Cloudera Edge Management 1.4.0

Cloudera Edge Management Installation

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Contents

Before you begin installing EFM

To start using Edge Flow Manager (EFM), you need to install it. Learn how to obtain the EFM software bits, install EFM, configure EFM, and configure security. Also learn the system requirements to do so.

System requirements for EFM

Before you begin your installation of Edge Flow Manager (EFM), carefully review the system requirements for EFM to understand operating system, database, browser, and JDK support.

Operating system support

Operating System	Version
RHEL/CentOS	7.x, 8.2, 8.4
Debian	9
Ubuntu	16.04, 18.04

JDK support

JDK	Version
OpenJDK	JDK8, JDK11
Oracle JDK	JDK8, JDK11

Supported databases

Database	Version
PostgreSQL	10.x, 11.x, 12.x, 13.x
MySQL	8.0.x
MariaDB	10.2, 10.3, 10.4, 10.5, 10.6

Browser support

Browser	Version
Chrome	>=76.0 (latest version 80.0 at time of release)
Firefox	>=68.0 (latest version 72.0 at time of release)

Other support

Package	Version
Stunnel	5.x

Install Java for EFM

You should install Java on the machine where you will install the EFM server.

Procedure

1. Download JDK from the appropriate website.

2. Run the installation command appropriate for your operating system:

   For RHEL/CentOS:

   ```
   yum install java-1.8.0-openjdk
   ```

   For Debian and Ubuntu:

   ```
   apt-get install openjdk-8-jre
   ```

Related Information
OpenJDK Download
Oracle JDK Download

Installing the EFM server

Learn how to install the Edge Flow Manager (EFM) server. You need to install database, and then install and configure the EFM server.

Installing databases for EFM

Learn how to install a database and configure it with your Edge Flow Manager (EFM) to manage, control, and monitor dataflows.

The EFM server requires a relational database. An H2 database is bundled with EFM that is used by default. While this is fine for development and test environments, for production environments, an external database is recommended.

For an external database, you can use either MySQL, MariaDB, or PostgreSQL. These topics describe how to install and configure MySQL, PostgreSQL, and MariaDB.

Note:

You should install either PostgreSQL or MySQL or MariaDB; all are not necessary.

Related Information
System requirements for EFM

Installing and configuring MySQL

Learn how to install and configure MySQL for Edge Flow Manager (EFM).

For supported database versions, see *System Requirements for EFM*.

Install MySQL

If you want to use PostgreSQL or MariaDB instead of MySQL, you may skip these steps. See the instructions for PostgreSQL and MariaDB in the respective sections.

1. Log in to the machine on which you want to install MySQL to use for the EFM server.
2. Install MySQL and the MySQL community server, and start the MySQL service. For installation instructions, check https://dev.mysql.com/doc/refman/5.7/en/installing.html.
3. Obtain the randomly generated MySQL root password.

   ```
   grep 'A temporary password is generated for root@localhost' \
   /var/log/mysqld.log |tail -1
   ```

4. Reset the MySQL root password. Enter the following command. You are prompted for the password you obtained in the previous step. MySQL then asks you to change the password.

```
/usr/bin/mysql_secure_installation
```

5. Download the MySQL JDBC Connector and place it in the EFM lib directory: /path/to/efm-1.4.0/lib/.

> **Note:** The folder is created when EFM is being installed.

Download the MySQL database driver from https://dev.mysql.com/downloads/connector/j/.

> **Note:** The above link redirects you to the latest version of the driver. You need to choose the right driver version that fits your DB setup.

It is recommended to select the Platform Independent offering, download one of the archives, extract, and then copy the connector JAR to the lib directory.

Configure MySQL for use by EFM

1. Launch the MySQL shell:

```
mysql -u root -p
```

2. Create the database for the EFM service to use:

```
CREATE DATABASE efm CHARACTER SET latin1;
```

3. Create the efm user account, replacing the final IDENTIFIED BY string with your password:

```
CREATE USER 'efm'@'%' IDENTIFIED BY 'efmPassword';
```

4. Assign privileges to the efm account:

```
GRANT ALL PRIVILEGES ON efm.* TO 'efm'@'%';
```

5. Commit the operation:

```
FLUSH PRIVILEGES;
```

Configure the EFM database properties

1. Configure the database properties in the efm.properties file:

```
efm.db.url=jdbc:mysql://localhost:3306/efm
efm.db.driverClass=com.mysql.cj.jdbc.Driver
efm.db.username=efm
efm.db.password=efmPassword
```

The URL should match the host and port of the machine running MySQL. Username and password at the DB side and in the efm.properties file must match.

Installing and configuring PostgreSQL

Learn how to install and configure PostgreSQL for Edge Flow Manager (EFM).

For supported database versions, see *System Requirements for EFM*.

Install PostgreSQL

If you are using MySQL or MariaDB instead of PostgreSQL, you may skip these steps. See the instructions for MySQL and MariaDB in the respective sections.

1. Install Red Hat Package Manager (RPM) according to the requirements of your operating system:

```
sudo yum install -y https://download.postgresql.org/pub/repos/yum/reporp
ms/EL-7-x86_64/pgdg-redhat-repo-latest.noarch.rpm
```

2. Install PostgreSQL version 9.6:

```
yum install postgresql96-server postgresql96-contrib postgresql96
```

3. Initialize the database:

For example, if you are using CentOS 7, use the following syntax:

```
/usr/pgsql-9.6/bin/postgresql96-setup initdb
```

4. Start PostgreSQL.

For example, if you are using CentOS 7, use the following syntax:

```
systemctl enable postgresql-9.6.service
systemctl start postgresql-9.6.service
```

5. Verify that you can log in:

```
sudo su postgres
psql
```

Configure PostgreSQL to allow remote connections

It is critical that you configure PostgreSQL to allow remote connections before you deploy EFM. If you do not perform these steps in advance of installing the EFM server, the installation fails.

1. Open /var/lib/pgsql/9.6/data/pg_hba.conf and update to the following:

```
# "local" is for Unix domain socket connections only
local all all trust


# IPv4 local connections:
host all all 0.0.0.0/0 trust

# IPv6 local connections:
host all all ::/0 trust
```

2. Open /var/lib/pgsql/9.6/data/postgresql.conf and update to the following:

```
listen_addresses = '*'
```

3. Restart PostgreSQL.

```
systemctl stop postgresql-9.6.service
systemctl start postgresql-9.6.service
```

Configure PostgreSQL for use by EFM

1. Log in to PostgreSQL:

```
sudo su postgres
```

```
psql
```

2. Create a database for the EFM service to use:

```
create database efm;
CREATE USER efm WITH PASSWORD 'efmPassword';
GRANT ALL PRIVILEGES ON DATABASE "efm" to efm;
```

Configure the EFM database properties

1. Configure the database properties in the efm.properties file:

```
efm.db.url=jdbc:postgresql://localhost:5432/efm
efm.db.driverClass=org.postgresql.Driver
efm.db.username=efm
efm.db.password=efmPassword
```

The URL should match the host and port of the machine running PostgreSQL. The password should match the value that you set using the following command:

```
CREATE USER efm WITH PASSWORD 'efmPassword';
```

Installing and configuring MariaDB

Learn how to install and configure MariaDB for Edge Flow Manager (EFM). MariaDB should act as a drop-in binary for MySQL so configuration should be very similar.

For supported database versions, see *System Requirements for EFM*.

Install MariaDB

If you are using MySQL or PostgreSQL instead of MariaDB, you may skip these steps. See the instructions for MySQL and PostgreSQL in the respective sections.

1. Log in to the machine on which you want to install MariaDB to use for the EFM server.
2. Install MariaDB and the MariaDB server, and start the MariaDB service.

For install instructions, check https://mariadb.com/kb/en/getting-installing-and-upgrading-mariadb/.
3. Use the following command to reset the MariaDB root password:

```
/usr/bin/mysql_secure_installation
```

MariaDB then asks you to change the password.
4. Download the MariaDB JDBC connector and place it in the EFM lib directory:

```
/path/to/efm-1.4.0/lib/
```

> **Note:** The folder is created when EFM is being installed.

5. Download the MariaDB database driver from https://mariadb.com/kb/en/about-mariadb-connector-j/.

> **Note:** The above link redirects you to the latest version of the driver. You need to choose the right driver version that fits your DB setup.

> **Note:** Cloudera recommends to select the platform independent offering, download one of the archives, extract, and then copy the connector JAR to the lib directory.

Configure MariaDB for use by EFM

1. Launch the MySQL shell:

```
mysql -u root -p
```

2. Create the database for the EFM service to use:

```
CREATE DATABASE efm CHARACTER SET latin1;
```

3. Create the efm user account, replacing the final IDENTIFIED BY string with your password:

```
CREATE USER 'efm'@'%' IDENTIFIED BY 'efmPassword';
```

4. Assign privileges to the efm account:

```
GRANT ALL PRIVILEGES ON efm.* TO 'efm'@'%';
```

5. Commit the operation:

```
FLUSH PRIVILEGES;
```

Configure the EFM database properties

1. Configure the database properties in the efm.properties file:

```
efm.db.url=jdbc:mariadb://localhost:3306/efm?useMysqlMetadata=true
efm.db.driverClass=org.mariadb.jdbc.Driver
efm.db.username=efm
efm.db.password=efmPassword
```

The URL should match the host and port of the machine running MariaDB. The password should match the value that you set using the following command:

```
CREATE USER 'efm'@'%' IDENTIFIED BY 'efmPassword';
```

Installing EFM server

Learn how to install the Edge Flow Manager (EFM) server.

Procedure

1. Move the efm-version-bin.tar.gz tarball to the desired host and installation directory.

   For download locations, see *EFM download locations*.

2. Extract the EFM tarball in the desired installation directory:

```
tar -xzf efm-version-bin.tar.gz
```

> ⚠️ **Important:** You should not install EFM server on HDF nodes, more precisely, where net.ipv4.tcp_tw_ recycle=1 is set, as it is not compatible with NAT and Load Balancers.

Related Information
EFM download locations

Installing EFM as an operating system service

The Edge Flow Manager (EFM) executable supports installation as a service on most Linux distributions. This is an optional installation step that is not required if you prefer to start the EFM server from the efm.sh executable included in the EFM bin directory.

You can start the application as a service by using either init.d or systemd.

Install EFM as an init.d service

To install EFM as an init.d service, symlink bin/efm.sh to init.d.

```
$ sudo ln -s /path/to/efm/bin/efm.sh /etc/init.d/efm
```

Once installed, you can start and stop the service as you would other OS services. For example:

```
$ service efm start
```

To configure EFM to start automatically on system boot, use update-rc.d. See man update-rc.d for information on using this utility.

> **Note:** The EFM application runs as the user who owns the efm.sh launch script. It is recommended to never run as root. The recommended best practice is to create a specific user for running efm. Then use chown to make that user the owner of efm.sh. For example:
>
> ```
> $ chown efm:efm /path/to/efm/bin/efm.sh
> ```
>
> It is also recommended to use Unix or Linux filesystem permissions in order to secure the EFM installation. The rule of setting minimal access permissions applies. All files in the EFM installation should only be accessible to the EFM run-as user. Configuration files should be made read-only (for example, chmod 40 0 <file>). Executable files, such as those in the bin directory, should be made read and executable only (for example, chmod 500 <file>). Directories in the EFM install location should be readable and writable to the EFM user (for example, chmod 600   <dir>).

Install EFM as a systemd service

Most modern Linux distributions now use systemd as the successor to init.d (System V). In many cases you can continue to use init.d, but it is also possible to launch EFM using systemd as a service configuration.

To install EFM as a systemd service, create a file named efm.service in the /etc/systemd/system directory. For example:

```
[Unit]
Description=efm
After=syslog.target

[Service]
User=efm
ExecStart=/path/to/efm/bin/efm.sh
SuccessExitStatus=143

[Install]
WantedBy=multi-user.target
```

> **Note:** When using systemd, the run-as user, the PID file, and the console log file are managed by systemd and therefore must be configured by using appropriate fields in the service script. Consult the service unit configuration man page for more details.
>
> To configure EFM to start automatically on system boot, use systemctl. See man systemctl for information on using this utility.

Configuring the EFM server

Once the Edge Flow Manager (EFM) server is installed, you can configure it by editing the efm.properties file. At minimum, you should edit the EFM server address and configure the connection to your database.

Procedure

1. Open the efm.properties file located in $EFM_HOME/conf/efm.properties.

   Note: The EFM home directory is the root directory where you installed the EFM binary.

2. Configure the EFM server address. Change efm.server.address=localhost to efm.server.address={EFM_IP_OR_HOSTNAME}, or use 0.0.0.0 to listen on all network interfaces.

Set the encryption password for EFM

You need to set the efm.encryption.password property which specifies a master password used for encrypting sensitive data saved to the Edge Flow Manager (EFM) server.

You can set it through the efm.properties file, a command line argument, or an OS environment variable.

By default, the EFM application uses AES encryption. The encryption key used is deterministically derived from an encryption password that the admin user must provide to the application at runtime. The property that is read for the encryption password is efm.encryption.password. You can set the value for this property in following ways:

- As a command line argument: ./bin/efm.sh   --efm.encryption.password=myEfmPassword
- As a Java System Property: -Defm.encryption.password=myEfmPassword
- As an OS environment variable: export   EFM_ENCRYPTION_PASSWORD=myEfmPassword
- As a key/value pair in the efm.properties file: efm.encryption.password=myEfmPassword

Note: The master encryption password must be at least 12 characters long. It must be the same for all EFM instances.

The derived encryption key length is determined by your Java Runtime Environment encryption strength profiles.

- Unlimited Strength Encryption active: AES 256-bit key
- Unlimited Strength Encryption inactive: AES 128-bit key

It is strongly recommended that you enable Unlimited Strength Encryption in your Java Runtime Environment.

Open network ports for EFM

You should ensure that the required ports are available for the Edge Flow Manager (EFM) server and its components.

Component	Port number
EFM Server HTTP	10090
EFM Server Constraint application protocol (CoAP)	8989

Starting the EFM server

After you install and configure the Edge Flow Manager (EFM) server, you can start it. Learn how to start the EFM server.

Procedure

1. From the EFM server home directory, run:

```
bin/efm.sh start
```

2. Access the UI by browsing to the following location:

```
http://{EFM_HOST_OR_IP}:10090/efm/
```