RSA NETWITNESS® PLATFORM

Warehouse Connector Configuration Guide

for Version 11.2

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September 2018

Contents

How Warehouse Connector Works

Warehouse Connector collects meta and events from Decoder and Log Decoder and writes them in AVRO format into a Hadoop-based distributed computing system. You can set up Warehouse Connector as a service on existing Log Decoders or Decoders.

The Warehouse Connector contains the following components:

- Data Source
- Destination
- Data Stream

Data Source

A data source is the service from which the Warehouse Connector collects data to store in the destination. The supported data sources are Log Decoder and Decoder services.

Destination

Destination is the Hadoop-based distributed computing system that collects, manages, and enables reporting on security data. The following are the supported destinations:

- RSA NetWitness Warehouse (MapR) deployments
- HortonWorks Data Platform
- Any Hadoop-based distributed computing system that supports WebHDFS or NFS mounting of HDFS file systems.
- Example: Commercial MapR M5 Enterprise Edition for Apache Hadoop

Data Streams

A data stream is a logical connection between the data source and destination. You can have multiple streams for different subsets of data collected. You can setup streams to segregate data from multiple Decoder and Log Decoder services. You can create a stream with multiple data sources and a single destination or with a single data source and destination.

The Warehouse Connector does the following:

- Aggregates session and raw log data from Decoders and Log Decoders.
- Transfers the aggregated data into supported destinations like Hadoop based deployments.
- Serializes the aggregated data that includes both schema and data into AVRO format.

In addition the Warehouse Connector also supports the following:

Meta Filters

Meta filters enables you to filter the meta keys that should be written into the Warehouse. For more information, see Specify Meta Filters for a Stream.

Support for Multi-Valued Meta Keys

RSA NetWitness Warehouse supports multi-valued meta keys. The multi-valued meta keys is the meta field with the array type. You can use the meta keys library to determine the meta fields of type array and write HIVE queries with the correct syntax for arrays. By default, the following meta keys are treated as multi-valued and are defined in the file, **multivalue-bootstrap.xml** located at **/etc/netwitness/ng** in the Warehouse Connector:

- alias.host
- action
- username
- alias.ip
- alias.ipv6
- email
- device.group
- event.class

Checksum Validation

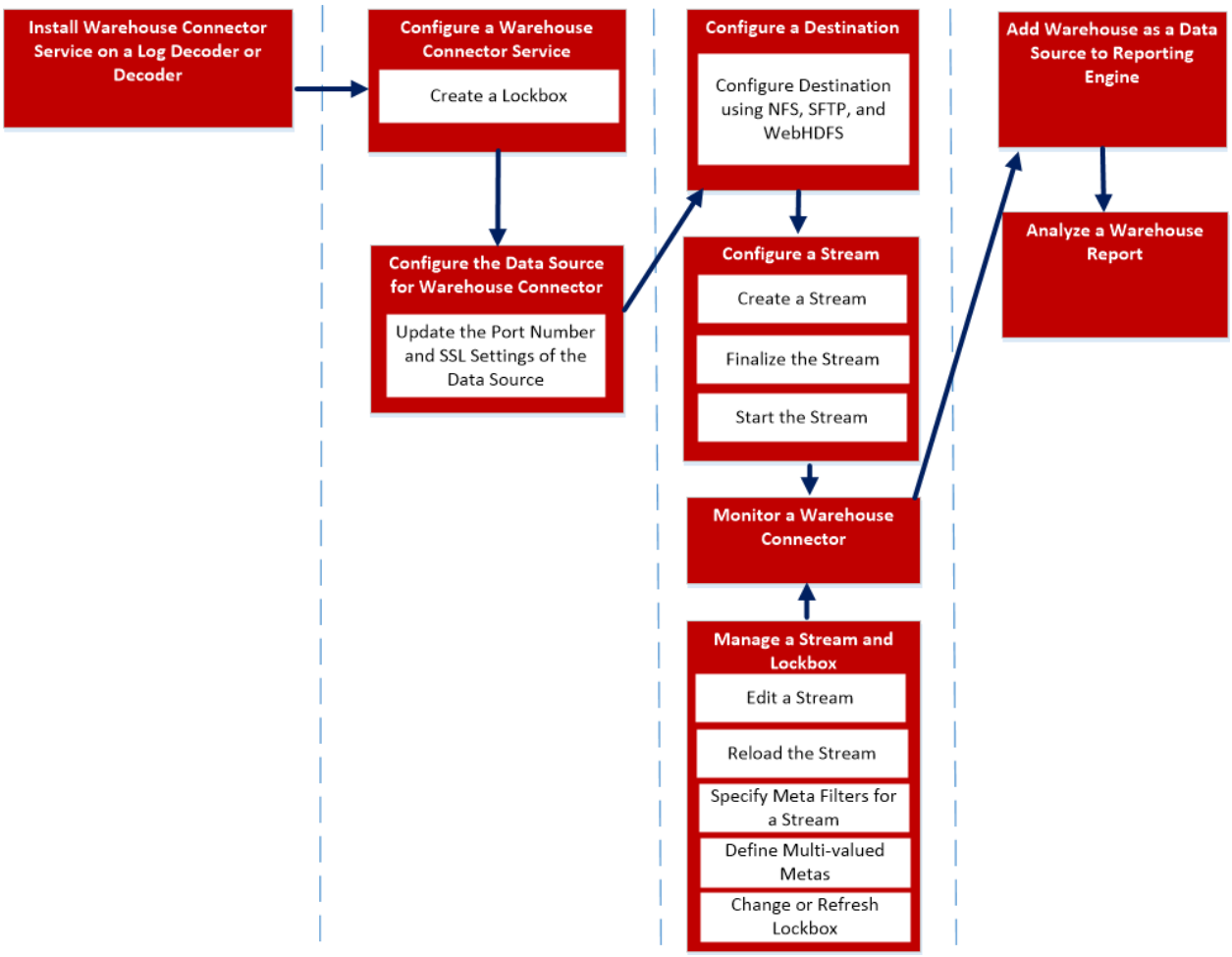
Warehouse Connector enables you to validate the file integrity of the AVRO files that are transferred from the Warehouse Connector to the data destinations. You need to enable checksum validation while you configure the Warehouse Connector.

Lockbox Support

Lockbox provides an encrypted file that Warehouse Connector uses to store and protect sensitive data. You need to create the lockbox by providing a lockbox password while configuring the Warehouse Connector for the first time.

You can orchestrate Warehouse Connector on a Log Decoder or a Decoder appliance.

The following is an overview of the entire process of installing and configuring the Warehouse Connector service on Log Decoder or Decoder, configuring the Warehouse Connector service on NetWitness, configuring data sources, destinations, streams for Warehouse Connector, and configuring alert notifications on NetWitness.



To install and configure the Warehouse Connector service, perform the following:

1. Install Warehouse Connector service on a Log Decoder or Decoder
2. Configure a Warehouse Connector service
3. Configure the Data Source for Warehouse Connector
4. Configure a Destination
5. Configure a Streams
6. Monitor a Warehouse Connector
7. Add Warehouse as a Data Source to Reporting Engine
8. Analyze a Warehouse Report
9. Manage a Stream and Lockbox

Install Warehouse Connector Service on a Log Decoder or Decoder or Hybrid

To install (fresh install) the Warehouse Connector service on a Log Decoder or Decoder or Hybrid:

1. Log on to the Log Decoder or Decoder host.
2. Enter the following command on NetWitness Server:
   `warehouse-installer --help`
   The command line interface (CLI) usage descriptions are displayed.
4. Install Warehouse Connector service by executing either of the following commands:
   `warehouse-installer --host-addr 10.0.0.0`
   `warehouse-installer --host-id 5928b9d8-83be-4143-9602-fa936de5c41e`
   `warehouse-installer --host-name NW11AdminServer`
   Where,
   10.0.0.0 - IP address of the Host
   5928b9d8-83be-4143-9602-fa936de5c41e - Host ID
   NW11AdminServer - Host name

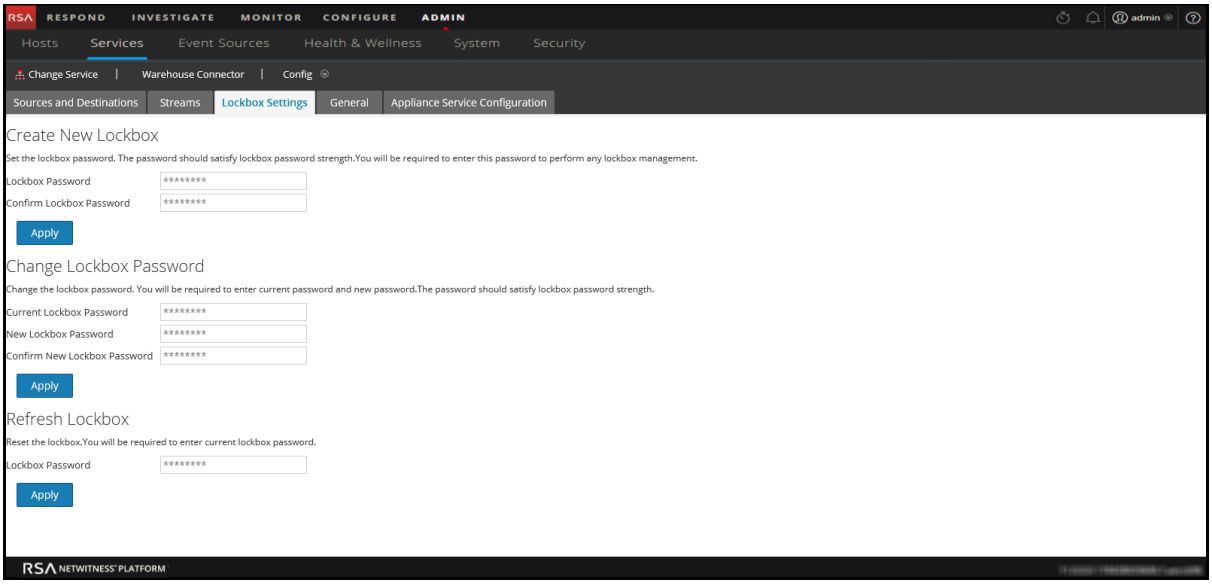
The Warehouse Connector service is successfully installed on the Log Decoder or Decoder or Hybrid.

Configure a Warehouse Connector Service

You can configure the Warehouse Connector service using the following procedure.

To set the Lockbox password:

1. Log on to NetWitness Platform.
2. Go to **ADMIN > Services**.
3. In the Services view, select the added Warehouse Connector service, and select  **> View > Config**.
4. In the Services Config view of Warehouse Connector, click the **Lockbox Settings** tab.



5. In the **Create New Lockbox** section, perform the following:
   a. In the **Lockbox Password** field, enter the new lockbox password.

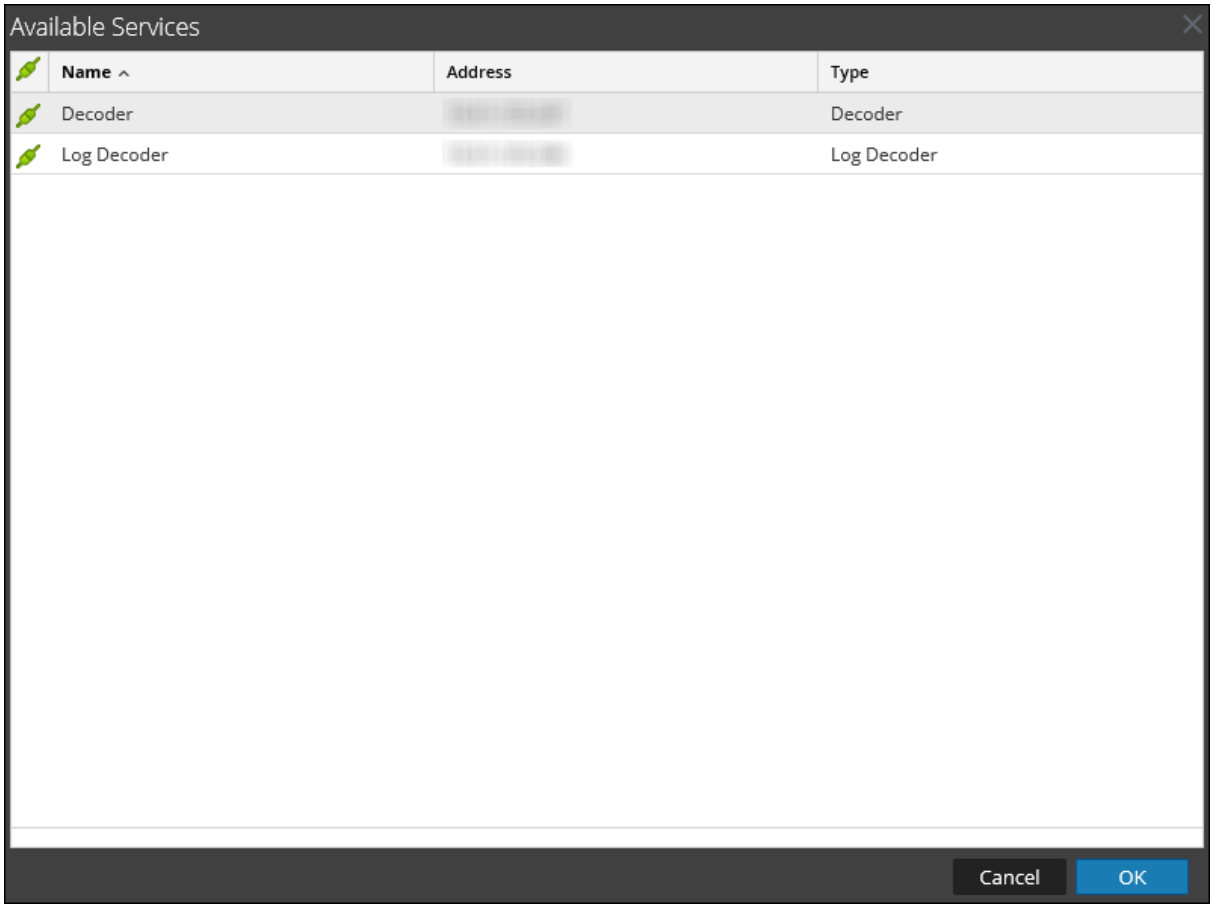
      Note: The lockbox password must be at least eight characters in length and it must contain at least three of the following groups: one uppercase character [A-Z], one lowercase character [a-z], one numeral [0-9], and one special character.

   b. In the **Confirm Lockbox Password** field, enter the added lockbox password to confirm.
   c. Click **Apply**.
      The Lockbox password is set.

Configure the Data Source for Warehouse Connector

To configure the data source:

1. Log on to NetWitness Platform.
2. Go to **ADMIN > Services**.
3. In the Services view, select the added Warehouse Connector service, and select  **> View > Config**.
   The Services Config view of Warehouse Connector is displayed.
4. On the **Sources and Destinations** tab, in the **Source Configuration** section, click  .



5. In the **Available Services** dialog, select the Log Decoder or Decoder services that you want to add as a source to the Warehouse Connector service and click **OK**.
   The selected Log Decoder and Decoder services are listed in the **Source Configuration** section.

Update the Port Number and SSL Settings of the Data Source

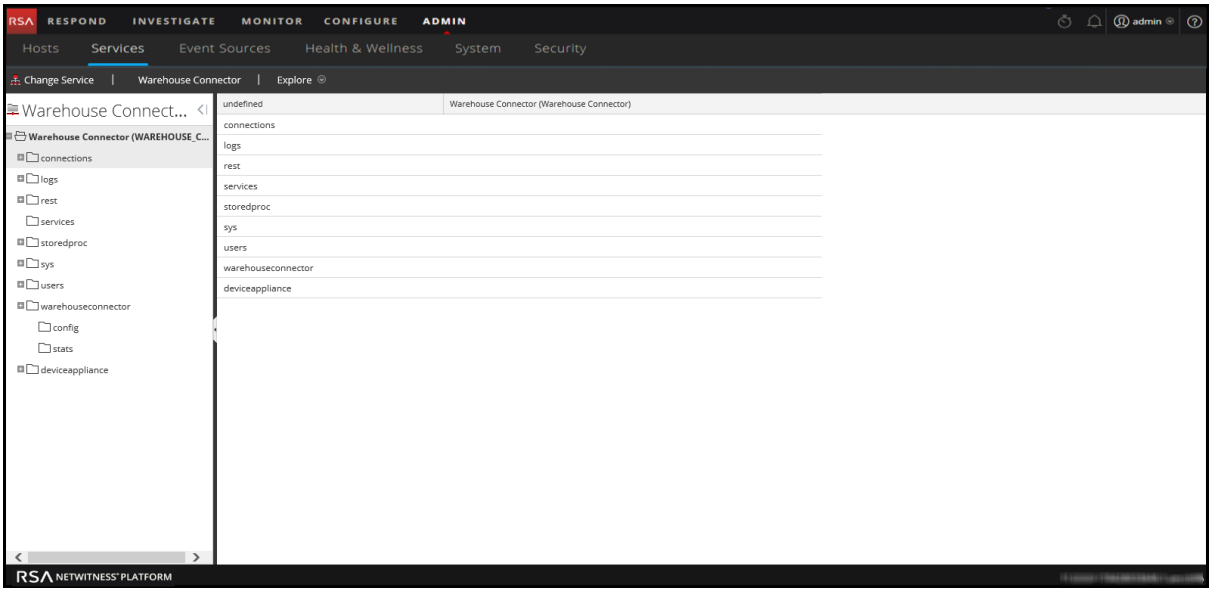
If there is change in the port number or SSL settings of the data sources used in the Warehouse Connector, you can directly update these details in Warehouse Connector, using the Explore view of the Warehouse Connector.

Make sure that:

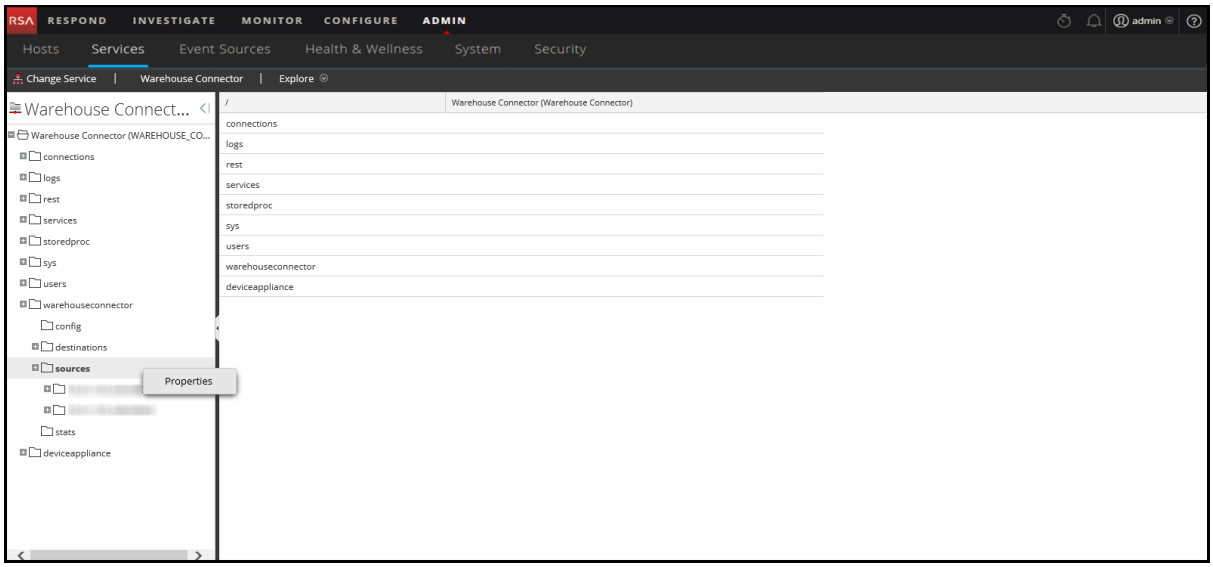
- You have the updated port number or SSL settings of the data source.
- You stop the streams related to the data source that you want to update the port number or SSL settings.

To update the port number or SSL settings:

1. Log on to NetWitness Platform.
2. Go to **ADMIN > Services**.
3. In the Services view, select the added Warehouse Connector service and select  **> View > Explore**.
   The Service Explore view of Warehouse Connector is displayed.



4. Navigate to **warehouseconnector/sources**, right-click the source, and click **Properties**.
   The Properties section of the source is displayed.



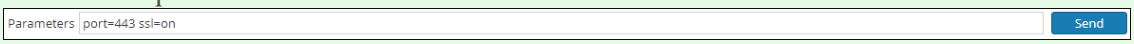
5. In the drop-down menu, select **update**. In the Parameters field, perform the following:
   - To update the port number of the source, enter `port=<new_source_portnumber>` and click **Send**.

   - To update the SSL settings of the source, enter `ssl=<new_ssl_settings>` and click **Send**.

     Note: You can also update the port number and ssl settings simultaneous by adding space between the parameters.

6. Restart the Warehouse Connector service.
7. Start the streams.

Configure the Destination

You can configure the destination using NFS, SFTP, and WebHDFS. Change the destination to which the Warehouse Connector service needs to write the collected data using NFS:

- RSA NetWitness Warehouse (MapR) deployments
- Commercial MapR M5 Enterprise Edition for Apache Hadoop deployments

You can configure the Warehouse Connector to write to a remote destination using Secure File Transfer Protocol (SFTP). The remote destination can be a remote server that is NFS mounted to the MapR cluster or it can be a remote staging server.

By default, in the remote destination the Warehouse Connector writes data in the following directory structure:

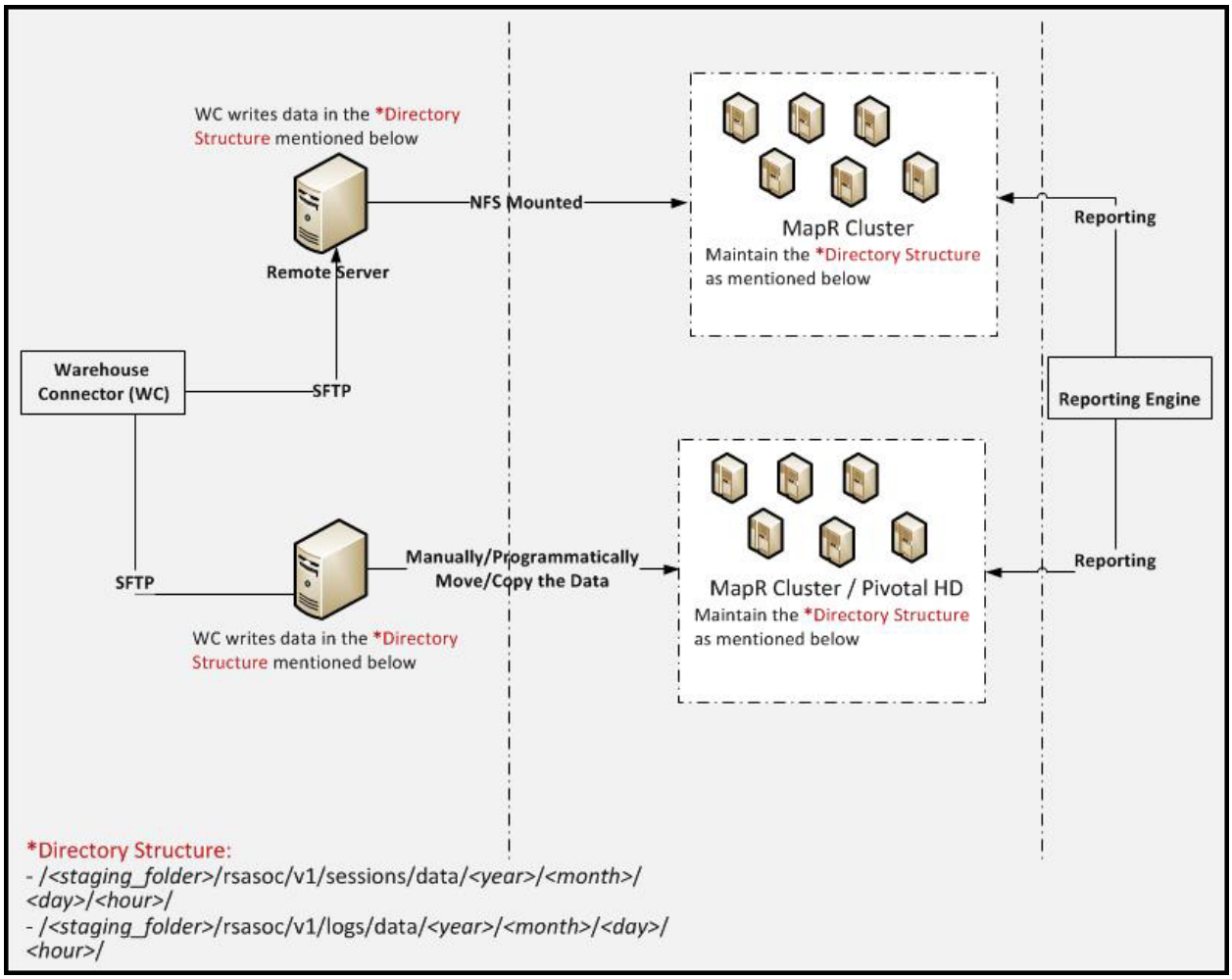
- `/<staging_folder>/rsasoc/v1/sessions/data/<year>/<month>/<day>/<hour>/`
- `/<staging_folder>/rsasoc/v1/logs/data/<year>/<month>/<day>/<hour>/`
  Where <staging_folder> is the folder on the remote server where the Warehouse Connector writes the data.

If you are using a remote staging server as the remote destination, you need to manually copy or move the directory structure to any of the following deployments:

- RSA NetWitness Warehouse (MapR)
- Commercial MapR M5 Enterprise Edition for Apache Hadoop
- HortonWorks HD

To generate reports from the data written by Warehouse Connector, make sure that in your Hadoop deployment you maintain a similar directory structure that is created by Warehouse Connector in the remote destinations.

The following illustration describes how you can use SFTP to write data from Warehouse Connector to a remote destination.



You can configure the Warehouse Connector service to write the collected data to a Hadoop-based distributed computing system that supports WebHDFS.

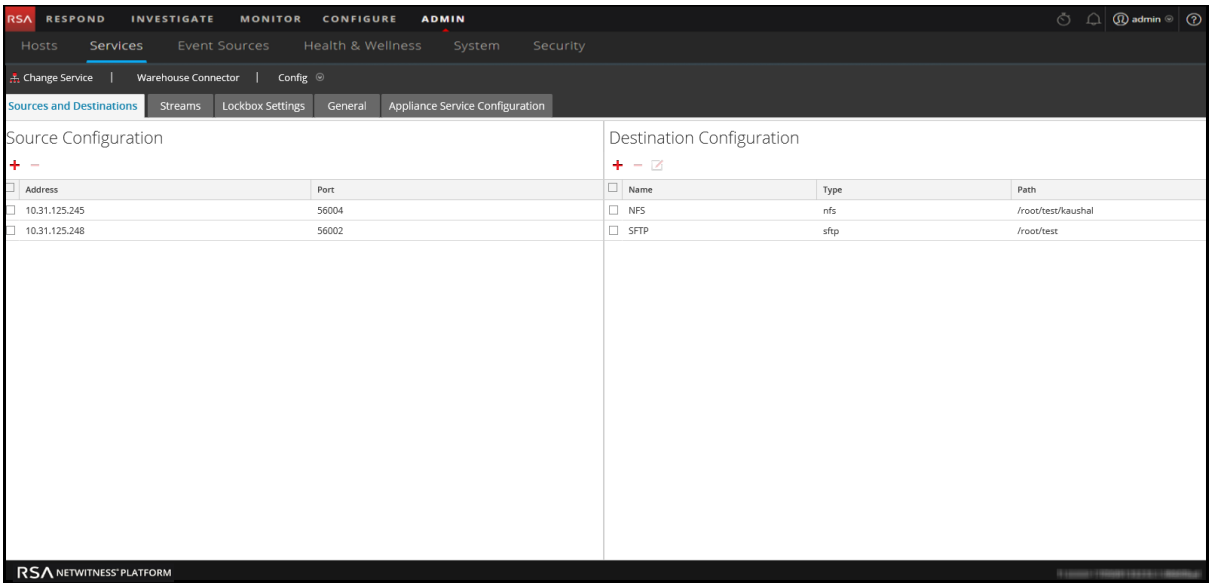
Configure the Destination Using NFS

Make sure that you have:

- Installed the Warehouse Connector service or virtual appliance in your network environment.
- Added the Warehouse Connector service to NetWitness. For more information, see "Add a Service to a Host" in the *Hosts and Services Getting Started Guide*.
- Set up NFS on Warehouse Connector. For more information on how to set up NFS on Warehouse Connector, see "Configure Warehouse Connector to Write to Warehouse" in the *Warehouse (MapR) Configuration Guide*.

To configure the destination using NFS:

1. Log on to NetWitness Platform.
2. Go to **ADMIN > Services**.
3. In the Services view, select the Warehouse Connector service, and select  **> View > Config**.
   The Services Config View of Warehouse Connector is displayed.



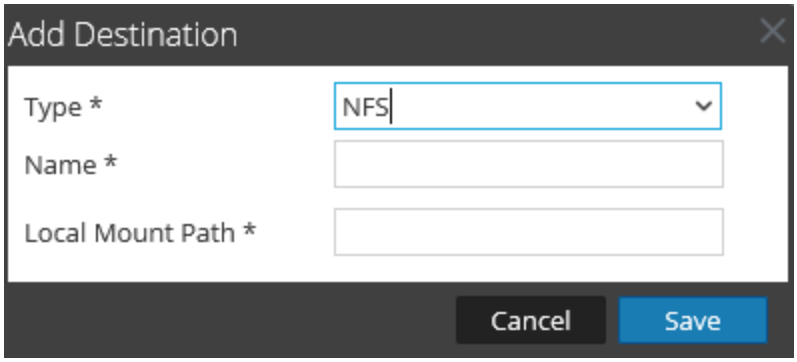
4. On the **Sources and Destinations** tab, in the **Destination Configuration** section, click +.
5. In the **Add Destination** dialog, select **NFS** from the **Type** drop-down list.
6. In the **Name** field, enter a unique symbolic name for the destination.

   Note: The **Name** field does not support spaces or special characters except underscore (_).

7. In the **Local Mount Path** field, enter the locally mounted directory for HDFS where you want the Warehouse Connector to write the data. For example:
   If **/saw** is the local mount point for HDFS that you have configured while mounting the

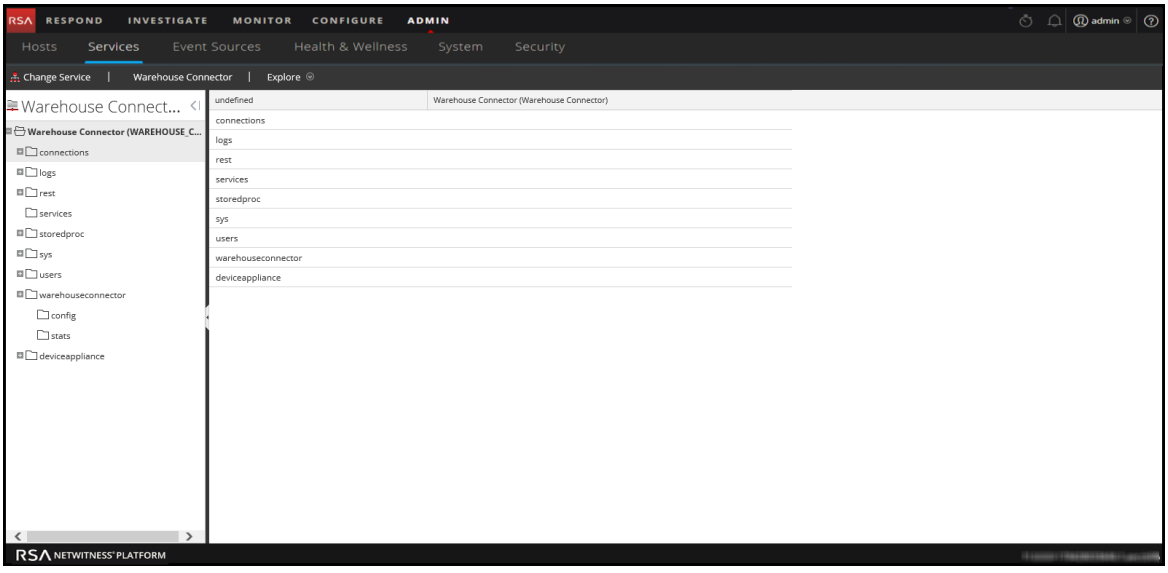
mapr NFS cluster on the host where you have installed the Warehouse Connector service to write to RSA NetWitness Warehouse (MapR), create a directory named **Ionsaw01** under **/saw** and the corresponding Local Mount Path for the destination would be **/saw/Ionsaw01**.

For more information, see "Mount the Warehouse on the Warehouse Connector" topic in the *Warehouse (MapR) Configuration Guide*.

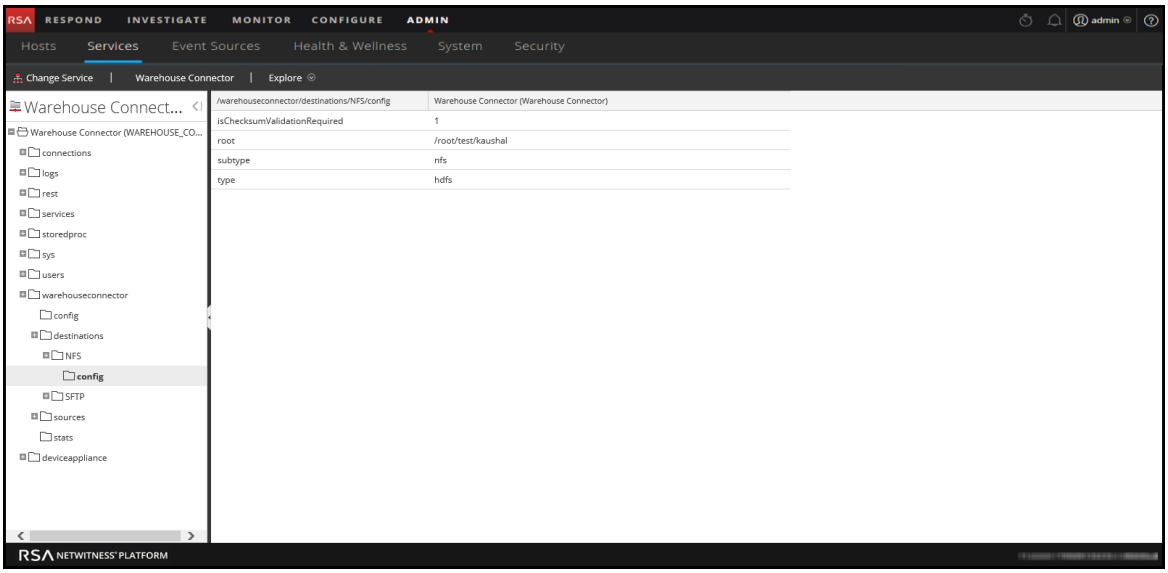


The **/saw** mount point implies to / as the root path for HDFS. The Warehouse Connector writes the data to **/Ionsaw01** in HDFS.

8. Click **Save**.
9. (Optional) If you want to enable checksum validation, perform the following:
   a. Go to **ADMIN > Services**.
   b. In the Services view, select the added Warehouse Connector service, and select  **> View > Explore**.
   The Explore view of Warehouse Connector is displayed.



   c. In the options panel, navigate to **warehouseconnector/destinations/nfs/config**. This is the name of the destination and is dynamic.
   d. Set the parameter `isChecksumValidationRequired` to **1**.



e. Restart the respective stream.

Configure the Destination Using SFTP

Make sure that you have:

- Installed the Warehouse Connector service or virtual appliance in your network environment.
- Added the Warehouse Connector service to NetWitness. For more information, see the "Add a Service to a Host" in the *Hosts and Services Getting Started Guide*.
- For the SFTP destination type, the destination host should be listed in the **/root/.ssh/known_hosts** file used by the ssh service (for example, sshd) running on the Warehouse Connector.

Add Destination from Warehouse Connector Host

To add the destination host to the **/root/.ssh/known_hosts** file, from the Warehouse Connector host, initiate a secure connection to the destination host:

1. Login to the Warehouse Connector.
2. Enter `ssh root@<SAWIP>` or `ssh username@<SAWIP>`.
3. Select **Yes** and enter the password.
4. Add the host key in the **/root/.ssh/known_hosts** file

> **Note:** After you upgrade Warehouse Connector to 11.0, you must make sure that the destination host is listed in the /root/.ssh/known_hosts file used by the ssh service (i.e. sshd) running on the Warehouse Connector. If you do not perform this action, the streams configured with SFTP in Warehouse Connector will not start.

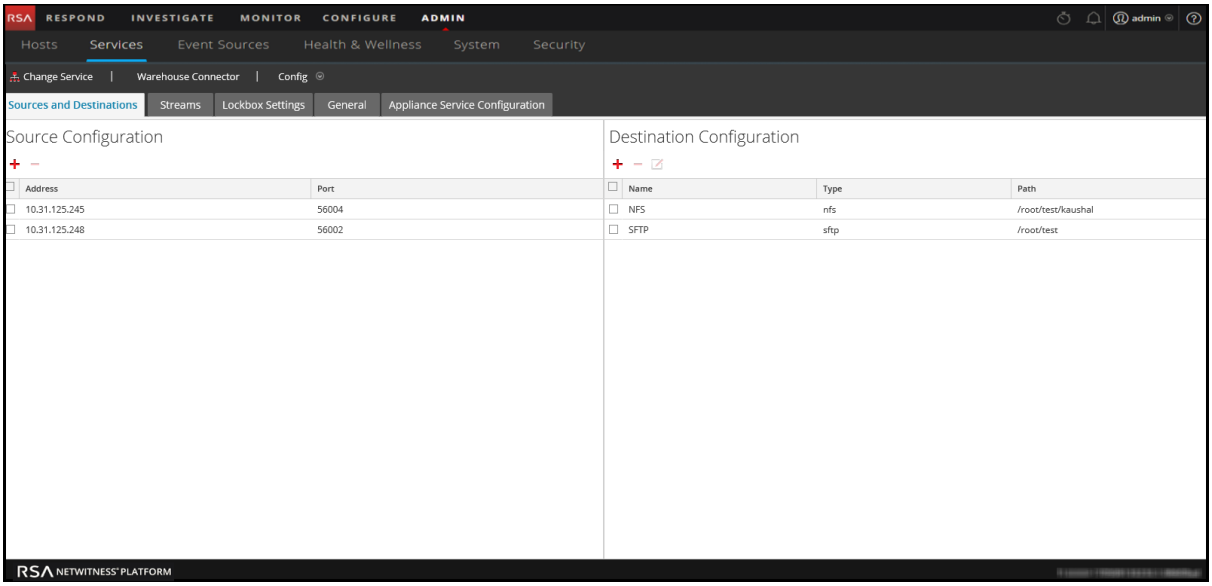
- If you want to use SFTP to write data into the destination using SSH key-based access, you need to configure SSH key-based access between the Warehouse Connector and the Warehouse host or Hadoop node. For more information, see **Configure SSH Keys** below.

> **Note:** If you want to enable checksum validation to validate the integrity of the AVRO files that are transferred from the Warehouse Connector to the destinations, make sure that you generate the keys without setting the passphrase and do a key exchange between warehouse connector and the warehouse nodes.

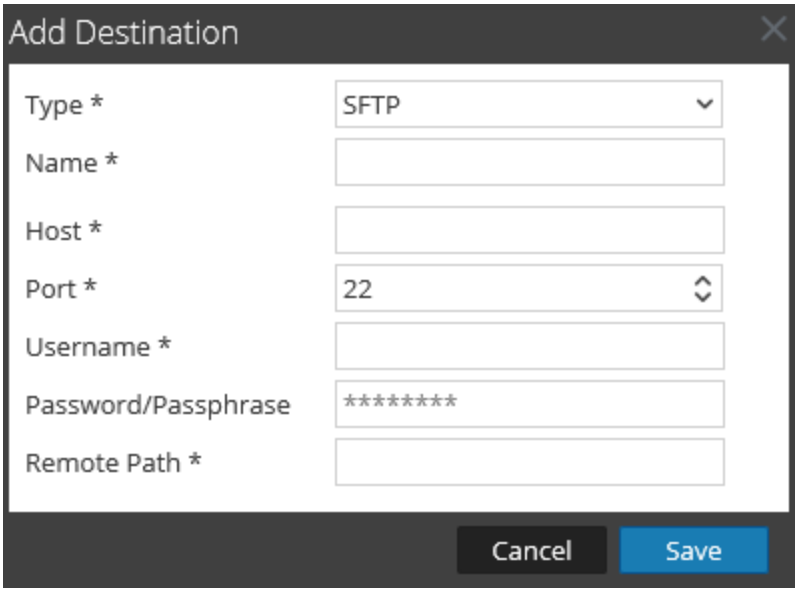
Configure Warehouse Connector to use SFTP destination

To configure the destination:

1. Log on to NetWitness Platform
2. Go to **ADMIN > Services**.
3. In the Services view, select the added Warehouse Connector service, and select  **> View > Config**.
   The Services Config view of Warehouse Connector is displayed.



4. On the **Sources and Destinations** tab, in the **Destination Configuration** section, click +.
5. In the **Add Destination** dialog, select **SFTP** from the **Type** drop-down list.



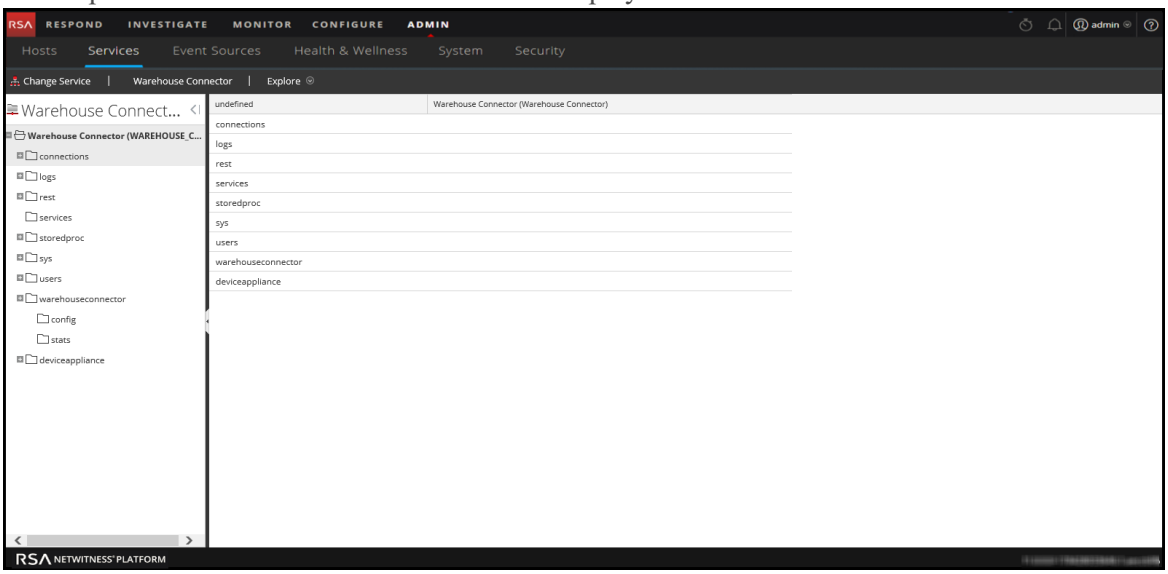
6. In the **Name** field, enter a unique symbolic name for the destination.

   Note: The **Name** field does not support spaces or special characters except underscore (_).

7. In the **Host** field, enter the remote server IP address.
8. In the **Port** field, retain the default port, **22**.
9. In the **Username** field, enter the SSH username.

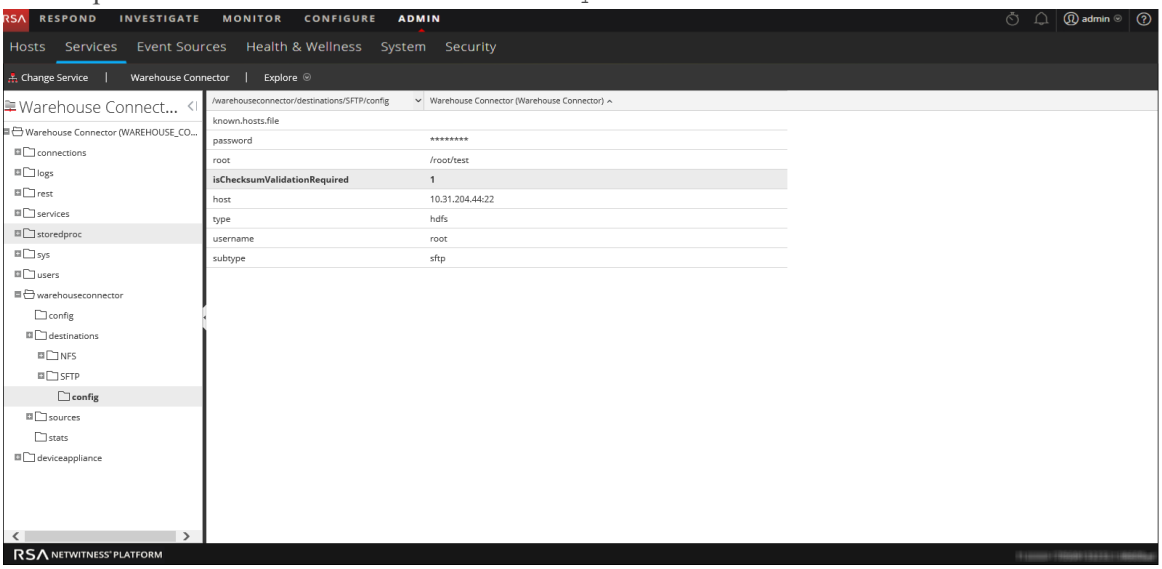
   Note: In the case of HortonWorks HD, ensure that the username is gpadmin and for password based access the password for gpadmin should be used. For passphrase-based access, the passphrase used to generate the keys for gpadmin user should be used.

10. In the **Password/Passphrase** field, enter one of the following:
    - SSH password - If you are using SFTP to write data into the destination using password-based access.
    - SSH passphrase - If you are using SFTP to write data into the destination using SSH key-based access.
11. In the **Remote Path** field, enter the path of the directory present on the SFTP server.
12. Click **Save**.
13. (Optional) If you want to enable checksum validation, perform the following:
    a. Go to **ADMIN > Services**.
    b. In the Services view, select the added Warehouse Connector service, and select  **> View > Explore**.
    The Explore view of Warehouse Connector is displayed.



    c. In the options panel, navigate to **warehouseconnector/destinations/sftp/config**.

d. Set the parameter `isChecksumValidationRequired` to **1**.



e. Restart the respective stream.

Configure SSH Keys

To configure SSH key-based access between the Warehouse Connector and the Warehouse host or Hadoop node:

1. Generate SSH keys on the Warehouse Connector at the default location. Perform the following:

   a. Log on to the Warehouse Connector.

   b. Type the following command and press ENTER:

   ```
   $ OWB_FORCE_FIPS_MODE_OFF=1 ssh-keygen -t dsa
   ```

   c. The command prompts you to enter the file in which to save the generated key.

   ```
   Enter file in which to save the key (/root/.ssh/id_dsa):
   ```

   d. Enter the file in which you want to save the key and press ENTER.

   The command prompts you to enter and confirm the passphrase.

   Note: If you want to enable checksum validation to validate the integrity of the AVRO files that are transferred from the Warehouse Connector to the destinations, make sure that you do not set the **passphrase**. Then, the below steps e, f, g, and h are not applicable.

   ```
   Enter passphrase (empty for no passphrase):
    Enter same passphrase again:
   ```

   The public key is generated and is saved in the location that you provided.

   e. Change the directory by entering the following command:

   ```
   cd /root/.ssh/
   ```

f. Move the generated key to the below location:

```
mv id_dsa id_dsa.old
```

g. Type the following command and press ENTER:

```
$ OWB_FORCE_FIPS_MODE_OFF=1 openssl pkcs8 -topk8 -v2 des3 -in id_dsa.old
-out id_dsa
```

The command prompts you to enter and confirm the passphrase.

h. Enter the encryption passphrase.

i. Run the following command to change the file permission:

```
chmod 600 id_dsa
```

2. Append the generated public key to the remote Warehouse host or Hadoop node's authorized keys list located at: `~/.ssh/authorized_keys`

> **Note:** Make sure that you copy the public keys to the Hadoop node and while copying the public key ensure that you provide the login details of the user using which the WebHDFS destination would be added.

You can now securely communicate between Warehouse Connector and Warehouse nodes or Hadoop nodes.

Configure the Destination Using WebHDFS

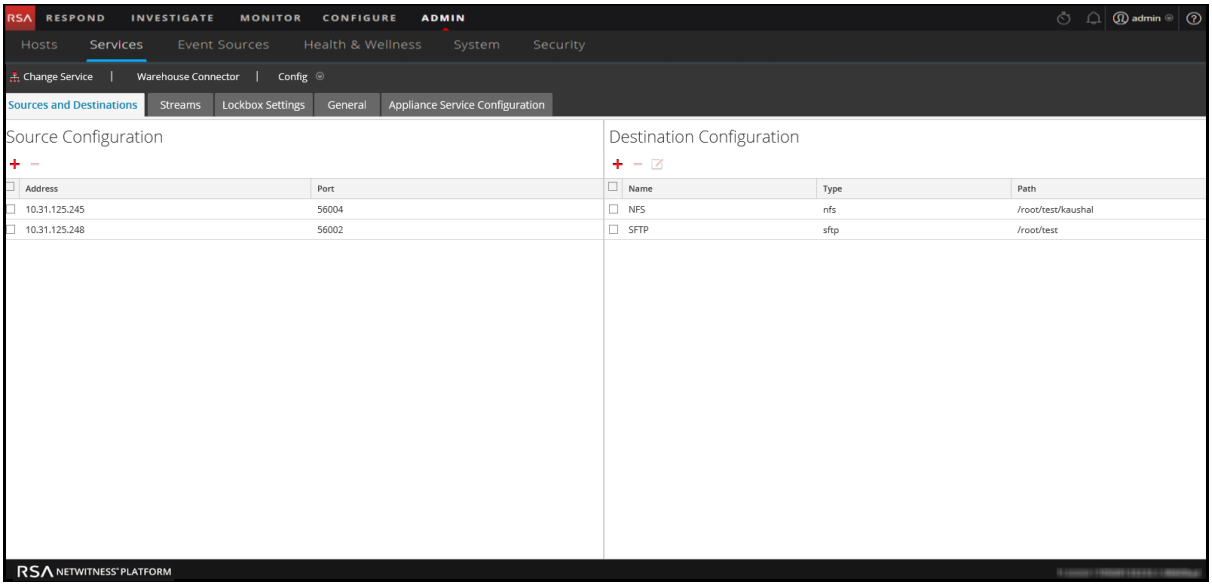
Make sure that you have:

- Installed the Warehouse Connector service or virtual appliance in your network environment.
- Added the Warehouse Connector service to NetWitness. For more information, see the "Add a Service to a Host" in the *Hosts and Services Getting Started Guide*.
- Added the hostname (or FQDN) and IP address of the warehouse nodes and Warehouse Connector to the DNS server. If the DNS server is not configured, add the hostname (or FQDN) and IP address of the warehouse nodes and Warehouse Connector to the file in the host on which the Warehouse Connector service is installed.
- If you want Kerberos authentication between the warehouse connector and the warehouse cluster, make sure that you perform the following:
  - Kerberos Key Distribution Center (KDC) Server is configured in your network environment and the Kerberos Keytab file is copied to the host on which you have installed Warehouse Connector.
  - Kerberos authentication is enabled in the warehouse cluster.
- If you want to enable checksum validation to validate the integrity of the AVRO files that are transferred from the Warehouse Connector to the destinations, make sure that you generate the keys without setting the passphrase and do a key exchange between the Warehouse Connector and the warehouse nodes. You need to configure SSH key-based access between the Warehouse Connector and the Warehouse host or hadoop node. For more information, see 'Configure SSH Keys' in Configure the Destination Using SFTP.

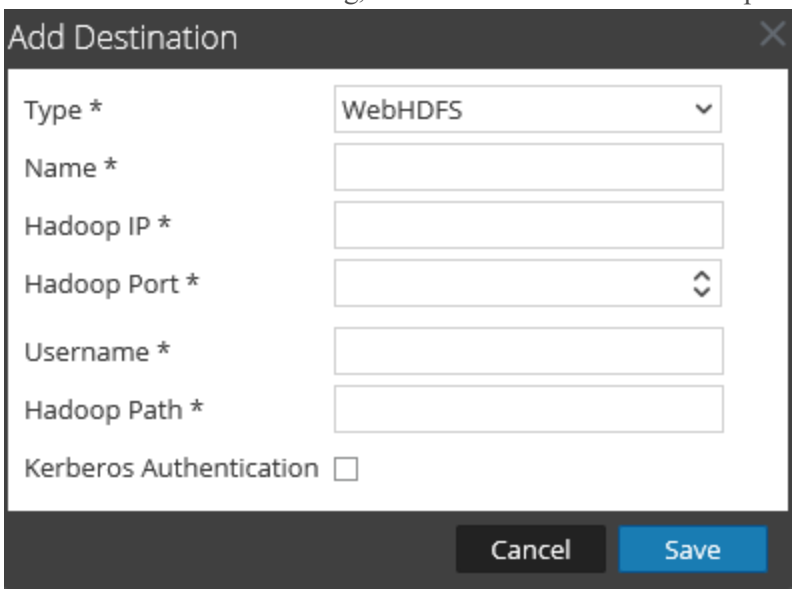
Configure Warehouse Connector to Write to SFTP destination

To configure the destination:

1. Log on to NetWitness Platform.
2. Go to **ADMIN > Services**.
3. In the Services view, select the added Warehouse Connector service and select  **> View > Config**.
   The Services Config view of Warehouse Connector is displayed.



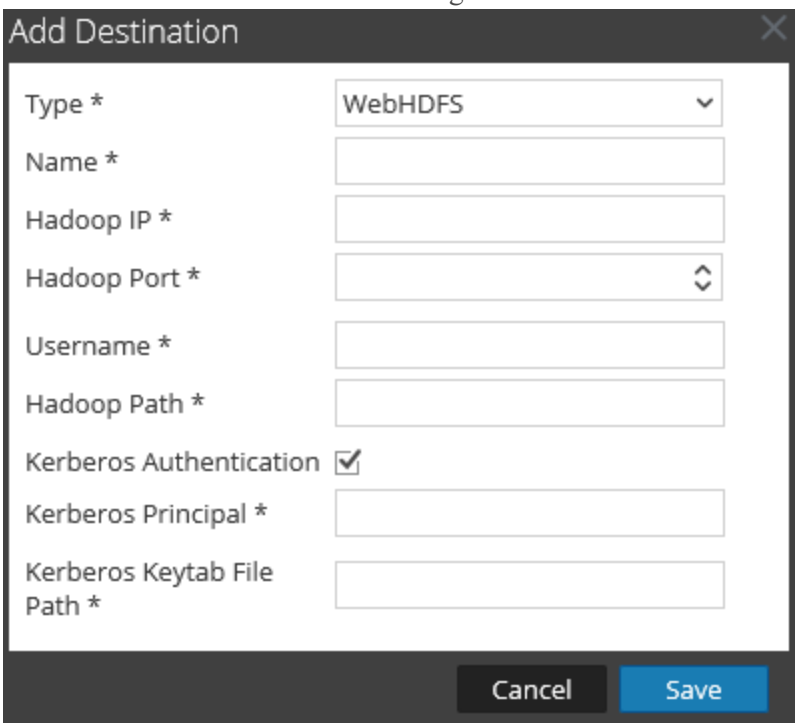
4. On the **Sources and Destinations** tab, in the **Destination Configuration** section, click  .
5. In the **Add Destination** dialog, select **WebHDFS** from the drop-down list.



6. In the **Name** field, enter a unique symbolic name for the destination.

   Note: The **Name** field does not support spaces or special characters except underscore (_).

7. In the **Hadoop IP** field, enter the namenode IP address of the warehouse cluster.
8. In the **Hadoop Port** field, enter the base port that is used by the namenode web user interface.
9. In the **Username** field, enter the owner of the directory in the warehouse to which Warehouse Connector should write the data.
10. In the **Hadoop Path** field, enter the path of the directory in the warehouse to which Warehouse Connector should write the data.
11. Select the **Kerberos Authentication** checkbox, if you want the warehouse connector to securely communicate with the warehouse using Kerberos authentication.

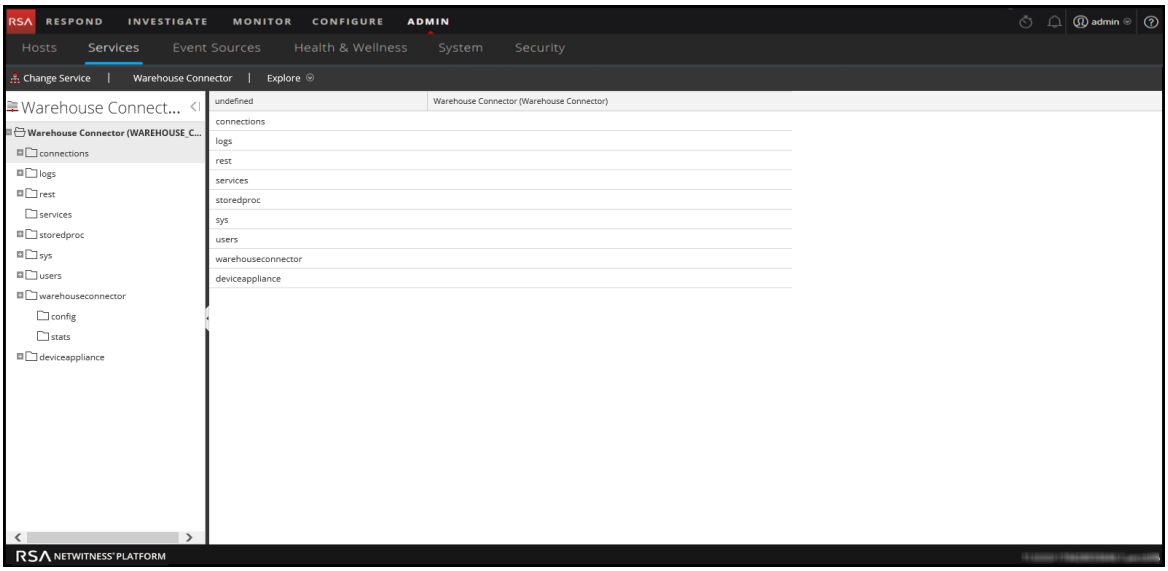


   Perform the following:

   a. In the **Kerberos Principal** field, enter the KDC Principal used for Kerberos authentication.
   b. In the **Kerberos Keytab File Path** field, enter the path of the Kerberos Keytab file in the Warehouse Connector.

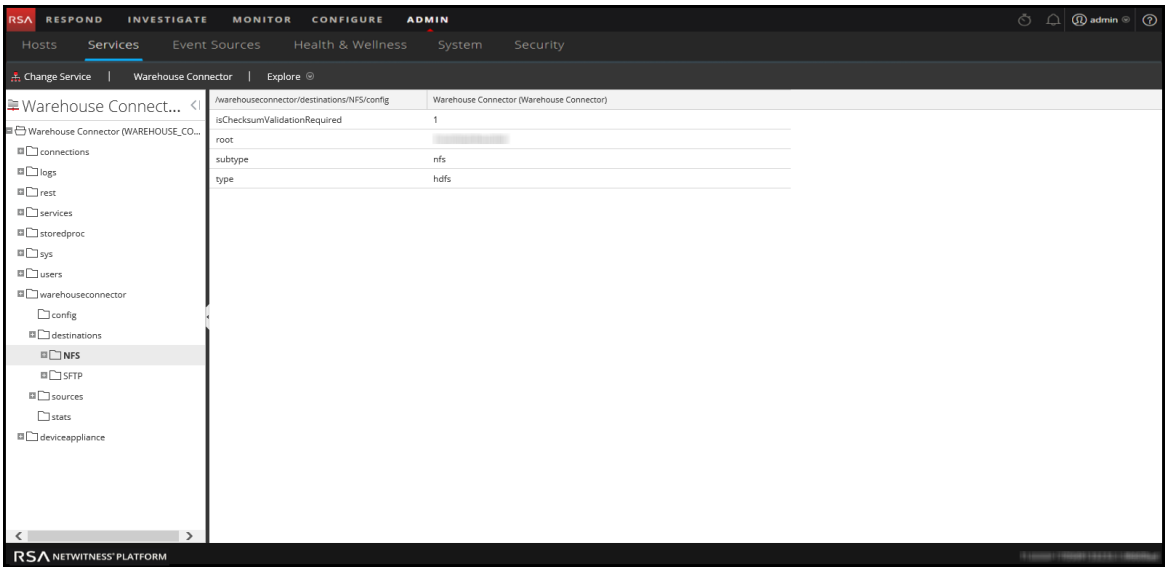
12. Click **Save**.
13. (Optional) If you want to enable checksum validation, perform the following:

   a. Go to **ADMIN > Services**.
   b. In the Services view, select the added Warehouse Connector service and select  **> View > Explore**.
   The Explore view of Warehouse Connector is displayed.



c. In the options panel, navigate to **warehouseconnector/destinations/webhdfs/config**.

d. Set the parameter `isChecksumValidationRequired` to **1**.



e. Restart the respective stream.

Configure a Stream

You can configure the data stream to define the data source and destination combinations.

Make sure that you have:

- Installed the Warehouse Connector service or virtual appliance in your network environment.
- Added the Warehouse Connector service to NetWitness. For more information, see "Add a Service to a Host" in the *Hosts and Services Getting Started Guide*.
- Configured the data source from which the Warehouse Connector service needs to collect data. For more information, see Configure the Data Source for Warehouse Connector.
- Configured the destination to which the Warehouse Connector service needs to write the collected data. For more information, see Configure the Destination.

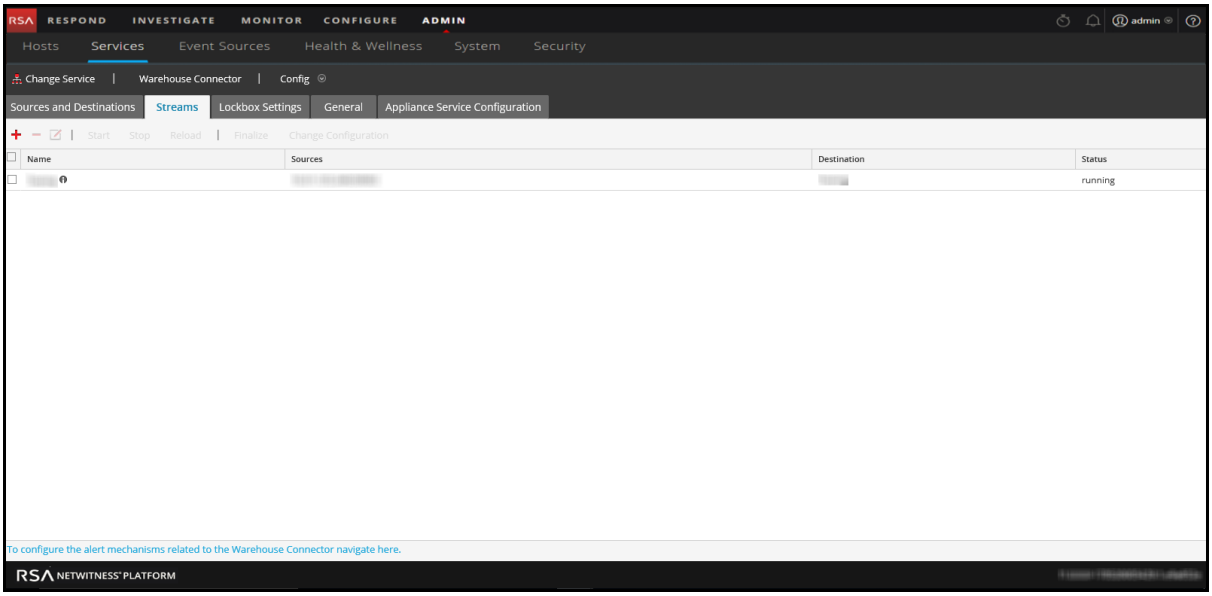
To configure the stream:

1. Create a stream
2. Finalize the stream
3. Start the stream

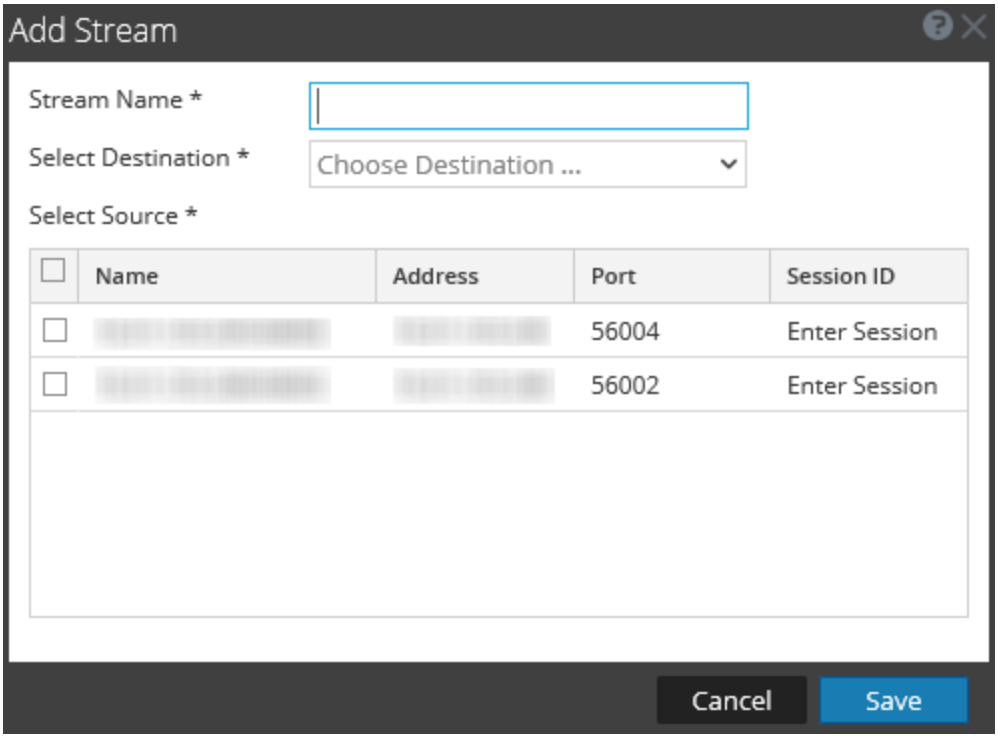
Create a Stream

To create a stream:

1. Go to **ADMIN > Services**.
2. In the Services view, select the added Warehouse Connector service and select  **> View > Config**.
   The Services Config view of Warehouse Connector is displayed.
3. Click the **Streams** tab.



4. On the **Streams** tab, click +.



5. In the **Add Stream** dialog, perform the following:
   a. In the **Stream Name** field, enter a name for the stream.

      Note: The **Stream Name** field does not support spaces or special characters except underscore (_).

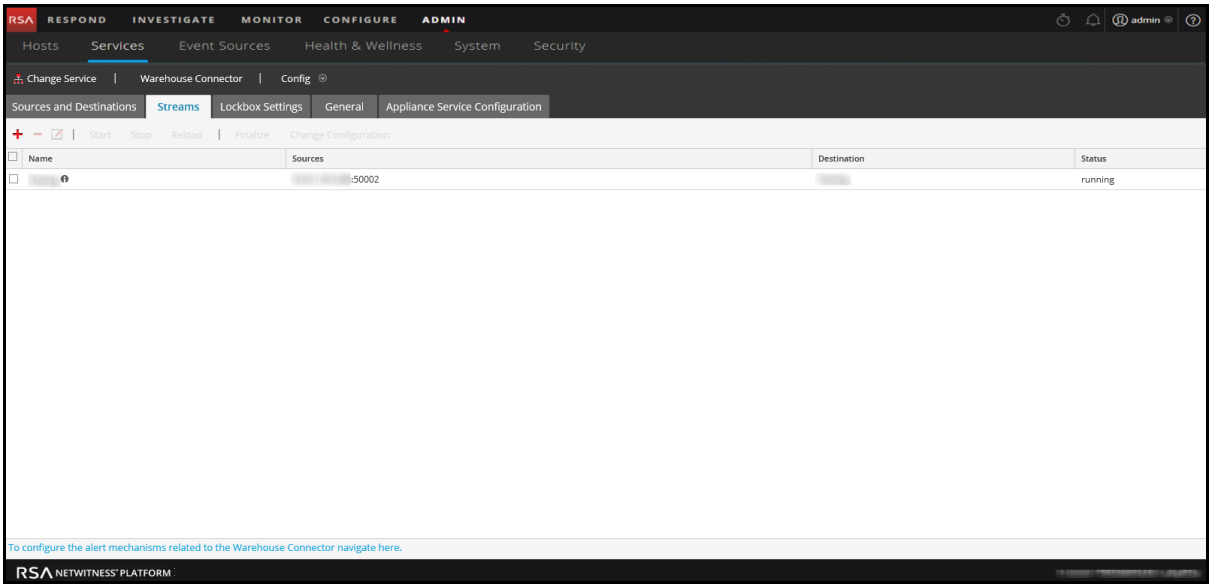
   b. In the **Select Destination** drop-down menu, select a destination from the list of destinations added to the Warehouse Connector.
   c. In the **Select Source** field, select sources from the list of sources displayed.
   d. In the **Session ID** column, enter the last session id.
      If you provide any session id, the Warehouse Connector will start the aggregation from that session, whereas if this is left blank, the aggregation will start from the current session.
   e. Click **Save**.

Finalize the Stream

Make sure that you have created a stream.

To finalize the stream:

1. Go to **ADMIN > Services**.
2. In the Services view, select the added Warehouse Connector service and select  **> View > Config**.
   The Services Config view of Warehouse Connector is displayed.
3. On the **Streams** tab, select the stream that you have created.



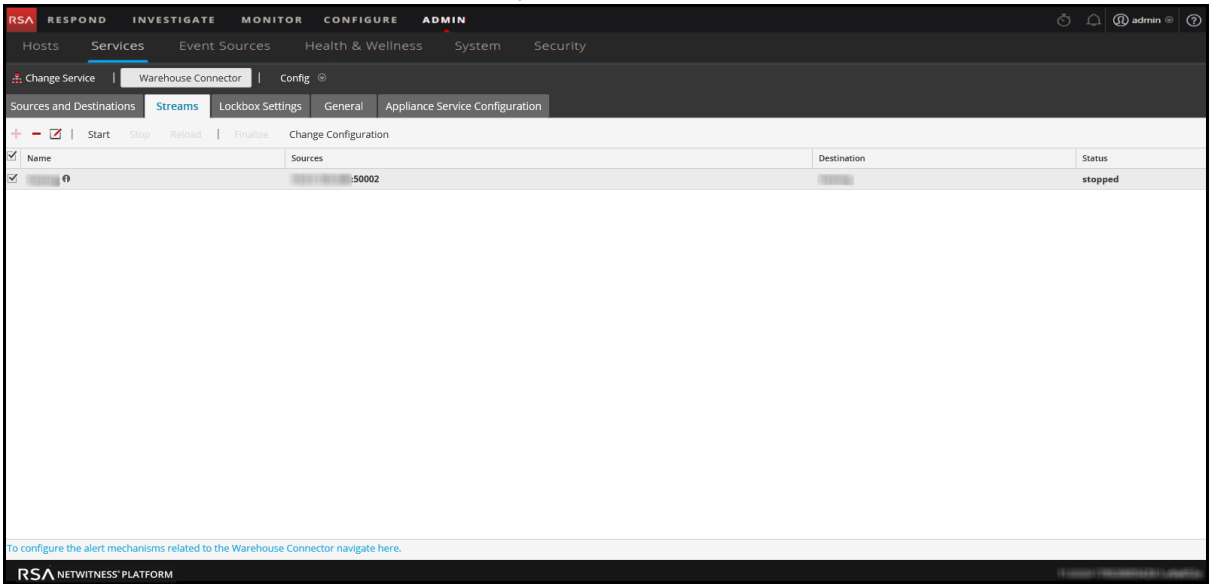
4. Click **Finalize**.

Start the Stream

Note: If you have deployed a Warehouse Connector Virtual Appliance, make sure that you change the default value of the `Maximum Message Hold Count` parameter to 800000. For more information, see General Tab Settings.

To start the stream:

1. Go to **ADMIN> Services**.
2. In the Services view, select the added Warehouse Connector service and select  **> View > Config**.
   The Services Config view of Warehouse Connector is displayed.
3. On the **Streams** tab, select the stream that you have created.



4. Click **Start**.

Monitor a Warehouse Connector

By monitoring a Warehouse Connector, you can automatically generate notifications when critical thresholds concerning Warehouse Connector and its storage have been met.

To monitor a Warehouse Connector:

1. Go to **ADMIN > Services**.
2. In the Services view, select the added Warehouse Connector service and select  **> View > Config**.
   The Services Config view of Warehouse Connector is displayed.
3. Click the **Streams** tab.
4. At the bottom of the **Streams** tab, click **To configure the alert mechanisms related to the Warehouse Connector navigate here**.
   The Warehouse Connector Monitoring page is displayed.

Caution: This page is deprecated and will be removed in a future release.

5. In the **Source or Destination Status** section, select the number of minutes or hours in the **Notify After Failing For** field.
   You will receive a notification if the source or destination connection fails for the defined number of minutes or hours.
6. In the **Stream Status** section, perform the following:
   a. In the **Notify Stopped For** field, define the number of minutes or hours after which you would like to receive a notification when the stream goes offline.
   b. In the **Disk Is** field, define the limit on the percentage of disk usage after which you would like to receive a notification.
   c. In the **Source is Behind** field, define the number of sessions. A notification is raised if the source goes behind the defined number of sessions.
   d. In the **Rejected Folder Size is** field, define the limit on the percentage of folder usage after which would like to receive a notification.
   e. In the **Number Of Files in Permanent Failure Folder** field, define the limit on the number of files in the permanent failure folder after which you would like to receive a notification.
7. In the **Notification Type** field, perform the following:
   a. Click **Configure email or distribution list** to configure email so that you can receive notifications in NetWitness. For more information, see the "Configure Email Server and Notification Account" topic in the *System Configuration* guide.
   b. Click **Configure Syslog and SNMP Trap servers** to configure audit logs. For more information, see the "Configure Syslog and SNMP Settings" topic in the *System Configuration* guide.

c. Select the following notification mechanisms as per your requirement:

- **NetWitness Console** - To get notifications on the NetWitness UI notification toolbar.
- **Email** - To get email notifications.
- **Syslog Notification** - To generate syslog events.
- **SNMP Trap Notifications** - To get audit events as SNMP traps.

Add Warehouse as a Data Source to Reporting Engine

You must add Warehouse as a data source to Reporting Engine to make this data source available to reports against this Reporting Engine. For more information, see "Add Warehouse as a Data Source to Reporting Engine" in the *Reporting Engine Configuration Guide*.

Analyze a Warehouse Report

The Warehouse modules provide analysts with reports of early indicators of compromise. The following Warehouse reports can be analyzed in NetWitness:

- Suspicious Domains report
- Suspicious DNS Activity report
- Host Profile report

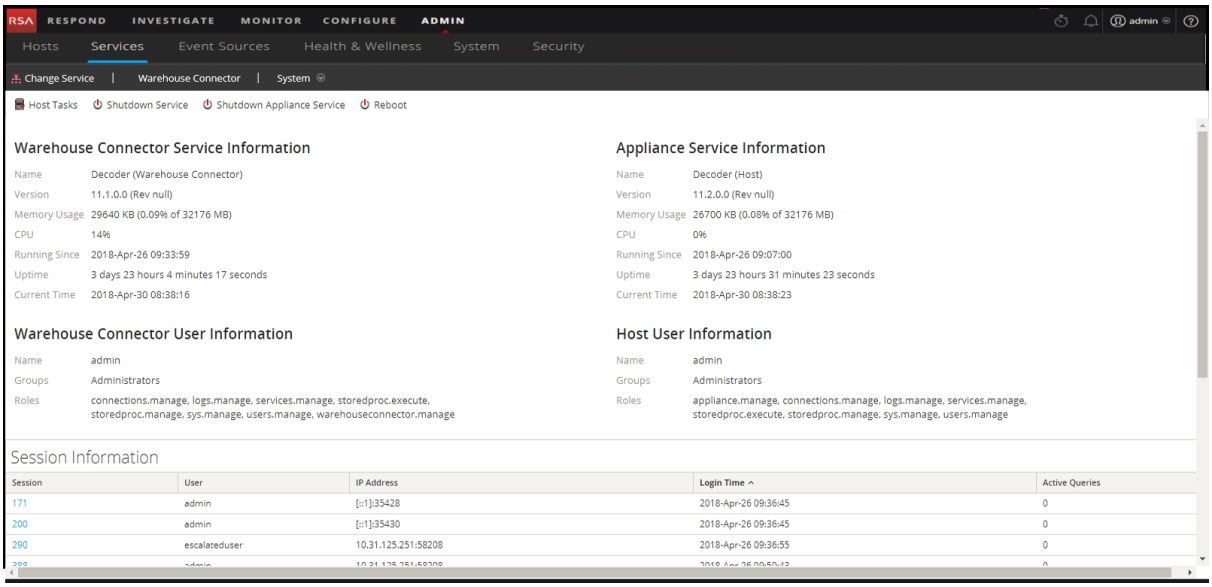
For more information, see "Step 4. Analyze a Warehouse Report" in the *Warehouse Guide*.

View the Warehouse Connector Service

While the information displayed in the Services System view is the same for all types of core services, several options in the toolbar are relevant only for Warehouse Connector.

To access this view:

1. Go to **ADMIN > Services**.
2. In the Services view, select a Warehouse Connector and select  **> View > System**.
   The Systems view for the selected Warehouse Connector is displayed.



The following is an example of toolbar options for Warehouse Connectors.

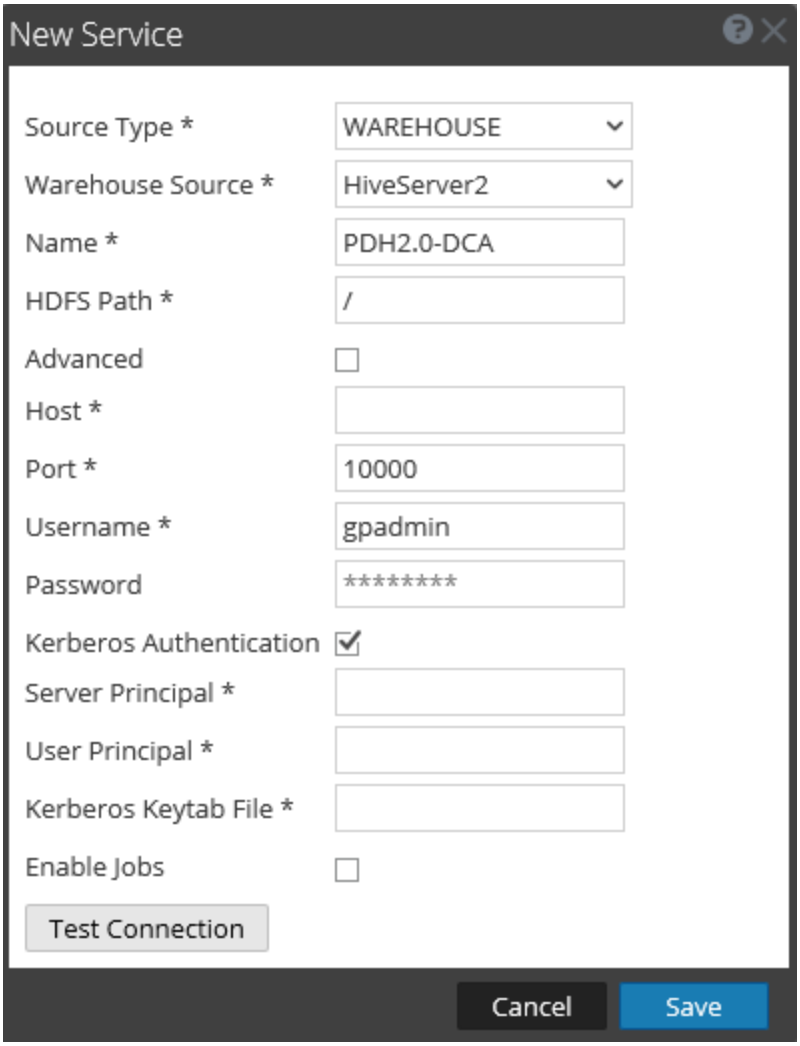
Host Tasks, Shutdown Service, Shutdown Appliance Service or (Shutdown Appliance), and Reboot are common to all services and are described in the *Hosts and Services Getting Started Guide*.

Troubleshoot the Warehouse Connector

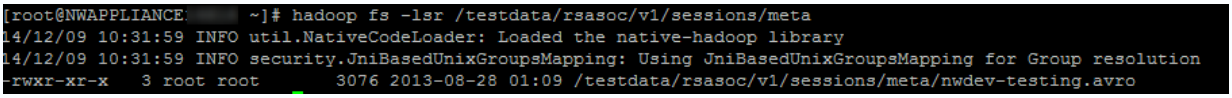
The following information suggests the possible issues that NetWitness users may encounter when adding a Warehouse service to the Reporting Engine as a data source for reporting in NetWitness. Look for explanations and solutions in this section.

While adding a Warehouse service to the Reporting Engine as a data source for reporting, you may observe some of the errors listed in this document. Information is provided on how to troubleshoot the errors and add the data source successfully.

The following figure shows the New Service dialog.



For more information, see "Add Warehouse as a Data Source to Reporting Engine" in the *Reporting Engine Configuration Guide*.

Error	Possible Solutions
Could not open connection to HiveServer	• Ensure that the HiveServer2 is running on the Host. • Check if the port provided can be accessible from the Reporting Engine server.
No Schema found in HDFS path	Ensure that meta avro data file(s) are available in the HDFS path (**<HDFS Path>/rsasoc/v1/sessions/meta**) mentioned. The following figure shows an example of the command to check the files in hdfs.
	
Could not open connection to HiveServer, GSS initiate failed	GSS initiate failed errors will be observed only in the case of Kerberos enabled Hive. Ensure that the proper keytab file is provided and it should have read options for the rsasoc user (user on which the Reporting Engine Server runs). Ensure that the system time is synchronized between KDC, Hadoop (HortonWorks) server, and the Reporting Engine system.

Manage a Stream and Lockbox

You can manage a stream using the following procedures:

- Edit a Stream
- Reload the Stream
- Specify meta filters for a Stream
- Define muti-valued metas

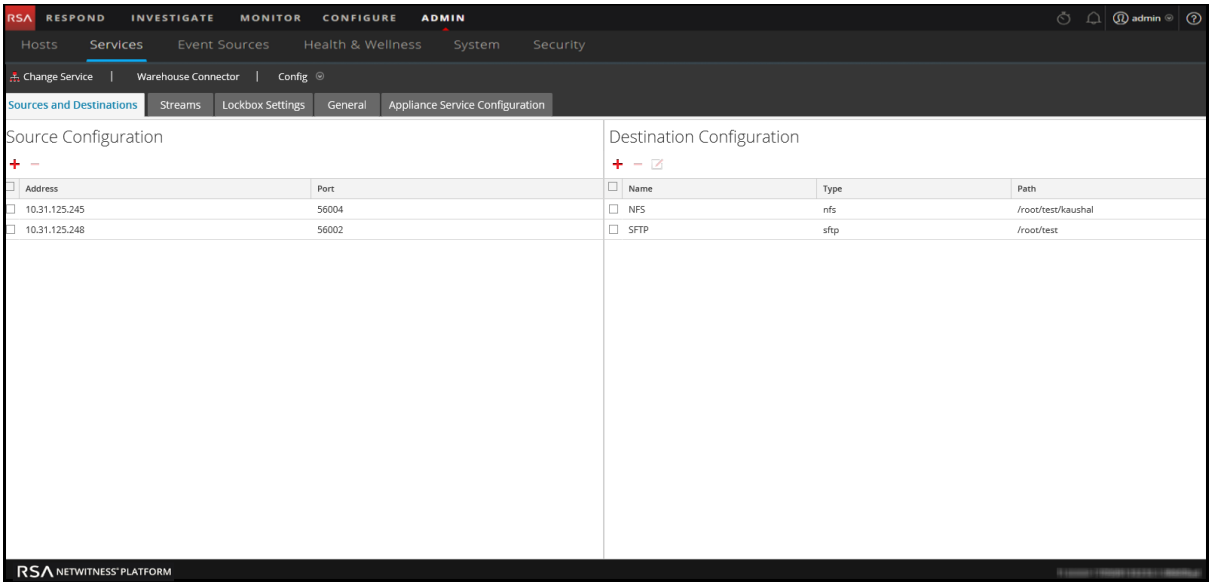
Edit a Stream

You can edit a stream to perform the following:

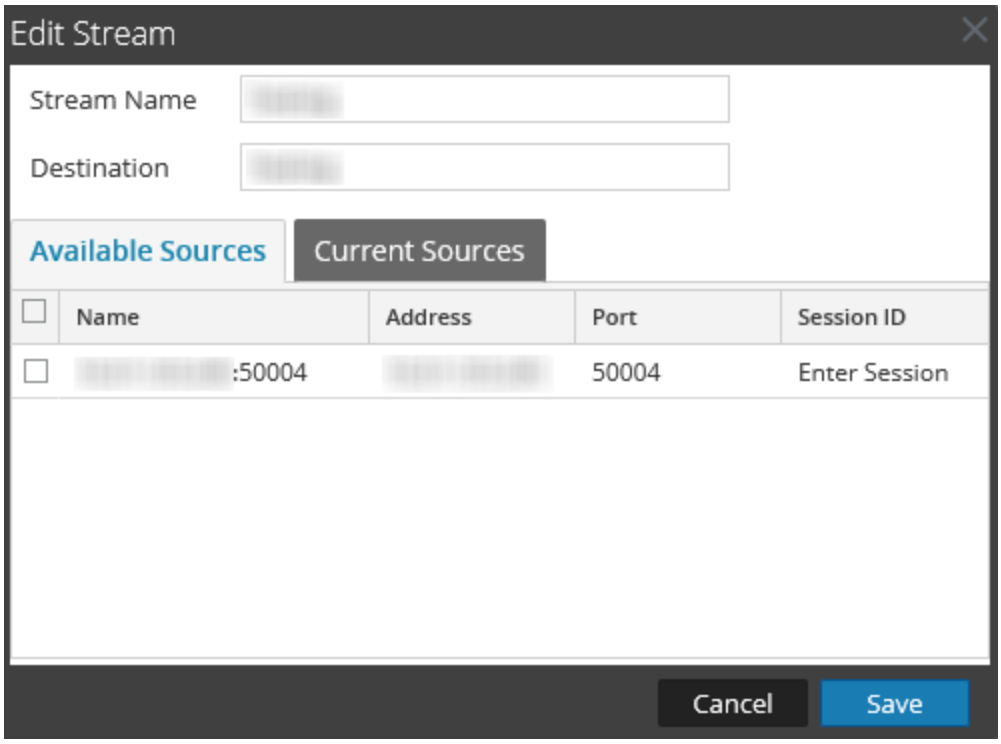
- Add more data sources to the stream.
- Delete existing data sources from the stream.

To edit a stream:

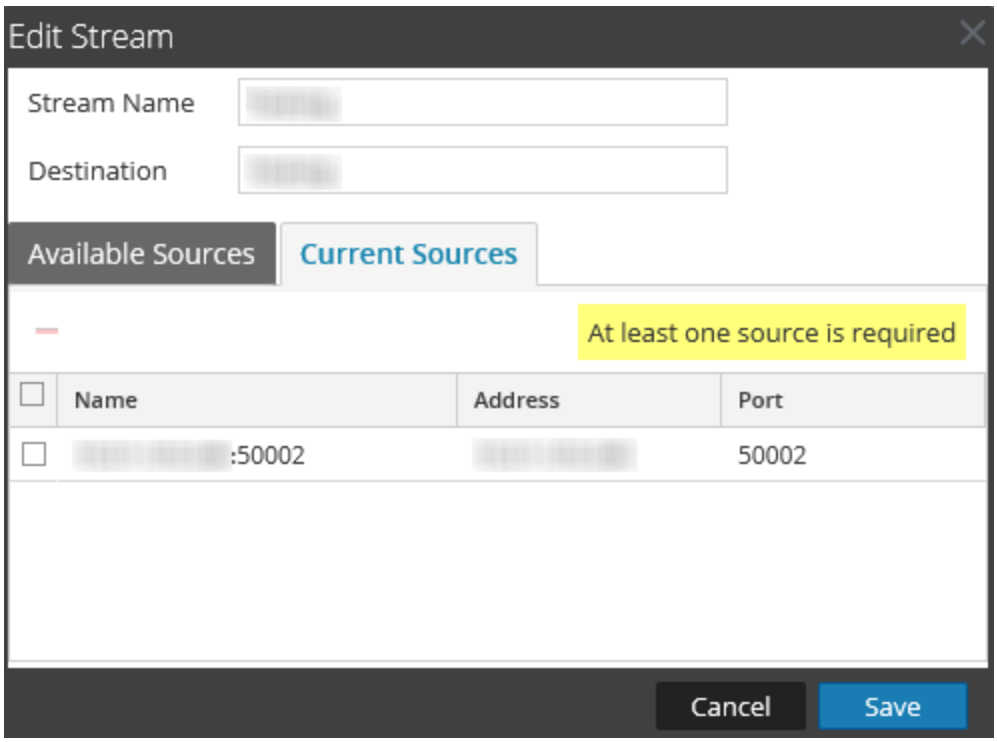
1. Go to **ADMIN > Services**.
2. In the Services view, select the added Warehouse Connector service and select  **> View > Config**.
   The Services Config view of Warehouse Connector is displayed.



3. On the **Streams** tab, click  .
4. In the **Edit Stream** dialog, you can perform the following:
   - On the **Available Sources** tab, you can select the available data sources to add to the stream and click **Save**.



- On the **Current Sources** tab, you can delete an existing data source from the stream. Select the data source and click − .



Reload the Stream

When you reload the stream, the Warehouse Connector updates the schema file for the stream. You should reload the stream whenever you add a new custom meta to the Log Decoder or Decoder.

To reload the stream:

1. Go to **ADMIN > Services**.
2. In the Services view, select the added Warehouse Connector service and select  **> View > Config**.
   The Services Config view of Warehouse Connector is displayed.
3. On the **Streams** tab, select the stream that you want to reload.
4. Click **Reload**.

Specify Meta Filters for a Stream

You need to specify the filter for each stream in the `export.session.meta.fields` parameter in the Explore view of the Warehouse Connector.

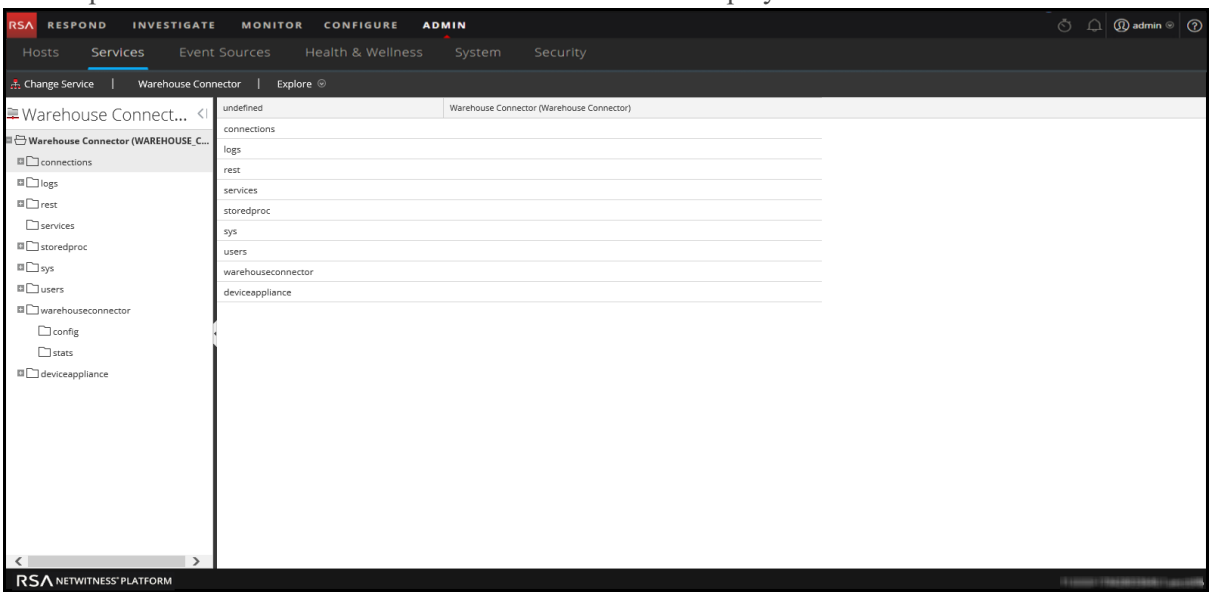
The following table lists the values that you can provide as a filter:

Values	Description
*	All the collected metas are written to SAW.
*, *meta1*, *meta2*	All the metas except the defined metas are written to SAW. For example, **Filter:**`*,ip.src` All the metas except `ip.src` is written to SAW.
meta1, meta2, meta3	Only the defined metas are written to SAW.

Note: By default, the following metas are written to Warehouse even if you specify them in the filter:
- ng_source
- unique_id
- time

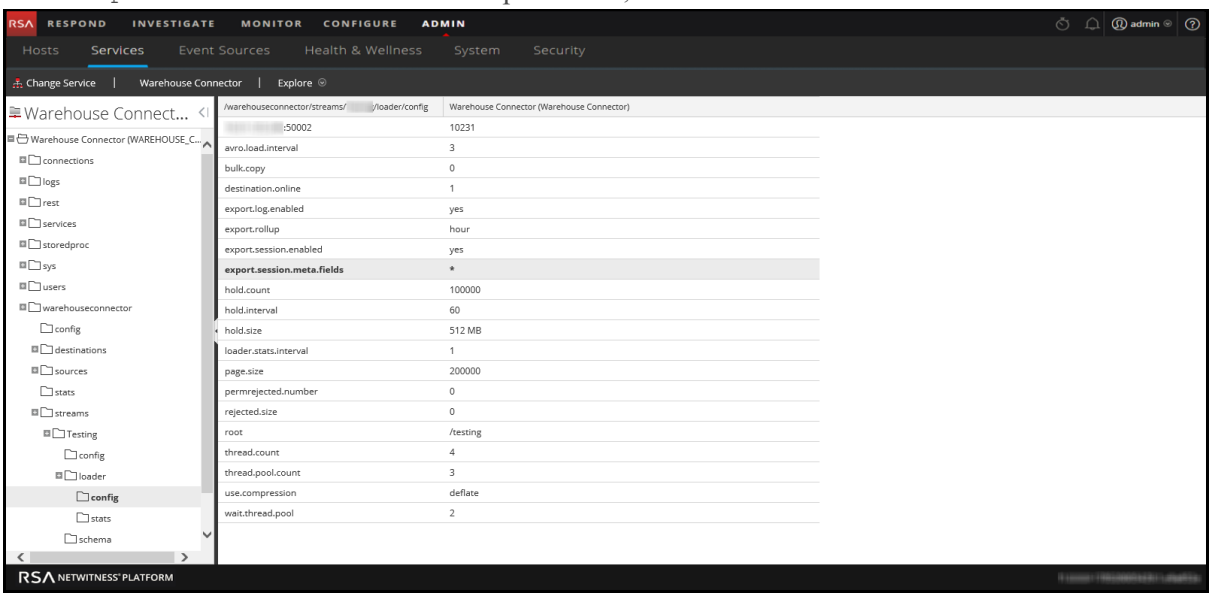
To specify meta filters for a Stream:

1. Go to **ADMIN > Services**.
2. In the Services view, select a Warehouse Connector services and select  **> View > Explore**.
   The Explore view of the Warehouse Connector service is displayed.



3. In the options panel, select **warehouseconnector > streams > <stream_name> > loader > config**.

4. In the `export.session.meta.fields` parameter, enter the filter.



5. Restart the stream.

Define Multi-valued Metas

You can also define an existing meta or a custom meta to be treated as multi-valued meta.

To define multi-valued metas:

Caution: Defining an existing meta to be treated as multi-valued may change the data type of the meta and cause the associated reports to fail.

1. Create a new file with the filename **multivalue-users.xml** in the **/etc/netwitness/ng** directory.
2. Add the following entries:

```
<?xml version="1.0" encoding="utf-8"?>

<Netwitness>
    <MultiValueMetas>
<Meta>NEWMETANAME</Meta>
    </MultiValueMetas>
</Netwitness>
```

   Where *NEWMETANAME* is the existing meta or a custom meta to be treated as multi-valued meta.

   Caution: Make sure that you do not add metas that are by default treated as non multi-value.

3. Restart the stream.

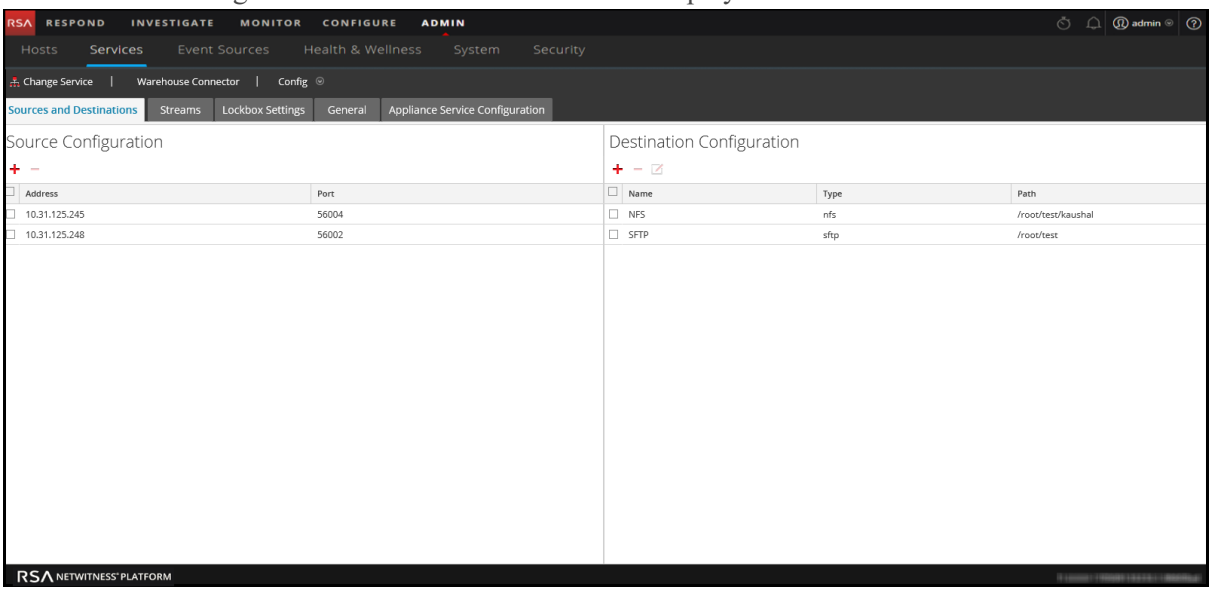
Manage a Lockbox

You can manage a lockbox using the following procedures:

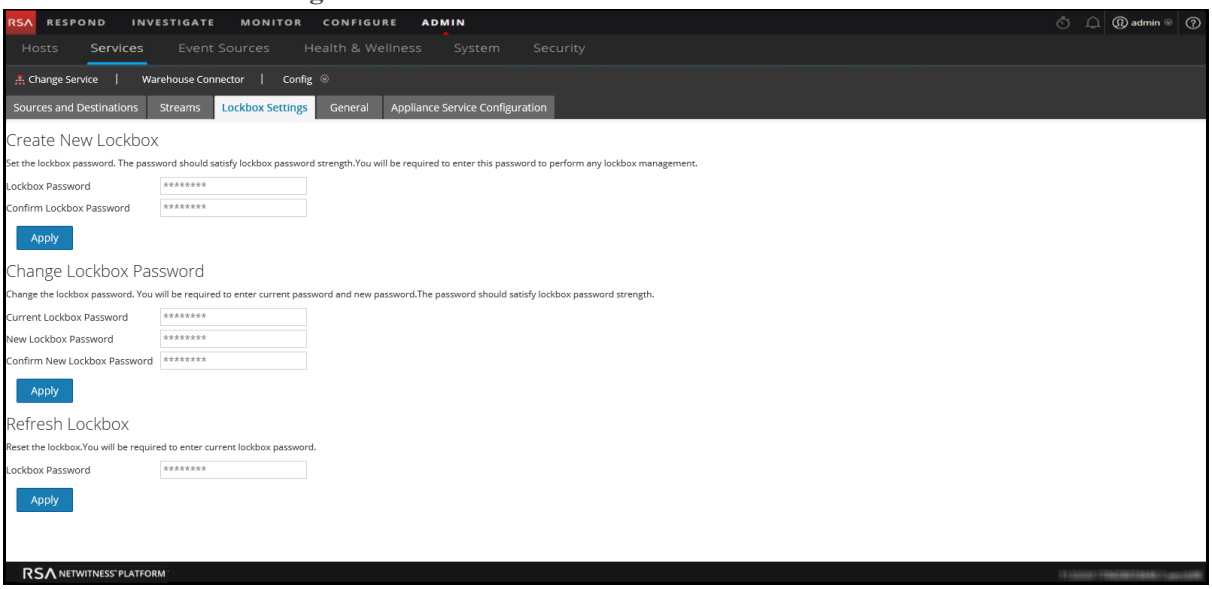
- Change the Lockbox password
- Refresh the Lockbox

To change the Lockbox password:

1. Log on to NetWitness Platform.
2. Go to **ADMIN > Services**.
3. In the Services view, select the added Warehouse Connector service, and select  **> View > Config**.
   The Services Config view of Warehouse Connector is displayed.



4. Click the **Lockbox Settings** tab.



5. In the **Change Lockbox Password** section, perform the following:
   a. In the **Current Lockbox Password** field, enter the current lockbox password.
   b. In the **New Lockbox Password** field, enter the new lockbox password.

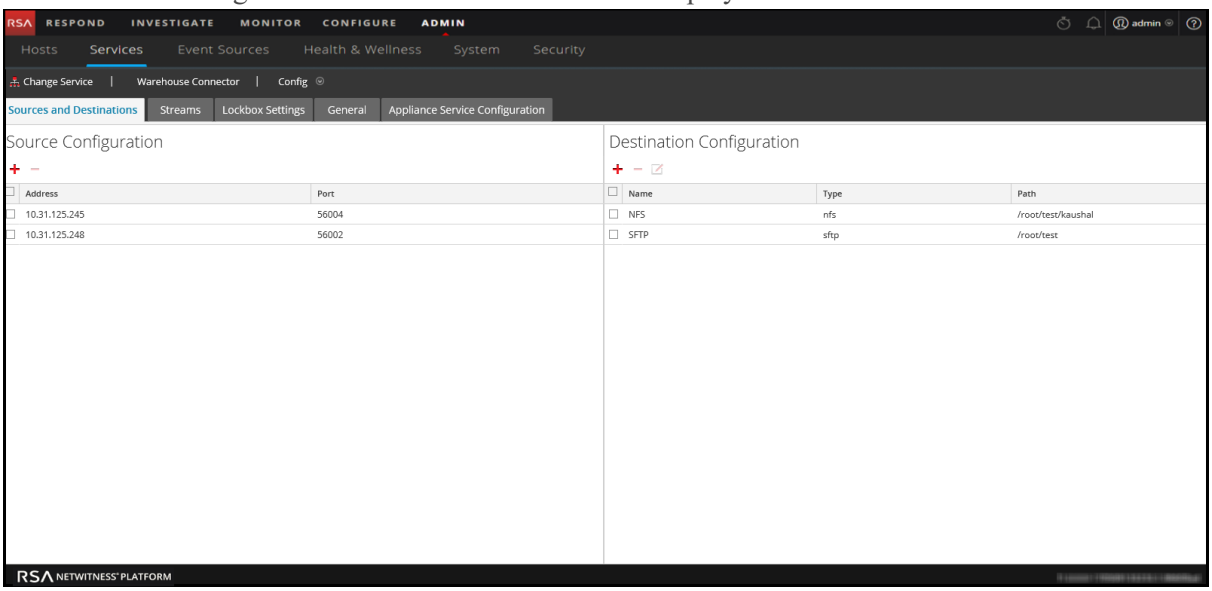
      Note: The lockbox password must be at least eight characters in length and it must contain at least three of the following groups: one uppercase character [A-Z], one lowercase character [a-z], one numeral [0-9], and one special character.

   c. In the **Confirm New Lockbox Password** field, enter the new lockbox password to confirm.
   d. Click **Apply**.
      The Lockbox password is successfully changed.

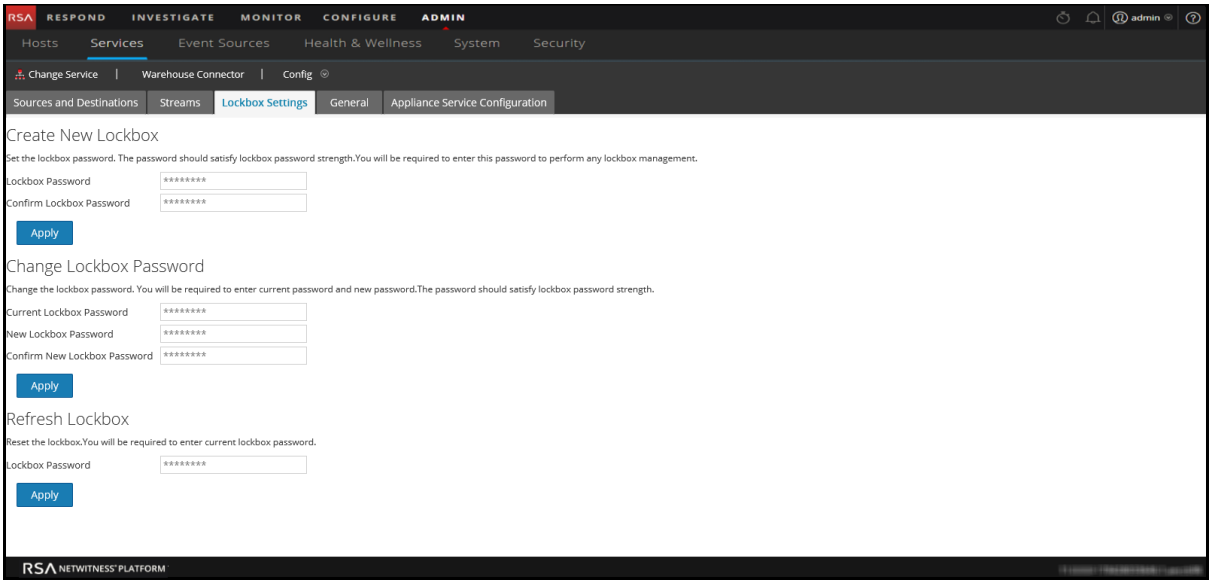
To refresh the Lockbox:

1. Log on to NetWitness Platform.
2. Go to **ADMIN > Services**.
3. In the Services view, select the added Warehouse Connector service, and select  **> View > Config**.

The Services Config view of Warehouse Connector is displayed.



4. Click the **Lockbox Settings** tab.



5. In the **Refresh Lockbox** section, enter the current lockbox password in the **Lockbox Password** field.
6. Click **Apply**.
   The Lockbox is reset.

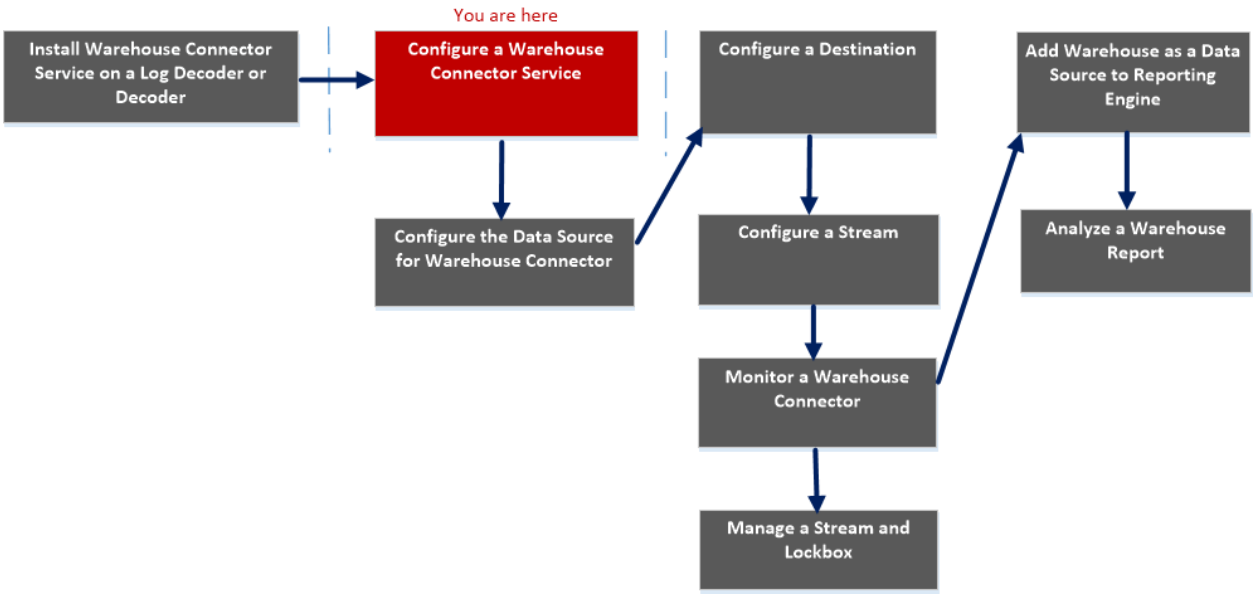
Warehouse Connector Configuration References

This section contains descriptions of the user interface as well as other reference information.

General Tab Settings

The General tab displays the general configuration settings for Warehouse Connector service.

Workflow



What do you want to do?

Role	I want to...	Refer to...
Administrator	Install Warehouse Connector Service on a Log Decoder or Decoder	Install Warehouse Connector Service on a Log Decoder or Decoder or Hybrid
Administrator	Configure a Warehouse Connector Service*	Configure a Warehouse Connector Service
Administrator	Configure the Data Source for Warehouse Connector	Configure the Data Source for Warehouse Connector
Administrator	Configure the Destination using NFS, SFTP, WebHDFS.	Configure the Destination Using NFS Configure the Destination Using SFTP Configure the Destination Using WebHDFS
Administrator	Configure a Stream	Configure a Stream
Administrator	Monitor a Warehouse Connector	Monitor a Warehouse Connector

Role	I want to...	Refer to...
Administrator	Add Warehouse as Data Source to Reporting Engine	For more information, see "Add Warehouse as a Data Source to Reporting Engine" in the *Reporting Engine Configuration Guide*.
Administrator	Analyze a Warehouse Report	For more information, see "Step 4. Analyze a Warehouse Report" in the *Warehouse Guide*.
Administrator	Manage a Stream and Lockbox*	Manage a Stream and Lockbox

*You can complete these tasks here.

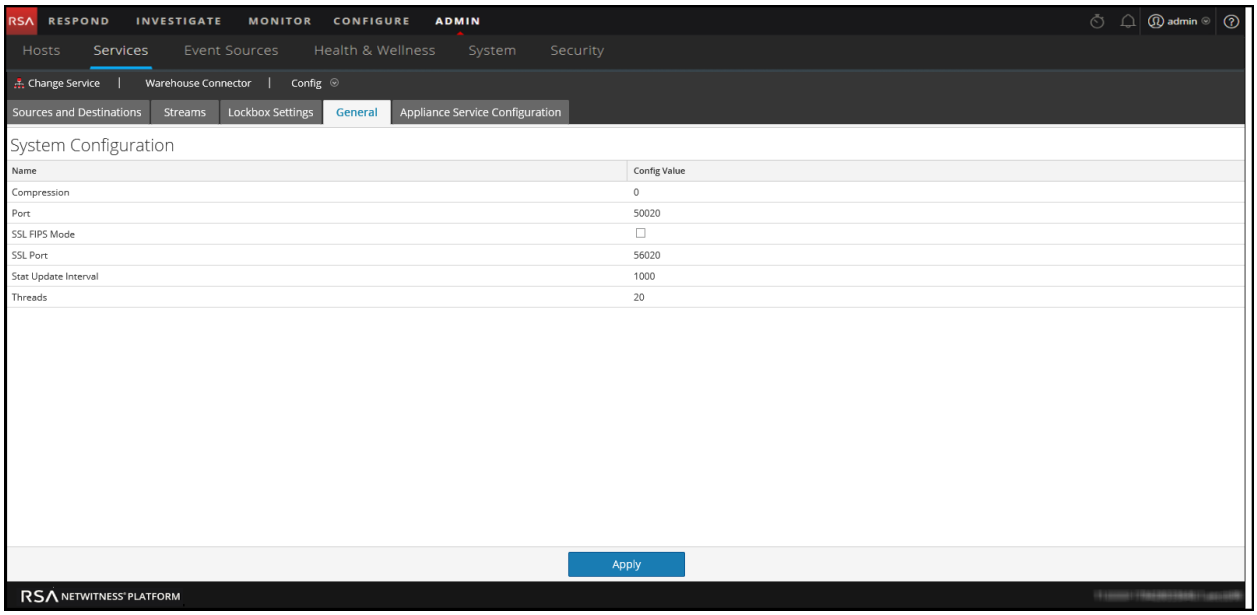
Related topics

- Configure a Warehouse Connector Service

Quick Look

The following figure shows the General tab on the Warehouse Connector Services Config view.

The General tab displays the system configuration parameters for the Warehouse Connector service.



When you add a Warehouse Connector service, default values are in effect. RSA designed the default values to accommodate most environments and recommends that you do not edit these values because it may adversely affect performance.

The following table describes the System Configuration parameters:

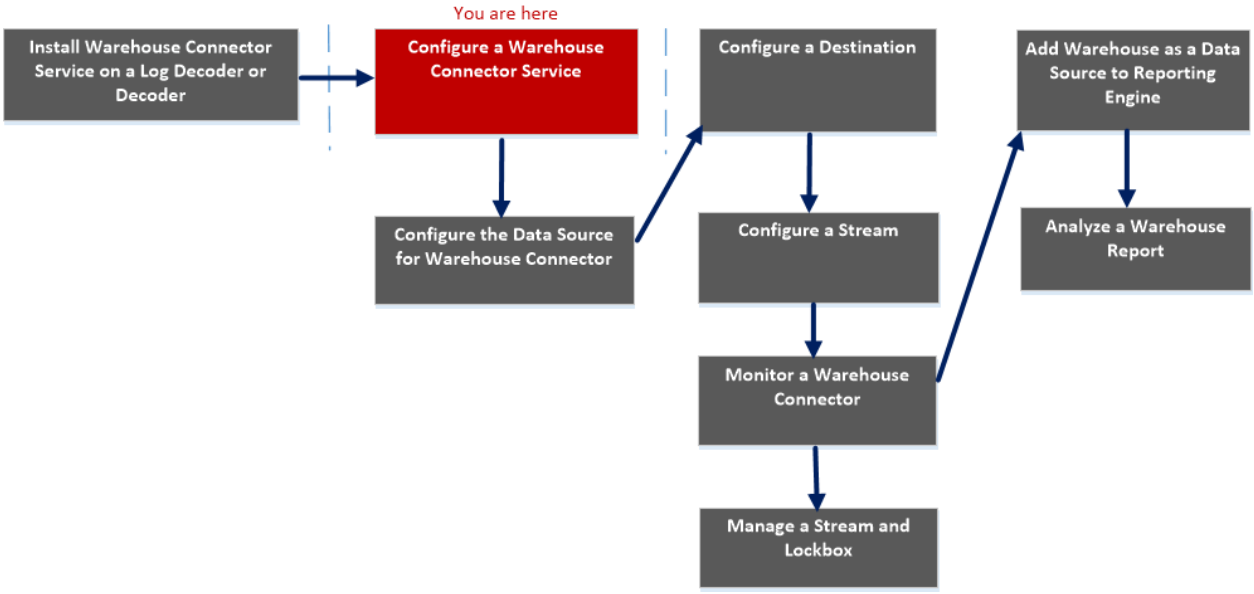
Name	Config Value
Compression	Determines the minimum amount of bytes before a message is compressed. If set to zero, messages are not compressed.

Name	Config Value
Port	Determines the port used by the service. **Note:** If you change the port number, ensure that you restart the service.
SSL	If enabled, all the data transferred in the network will be encrypted using SSL.
Stat Update Interval	Determines how often (in milliseconds) statistic nodes are updated in the system.
Threads	Determines the number of threads in the thread pool to handle incoming requests.

Appliance Service Configuration Tab Settings

The Appliance Service Configuration tab displays the appliance configuration settings for Warehouse Connector service. For more information, see "Appliance Service Configuration" in the *Hosts and Services Getting Started Guide*.

Workflow



What do you want to do?

Role	I want to...	Refer to...
Administrator	Install Warehouse Connector Service on a Log Decoder or Decoder	Install Warehouse Connector Service on a Log Decoder or Decoder or Hybrid
Administrator	Configure a Warehouse Connector Service*	Configure a Warehouse Connector Service
Administrator	Configure the Data Source for Warehouse Connector	Configure the Data Source for Warehouse Connector
Administrator	Configure the Destination using NFS, SFTP, WebHDFS.	Configure the Destination Using NFS Configure the Destination Using SFTP Configure the Destination Using WebHDFS
Administrator	Configure a Stream	Configure a Stream
Administrator	Monitor a Warehouse Connector	Monitor a Warehouse Connector

Role	I want to...	Refer to...
Administrator	Add Warehouse as Data Source to Reporting Engine	For more information, see "Add Warehouse as a Data Source to Reporting Engine" in the *Reporting Engine Configuration Guide*.
Administrator	Analyze a Warehouse Report	For more information, see "Step 4. Analyze a Warehouse Report" in the *Warehouse Guide*.
Administrator	Manage a Stream and Lockbox*	Manage a Stream and Lockbox

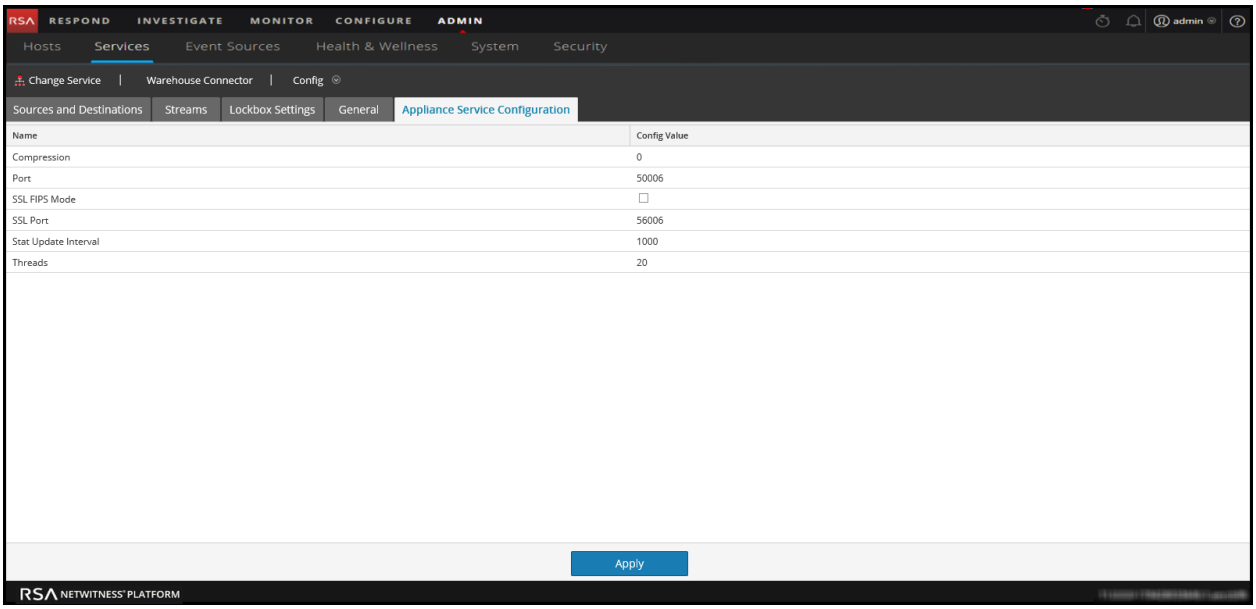
*You can complete these tasks here.

Related topics

- Configure a Warehouse Connector Service

Quick Look

The following figure shows the different settings on the Appliance Service Configuration tab.



When you add a Warehouse Connector service, default values are in effect. RSA designed the default values to accommodate most environments and recommends that you do not edit these values because it may adversely affect performance.

The following table describes the Appliance Service Configuration parameters:

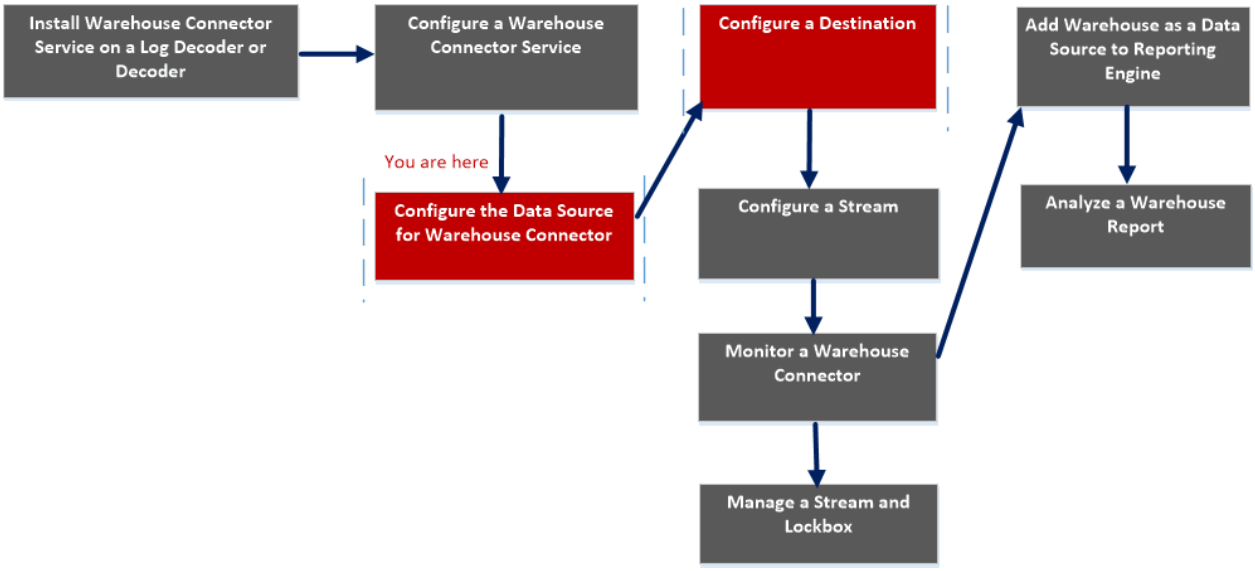
Name	Configuration Value
Compression	Determines the minimum amount of bytes before a message is compressed. If set to zero, messages are not compressed.

Name	Configuration Value
Port	Determines the port used by the service. **Note:** If you change the port number, ensure that you restart the service.
SSL FIPS Mode	If enabled, all the data transferred in the network will be encrypted using SSL FIPS.
SSL Port	Determines the SSL port used by the service.
Stat Update Interval	Determines how often (in milliseconds) statistic nodes are updated in the system.
Threads	Determines the number of threads in the thread pool to handle incoming requests.

Sources and Destinations Configuration

The Sources and Destinations tab for a Warehouse Connector in the Services Config view provides a way to manage basic service configuration and configure source and destination.

Workflow



What do you want to do?

Role	I want to...	Refer to...
Administrator	Install Warehouse Connector Service on a Log Decoder or Decoder	Install Warehouse Connector Service on a Log Decoder or Decoder or Hybrid
Administrator	Configure a Warehouse Connector Service	Configure a Warehouse Connector Service
Administrator	Configure the Data Source for Warehouse Connector*	Configure the Data Source for Warehouse Connector
Administrator	Configure the Destination using NFS, SFTP, WebHDFS*	Configure the Destination Using NFS Configure the Destination Using SFTP Configure the Destination Using WebHDFS
Administrator	Configure a Stream	Configure a Stream
Administrator	Monitor a Warehouse Connector	Monitor a Warehouse Connector

Role	I want to...	Refer to...
Administrator	Add Warehouse as Data Source to Reporting Engine	For more information, see "Add Warehouse as a Data Source to Reporting Engine" in the *Reporting Engine Configuration Guide*.
Administrator	Analyze a Warehouse Report	For more information, see "Step 4. Analyze a Warehouse Report" in the *Warehouse Guide*.
Administrator	Manage a Stream and Lockbox	Manage a Stream and Lockbox

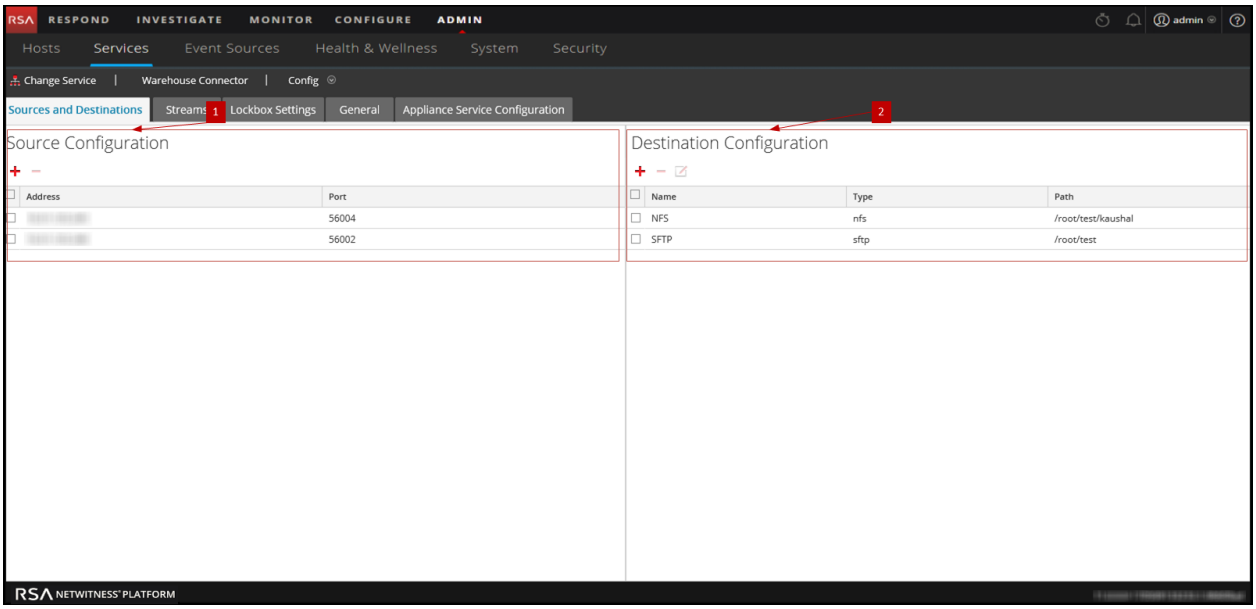
*You can complete these tasks here.

Related topics

- Configure the Data Source for Warehouse Connector
- Configure the Destination

Quick Look

The following figure shows the Sources and Destinations tab on the Warehouse Connector Services Config view.



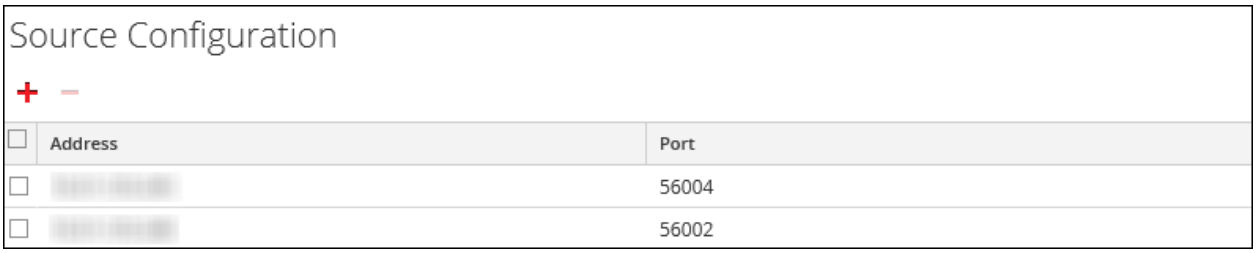
The Sources and Destinations tab includes the following two sections:

1 Source Configuration
2 Destination Configuration

Source Configuration

The Source Configuration section allows you to configure the data sources from which the Warehouse Connector service needs to collect data.

The following is an example of the Source Configuration section.

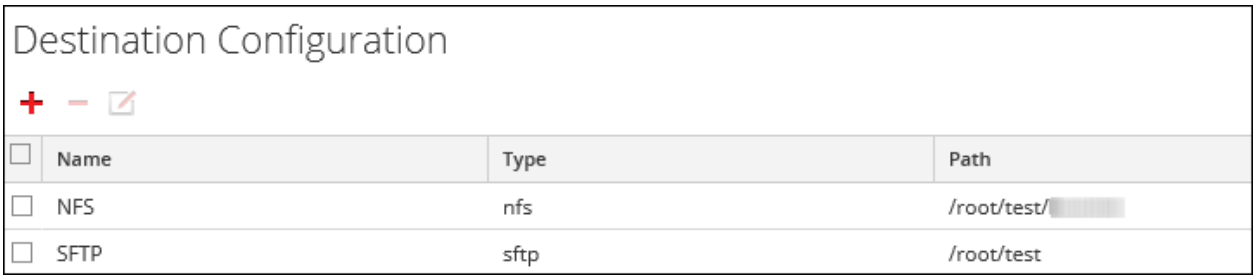


The Source Configuration section allows you to perform the following:

Features	Description
+	Add the data source.
−	Delete the data source.

Destination Configuration

The Destination Configuration section allows you to configure the destination to which the Warehouse Connector service needs to write the collected data.



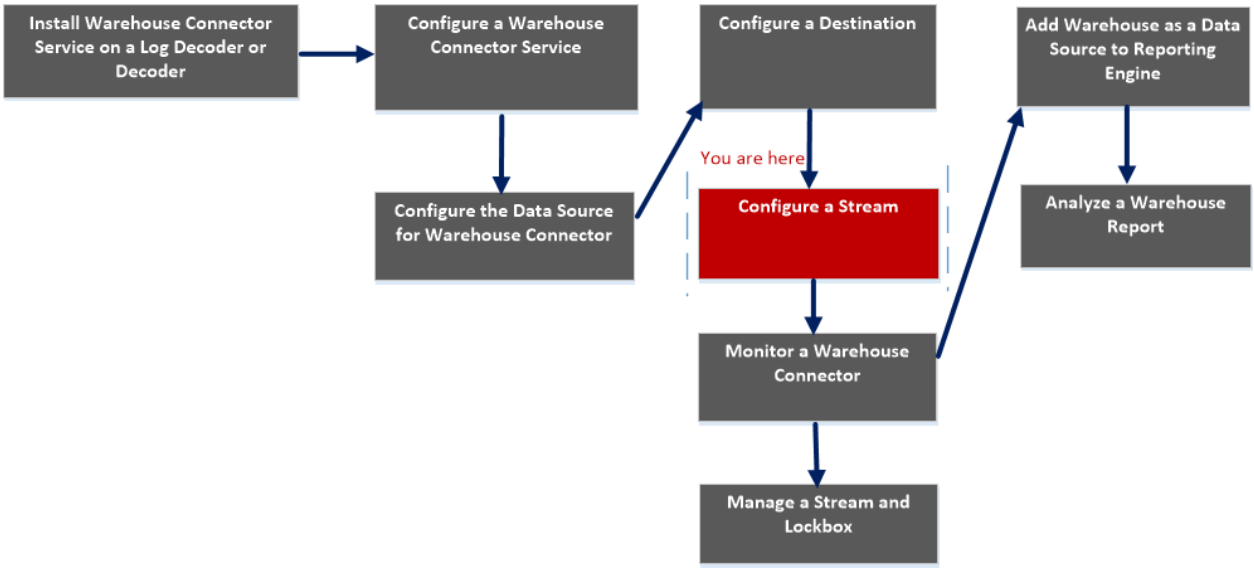
The Destination Configuration section allows you to perform the following:

Features	Description
+	Add the destination.
−	Delete the destination.
✎	Edit the destination. **Note:** You can only edit the SFTP destination type.

Add Stream Dialog

You can configure and add a stream to a Warehouse Connector in this dialog

Workflow



What do you want to do?

Role	I want to...	Refer to...
Administrator	Install Warehouse Connector Service on a Log Decoder or Decoder	Install Warehouse Connector Service on a Log Decoder or Decoder or Hybrid
Administrator	Configure a Warehouse Connector Service	Configure a Warehouse Connector Service
Administrator	Configure the Data Source for Warehouse Connector	Configure the Data Source for Warehouse Connector
Administrator	Configure the Destination using NFS, SFTP, WebHDFS.	Configure the Destination Using NFS Configure the Destination Using SFTP Configure the Destination Using WebHDFS
Administrator	Configure a Stream*	Configure a Stream
Administrator	Monitor a Warehouse Connector	Monitor a Warehouse Connector

Role	I want to...	Refer to...
Administrator	Add Warehouse as Data Source to Reporting Engine	For more information, see "Add Warehouse as a Data Source to Reporting Engine" in the *Reporting Engine Configuration Guide*.
Administrator	Analyze a Warehouse Report	For more information, see "Step 4. Analyze a Warehouse Report" in the *Warehouse Guide*.
Administrator	Manage a Stream and Lockbox	Manage a Stream and Lockbox

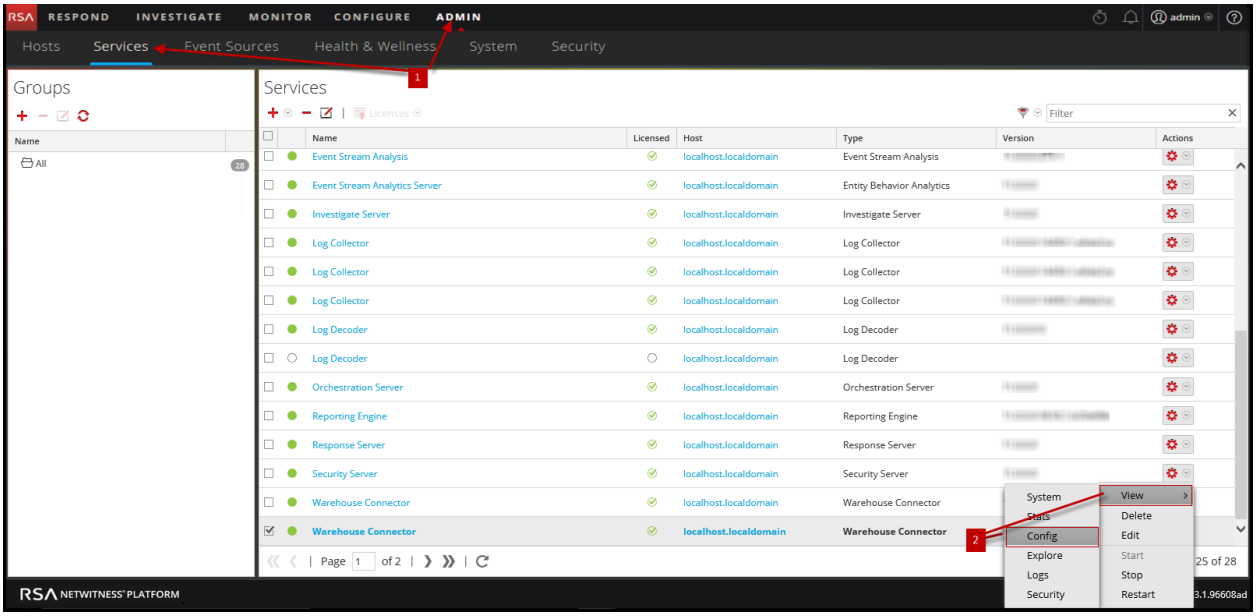
*You can complete these tasks here.

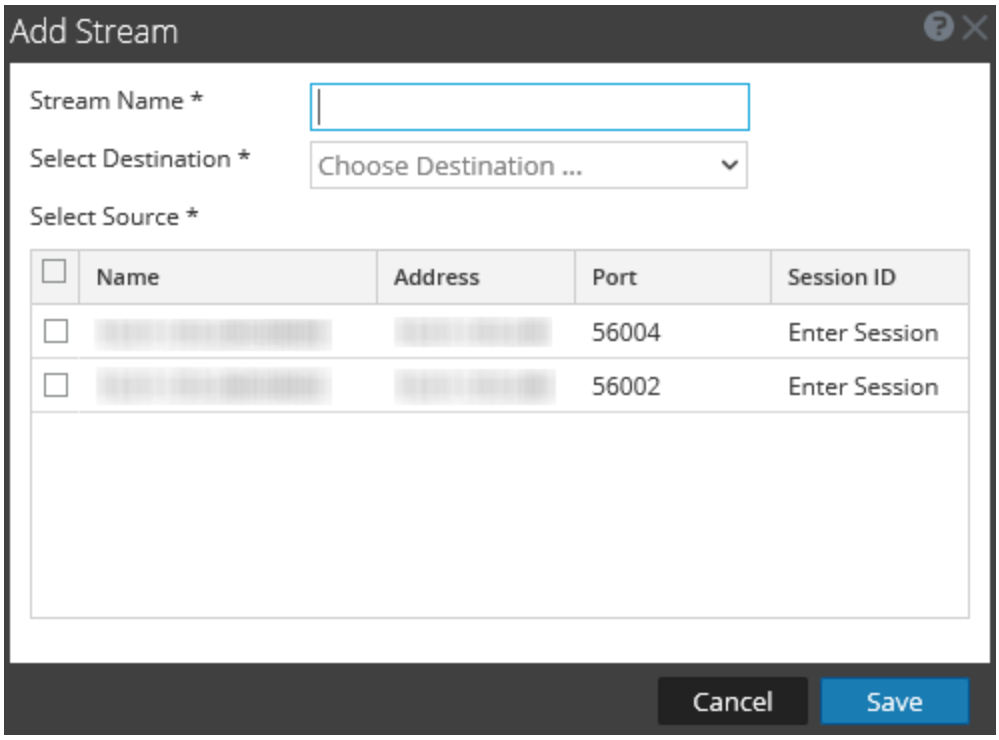
Related Topics

- Configure a Stream

Quick Look

The following figure is an example with the important features labeled.





1. Go to **ADMIN > Services**.
2. In the services view, select a Warehouse Connector service and select **>view>config**
3. In the **Streams** tab, click + to view the add stream dialog.

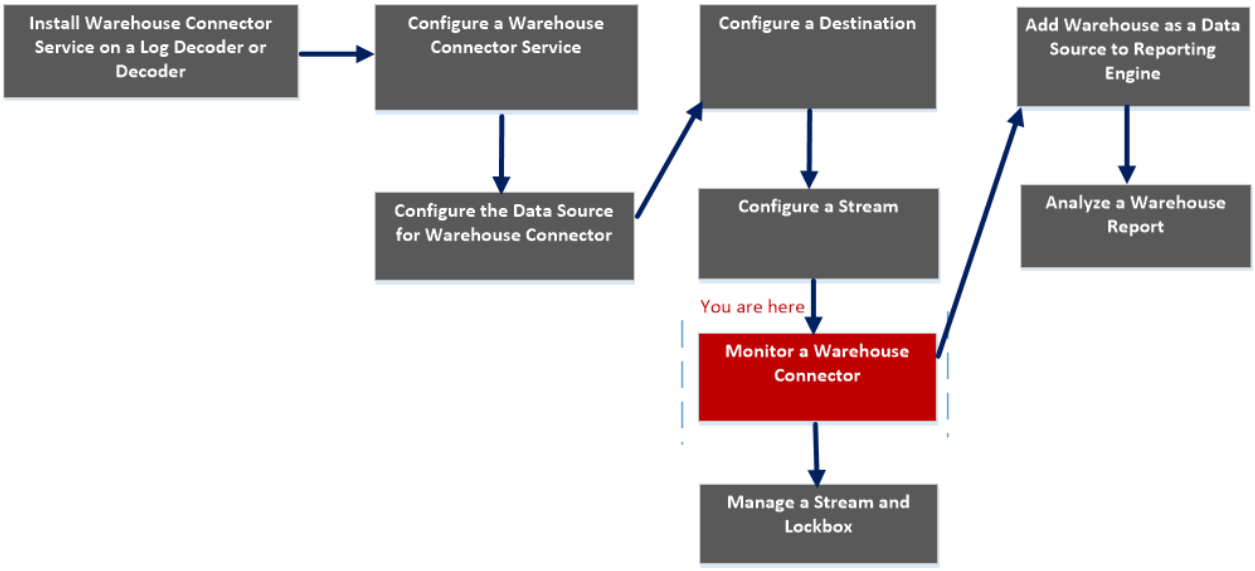
The following table describes the fields in the Add Stream dialog:

Parameter	Description
Stream Name	Type the name of the stream. The stream name may only contain alphanumeric characters and underscores. It cannot exceed 20 characters in length.
Select Destination	Select a destination from the drop-down list.
Select Source	Select a source from the grid at the bottom section of the dialog.
Name	The name of the source.
Address	The address of the source.
Port	The port of the source.
Session ID	The session ID of the source.

Streams Configuration

The Streams tab for a Warehouse Connector in the Services Config view provides a way to manage stream configuration.

Workflow



What do you want to do?

Role	I want to...	Refer to...
Administrator	Install Warehouse Connector Service on a Log Decoder or Decoder	Install Warehouse Connector Service on a Log Decoder or Decoder or Hybrid
Administrator	Configure a Warehouse Connector Service	Configure a Warehouse Connector Service
Administrator	Configure the Data Source for Warehouse Connector	Configure the Data Source for Warehouse Connector
Administrator	Configure the Destination using NFS, SFTP, WebHDFS.	Configure the Destination Using NFS Configure the Destination Using SFTP Configure the Destination Using WebHDFS
Administrator	Configure a Stream*	Configure a Stream
Administrator	Monitor a Warehouse Connector*	Monitor a Warehouse Connector

Role	I want to...	Refer to...
Administrator	Add Warehouse as Data Source to Reporting Engine	For more information, see "Add Warehouse as a Data Source to Reporting Engine" in the *Reporting Engine Configuration Guide*.
Administrator	Analyze a Warehouse Report	For more information, see "Step 4. Analyze a Warehouse Report" in the *Warehouse Guide*.
Administrator	Manage a Stream and Lockbox	Manage a Stream and Lockbox

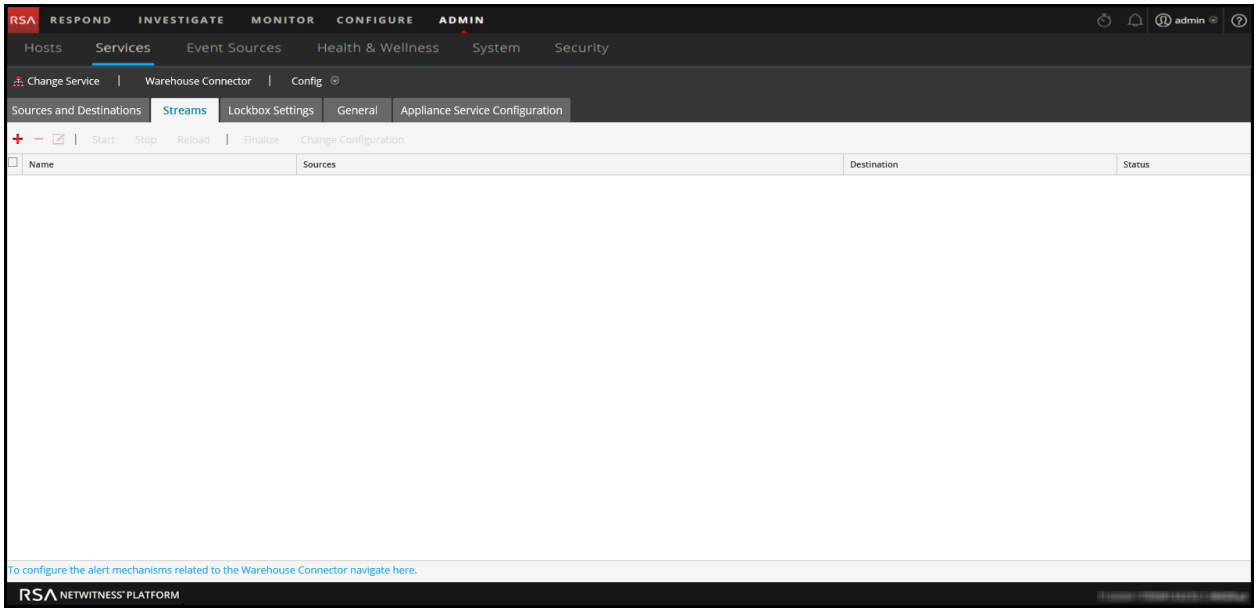
*You can complete these tasks here.

Related topics

Configure a Stream

Quick Look

The following figure shows the Streams tab on the Warehouse Connector Services Config view.



The Streams tab allows you to perform the following:

Features	Description
	Add a stream.
	Delete a stream.
	Edit the stream.
	Start the stream.

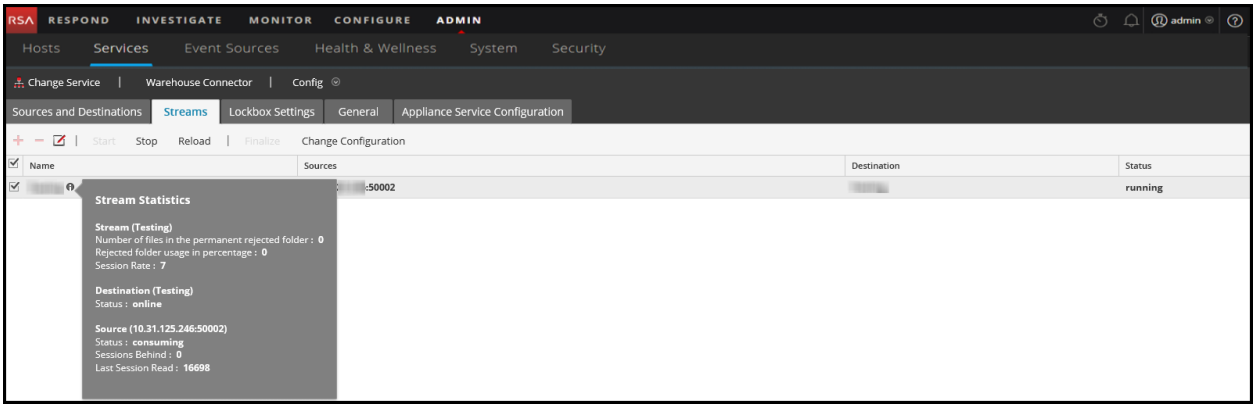
Features	Description
Stop	Stop the stream.
Finalize	Finalize the stream.
Reload	Reload the stream. If you have added a new meta or if a new meta is added as part of content update to any of the sources, Log Decoder or Decoder, you need to reload the stream for the meta to be visible in the schema for the Reporting Engine. Reloading a stream does not have any impact on the data, but only the new meta list is fetched from the sources.

The following table describes the fields in the Streams tab:

Parameter	Description
Name	Name of the stream.
Sources	The sources associated with the stream.
Destination	The destinations associated with the stream.
Status	Status of the stream.

Stream Statistics

You can view the statistics of a configured stream. Click the icon next to the name of the stream.



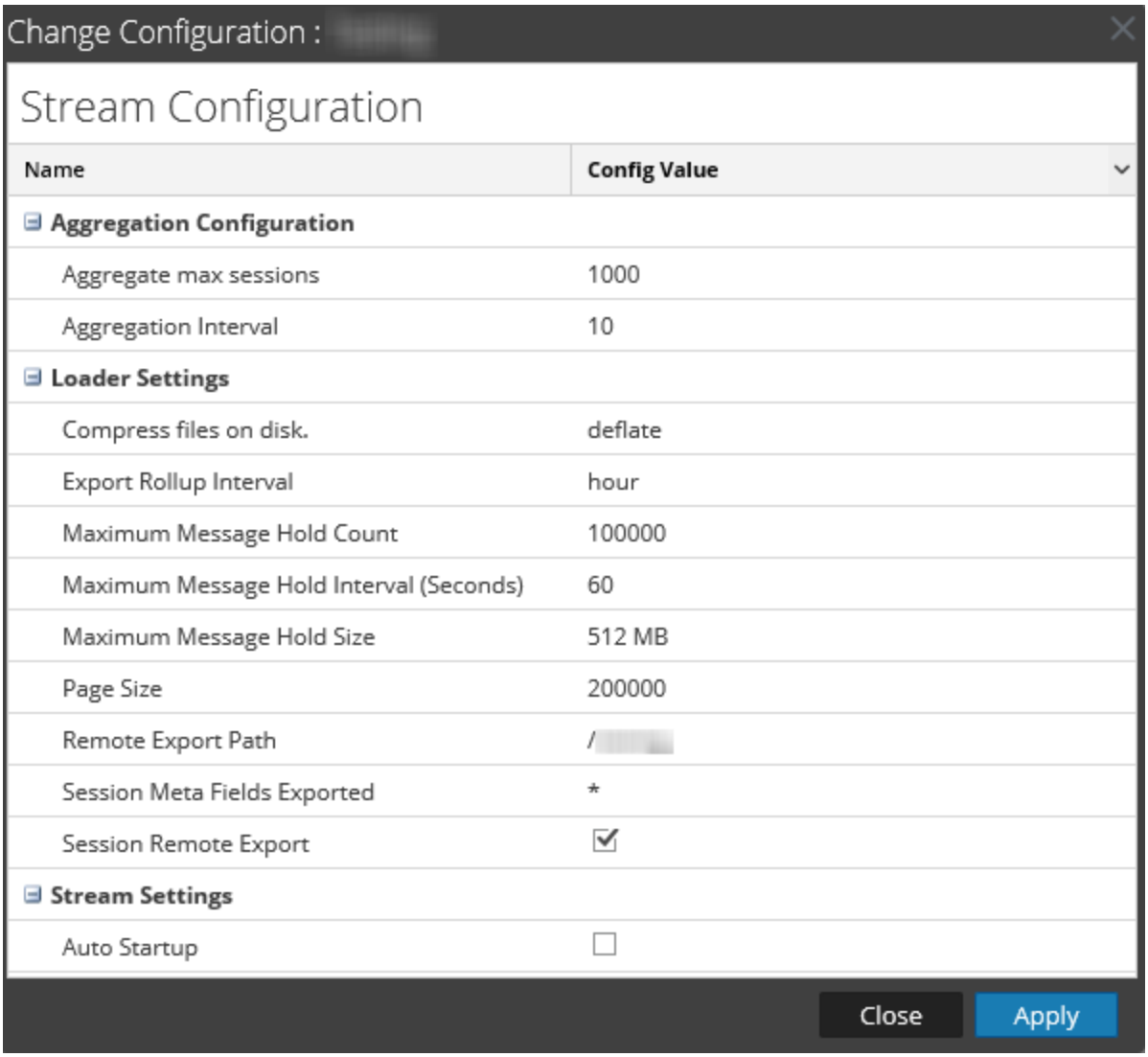
The following parameters are displayed in the Stream Statistics:

Section	Parameter	Description
Stream		
	Number of files in the permanent rejected folder	Determines the number of files in the permanent rejected folder (named, **permfail**) in the Warehouse Connector. The permanent rejected folder contains the files that Warehouse Connector failed to write to the destination.

Section	Parameter	Description
	Rejected folder usage in percentage	Determines the disk usage of the rejected folder.
	Session Rate	Determines the rate at which the session is processed by the Warehouse Connector for the source.
Destination		
	Status	Indicates the status of the destination.
Source		
	Status	Indicate the status of the source.
	Sessions Behind	Determines that number of sessions that needs to be processed by the Warehouse Connector.
	Last Session read	Determines the last session id processed by the Warehouse Connector.

Change Stream Configuration

You can change configuration of a stream in runtime. In the **Streams** tab, click **Change Configuration** to change the configuration of the selected stream.



You can change the following parameters of the Stream Configuration:

Note: If you change the value of any parameter in stream configuration, make sure that you restart the stream.

After upgrading, if the values of Maximum Message Hold Count, Maximum Message Hold Interval and Maximum Message Hold Size are 3000000, 60 and 128 respectively, ensure that you assign the following values to the streams:

- Maximum Message Hold Count - 2400000
- Maximum Message Hold Interval - 600
- Maximum Message Hold Size - 512

You can assign these values by modifying the existing Stream configuration.

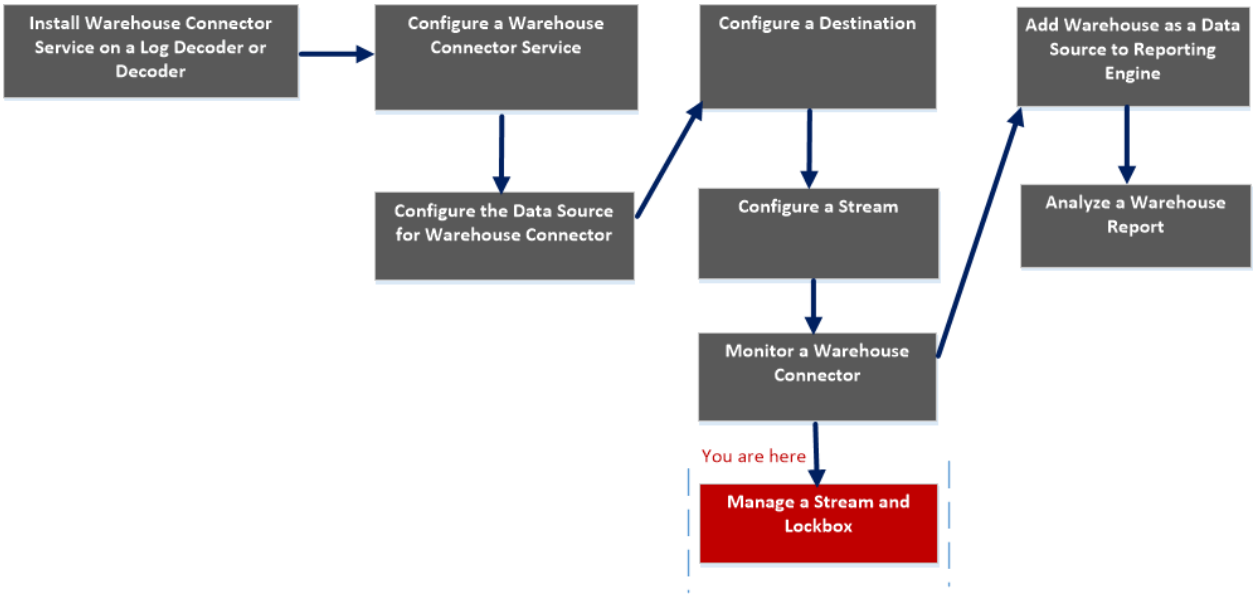
Parameter	Description
	Aggregation Configuration
Aggregate max sessions	Determines the maximum number of sessions in a response for an aggregation request from the Warehouse Connector to the source .
Aggregation Interval	Determines the time between the responses from the source.
	Loader Settings
Compress files on disk	Enable to compress files on disk. Supported values: • Deflate - Provides smaller compressed files and good performance while generating reports. • Off By default, the parameter is set to **deflate**.
Export Rollup Interval	Determines the roll-up interval for export files and also the directory structure the Warehouse Connector writes to the destination. For example: If the parameter is set to: **Value** — **Directory Structure** hour — /rsasoc/v1/[logs | sessions]/data/{year}/{month}/{day}/{hour} minute — /rsasoc/v1/[logs | sessions]/data/{year}/{month}/{day}/{hour}/{minute} day — /rsasoc/v1/[logs | sessions]/data/{year}/{month}/{day} If you change the value of the parameter, ensure that you restart the stream. Recommended value is **hour**.
Maximum Message Hold Count	Determines the maximum number of sessions to store in the memory before processing. **Note:** If you have deployed a Warehouse Connector Virtual Appliance, make sure that you change the default value of the parameter to 800000.
Maximum Message Hold Interval (Seconds)	Determines the maximum time (in seconds) to hold the sessions in memory before processing.
Maximum Message Hold Size	Determines the maximum size for the sessions to store in the memory before processing.
Remote Export Path	Determines the remote local mount point for HDFS (nfs://) and the location to export the data.
Page Size	Determines the maximum pages.

Parameter	Description
Stream Settings	
Auto Startup	Enable to automatically start the stream whenever the Warehouse connector process is restarted. By default, the parameter is set to **off**.

Lockbox Settings

The Lockbox Settings tab for a Warehouse Connector in the Services Config view provide a way to manage the lockbox settings.

Workflow



What do you want to do?

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Administrator	Configure a Warehouse Connector Service*	Configure a Warehouse Connector Service
Administrator	Configure the Data Source for Warehouse Connector	Configure the Data Source for Warehouse Connector
Administrator	Configure the Destination using NFS, SFTP, WebHDFS.	Configure the Destination Using NFS Configure the Destination Using SFTP Configure the Destination Using WebHDFS
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Administrator	Add Warehouse as Data Source to Reporting Engine	For more information, see "Add Warehouse as a Data Source to Reporting Engine" in the *Reporting Engine Configuration Guide*.
Administrator	Analyze a Warehouse Report	For more information, see "Step 4. Analyze a Warehouse Report" in the *Warehouse Guide*.
Administrator	Manage a Stream and Lockbox*	Manage a Stream and Lockbox

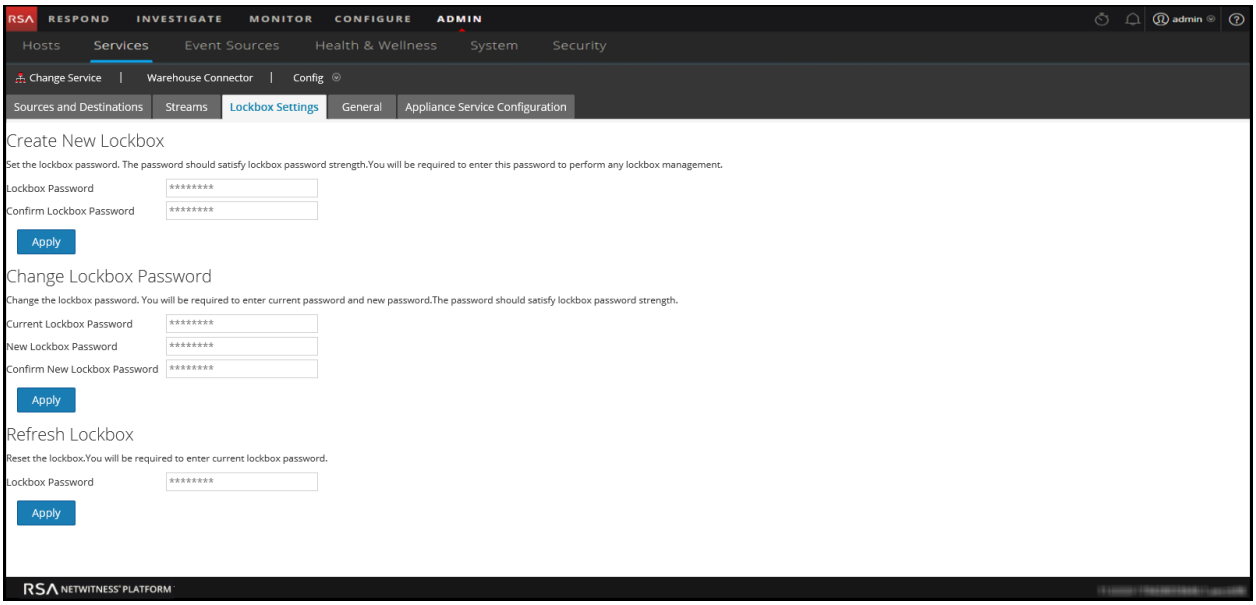
*You can complete these tasks here.

Related topics

- Configure a Warehouse Connector Service
- Manage a Stream and Lockbox

Quick Look

The following figure shows the Lockbox settings tab on the Warehouse Connector Services Config view.



The Lockbox Settings tab allows you to set, change, or refresh the lockbox password of the Warehouse Connector.