Cloudera Edge Management 1.6.0

Encrypting Sensitive Properties

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Encrypt sensitive properties

You can encrypt sensitive information stored in the efm.properties file. You can encrypt a single sensitive property stored in the efm.properties file. You can also encrypt multiple sensitive properties stored in the efm.properties file.

Whenever you store sensitive information like database, keystore passwords in the efm.properties file, you are essentially making them vulnerable. Edge Flow Manager (EFM) provides an internal way to deal with this problem.

To decrypt sensitive properties EFM relies on the Jasypt library which Cloudera also recommends to use for encryption.

Encryption of a single property

Learn how you can encrypt a single sensitive property stored in the efm.properties file.

To encrypt a property, you should use the Jasypt CLI which you can download from here: http://www.jasypt.org/cli.html

Once you download the CLI, a single property can be encrypted by using the following command:

```
./encrypt.sh input=propertyValueToEncrypt password=secretKey \
algorithm=PBEWITHHMACSHA512ANDAES_256 \
ivGeneratorClassName=org.jasypt.iv.RandomIvGenerator
```

Please note that you need to specify the above algorithm and the ivGeneratorClassName values, because these are the default ones in Edge Flow Manager (EFM). If you do not specify them, the Jasypt CLI uses its defaults which is incompatible with EFM. If you still want to use them or if you want to choose a different algorithm, you need to specify them for EFM with these properties in the efm.properties file:

```
efm.property.encryptor.algorithm=
efm.property.encryptor.ivGeneratorClassName=
```

To list available algorithms you can run the following command:

```
./listAlgorithms.sh
```

Please note that this command does not list any argument from non-default JCE providers like Bouncy Castle unless you have registered such providers at the JVM. For more info visit http://www.jasypt.org/non-default-providers.html.

You can use this approach to encrypt multiple properties, but you should use the same password for each as you can provide only one password when starting up EFM.

With some Java 8 versions, the Jasypt CLI throws java.lang.ExceptionInInitializerError error. To fix this issue you need to update the icu4j library used by Jasypt. This means you need to update the <jasypt-root>/lib/icu4j-3.4.4.jar file (if you are using Jasypt 1.9.3) with a newer version that you can download from here: https://github.com/unicode-org/icu/releases/download/release-68-2/icu4j-68_2.jar.

Once you acquire the encrypted value, you need to wrap it in ENC(...) to let EFM know that it should treat the property as an encrypted value. For example,

```
efm.server.ssl.keyStorePassword=ENC(e2cpfr5CA+xyS8uU2BNXltKoR/hCBJeJlBxMAO2l
Ngt1snFOGza6uUCJCZGGNl5Q)
```

Encryption of multiple properties

Learn how you can encrypt multiple sensitive properties stored in the efm.properties file.

Although it is possible to encrypt multiple properties one by one described in *Encryption of a single property* section, Edge Flow Manager (EFM) provides a helper script for convenience that you can use to encrypt all sensitive properties stored in the efm.properties file.

This script relies on the Jasypt CLI, therefore it is necessary that you install it. Also it requires the JASYPT_HOME environment variable set, which points to the root directory of Jasypt.

To encrypt a specific property, wrap its unencrypted value with DEC(...) in the efm.properties file. For example,

efm.server.ssl.keyStorePassword=DEC(passwordToEncrypt)

To encrypt the efm.properties file, you need to use the encrypt_properties.sh command and you need to provide the secret key with the -p flag which stands for password. For example,

./bin/encrypt_properties.sh -p secretKey

Unless it is explicitly specified through -o option, this script produces a .encrypted file next to the original one. You need to overwrite the original file with this newly created file.

You can also use the following optional flags:

- -h: Prints help
- -a: Specifies the algorithm used for encryption. Default value is PBEWITHHMACSHA512ANDAES_256.
- -i: Specifies the ivGeneratorClassName. Default value is org.jasypt.iv.RandomIvGenerator.
- -l: Specifies an alternative location for the property file. Default value is conf/efm.properties.
- -o: Specifies the output file location. Default value is conf/efm.properties.encrypted (<originalfile>.encrypted).

Startup of EFM with encrypted properties

Learn how to start up Edge Flow Manager (EFM) after you encrypt a single sensitive property or multiple sensitive properties.

After you set the encrypted properties in the efm.properties file described in *Encryption of a single property* or *Encryption of multiple properties* section, you need to provide your secret key to EFM at startup. There are two ways to provide the secret key; directly through a property or through a file:

- You can set the secret key directly through a property in the following ways:

  - As a command line argument: ./bin/efm.sh   --efm.property.encryptor.password=secretKey
  - As a Java system property: -Defm.property.encryptor.password=secretKey
  - As an Operating System environment variable: export   EFM_PROPERTY_ENCRYPTOR_PASSWORD =secretKey
  - As a key value pair in the efm.properties file: efm.property.encryptor.password=secretKey
- You can set the secret key through a file in the following way:

  Provide the path to the secret key file in the efm.property.encryptor.passwordFile property:

```
efm.property.encryptor.passwordFile=<path-to-file>
```

Note: Please ensure that correct permissions are set on the file so EFM can access it at startup. Also please note that whitespaces are trimmed from the file content.