

Securing Streams Messaging Manager

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Securing Streams Messaging Manager

As a cluster administrator, you can combine Kerberos authentication and Ranger authorization to secure the Streams Messaging Manager (SMM) web user interface (UI). After you secure the SMM web UI, the login page appears, which does not appear by default.

About this task

If you deploy SMM without security, the login page is not enabled on the SMM UI by default. When you enable Kerberos authentication, SMM uses SPNEGO to authenticate users and allows them to view or create topics within Kafka by administering Ranger Kafka Policies. For information on enabling browsers to use SPNEGO, see [How to Configure Browsers for Kerberos Authentication](#).

After you secure SMM, anyone within the organization can login to SMM. However, if they do not have the correct policy configuration in Ranger, then they may not have the necessary privileges to perform their required tasks through SMM.

Before you begin

- Configure Kafka in Ranger

For more information, see *Configure a resource-based service: Kafka*.

- Enable Kerberos authentication for Kafka

For more information, see *Enable Kerberos authentication*.

- Add and configure SMM

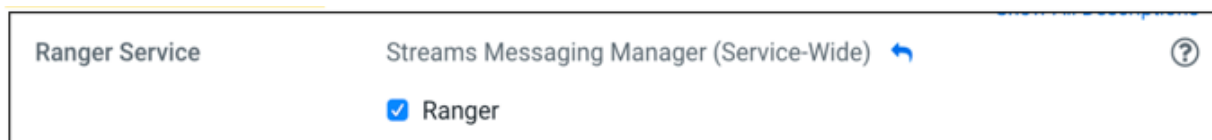
For more information, see *Creating your first Streams Messaging cluster*.



Note: For the Kafka Client security protocol, it is possible to use INFERRED, SASL_PLAINTEXT, and SASL_SSL for securing SMM. However, Cloudera recommends using SASL_SSL.

Procedure

1. Go to Cloudera Manager > SMM, and click Configuration.
2. Enable Ranger for SMM.



3. Go to the Ranger service UI and configure the Kafka policies.



Note: Review your Ranger Kafka Policies. Remember to log in to Ranger with a user that has the Ranger Admin role.

4. Click cm_kafka in the Ranger service UI.



The List of Policies page appears.

5. Click Add New Policy.

Ranger

Access Manager

Audit

Security Zone

Settings

admin

Service Manager

cm_kafka Policies

List of Policies : cm_kafka

Search for your policy...

Add New Policy

| Policy ID | Policy Name | Policy Labels | Status | Audit Logging | Roles | Groups | Users | Action |
|-----------|---|---------------|---------|---------------|-------|--------|---|--|
| 22 | all - consumer group | -- | Enabled | Enabled | -- | -- | <div>crusecontrol</div> <div>streamsmgmr</div> <div>kafka</div> <div>streamsmgmr</div> <div>+ More...</div> | <div>eye</div> <div>edit</div> <div>delete</div> |
| 23 | all - topic | -- | Enabled | Enabled | -- | -- | <div>crusecontrol</div> <div>streamsmgmr</div> <div>kafka</div> <div>streamsmgmr</div> <div>+ More...</div> | <div>eye</div> <div>edit</div> <div>delete</div> |
| 24 | all - transactional id | -- | Enabled | Enabled | -- | -- | <div>crusecontrol</div> <div>streamsmgmr</div> <div>kafka</div> <div>streamsmgmr</div> <div>+ More...</div> | <div>eye</div> <div>edit</div> <div>delete</div> |
| 25 | all - cluster | -- | Enabled | Enabled | -- | -- | <div>crusecontrol</div> <div>streamsmgmr</div> <div>kafka</div> <div>streamsmgmr</div> <div>+ More...</div> | <div>eye</div> <div>edit</div> <div>delete</div> |
| 26 | all - delegation token | -- | Enabled | Enabled | -- | -- | <div>crusecontrol</div> <div>streamsmgmr</div> <div>kafka</div> <div>streamsmgmr</div> <div>+ More...</div> | <div>eye</div> <div>edit</div> <div>delete</div> |
| 27 | ATLAS_HOOK | -- | Enabled | Enabled | -- | -- | <div>hbase</div> <div>hive</div> <div>impala</div> <div>mgov</div> <div>+ More...</div> | <div>eye</div> <div>edit</div> <div>delete</div> |
| 28 | ATLAS_ENTITIES | -- | Enabled | Enabled | -- | -- | <div>atlas</div> <div>rangertagsync</div> <div>cloudera-scm</div> | <div>eye</div> <div>edit</div> <div>delete</div> |
| 29 | ATLAS_SPARK_HOOK | -- | Enabled | Enabled | -- | public | <div>atlas</div> <div>cloudera-scm</div> | <div>eye</div> <div>edit</div> <div>delete</div> |
| 30 | atlas consumer group | -- | Enabled | Enabled | -- | -- | <div>atlas</div> | <div>eye</div> <div>edit</div> <div>delete</div> |
| 31 | ranger_entities_consumer consumer group | -- | Enabled | Enabled | -- | -- | <div>rangertagsync</div> | <div>eye</div> <div>edit</div> <div>delete</div> |
| 42 | enable-create | -- | Enabled | Enabled | -- | -- | <div>cloudera-scm</div> | <div>eye</div> <div>edit</div> <div>delete</div> |

The Policy Details page appears.

Policy Details :

Policy Type

Access

Policy Name *

enable-create

enabled

normal

Policy Label

Policy Label

cluster

*

x *

include

Description

Audit Logging

YES

6. Add a policy name and select cluster from the dropdown.

Policy Details :

Policy Type **Access**

Policy Name * **enabled** **normal**

Policy Label **include**

topic
transactionalid
✓ cluster
delegationtoken
consumergroup

Description

Audit Logging **YES**

7. Type * in the field beside cluster, and select the * from the values that appear.
8. Go to the Allow Condition section and select the user.
9. Add permissions by clicking the + under Add Permissions.

Allow Conditions :

| Select Role | Select Group | Select User | Policy Conditions | Permissions | Delegate Admin |
|--|--|--|----------------------------|-----------------------------|--------------------------|
| <input type="text" value="Select Roles"/> | <input type="text" value="Select Groups"/> | <input type="text" value="x streamsmgmr"/> | Add Conditions + | Add Permissions + | <input type="checkbox"/> |
| <div> <div>+</div> <div>Exclude from Allow Conditions :</div> </div> | | | | | |
| <input type="text" value="Select Roles"/> | <input type="text" value="Select Groups"/> | <input type="text" value="Select Users"/> | Add Conditions + | Add Permissions + | <input type="checkbox"/> |

add/edit permissions
☐ Configure
☒ Describe
☐ Kafka Admin
☒ Create
☐ Idempotent Write
☐ Describe Configs
☐ Alter Configs
☐ Cluster Action
☐ Alter
☐ Select/Deselect All

10. Select Create and Describe permissions.
11. Click Add.

Related Information

[Configure a resource-based service: Kafka](#)

[Enable Kerberos Authentication](#)

[Creating your first Streams Messaging cluster](#)

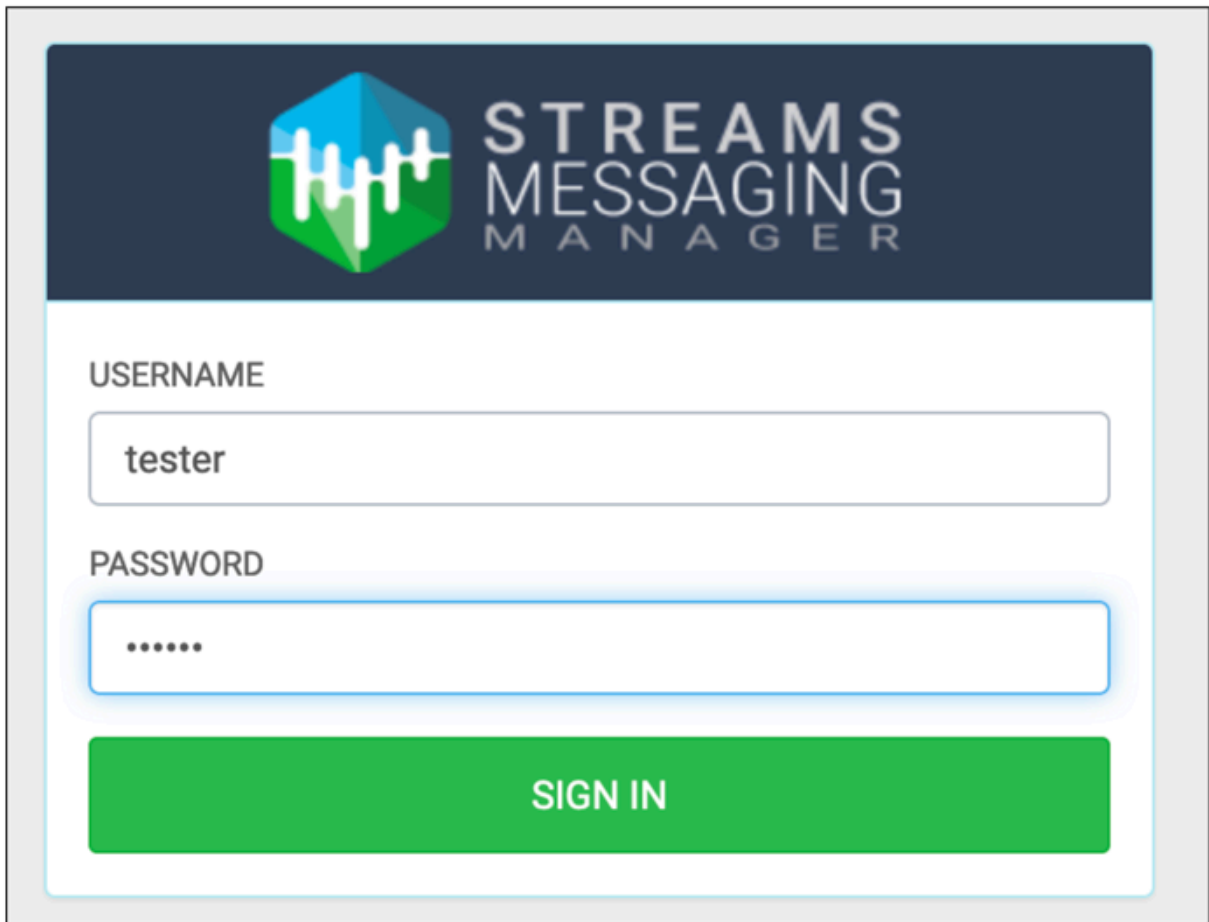
Verifying the setup

After you secure SMM, you can verify the security setup. You can login to the SMM web UI and create Kafka topics.

Procedure

1. Go to Cloudera Manager > SMM .

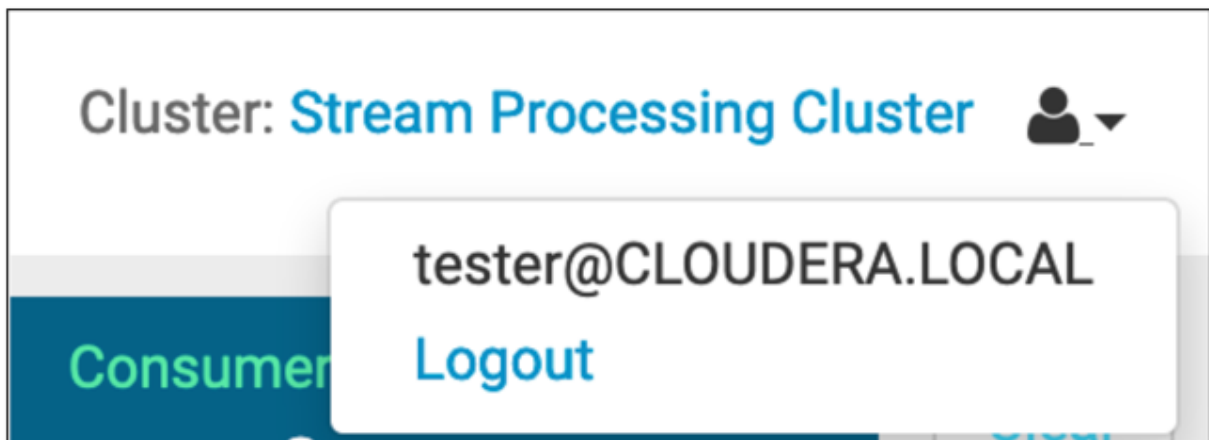
The login page for SMM appears.



The screenshot shows the login interface for Streams Messaging Manager. At the top, there is a dark blue header with the SMM logo (a green hexagon with a white waveform) and the text "STREAMS MESSAGING MANAGER". Below the header, the form has two input fields: "USERNAME" with the value "tester" and "PASSWORD" with masked characters ".....". A large green "SIGN IN" button is positioned below the password field.

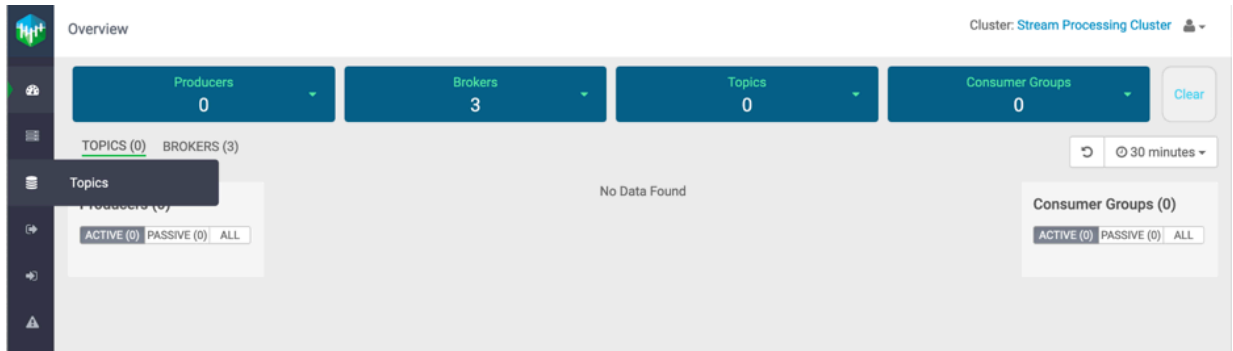
2. Login to the SMM UI using your regular credentials.

After you log in, you see the user logout dropdown at the top right corner of your screen. It shows the domain associated with the user.

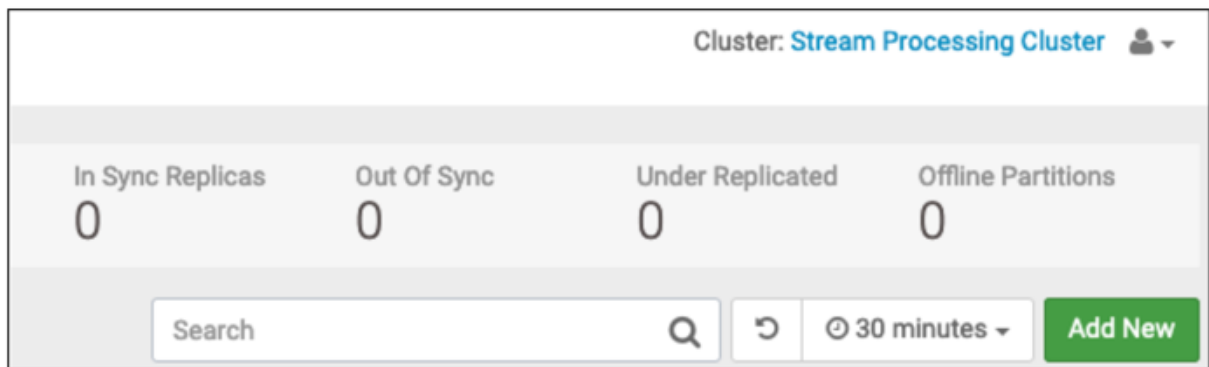


3. Click Streams Messaging Manager Web UI.

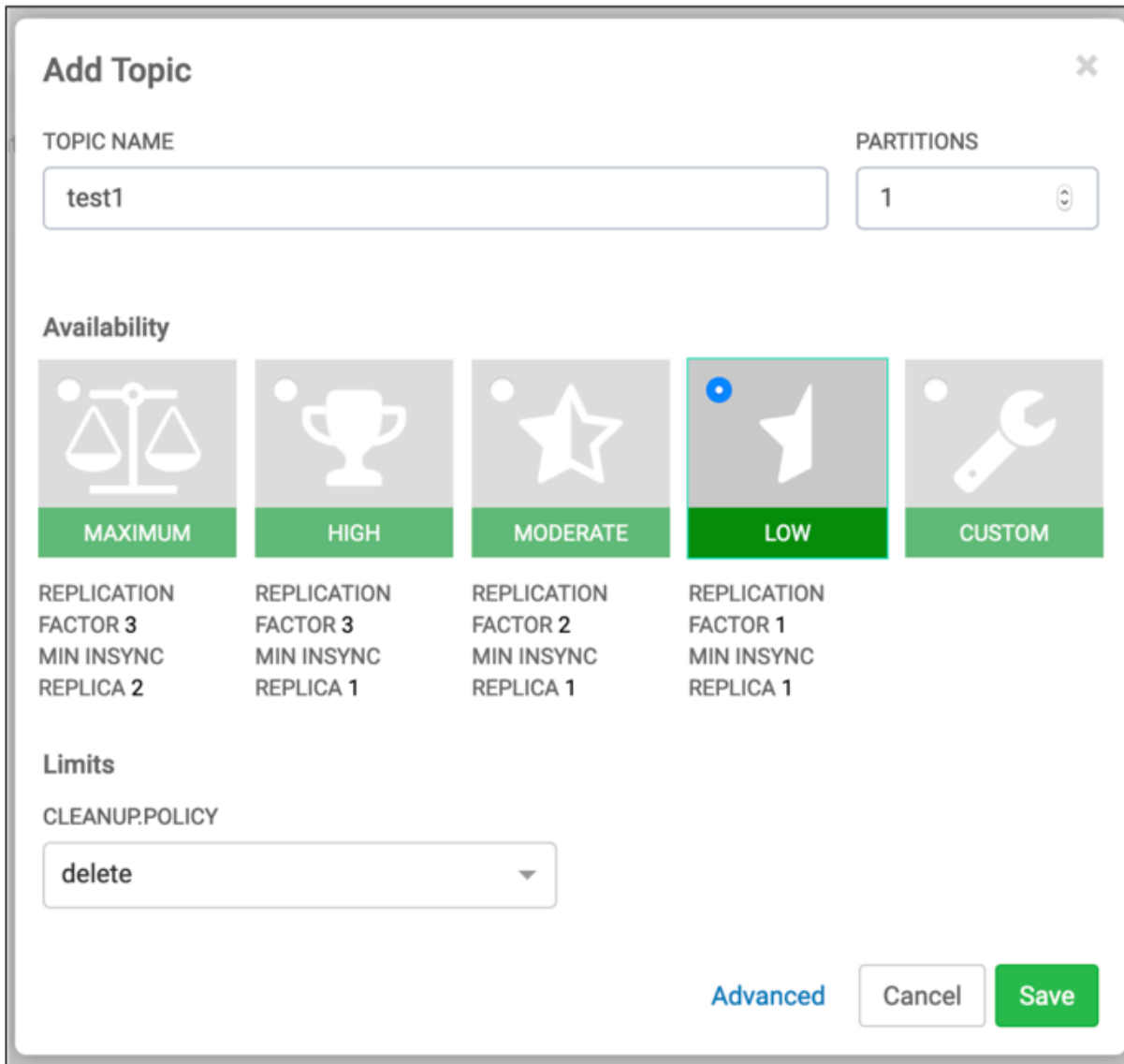
4. To add a topic, go to Topics.



5. Click Add New.



6. Add a topic name, select partitions, and cleanup policy.

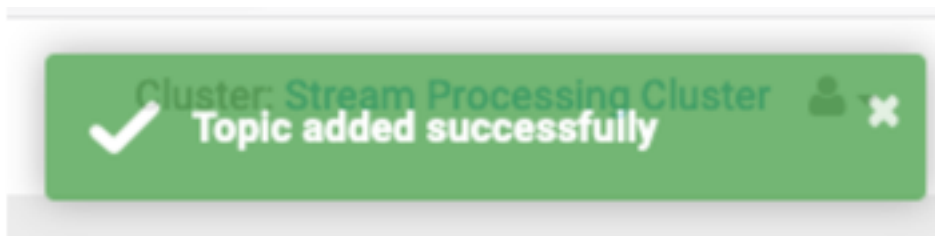


The "Add Topic" dialog box is shown. It has a title bar with a close button. The "TOPIC NAME" field contains "test1". The "PARTITIONS" field is a dropdown menu set to "1". Below these fields is the "Availability" section, which contains five icons representing different availability levels: "MAXIMUM" (scales), "HIGH" (trophy), "MODERATE" (star), "LOW" (star with a blue dot), and "CUSTOM" (wrench). The "LOW" option is selected. Below the availability options is the "Limits" section, which contains a "CLEANUP.POLICY" dropdown menu set to "delete". At the bottom right of the dialog are three buttons: "Advanced" (blue text), "Cancel" (white text on a light gray button), and "Save" (white text on a green button).

| Availability | Replication Factor | Min Insync Replicas |
|--------------|--------------------|---------------------|
| MAXIMUM | 3 | 2 |
| HIGH | 3 | 1 |
| MODERATE | 2 | 1 |
| LOW | 1 | 1 |
| CUSTOM | - | - |

7. Click Save.

You see the following message in the top right corner of the webpage.



Enabling TLS Encryption for SMM on CDP Private Cloud

Learn how to enable TLS/SSL encryption for Streams Messaging Manager (SMM) on CDP Private Cloud. You can enable the settings in Cloudera Manager according to the cluster configuration.

About this task

If Kerberos is enabled, then you must enable SSL for Streams Messaging Manager (SMM). SMM UI fails to load if Kerberos is enabled and SSL is not enabled.

Also, if Kafka has Kerberos/SSL enabled, the same should be enabled for SMM.

Procedure

1. Go to Cloudera Manager.
2. Select Streams Messaging Manager cluster.
3. Click Configuration from the menu bar.
4. In the Search field, type TLS/SSL to show the SMM TLS/SSL properties.

The security related properties appear.

5. Edit the security properties according to the cluster configuration.
6. Click Save Changes.

TLS/SSL settings for Streams Messaging Manager

To enable TLS/SSL settings for Streams Messaging Manager (SMM), you need to configure SMM server properties, SMM UI properties, and SMM Server's Oracle TLS connection properties in Cloudera Manager according to the cluster configuration.

Table 1: TLS/SSL Settings for SMM

| Properties | Description |
|---|--|
| SMM Server properties | |
| Enable TLS/SSL for Streams Messaging Manager Rest Admin Server ssl.enable | Encrypt communication between clients and Streams Messaging Manager Rest Admin Server using Transport Layer Security (TLS) (formerly known as Secure Socket Layer (SSL)). |
| Streams Messaging Manager port (SSL) streams.messaging.manager.ssl.port | HTTPS port Streams Messaging Manager rest server runs on when SSL is enabled. |
| Streams Messaging Manager Admin Port (SSL) streams.messaging.manager.ssl.adminPort | HTTPS admin port Streams Messaging Manager rest server runs on when SSL is enabled. |
| SSL Keystore Type streams.messaging.manager.ssl.keyStoreType | The keystore type. Required if Streams Messaging Manager rest server's SSL is enabled. e.g. PKCS12 or JKS. If it is left empty then the keystore type will come from CM settings. |
| SSL TrustStore Type streams.messaging.manager.ssl.trustStoreType | The truststore type. Required if streams messaging manager's ssl is enabled. e.g. PKCS12 or JKS. If it is left empty then the keystore type will come from CM settings. |
| Streams Messaging Manager Rest Admin Server TLS/SSL Server JKS Keystore File Location streams.messaging.manager.ssl.keyStorePath | The path to the TLS/SSL keystore file containing the server certificate and private key used for TLS/SSL. Used when Streams Messaging Manager Rest Admin Server is acting as a TLS/SSL server. |
| Streams Messaging Manager Rest Admin Server TLS/SSL Server JKS Keystore File Password | The password for the Streams Messaging Manager Rest Admin Server keystore file. |
| Streams Messaging Manager Rest Admin Server TLS/SSL Server JKS Keystore Key Password | The password that protects the private key contained in the keystore used when Streams Messaging Manager Rest Admin Server is acting as a TLS/SSL server. |

| Properties | Description |
|---|--|
| Streams Messaging Manager Rest Admin Server TLS/SSL Client Trust Store File streams.messaging.manager.ssl.trustStorePath | The location on disk of the trust store used to confirm the authenticity of TLS/SSL servers that Streams Messaging Manager Rest Admin Server might connect to. This is used when Streams Messaging Manager Rest Admin Server is the client in a TLS/SSL connection. This trust store must contain the certificate(s) used to sign the service(s) connected to. If this parameter is not provided, the default list of well-known certificate authorities is used instead. |
| Streams Messaging Manager Rest Admin Server TLS/SSL Client Trust Store Password | The password for the Streams Messaging Manager Rest Admin Server TLS/SSL Certificate Trust Store File. This password is not required to access the trust store; this field can be left blank. This password provides optional integrity checking of the file. The contents of trust stores are certificates, and certificates are public information. |
| Cloudera Manager Metrics TrustStore Type cm.metrics.truststore.type | Cloudera Manager's truststore type. If it is left empty then the keystore type will come from CM settings. If it is left empty then the keystore type will come from CM settings. |
| SSL ValidateCerts streams.messaging.manager.ssl.validateCerts | Whether or not to validate TLS certificates before starting. If enabled, it will refuse to start with expired or otherwise invalid certificates. |
| SSL validatePeers streams.messaging.manager.ssl.validatePeers | Whether or not to validate TLS peer certificates. |
| SMM UI properties | |
| Enable TLS/SSL for Streams Messaging Manager UI Server streams.messaging.manager.ui.ssl.enable | Encrypt communication between clients and Streams Messaging Manager UI Server using Transport Layer Security (TLS) (formerly known as Secure Socket Layer (SSL)). |
| Streams Messaging Manager UI Server TLS/SSL Server Private Key File (PEM Format) streams.messaging.manager.ui.ssl.private.key.location | The path to the TLS/SSL file containing the private key used for TLS/SSL. Used when Streams Messaging Manager UI Server is acting as a TLS/SSL server. The certificate file must be in PEM format. |
| Streams Messaging Manager UI Server TLS/SSL Server Certificate File (PEM Format) streams.messaging.manager.ui.ssl.cert.location | The path to the TLS/SSL file containing the server certificate key used for TLS/SSL. Used when Streams Messaging Manager UI Server is acting as a TLS/SSL server. The certificate file must be in PEM format. |
| Streams Messaging Manager UI Server TLS/SSL Server CA Certificate (PEM Format) streams.messaging.manager.ui.ssl.ca.cert.location | The path to the TLS/SSL file containing the certificate of the certificate authority (CA) and any intermediate certificates used to sign the server certificate. Used when Streams Messaging Manager UI Server is acting as a TLS/SSL server. The certificate file must be in PEM format, and is usually created by concatenating all of the appropriate root and intermediate certificates. |
| Streams Messaging Manager UI Server TLS/SSL Private Key Password | The password for the private key in the Streams Messaging Manager UI Server TLS/SSL Server Certificate and Private Key file. If left blank, the private key is not protected by a password. |
| Streams Messaging Manager UI Server TLS/SSL Certificate Trust Store File streams.messaging.manager.ui.ssl.trust.store.location | The location on disk of the trust store, in .pem format, used to confirm the authenticity of TLS/SSL servers that Streams Messaging Manager UI Server might connect to. This is used when Streams Messaging Manager UI Server is the client in a TLS/SSL connection. This trust store must contain the certificate(s) used to sign the service(s) connected to. If this parameter is not provided, the default list of well-known certificate authorities is used instead. |
| SMM Server's Oracle TLS connection properties | |
| Enable TLS with Oracle DB streams.messaging.manager.enable.TLS.Oracle | Enable TLS with Oracle as DB for Schema Registry. |
| Oracle.net.ssl_version streams.messaging.manager.oracle.net.ssl_version | Oracle net ssl version. |
| Oracle TLS javax.net.ssl.keyStore streams.messaging.manager.javax.net.ssl.keyStore | Path to keystore file if enabling TLS using Oracle DB. |

| Properties | Description |
|---|---|
| Oracle TLS javax.net.ssl.keyStoreType streams.messaging.manager.javax.net.ssl.keyStoreType | KeyStoreType type if enabling TLS using Oracle DB. |
| Oracle TLS javax.net.ssl.keyStorePassword streams.messaging.manager.javax.net.ssl.keyStorePassword | KeyStorePassword if enabling TLS using Oracle DB. |
| Oracle TLS javax.net.ssl.trustStore streams.messaging.manager.javax.net.ssl.trustStore | Required Path to truststore file if enabling TLS using Oracle DB. |
| Oracle TLS javax.net.ssl.trustStoreType streams.messaging.manager.javax.net.ssl.trustStoreType | Required Truststore type if enabling TLS using Oracle DB. |
| Oracle TLS javax.net.ssl.trustStorePassword streams.messaging.manager.javax.net.ssl.trustStorePassword | TrustStorePassword type if enabling TLS using Oracle DB. |
| Oracle TLS oracle.net.ssl_cipher_suites streams.messaging.manager.oracle.net.ssl_cipher_suites | net ssl cipher suites if enabling TLS using Oracle DB e.g. SSL_DH_DSS_WITH_DES_CBC_SHA. |
| Oracle TLS oracle.net.ssl_server_dn_match streams.messaging.manager.oracle.net.ssl_server_dn_match | ssl server domain name match if enabling TLS using Oracle DB. |
| Oracle TLS oracle.net.authentication_services streams.messaging.manager.oracle.net.authentication_services | Oracle net authentication service if enabling TLS using Oracle DB. |