



MUSE

MuseKnowledge™ Log Capabilities

MuseGlobal, Inc.
One Embarcadero
Suite 500
San Francisco, CA 94111
415 896-6873
www.museglobal.com

MuseGlobal S.A
Calea Bucuresti
Bl. 27B, Sc. 1, Ap. 10
Craiova, România
40 251-413496
www.museglobal.ro

EduLib, S.R.L.
Calea Bucuresti
Bl. 27B, Sc. 1, Ap. 2
Craiova, România
40 351-420970
www.edulib.com

Version: 1.2
Date: 15th November
2016
Author: EduLib, S.R.L.

Logging in MuseKnowledge™

Logging Features:

- Each MuseKnowledge™ Product generates log files;
- All log files are kept in special designated places inside each MuseKnowledge™ Product (e.g. `#{Product Name}/logs/`); For example the log files for Muse Control Center are located in the folder: `#{MUSE_HOME}/center/logs`;
- The logging settings for each product are in the main configuration file of the product; For example, the logging settings for Muse Web Bridge are in the `#{MUSE_HOME}/web/MusePeer.xml` file;
- Sizing of logs and rotation rules should be considered according to the usage of the servers; We recommend settings that will ensure one log per day for at least one full month;
- All log files have the *.log extension;

Types of Log Files in MuseKnowledge™:

- Debug log files: common to all MuseKnowledge™ Products;
- Statistics log files: available only for the ICE Server, Proxy Server and MuseKnowledge™ Web Bridge;
- Access log files: particular to MuseKnowledge™ Proxy;
- Captured log files: specific to the three Muse Servers – MuseKnowledge™ Embedded Apache Tomcat, MuseKnowledge™ Proxy and ICE;

MUSE



Debug Log Type

There are 2 implementations of Debug logs in Muse:

1. ICE logger; This is a MuseKnowledge™ implementation of a logger;
2. Log4J logger; This is an Apache package for logging. This is available only for the following MuseKnowledge™ Products: MuseKnowledge™ SOAP Bridge, MuseKnowledge™ Z39.50 Bridge and some internal tools; Basically the structure of each line entry is the same: Date, Debug Level, Module/Object, Message;

Configuration elements:

- <DEBUG> The following logging levels are available: ERROR, WARNING, NOTICE, DEBUG;
- <LOG_CLASS> Fully qualified log class name: E.g. com.edulib.ice.util.ICETextLog ;
- <LOG> Log file name;
- <LOG_SIZE> The maximum log file size after it gets rotated;

MUSE

More



Debug Log Type

- `<LOG_FORMAT>` Logging format: E.g. `{0, date, medium} {0, time, medium}`: `{1}: {2}: {3}>`, where the log parameters are:
 - `{0}` - the current time and date;
 - `{1}` - the logging level;
 - `{2}` - the fully qualified object name that generated the log message;
 - `{3}` - the log message;
 - `{4}` - the short name of the object that generated the current log message.
- `<LOG_MAX_BACKUP_INDEX>` The maximum number of backup files;
- `<LOG_TIME_INTERVAL>` The time interval before rotating the log. The interval is measured in hours; The following rotations rules are available:
 - `<LOG_SCHEDULED_ROTATION type="hourly" minute="minute"/>` Defines a rotation hourly;
 - `<LOG_SCHEDULED_ROTATION type="daily" hour="hour" minute="minute"/>` Defines a rotation daily;
 - `<LOG_SCHEDULED_ROTATION type="weekly" weekday="weekday" hour="hour" minute="minute"/>` Defines a rotation weekly;
 - `<LOG_SCHEDULED_ROTATION type="monthly" monthday="monthday" hour="hour" minute="minute"/>` Defines a rotation monthly.

More



Debug Log Type

Where:

- type is the rotation type (period);
- minute is in 0..59 range;
- hour is in 0..23 range;
- weekday is in 1..7 range or one of sun, mon, tue, wed, thu, fri, sat, sunday, monday, tuesday, wednesday, thursday, friday, saturday;
- monthday is in of 1..31 range.

Example of a default logger configuration for the ICE server extracted from the `#{ICE_HOME}/ICECore.xml` file:

```
<LOGGER name="default" enable="true" flush="15000">
  <DEBUG>NOTICE</DEBUG>
  <LOG_CLASS>com.edulib.ice.util.log.ICETextLog</LOG_CLASS>
  <LOG>#{ICE_HOME}/logs/ICECore.log</LOG>
  <LOG_SIZE>10485760</LOG_SIZE>
  <LOG_FORMAT>{0, date,yy/MM/dd hh:mm:ss a z} {1}: {4}: {3}</LOG_FORMAT>
  <LOG_MAX_BACKUP_INDEX>10</LOG_MAX_BACKUP_INDEX>
  <LOG_TIME_INTERVAL>24</LOG_TIME_INTERVAL>
  <LOG_SCHEDULED_ROTATION type="daily" hour="0" minute="00"/>
</LOGGER>
```

MUSE

More



Debug Log Type

Example of a default logger configuration for the ICE server extracted from the `#{ICE_HOME}/ICECore.xml` file:

```
<LOGGER name="default" enable="true" flush="15000">
  <DEBUG>NOTICE</DEBUG>
  <LOG_CLASS>com.edulib.ice.util.log.ICETextLog</LOG_CLASS>
  <LOG>#{ICE_HOME}/logs/ICECore.log</LOG>
  <LOG_SIZE>10485760</LOG_SIZE>
  <LOG_FORMAT>{0, date,yy/MM/dd hh:mm:ss a z} {1}: {4}: {3}</LOG_FORMAT>
  <LOG_MAX_BACKUP_INDEX>10</LOG_MAX_BACKUP_INDEX>
  <LOG_TIME_INTERVAL>24</LOG_TIME_INTERVAL>
  <LOG_SCHEDULED_ROTATION type="daily" hour="0" minute="00"/>
</LOGGER>

<LOGGER name="statistics" enable="true" flush="15000">
  <DEBUG>STATISTICS</DEBUG>
  <LOG_CLASS>com.edulib.ice.util.log.ICETextLog</LOG_CLASS>
  <LOG>#{ICE_HOME}/logs/ICECoreStatistics.log</LOG>
  <LOG_SIZE>5242880</LOG_SIZE>
  <LOG_FORMAT>{0, date,MM/dd/yy hh:mm:ss a z} {1}: {3}</LOG_FORMAT>
  <LOG_MAX_BACKUP_INDEX>10</LOG_MAX_BACKUP_INDEX>
  <LOG_TIME_INTERVAL>24</LOG_TIME_INTERVAL>
  <LOG_SCHEDULED_ROTATION type="daily" hour="0" minute="00"/>
</LOGGER>
```

MUSE

More



Debug Log Type

Categories of errors found in the Debug type logs:

1. Critical: Out of Memory, Too many open files, No space left on device, Unexpected exception; Example:

08/11/28 03:55:12 PM EET ERROR: Thread[ICESession: 217.156.14.184@1227879856389,5,main]: Unknown error: java.lang.OutOfMemoryError: Java heap space

2. Search Source Errors: I/O exceptions when connecting to native sources, Unauthorized access, error parsing native output (page changed); Example:

08/05/23 12:54:55 AM MDT ERROR: Thread[SEARCH: 127.0.0.1@1211525693152,5,main]: Ebrary: Cannot read from eBrary target. [Ebrary: Page cannot be displayed.] [2001]

3. Module Errors: Configuration files not found, Scripts not found; Example:

08/11/28 03:44:32 PM EET ERROR: Thread[SEARCH: 217.156.14.184@1227879856389,5,main]: Cannot perform LoCZ instruction: file not found[C:\muse/home/foundation/profiles/connectors/LoCZ.xml].

4. Bridge Errors: I/O Exceptions, Authentication failures; Example:

08/11/28 03:57:55 PM EET NOTICE: [MusePeer]: Authentication failed Login: error Invalid user/password.

MUSE



Access Log Type

- Available only for the MuseKnowledge™ Proxy;
- The format of this log type is based on the Apache Web Server access log format:
<http://www.w3.org/Daemon/User/Config/Logging.html#common-logfile-format>
- The common log file format is as follows:
remotehost rfc931 authuser [date] "request" status bytes

Where:

1. remotehost - Remote hostname (or IP number if DNS hostname is not available, or if DNSLookup is Off);
2. rfc931 - The remote logname of the user;
3. authuser - The username as which the user has authenticated himself;
4. [date] - Date and time of the request;
5. "request" - The request line exactly as it came from the client;
6. status - The HTTP status code returned to the client;
7. bytes - The content-length of the document transferred.

Example:

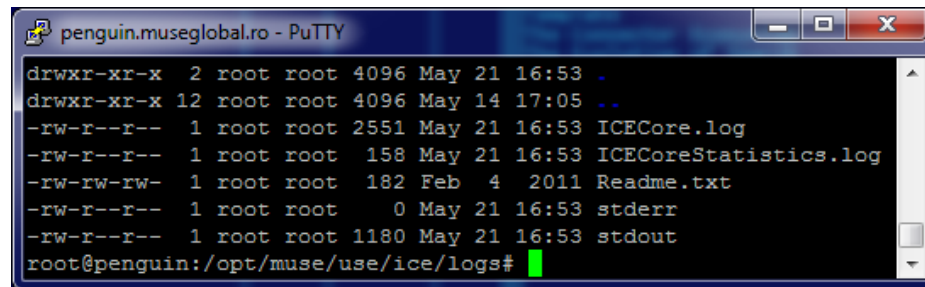
```
217.156.14.184 217.156.14.184 [28/Feb/2008:12:39:30 0200] "GET /ProxyInformation  
HTTP/1.1" 200 5768
```

MUSE





Captured Log Type

- Obtained from redirecting the standard error and output streams of the Muse processes;
- By default all three MuseKnowledge™ servers (Muse Embedded Apache Tomcat, ICE and Muse Proxy) have the output redirected into:
 - `$(Product Home)/logs/stderr` and `product_home/logs/stdout` files on Unix/Linux machines;
 - `$(Product Home)/$(Product Name).out` and `$(Product Home)/$(Product Name).err` files on Windows machines.



```
penguin.museglobal.ro - PuTTY
drwxr-xr-x  2 root root 4096 May 21 16:53 .
drwxr-xr-x 12 root root 4096 May 14 17:05 ..
-rw-r--r--  1 root root 2551 May 21 16:53 ICECore.log
-rw-r--r--  1 root root  158 May 21 16:53 ICECoreStatistics.log
-rw-rw-rw-  1 root root  182 Feb  4 2011 Readme.txt
-rw-r--r--  1 root root    0 May 21 16:53 stderr
-rw-r--r--  1 root root 1180 May 21 16:53 stdout
root@penguin:/opt/muse/use/ice/logs#
```

 MuseProxyService.err	03/09/2013 17:55	ERR File	1 KB
 MuseProxyService.out	20/05/2014 18:05	OUT File	3 KB

MUSE



Java Core Dumps

- In case of a serious Java Virtual Machine bug the whole process crashes and a dump is written on disc in files of the form: `hs_err_pidID.log`;
- The `hs_err` files contain information of the bug and the whole stack trace loaded into memory along with system information;
- With the information from the `hs_err` file one can track down the bug on the SUN (Oracle) Java forums;
- In some cases, the JVM may not produce a `hs_err_pid` file. In such cases, we need to analyze the core file produced; There are a few, different ways to look at core dumps:
 - Using `gdb`; GNU Debugger (`gdb`) can examine a core file and work out what the program was doing when it crashed;
 - Using `jstack` to print stack traces of Java threads for a given core file;
Example:

```
jstack -J-d64 $JAVA_HOME/bin/java /var/tmp/cores/java.14015.146385.core
```
 - Using `jmap` to examine a core file and print out shared object memory maps or heap memory details; Example:

```
jmap -J-d64 $JAVA_HOME/bin/java /var/tmp/cores/java.14015.146385.core
```

MUSE



Troubleshooting Tips

- Always look in the right log file for debugging information; Since the MuseKnowledge™ products are interconnected, when performing investigations look into the log files of all involved products.
For example all errors obtained in a MuseKnowledge™ Web application or client that is connecting through MuseKnowledge™ Web Bridge HTTP-XML request/response are in the MuseKnowledge™ Web Bridge log files; Then the investigation must be continued in the ICE log files; If there is nothing obvious the MuseKnowledge™ Embedded Apache Tomcat Log files should be analyzed; The captured logs could also be verified;
- If the servers seems to be irresponsive, then one could roughly check if they are responding by performing a raw Telnet on their port from the local machine or from a machine in the same network; E.g. by default on port 8000 for MuseKnowledge™ Apache Embedded Tomcat Server, port 2504 for the ICE Server, etc.; If the port is not opened it means that the server is not working.

MUSE

More



Troubleshooting Tips

- Track down all session's entries. All MuseKnowledge™ Products are session oriented hence all operations are tied to a session ID. One can search the log files for all events related to a sessionID from the login to the logoff operations. An example is below from the ICE server log file:

```
08/11/28 05:06:51 PM EET NOTICE: Thread[ICESessionsController,5,main]: Connection request from: nemo.museglobal.ro [217.156.14.184]:2514
```

```
08/11/28 05:06:51 PM EET NOTICE: Thread[ICESession: 217.156.14.184@1227884811076,5,main]: Starting ICE Session...
```

```
08/11/28 05:06:51 PM EET NOTICE: Thread[ICESession: 217.156.14.184@1227884811076,5,main]: Started ICE Session
```

```
.....  
08/11/28 05:13:13 PM EET ERROR: Thread[SEARCH: 217.156.14.184@1227884811076,5,main]: EBSCO: Database is not authenticated. [2001]
```

- For the ICE Server there are available both the Debug log and the Statistics log and both can be looked into in order to see what is happening during a session;
- If more details needs to be seen for any product, then the default Debug level (NOTICE/INFO) could be switched to DEBUG, but the output will be very verbose. This means a server restart also, with the exception of the ICE Server, which could be set through a Java JMX client;
- The dimension of the log file and the backup index (for rotation) should be increased when using the DEBUG level. This level is not meant for running a production server, because the logs become very hard to follow on real usage.



Technical Documentation

- Muse Log Capabilities.pdf;
- Muse Advanced Configuration.pdf;
- Muse Statistics Monitor.pdf;
- Muse Administrator.pdf

MUSE





MUSE

MuseKnowledge™ Log Capabilities