

LUX 2.8 Installation Guide

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1 Prerequisites

1.1 Recommended Minimum Prerequisite Hardware

Hardware requirements for LUX vary greatly based on customer requirements. Please consult ICG personnel for additional information with regards to hardware allocation recommendations.

| LUX Component | Required Hardware |
|--|------------------------------|
| Engine Server | 16 CPU / 32GB RAM / 50GB SSD |
| User Interface Server | 4 CPU / 8GB RAM / 50GB HDD |
| Database Server | 8 CPU / 16GB RAM / 2TB SSD |
| Alert Batch Analytic Server (optional) | 16 CPU / 32GB RAM / 50GB HDD |

1.2 Required Prerequisite Software

| Software | Version | Download URL |
|----------------------|------------|--|
| CentOS or RHEL Linux | 7.x | https://www.centos.org/download/ |
| JDK | 1.8.x | https://docs.aws.amazon.com/corretto/latest/corretto-8-ug/downloads-list.html |
| MongoDB | 3.6.-4.0.X | https://docs.mongodb.com/v3.6/tutorial/install-mongodb-on-red-hat/ https://repo.mongodb.org/yum/redhat/7/mongodb-org/3.6/x86_64/RPMS/ |

1.3 Alternative Prerequisite Software

| Software | Version | Alternative to: | Download URL |
|----------|---------|----------------------|---|
| HBASE | 5.5+ | Mongo Alert Store | https://www.cloudera.com/downloads/quickstart_vms/5-13.html |
| ActiveMQ | 5.3+ | Engine REST Alserter | http://activemq.apache.org/download.html |

LUX can be configured to use the above listed alternative software for the alert DB store and alerting components of the installation to better match customer requirements. Please contact ICG personnel for configuration information.

2 Prerequisite Software Installation

2.1 JDK 1.8

The following instructions review installation steps for OpenJDK via yum

1. Update yum
 - a. `sudo yum -y update`
2. `sudo yum install java-1.8.0-openjdk`
3. Verify installed version of Java
 - a. `java -version`
 - b. Output should be similar to `openjdk version "1.8.0_252"`
4. If multiple JDKs have been installed, it is possible that alternatives may contain conflicting configurations. Perform the following steps to verify that everything is set up correctly:
 - a. `sudo /usr/sbin/alternatives --config java`
5. Verify the installation:
 - a. `java -version`
 - b. If you see a version that doesn't mention the correct JDK, then configure java and javac providers by running java alternatives and selecting the correct java provider:
 - i. `sudo /usr/sbin/alternatives --config java`
 - ii. `sudo /usr/sbin/alternatives --config javac`

2.2 MongoDB

The following instructions cover installation of a baseline, non-production ready, MongoDB Instance. For preparation of a production MongoDB instance please refer to the [MongoDB Production Notes](#), paying special attention to [hardware requirements](#) and [MongoDB clustering](#) sections.

MongoDB is required for entities in the LUX Engine and storage of multiple components of the LUX UI. The VM hosting MongoDB should have [Transparent Huge Pages](#) disabled, and [ulimit settings](#) configured appropriately for MongoDB.

Mongo, by default, will store its database files in `/var/lib/mongo`. If `/var/lib` is in a partition that does not have much space, you will want to move MongoDB to another partition.

ICG highly recommends backing up LUX related MongoDB data to allow restoration of a LUX instance in case of a database failure or data loss. Please follow [MongoDB's backup](#)

[recommendations](#) from the official documentation and utilize the backup method that works best with your infrastructure.

2.2.1 MongoDB installation via YUM

Following instructions given on the [MongoDB Community Edition webpage](#):

1. Create `/etc/yum.repos.d/mongodb-org-4.0.repo` with the following content:

```
[mongodb-org-4.0]
name=MongoDB Repository
baseurl=https://repo.mongodb.org/yum/redhat/$releasever/mongodb-org/4.0/x86_64/
gpgcheck=1
enabled=1
gpgkey=https://www.mongodb.org/static/pgp/server-4.0.asc
```

2. `sudo yum install -y mongodb-org`

If SELinux is in enforcing mode, the installation isn't using the default MongoDB directories, and you're not using the default MongoDB ports, then the SELinux policy will need to be updated according to the [MongoDB SELinux instructions](#).

2.2.2 MongoDB installation via RPM Download

Download the most recent MongoDB-Org packages from the MongoDB Community Edition RPM [download webpage](#) (v4.0.11 at time of writing).

1. `mongodb-org-server-4.0.11-1.el7.x86_64.rpm`
2. `mongodb-org-tools-4.0.11-1.el7.x86_64.rpm`
3. `mongodb-org-shell-4.0.11-1.el7.x86_64.rpm`
4. `mongodb-org-mongos-4.0.11-1.el7.x86_64.rpm`

Install the downloaded MongoDB RPMs using `yum localinstall`:

1. `sudo yum localinstall -y mongodb-org-server-4.0.11-1.el7.x86_64.rpm`
2. `sudo yum localinstall -y mongodb-org-tools-4.0.11-1.el7.x86_64.rpm`
3. `sudo yum localinstall -y mongodb-org-shell-4.0.11-1.el7.x86_64.rpm`
4. `sudo yum localinstall -y mongodb-org-mongos-4.0.11-1.el7.x86_64.rpm`

2.2.3 MongoDB Initial Configuration

Check Mongo configuration via `mongod.conf`:

1. Ensure `mongod` is listening on all interfaces.

- a. Edit `/etc/mongod.conf` and find the line that says `Listen to local interface only`. Comment out `to listen on all interfaces`. Make sure that the next line is either commented out, or specifies `bind_ip=0.0.0.0` so that mongod does indeed listen on all interfaces.
- b. Do not put the Application Server IP in `bind_ip` option. This `bind_ip` option tells MongoDB to accept connections from which local network interfaces, not which “remote IP address”.
2. If needed: Enable Mongo Security Authorization.
 - a. Edit `/etc/mongod.conf` and find the line that says `#security`. Uncomment the `#security` line and add the line `"authorization: enabled"`
3. Verify that any additional configuration settings within `/etc/mongod.conf` are configured correctly for your particular LUX installation.

3.1 YUM Configuration

1. `sudo yum clean all`
2. `sudo yum check`
3. `sudo yum upgrade`

3.1.1 ICG YUM Repository Configuration

If you will be using the online ICG YUM repository to perform the install, follow the steps here in addition to the steps in 3.1

1. `wget https://rpm.icgsolutions.com/pub/icg-repos-2.1-3.noarch.rpm`
2. `sudo rpm -Uvh icg-repos-2.1-3.noarch.rpm`
3. `sudo vim /etc/yum.repos.d/icg.repo`
4. Replace `<user>` and `<password>` with the username and password provided to you for repository access.

3.2 Database Configuration Scripts

If you are using YUM to install, install the DB configuration scripts on the VM hosting the DB:

1. `sudo yum install lux-db-config`

If you are not using YUM, install the DB configuration script from RPM:

1. `sudo rpm -Uvh lux-db-config-<VERSION>.noarch.rpm`

Change into the scripts directory to prepare for the next step:

1. `sudo su -`
2. `cd /usr/local/lux/scripts`

3.3 MongoDB configuration for LUX

Ensure the port MongoDB is listening on default port 27017 is open for connections through the firewall from the LUX UI and LUX Engine hosts (see [section 2.2.3](#)).

1. `cd /usr/local/lux/scripts/`
2. `sudo chmod +w setupMongo.js`
3. Edit `setupMongo.js` and change the temporary admin password '`<change-me>`' (in 2 places) to the admin password you will use.
4. Comment out lines 5 and 6 by adding `//` to the beginning, or remove the lines completely.
5. For JBlocks installations, uncomment the line specifying a classification value for the default project.
6. Change `{"expireAfterSeconds": 1209600}` to the value of seconds that the mongo alerts need to persist within the system.
 - a. Expiry in 14 days would be a value of `1209600`
7. Save and exit the file
8. Execute the command: `mongo setupMongo.js`
 - a. You should see messages that both 'icg' and 'lux' users were successfully added.

4 LUX Installation

4.1 User Interface (UI)

Use YUM to install the LUX UI if your environment is not on a disconnected LAN (see 4.1.2). If your environment is not able to access the internet, or ICG YUM repositories, use the RPMs provided in your LUX distribution software package (see [4.1.1](#)).

The LUX UI installation includes the installation of tomcat.

4.1.1 Install LUX packages from RPM

If you are **not** using YUM to install the LUX UI, you will need to install JSVC manually. If you are using YUM to install the LUX UI, skip to [4.1.2](#).

1. Install JSVC
 - a. `sudo yum install jsvc`
 - b. If this does not run, try the following:
 - i. On Centos 6.x: `sudo rpm -Uvh jakarta-commons-daemon-jsvc-1.0.1-8.9.e16.x86_64.rpm`

- ii. On Centos 7.X: `sudo rpm -Uvh apache-commons-daemon-jsvc-1.0.15-11.fc24.x86_64.rpm`
2. `sudo rpm -Uvh lux-ui-<VERSION>-noarch.rpm`

4.1.2 Install LUX package from YUM

Install the LUX UI Package:

1. `sudo yum install lux-ui`

4.1.3 Configure LUX UI

1. Edit `/etc/init.d/lux`
 - a. Update the variable `JAVA_HOME` with the path to java 1.8 install.
 - b. Validate ownership of the LUX UI directory to the 'LUX' user if needed:
 - c. `chown -R lux:lux /usr/local/lux/ui/`
 2. If using the default REST alerter, delete `jms.xml`
 - a. `/usr/local/lux/ui/webapps/lux/WEB-INF/spring/jms.xml`
 3. Within:
`/usr/local/lux/ui/webapps/lux/WEB-INF/classes/spring-context.properties`
configure the following required options:
 - i. `jms.server.url` - URL and connection type of the JMS server you are using. If you are following this guide to setup your JMS server, you can leave default.
 - ii. `jms.user` - Username to connect to your JMS server. If you are using this guide, leave default.
 - iii. `jms.password` - Password for the user. If you are using this guide, leave default.
 - iv. `lux.webapp.url` - The LUX server URL. This should be set to your server's URL (i.e. <https://example.com/lux>)
 - v. `builder.run` - If `=true` then it enables the LUX UI Watchboard functionality and rule folder warning colorations. Set to `=false` if watchboard functionality is not desired.
 - b. Any instance of `localhost` in `spring-context.properties` should be replaced with the actual server ip address or DNS host name or the server won't serve remotely. There should be multiple occurrences that need to be replaced.
 - c. Edit:
`/usr/local/lux/ui/webapps/lux/WEB-INF/classes/liveAlertsKmlTemplate.vm` and replace `localhost` with the hostname of the server.
 - d. Edit:
`/usr/local/lux/ui/webapps/lux/WEB-INF/classes/spring-security.properties` and replace `localhost` with the hostname of the server.
4. MongoDB Configuration for the UI:

- a. Configure settings in `/usr/local/lux/ui/webapps/lux/WEB-INF/classes/mongo.properties` by changing `mongo.url` and `mongo.entity.url` to equal the hostname of your database server.
5. Configure **Optional** Information for the LUX UI:
 - a. Modify the following file with the desired timeline values for the UI:
 - i. `/usr/local/lux/ui/webapps/lux/config/timeline/timerangeselector.json`
 - b. Add Installation details, such as customer name, LUX serial number, and license expiry dates to `/usr/local/lux/ui/webapps/lux/WEB-INF/classes/license.properties`
 - c. Add UI Installation name and validate product version in: `/usr/local/lux/ui/webapps/lux/WEB-INF/classes/version.properties`
 - d. Add the LUX Engine Version to: `/usr/local/lux/ui/webapps/lux/WEB-INF/classes/engine.properties`
6. `sudo service lux start`
7. `sudo chkconfig lux on`
8. Check the UI `catalina.out` log for errors. Rectify any found and restart LUX.
 - a. `less +F /usr/local/lux/ui/logs/catalina.out`
9. Navigate to the LUX UI Webpage
 - a. If following this guide, the URL and login credentials will be as follows:
 - b. URL: `https://<HOSTNAME>/lux/`
 - c. Default credentials:
 - i. Username - admin
 - ii. Password - admin

4.2 LUX Engine Installation

Either install the engine from RPM files provided from ICG using the instructions in section 4.2.1, or install directly from ICG's YUM repository using the instructions in [4.2.2](#). You may need to execute the following instructions with `sudo` or as root.

4.2.1 Install packages from RPM

1. `sudo rpm -Uvh --replacefiles lux-engine-<VERSION>.noarch.rpm`
2. Copy a valid `lux.lic` license file provided by ICG to the `/usr/local/lux/engine/license/` directory.
3. Edit `/etc/init.d/luxengine` replace the value of `JAVA_HOME` with the location of `java_home`.
4. `chkconfig luxengine on`

4.2.2 Install packages from YUM

1. Install the LUX Engine Package:
 - a. `sudo yum install lux-engine`
2. Copy a valid `lux.lic` license file provided by ICG to the `/usr/local/lux/engine/license` directory.
3. Edit `/etc/init.d/luxengine` replace the value of `JAVA_HOME` with the location of `JAVA_HOME`.
4. `chkconfig luxengine on`

4.2.3 Basic LUX Engine Configuration

1. Edit `/usr/local/lux/engine/EngineMain/data/conf/lux.properties` change all occurrences of `localhost` to the hostname of the LUX UI server.
2. Edit `/usr/local/lux/engine/EngineMain/data/conf/engine.properties` change the value of the `admin.console.rest.url` to the hostname of the LUX UI server.
3. Edit `/usr/local/lux/engine/EngineMain/data/conf/jms.xml` change all occurrences of `localhost` to the hostname of the LUX UI server.

4.2.4 Starting and stopping LUX Engine

1. To start LUX Engine: `sudo service luxengine start`
2. To stop LUX Engine: `sudo service luxengine stop`

4.2.5 Install Engine Admin Console

1. If using the LUX UI, verify that the Admin Console `.war` file exists on the UI host (`/usr/local/lux/ui/webapps/AdminConsole.war`).
 - a. The `AdminConsole.war` file is included on the Engine VM in most installations under `/usr/local/lux/engine/AdminConsole.war`, and can be copied to the UI VM.
2. If using the Engine as standalone, install Apache Tomcat on the Engine host and copy the `/usr/local/lux/engine/AdminConsole.war` file to the `$CATALINA_HOME/webapps/` directory.
3. Login to the LUX Engine Administration Console
 - a. If following this guide, the URL and login credentials will be as follows:
 - b. URL: `https://<HOSTNAME>/AdminConsole/`
 - c. Default credentials:
 - i. Username - admin
 - ii. Password - admin1

