

How to implement log rotation with Log4j on Tomcat 8

The Lucee Installer does not come with ability to rotate logs built into it. Instead, the Lucee installers ship with Tomcat's default logging mechanism, java.util.logging. This is simple and effective logging that will work in most situations, but if you want more complex features, such as rotation based on date or size, you will need to upgrade Tomcat to use a more advanced logging mechanism, such as Log4j.

Thankfully, upgrading to log4j is NOT DIFFICULT. Download a couple things here, tweak a config file there, and you're all set.

The following is intended to be a guide on how to go about downloading and installing log4J on a system that was built using the Lucee Installers.

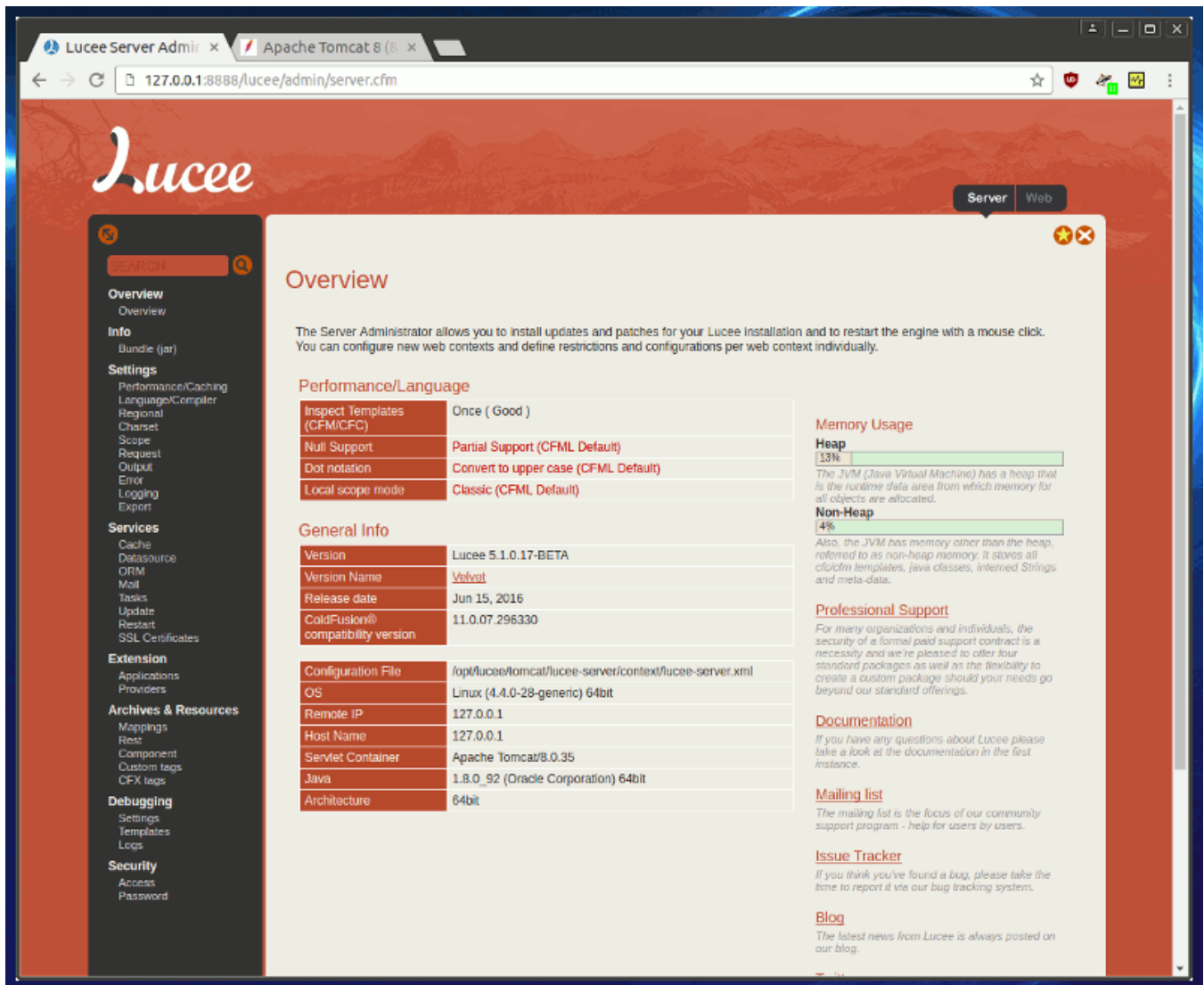
Review the Tomcat Guide (optional)

Much of the following is just a customized from of the Tomcat documentation, which, if you want to review the original, can be found [here](#).

Installing Log4J Walkthrough

The following guide will assume you've installed Lucee to the default location of /opt/lucee, and the directories stated here will be written accordingly. If you installed Lucee to a different location, you will need to update the example directories to match where you installed Lucee.

In the following example, I will be upgrading a Lucee 5 installation on Ubuntu 16.4 LTS. If you're not running this setup, you may need to interpolate these commands a bit, but the general principals will be the same.



Create the log4j.properties file

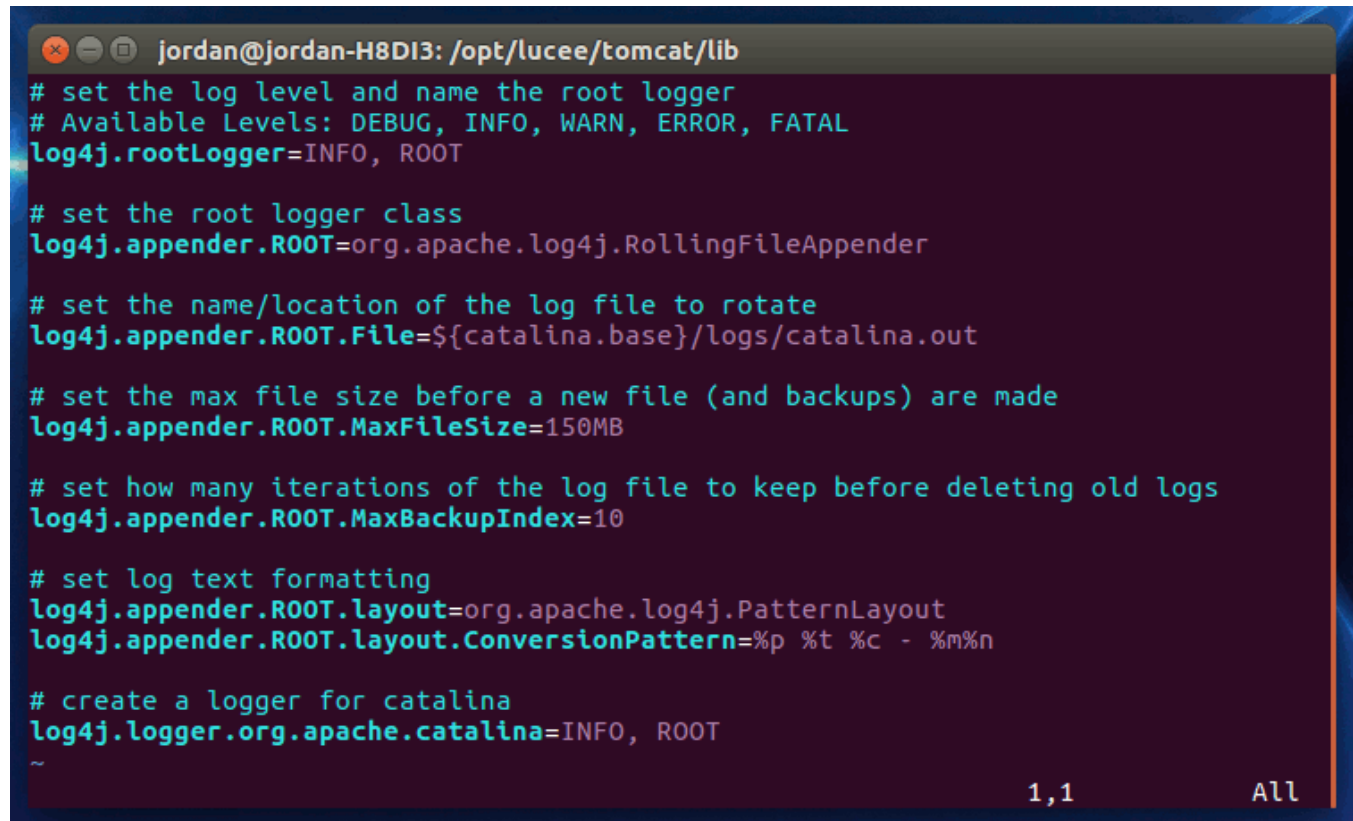
Start out by creating a standard config file. This config file will force the majority of relevant logging info to be logged in the catalina.out file. When we're done, other log files will be created, but they should not contain any actual information with the exception of a single line on occasion.

Create a new text file in /opt/lucee/tomcat/lib/ called log4j.properties.

```
$ cd /opt/lucee/tomcat/lib/  
$ sudo vim log4j.properties
```

Then add the following text to it:

```
# set the log level and name the root logger  
# Available Levels: DEBUG, INFO, WARN, ERROR, FATAL  
log4j.rootLogger=INFO, ROOT  
# set the root logger class  
log4j.appender.ROOT=org.apache.log4j.RollingFileAppender  
# set the name/location of the log file to rotate  
log4j.appender.ROOT.File=${catalina.base}/logs/catalina.out  
# set the max file size before a new file (and backups) are made  
log4j.appender.ROOT.MaxFileSize=150MB  
# set how many iterations of the log file to keep before deleting old logs  
log4j.appender.ROOT.MaxBackupIndex=10  
# set log text formatting  
log4j.appender.ROOT.layout=org.apache.log4j.PatternLayout  
log4j.appender.ROOT.layout.ConversionPattern=%p %t %c - %m%n  
# create a logger for catalina  
log4j.logger.org.apache.catalina=INFO, ROOT
```

A screenshot of a terminal window with a dark background and light-colored text. The terminal title bar shows the user 'jordan' on a machine named 'jordan-H8DI3' in the directory '/opt/lucee/tomcat/lib'. The content of the terminal is the log4j.properties configuration file, with each line of code on a new line. The text is color-coded: comments are in light blue, and configuration values are in light green. At the bottom right of the terminal window, the text '1,1' and 'All' are visible, indicating the current line and column position.

```
jordan@jordan-H8DI3: /opt/lucee/tomcat/lib  
# set the log level and name the root logger  
# Available Levels: DEBUG, INFO, WARN, ERROR, FATAL  
log4j.rootLogger=INFO, ROOT  
# set the root logger class  
log4j.appender.ROOT=org.apache.log4j.RollingFileAppender  
# set the name/location of the log file to rotate  
log4j.appender.ROOT.File=${catalina.base}/logs/catalina.out  
# set the max file size before a new file (and backups) are made  
log4j.appender.ROOT.MaxFileSize=150MB  
# set how many iterations of the log file to keep before deleting old logs  
log4j.appender.ROOT.MaxBackupIndex=10  
# set log text formatting  
log4j.appender.ROOT.layout=org.apache.log4j.PatternLayout  
log4j.appender.ROOT.layout.ConversionPattern=%p %t %c - %m%n  
# create a logger for catalina  
log4j.logger.org.apache.catalina=INFO, ROOT  
~  
1,1 All
```

Download Log4j

At the time of this writing, log4j 2.0 beta is available, but the Tomcat documentation for log4j (link above) says that Tomcat requires the 1.2.x version, which can be found in the archived versions here:

<http://archive.apache.org/dist/logging/log4j/1.2.17/>

Copy the log4j-1.2.17.jar file to /opt/lucee/tomcat/libdirectory, and you're done with this step.

```
$ cd /opt/lucee/tomcat/lib/  
$ sudo wget http://archive.apache.org/dist/logging/log4j/1.2.17/log4j-1.2.17.jar
```

A terminal window titled 'jordan@jordan-H8DI3: /opt/lucee/tomcat/lib' shows the execution of the 'sudo wget' command. The output displays the file being downloaded from 'http://archive.apache.org/dist/logging/log4j/1.2.17/log4j-1.2.17.jar', the connection to the server at 163.172.17.199, and the successful completion of the download with a status of 200 OK. The file size is 489884 bytes (478K) and it was saved at 526KB/s in 0.9s.

```
jordan@jordan-H8DI3: /opt/lucee/tomcat/lib  
jordan@jordan-H8DI3:~$ cd /opt/lucee/tomcat/lib/  
jordan@jordan-H8DI3:/opt/lucee/tomcat/lib$ sudo wget http://archive.apache.org/d  
ist/logging/log4j/1.2.17/log4j-1.2.17.jar  
--2016-06-30 18:58:35-- http://archive.apache.org/dist/logging/log4j/1.2.17/log  
4j-1.2.17.jar  
Resolving archive.apache.org (archive.apache.org)... 163.172.17.199  
Connecting to archive.apache.org (archive.apache.org)|163.172.17.199|:80... conn  
ected.  
HTTP request sent, awaiting response... 200 OK  
Length: 489884 (478K) [application/java-archive]  
Saving to: 'log4j-1.2.17.jar'  
  
log4j-1.2.17.jar 100%[=====>] 478.40K 526KB/s in 0.9s  
2016-06-30 18:58:36 (526 KB/s) - 'log4j-1.2.17.jar' saved [489884/489884]  
  
jordan@jordan-H8DI3:/opt/lucee/tomcat/lib$
```

Download Tomcat Extras

There are two additional JAR's Tomcat will need in order to use Log4j, these are tomcat-juli.jar and tomcat-juli-adapters.jar These are "extras" that the Tomcat project keeps up to date and provides downloads for. You can download these two files from the Tomcat download page, under "Extras":

<https://tomcat.apache.org/download-80.cgi>

```
$ cd /opt/lucee/tomcat/lib/  
$ sudo wget http://apache.osuosl.org/tomcat/tomcat-8/v8.0.36/bin/extras/tomcat-juli-adapters.jar  
$ sudo wget http://apache.osuosl.org/tomcat/tomcat-8/v8.0.36/bin/extras/tomcat-juli.jar
```

```
jordan@jordan-H8DI3: /opt/lucee/tomcat/lib
jordan@jordan-H8DI3:~$ cd /opt/lucee/tomcat/lib/
jordan@jordan-H8DI3:/opt/lucee/tomcat/lib$ sudo wget http://apache.osuosl.org/tomcat/tomcat-8/v8.0.36/bin/extras/tomcat-juli-adapters.jar
--2016-06-30 19:02:15-- http://apache.osuosl.org/tomcat/tomcat-8/v8.0.36/bin/extras/tomcat-juli-adapters.jar
Resolving apache.osuosl.org (apache.osuosl.org)... 64.50.233.100, 140.211.166.134
Connecting to apache.osuosl.org (apache.osuosl.org)|64.50.233.100|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 21683 (21K) [application/x-java-archive]
Saving to: 'tomcat-juli-adapters.jar'

tomcat-juli-adapters.jar 100%[=====] 21.17K --.-KB/s in 0.1s
2016-06-30 19:02:16 (202 KB/s) - 'tomcat-juli-adapters.jar' saved [21683/21683]

jordan@jordan-H8DI3:/opt/lucee/tomcat/lib$ sudo wget http://apache.osuosl.org/tomcat/tomcat-8/v8.0.36/bin/extras/tomcat-juli.jar
--2016-06-30 19:02:39-- http://apache.osuosl.org/tomcat/tomcat-8/v8.0.36/bin/extras/tomcat-juli.jar
Resolving apache.osuosl.org (apache.osuosl.org)... 140.211.166.134, 64.50.233.100
Connecting to apache.osuosl.org (apache.osuosl.org)|140.211.166.134|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 78487 (77K) [application/x-java-archive]
Saving to: 'tomcat-juli.jar'

tomcat-juli.jar 100%[=====] 76.65K --.-KB/s in 0.04s
2016-06-30 19:02:39 (1.96 MB/s) - 'tomcat-juli.jar' saved [78487/78487]

jordan@jordan-H8DI3:/opt/lucee/tomcat/lib$
```

Set the Context Log Attribute

We will need to update the default context config so that logging data is "trapped" and placed in the default root logger. In order to do this, we need to edit the default context file in `/opt/lucee/tomcat/conf/context.xml`.

In that file, we need to update this line:

```
<Context useHttpOnly="true">
```

to this:

```
<Context useHttpOnly="true" swallowOutput="true">
```

```
jordan@jordan-H8DI3: /opt/lucee/tomcat/conf
<?xml version='1.0' encoding='utf-8'?>
<!--
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contributor license agreements. See the NOTICE file distributed with
this work for additional information regarding copyright ownership.
The ASF licenses this file to You under the Apache License, Version 2.0
(the "License"); you may not use this file except in compliance with
the License. You may obtain a copy of the License at

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distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
-->
<!-- The contents of this file will be loaded for each web application -->
<Context useHttpOnly="true" swallowOutput="true">

    <!-- Default set of monitored resources. If one of these changes, the -->
    <!-- web application will be reloaded. -->
    <WatchedResource>WEB-INF/web.xml</WatchedResource>
    <WatchedResource>${catalina.base}/conf/web.xml</WatchedResource>

    <!-- Uncomment this to disable session persistence across Tomcat restarts --
>
    <!--
    <Manager pathname="" />
    -->

    <!-- Uncomment this to enable Comet connection tacking (provides events
    on session expiration as well as webapp lifecycle) -->
"context.xml" 36L, 1617C
```

Cleanup and Restart

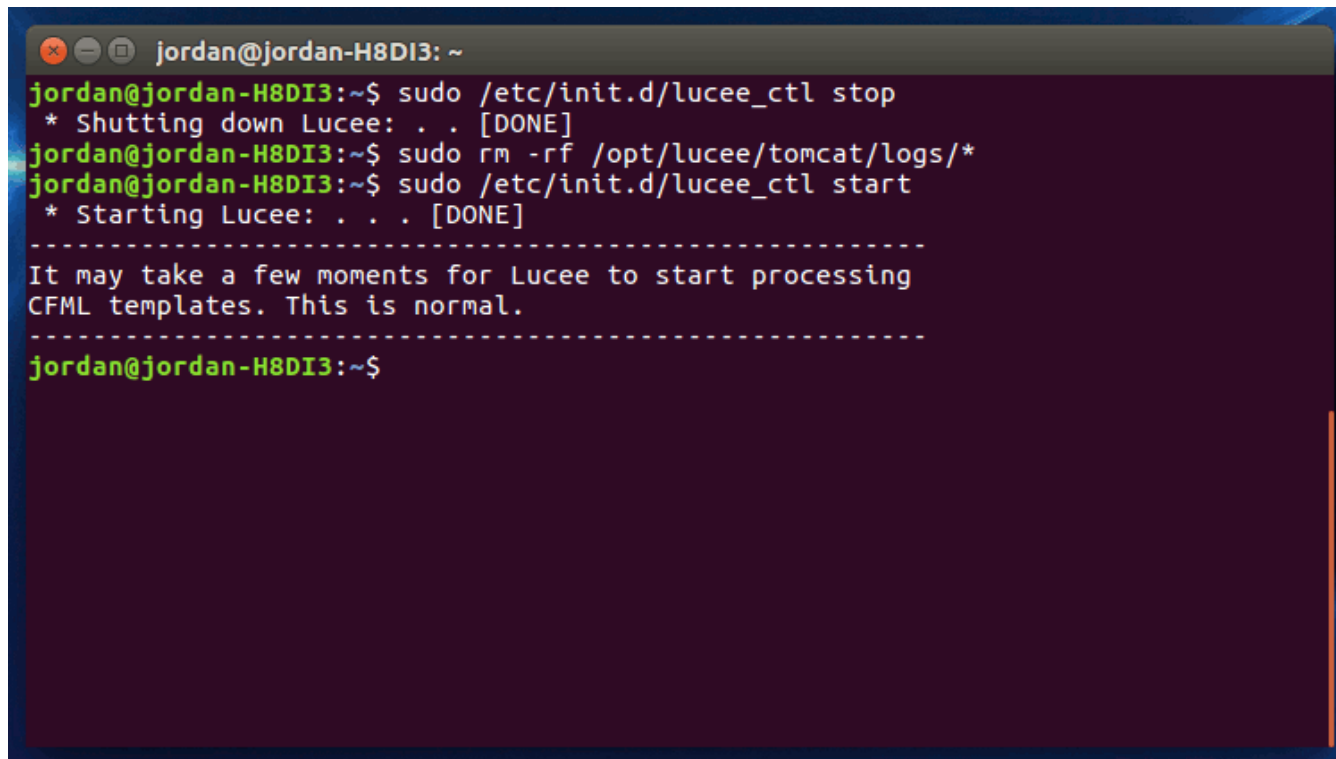
Last, we need to remove the previous logging.properties file as Tomcat will still read that and create empty log files if we do not remove it. Just delete it or rename it if you want to keep it around for some reason.

```
$ cd /opt/lucee/tomcat/conf
$ sudo mv logging.properties logging.properties.bak
```

```
jordan@jordan-H8DI3: /opt/lucee/tomcat/conf
jordan@jordan-H8DI3:~$ cd /opt/lucee/tomcat/conf
jordan@jordan-H8DI3:/opt/lucee/tomcat/conf$ sudo mv logging.properties logging.p
roperties.bak
jordan@jordan-H8DI3:/opt/lucee/tomcat/conf$
```

I would also recommend that you clean out the previous logs from the `/opt/lucee/tomcat/logs/` directory. To do this, just stop the Lucee service, delete the logs, then start it again. This will make verifying your config much easier, as you can see at a glance if your new logging config has taken effect.

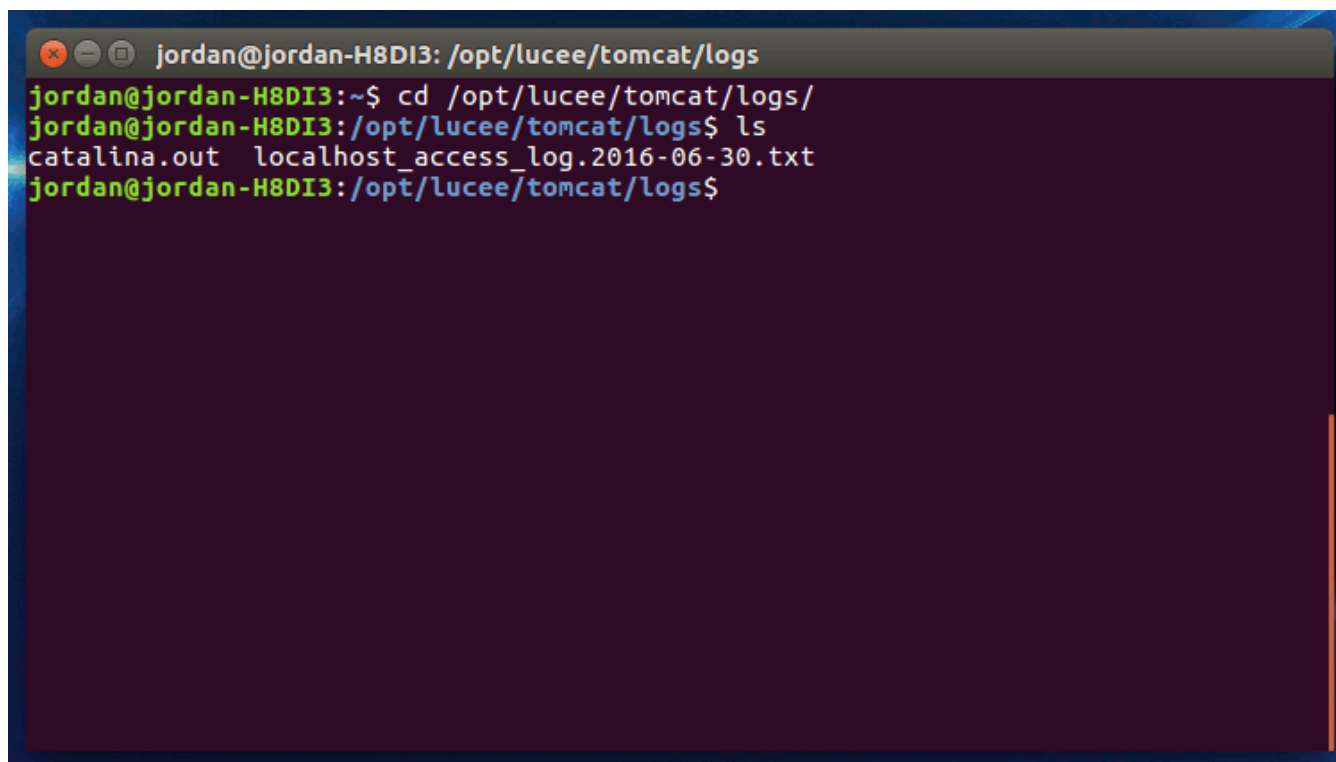
```
$ sudo /etc/init.d /lucee_ctl stop
$ sudo rm - rf /opt/lucee/tomcat/logs/*
$ sudo /etc/init.d/lucee_ctl start
```

A terminal window titled 'jordan@jordan-H8DI3: ~' with a dark purple background. It shows the execution of three commands: stopping Lucee, deleting old logs, and starting Lucee. The output shows 'Shutting down Lucee' and 'Starting Lucee' both completed successfully. A message indicates it may take time for Lucee to process CFML templates. The prompt returns to the user.

```
jordan@jordan-H8DI3: ~
jordan@jordan-H8DI3:~$ sudo /etc/init.d/lucee_ctl stop
* Shutting down Lucee: . . [DONE]
jordan@jordan-H8DI3:~$ sudo rm -rf /opt/lucee/tomcat/logs/*
jordan@jordan-H8DI3:~$ sudo /etc/init.d/lucee_ctl start
* Starting Lucee: . . . [DONE]
-----
It may take a few moments for Lucee to start processing
CFML templates. This is normal.
-----
jordan@jordan-H8DI3:~$
```

Verify Your Config

Once you've restarted Tomcat. Check your log directory and ensure that the bulk of the log data is now being stored in your catalina.out file. An example resulting log directory can be seen in the image below.

A terminal window with a dark blue title bar and a dark purple background. The title bar contains three window control icons (close, maximize, and a third icon) and the text 'jordan@jordan-H8DI3: /opt/lucee/tomcat/logs'. The terminal shows a sequence of commands and their output: 'cd /opt/lucee/tomcat/logs/' followed by a new prompt, then 'ls' followed by the output 'catalina.out localhost_access_log.2016-06-30.txt', and finally another prompt.

```
jordan@jordan-H8DI3: /opt/lucee/tomcat/logs
jordan@jordan-H8DI3:~$ cd /opt/lucee/tomcat/logs/
jordan@jordan-H8DI3:/opt/lucee/tomcat/logs$ ls
catalina.out  localhost_access_log.2016-06-30.txt
jordan@jordan-H8DI3:/opt/lucee/tomcat/logs$
```

Note that all useful log data is being directed to the catalina.out file.

If you have any questions, or if you run into any issues, please contact our Support department via [email](#), [phone](#), or [web chat](#).