GT 4.2.1 Batch Replicator: System Administrator’s Guide

Introduction

This guide contains advanced configuration information for system administrators working with the Batch Replicator. It provides references to information on procedures typically performed by system administrators, including installing, configuring, deploying, and testing the installation.

⚠️ Important

This information is in addition to the basic Globus Toolkit prerequisite, overview, installation, security configuration instructions in the Installing GT 4.2.1. Read through this guide before continuing!
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Chapter 1. Building and installing

Batch Replicator is distributed with the Globus Toolkit 4.2.1 and is available in both the binary bundles and the source bundle. For most purposes, the binary bundle provides the simplest means of installing the Batch Replicator and its requirements. There are three typical ways to access and install the Batch Replicator:

- Section 1, “Installing Batch Replicator using Globus Toolkit Binary Bundle”
- Section 2, “Installing Batch Replicator using Globus Toolkit Source Bundle”
- Section 3, “Installing Batch Replicator using Globus CVS”

⚠️ Important

Before proceeding with installation of Batch Replicator, please familiarize yourself with the installation procedures for RLS (see Replica Location Service (RLS)) and RFT (see Reliable File Transfer (RFT) Service).

1. Installing Batch Replicator using Globus Toolkit Binary Bundle

Follow instructions provided by Installing GT 4.2.1 and Installing GT in order to install the Batch Replicator from one of the available binary bundles of the Globus Toolkit.

Once you have unpackaged the binary bundle, the following commands may be used to install Batch Replicator:

`% ./configure --prefix=$GLOBUS_LOCATION --enable-rls --enable-drs`
`% make`
`% make install`

2. Installing Batch Replicator using Globus Toolkit Source Bundle

In order to install Batch Replicator, you will need to ensure that RLS is also installed as part of the build by reviewing its installation procedures. The following commands will install the Batch Replicator (optionally you may use the “Batch Replicator” make target to build only Batch Replicator and its requirements):

`% ./configure --prefix=/path/to/install --enable-rls --enable-drs`
`% make [drs]`
`% make install`

3. Installing Batch Replicator using Globus CVS

Additionally, you may access the Batch Replicator from the Globus Toolkit CVS repository. You may deploy the 4.0.x Batch Replicator on top of an existing GT 4.0.x installation using the globus_4_0_branch tag. You may deploy the 4.1.x Batch Replicator on top of an existing GT 4.2 installation using the globus_4_2_branch tag.
The following example instructions will only work given the presence of an existing GT installation with *all Batch Replicator dependencies*. The best way to establish such an environment is to first follow the basic installation instructions and subsequently use the following instructions to obtain the latest updates from the CVS branch. Note the use of the *globus_X_Y_branch* tag depends on whether you are interested in updates from the maintenance branch or the development trunk.

```bash
% setenv GLOBUS_LOCATION /path/to/existing/gtXY/install/
% setenv CVSROOT :pserver:anonymous@cvs.globus.org:/home/globdev/CVS/globus-packages
% cvs co [-r globus_X_Y_branch] ws-replica/replicator/
% cd ws-replica/replicator/
% ant deploy
```

To learn more about general instructions regarding GT CVS access, see [Remote CVS Access](http://www.globus.org/toolkit/docs/development/remote-cvs.html).
Chapter 2. Configuring

This information is in addition to the basic configuration instructions in the Installing GT 4.2.1. Aside from the basic configuration of GT 4.2.1, please review the following instructions:

1. Configuration overview

The Batch Replicator requires certain JNDI settings to be properly configured. The installed JNDI configuration file may be found at $GLOBUS_LOCATION/etc/globus_wsrf_replicator/jndi-config.xml. To view the default configuration file (shipped with the GT 4.2.1 release) from the Globus CVS repository click here\(^1\).

2. Syntax of the interface

The settings are structured as name-value pairs. For example:

```xml
<parameter>
  <name>defaultIndexUrl</name>
  <value>rls://127.0.0.1:39281</value>
</parameter>
```

The following settings must be properly configured:

- **proxyfileDir**: the directory that you would like the Batch Replicator to temporarily store user proxies. No setting is necessary. This value may be empty.
- **requestfileDir**: the directory that you would like the Batch Replicator to temporarily store request files. No setting is necessary. This value may be empty.
- **defaultIndexUrl**: the connection URL for your installation of RLS running as a RLI service.
- **defaultRegistrationUrl**: the connection URL for your installation of RLS running as a LRC service.
- **defaultReliableTransferUrl**: the connection URL for your installation of the RFT ReliableFileTransfer-FactoryService.
- **proxyfileChangePermsCmd**: the platform-dependent command to change file permissions to user-only read-write permissions.
- The rest of the parameter/value pairs may retain the given default values.

\(^1\) [http://viewcvs.globus.org/viewcvs.cgi/ws-replica/replicator/service/java/source/deploy-jndi-config.xml?tab=globus_4_2_branch&content-type=text/vnd.viewcvs-markup](http://viewcvs.globus.org/viewcvs.cgi/ws-replica/replicator/service/java/source/deploy-jndi-config.xml?tab=globus_4_2_branch&content-type=text/vnd.viewcvs-markup)
Chapter 3. Testing

This service does not provide a set of tests yet.
Chapter 4. Security considerations

1. Batch Replicator Security Considerations

1.1. Service configuration files

The service configuration files such as the JNDI configuration file, jndi-config.xml, and the Web service deployment descriptor, server-config.wsdd, located in the $GLOBUS_LOCATION/etc/globus_wsrf_replicator directory, contain sensitive information such as database username and password. It is important to ensure that these files are readable only by the system administrator that is responsible for the container. During deployment, the permissions on these files are adjusted automatically, however, you should verify the permissions to ensure that they have been correctly set for your specific platform.

1.2. Delegated proxy credential files

Creating a Replicator requires that the user supply a delegated credential to the Batch Replicator during the initial creation request. The service retrieves the delegated credential from the Delegation Service and stores it on the file system. As part of the Batch Replicator configuration (see installation and configuration instructions), the user selects a directory to use for storage of delegated credentials. The default setting is for the Batch Replicator to store the file in the system's designated temporary directory (e.g., /tmp on many platforms). The service sets the permissions on the temporary file such that it can only be accessed by the user account used to run the container.
Chapter 5. Debugging

1. Verbose log output

Generating verbose log output is a critical aid in troubleshooting of the Batch Replicator and is useful when communicating problems to Globus support lists. To increase logging detail, add the following line to the $GLOBUS_LOCATION/container-log4j.properties file.

```
... 
log4j.category.org.globus.replica=DEBUG
... 
```

2. Logging in Java WS Core

The following information applies to Java WS Core and all services built on Java WS Core.

Java WS Core server side has two types of loggers. One logger is used for development logging and by default writes to standard out. The other logger includes system administration information and is CEDPs best practices compliant.

On client side, only developer logging is available and is configured using log4j.properties.

2.1. Development Logging in Java WS Core

The following information applies to Java WS Core and those services built on it.

Logging in the Java WS Core is based on the Jakarta Commons Logging API. Commons Logging provides a consistent interface for instrumenting source code while at the same time allowing the user to plug-in a different logging implementation. Currently we use Log4j as a logging implementation. Log4j uses a separate configuration file to configure itself. Please see Log4j documentation for details on the configuration file format.

2.1.1. Configuring server side developer logs

Server side logging can be configured in $GLOBUS_LOCATION/container-log4j.properties, when the container is stand alone container. For tomcat level logging, refer to Logging for Tomcat. The logger log4j.appenders.A1 is used for developer logging and by default writes output to the system output. By default it is set for all warnings in the Globus Toolkit package to be displayed.

Additional logging can be enabled for a package by adding a new line to the configuration file. Example:

```
# for debug level logging from org.globus.package.FooClass
log4j.category.org.globus.package.name.FooClass=DEBUG
# for warnings from org.some.warn.package
```

log4j.category.org.some.warn.package=WARN

2.1.2. Configuring client side developer logs

Client side logging can be configured in $GLOBUS_LOCATION/log4j.properties. The logger log4j.appender.A1 is used for developer logging and by default writes output to the system output. By default it is set for all warnings in the Globus Toolkit package to be displayed.

2.2. Configuring system administration logs

The specific logger to edit will be log4j.logger.sysadmin in $GLOBUS_LOCATION/container-log4j.properties. There you can configure the following properties:

log4j.appender.infoCategory=org.apache.log4j.RollingFileAppender
    log4j.appender.infoCategory.Threshold=INFO
    log4j.appender.infoCategory.File=var/containerLog
    log4j.appender.infoCategory.MaxFileSize=10MB
    log4j.appender.infoCategory.MaxBackupIndex=2

Above implies the logging file is rolling with each file size limited to 10MB and the logging information is stored in $GLOBUS_LOCATION/var/containerLog.

2.3. Sample log file

The sample log file\(^6\) contains many log entries for various scenarios in the Java WS container.

\(^6\) http://www.globus.org/toolkit/docs/4.2/4.2.1/common/javawscore/sample-container-log.txt
Chapter 6. Troubleshooting

For a list of common errors in GT, see Error Codes.

1. Errors

Table 6.1. Batch Replicator Errors

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Definition</th>
<th>Possible Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authorization failed. Expected &lt;hostname1&gt; target but received &lt;hostname2&gt;</td>
<td>Did not receive expected hostname</td>
<td>When authorization is enabled on the container, you may need to use the proper hostname when referencing the Batch Replicator service rather than using localhost.</td>
</tr>
<tr>
<td>org.globus.wsrfs.PropertyException: Failed to create Replication: /scratch/testrun (No such file or directory)</td>
<td>Cannot find the request file</td>
<td>Ensure that the request file's filename is correct, that it is reachable by the Batch Replicator service, and that it has the appropriate permissions for the Batch Replicator service to access it.</td>
</tr>
<tr>
<td>org.globus.wsrfs.PropertyException: Failed to create Replication: String index out of range: -1</td>
<td>The request file is malformed (for example by using spaces instead of a delimiting tab character) which is resulting in a runtime exception.</td>
<td>Make sure your request file is in the correct form as described here.</td>
</tr>
</tbody>
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