes.

Example 5. qconf -rattr exechost complex_values nodelist=$hostname $hostname

```
# for i in `qconf -sel | sed 's/\..*//'`; do echo $i; qconf -rattr exechost
complex_values nodelist=$i $i; done
```

Shorten the scheduler interval

Use the qconf -msconf command to edit the schedule_interval setting to be less than or
equal to one half the time of the Moab RMPOLLINTERVAL (seen with showconfig | grep
RMPOLLINTERVAL).

```
# qconf -msconf

schedule_interval                0:0:15
```

Add the sge ports to the services file

In order for the sge client commands to know what port to use when communicating with
the sge qmaster, the ports should be listed in the /etc/services file. (Alternatively, the
SGE_QMASTER_PORT environment variable must be set in the config.sge.pl file).

Example 6. Edit /etc/services

```
# vi /etc/services

sge_qmaster     536/tcp                 # SGE QMaster
sge_execd       537/tcp                 # SGE Execd
```