GEMLCA GT4 installation & configuration handson

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Prerequisites

- Software dependencies:
  - Globus Toolkit 4, Ant 1.6, Java 1.5
  - Bash 2
  - Service certificate for the GEMLCA container
  - Optional packages:
    - Apache Tomcat 5.5 - as a flexible container
    - Condor - G with GT2 access - for GT2 backend
    - LCG2 UI - for EGEE backend
    - P-Grade Portal 2.4.1 - both for GT2 and EGEE backends
- Hardware requirements:
  - 256 MB memory / running GEMLCA service.
  - 20MB disk + LC configuration store.

Installation

- Unpack the GEMLCA tarball
- Internet connection is required to finish the installation!
- If you want to deploy the GEMLCA in a tomcat container please setup the CATALINA_HOME environment variable before installation.
- Start the setup process by calling:
  - ant install

Installer Questionnaire #1

- Managed Job Factory Service's URL?
  - URL of the WS-GRAM where the GEMLCA will submit the LCs. E.g.: https://grid-compute-ws.cpc.wmin.ac.uk:8443/wsrf/services/ManagedJobFactoryService
- Comma separated list of supported jobmanagers?
  - The list of jobmanagers the WS-GRAM service can handle. (GEMLCA supports fork, condor, pbs, lsf - under development)

Installer Questionnaire #2

- GEMLCA root folder (Repository and configuration file storage)?
  - The GEMLCA is going to store its basic legacy codes and LCID descriptors: e.g. /usr/local/gemlca/repository
- “Keyfile?” then “Certificate file?”
  - The GEMLCA service certificates, e.g.:
    - /usr/local/gemlca/servicekey.pem, /usr/local/gemlca/servicecert.pem

Installer Questionnaire #3

- GT4 Libraries?
  - The location of the CoG, WSRF Core and other libs from the Globus installation: e.g. /usr/local/globus/lib
- Where to install the GEMLCA services?
  - The location where the installer will create a base Globus WSRF Core container and deploy the GEMLCA services. E.g.: /usr/local/gemlca/service
  - The container gets downloaded from the Globus website, then it is compiled and prepared to receive the GEMLCA service pack.

Installer Questionnaire #4

- Would you like the GEMLCA to be deployed in your tomcat installation (/usr/local/tomcat)?
  - Optional question - depends on CATALINA_HOME
  - Press “y” to deploy it, the installer creates a wsrf webapp.

Configuration - fine tuning parameters

- Base configuration file is in /usr/local/gemlca/service/gemlca-config.xml
- It is generated by the install script
- Parameters:
  - globus-grid-mapfile - The gridmapfile used for authorization.
  - gemlca-config-folder, gemlca-LC-programs-folder, gemlca-LC-environment-folder

Configuration - plugin setup

- Define plugin classes with the plugin element:
  - <plugin name="GT4" className="uk.ac.wmin.cpc.gemlca.backend.GT4Job"/>
- Define plugin instances with the backend element - configure the plugin behaviour site by site.

Configuration - backend setup

```
<backend id=”Westminster">
  <pluginName>GT4</pluginName>
  <contactURL>https://grid-compute-
    ws.cpc.wmin.ac.uk:8443/wsrf/services/ManagedJobFactoryService
    </contactURL>
  <parameter name="gemlca-job-managers-supported”
    value="FORK,CONDOR"/>
  <parameter name="notification-test-timeout-sec" value="20"/>
  <parameter name="notification-cache-max-age-sec" value="3600"/>
  <parameter name="polling-time-for-legacy-codes-sec" value="30"/>
  <parameter name="number-errors-catch-when-contacting-job-manager"
    value="30"/>
  <parameter name="safety-polling-time-for-legacy-codes-sec" value="300"/>
</backend>
```

Plugin reference

Generated

Long term experience

Startup and logging

- Startup:
  - export GLOBUS_LOCATION=/usr/local/gemlca/service
  - $GLOBUS_LOCATION/bin/globus-start-container -p 8443 > $GLOBUS_LOCATION/containerlog &
- GEMLCA specific logs can be found in /tmp/GEMLCA.log, contents:
  - Problems with legacy code deployments
  - Problems with legacy code executions
  - Basic GEMLCA accounting information
- GEMLCA log4j appender setup is located in $GLOBUS_LOCATION/gemlcalogger.properties.xml
  - Logger examples and formats can be found here

Legacy code administrators

- GEMLCA has a filesystem based legacy code store
  - The store can be managed by anyone who can write its files via the FS. FS rights has to be managed by the GEMLCA administrator - manages the list of legacy code administrators.
  - The individual Legacy Code Descriptors are maintained by their owners. Owner info and authorization is done by the GEMLCA.

Recommended FS setup

- chmod 2775 /usr/local/gemlca/repository/legacycodes
  - drwxrwsr-x …
- GEMLCA admin user: gemlca
- GEMLCA users group: gridusers
- GEMLCA LC admins group: lcadmins, or gridusers
- Permissive setup: chown -R gemlca:gridusers /usr/local/gemlca/repository/legacycodes
- Defensive setup: chown -R gemlca:lcadmins /usr/local/gemlca/repository/legacycodes

Legacy Code store layout

- The legacy codes are stored under /usr/local/gemlca/repository/legacycodes
- The folders inside are the ids of the legacycodes
- Each folder holds a descriptor (called config.xml), and the default input files if necessary.

The Legacy Code descriptor

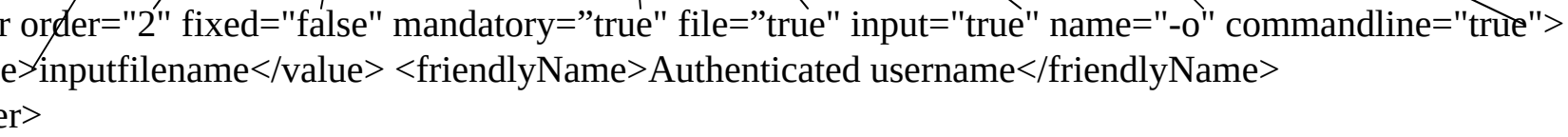
```
<?xml version="1.0"?>
<LCEnvironment xmlns='http://uk.ac.wmin.cpc.gemlca/schema/legacyCodeConfig'
   xmlns:xsi='http://www.w3.org/2001/XMLSchema-instance'
   xsi:schemaLocation='http://uk.ac.wmin.cpc.gemlca/schema/legacyCodeConfig ../../conf/legacyCodeConfig.xsd'
    id="gemlca_ce" status="system" maximumParallelism="1">
    <description>GEMLCA Helper: Legacy code environment praparation</description>
    <parameter order="0" fixed="false" mandatory="true" file="false" input="true" name="-p" commandline="true" >
       <value></value> <friendlyName>Folders To Be Created</friendlyName>
    </parameter>
    <parameter order="1" fixed="false" mandatory="false" file="false" input="true" name="-f" commandline="true">
       <value></value> <friendlyName>Files to be copied into the folder</friendlyName>
    </parameter>
    <parameter order="2" fixed="false" mandatory="false" file="false" input="true" name="-o" commandline="true">
       <value></value> <friendlyName>Authenticated username</friendlyName>
    </parameter>
    <parameter order="3" fixed="false" mandatory="true" file="false" input="true" name="-e" commandline="true">
       <value></value> <friendlyName>Error output</friendlyName>
    </parameter>
    <backendSpecificData backendId="GT4" executable="LINUX/gemlca_ce.sh" jobManager="FORK”
                jobType="single" output="stdout" error="error"/>
    <authorizationInfo><owner/></authorizationInfo>
</LCEnvironment>
```

Basic Legacy code info

- id - same as the dirname
- status
  - System - parts of the GEMLCA, cannot be listed
  - Offline - descriptor for future use, not listed
  - Test - descriptor is under development after a successful submit it becomes online, not listed
  - Online - production legacy code, listed
- maximumParallelism - number of legacy code jobs allowed in parallel
- description - Simple description for the service requestor/user

Parameter setup

- lcexec $1 $2 -o “inputfilename” …
- Parameter can be changed from its initial value
- A new value has to be given before execution
- Parameter is present in the commandline
- Parameter refers to a file which should be transferred from or next to the LC execution



Backend specific data

- backendId = Which plugininstance to use for legacy code submission
- executable = absolute or relative path of the legacy code on the local FS - if not present the GEMLCA tries to execute the LC without transferring the executable
- jobManager = which jobmanager to use - has to be chosen from the list of the backend configuration.
- jobType = GT4 RSL equivalent jobtype
- Output, error = standard outputs

Current non GT4 Plugins

- EGEE Plugin:
  - Requires the PGrade Portal installed on the same machine as the GEMLCA.
  - New backend specific data called “ExecutorSites”. List of EGEE sites which can accept the same LC separated by “;”.
- Condor-G Plugin:
  - Requires the Pgrade Portal installed on the same machine as the GEMLCA.
  - The plugin needs the /usr/local/gemlca/repository/conf/condorg.sh’s GT4 location and CONDOR_LOCATION variables to be changed on each installation.