

NetWitness[®] Platform

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Warehouse Connector Configuration Guide

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Warehouse Connector Configuration

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 the 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

Warehouse Connector collects data from the data source to store it in the destination. The supported data sources are Log Decoder and Decoder.

Destination

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

- 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 a single data source and destination or with multiple data sources and a single destination.

The Warehouse Connector:

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

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](#).

Multi-Valued Meta Keys

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

You can 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 option when you configure the Warehouse Connector.

Lockbox Support

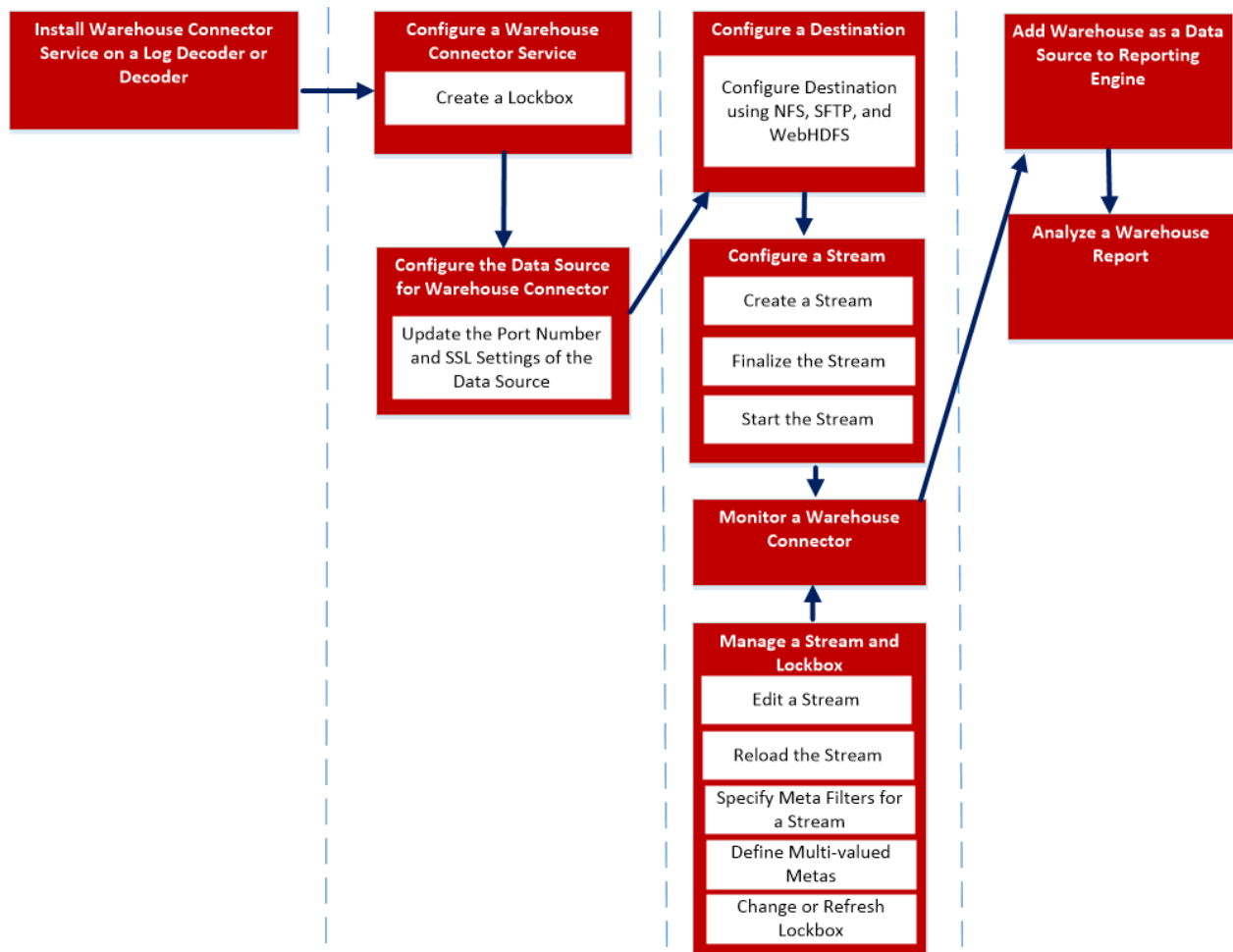
Lockbox provides an encrypted file that Warehouse Connector uses to store and protect sensitive data. You need to create the lockbox by providing a lockbox password while configuring the Warehouse Connector for the first time.

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

The following is an overview on how to install and configure the Warehouse Connector service on Log Decoder or Decoder.

- Configuring the Warehouse Connector service on NetWitness,
- Configuring data sources,
- Destinations,
- Streams for Warehouse Connector,
- Configuring alert notifications on NetWitness.

Note: NetWitness Platform has added a Health & Wellness stat for Warehouse Connector to indicate the status of its Lockbox. Also, an out-of-the-box rule has been added so that a Health & Wellness alarm is raised when the Lockbox does not exist or cannot be opened.



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

1. [Install Warehouse Connector Service on a Log Decoder or Decoder or Hybrid](#)
2. [Configure a Warehouse Connector Service](#)
3. [Configure the Data Source for Warehouse Connector](#)
4. [Configure the Destination](#)
5. [Configure a Stream](#)
6. [Monitor a Warehouse Connector](#)
7. [Add Warehouse as a Data Source to Reporting Engine](#)
8. [Analyze a Warehouse Report](#)
9. [Manage a Stream](#)

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 in to NW Admin server
2. Enter the following command on NetWitness Server:
`warehouse-installer --help`
The command line interface (CLI) usage descriptions are displayed.
3. Install Warehouse Connector service by executing the following command:
`warehouse-installer --host-key <ID, IP address, hostname or display name of Decoder, Log Decoder, or Hybrid host>`
4. Restart the Warehouse Connector using following command:
`service nwarehouseconnector restart`

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

Note: If you have custom-defined host entries in `/etc/hosts`, make sure to have the same entries in `/etc/hosts.user`. Run the following command to ensure that the host names are updated in this installation:



```
nw-manage --refresh-host --host-key <ID, IP, hostname or display name of host>
```

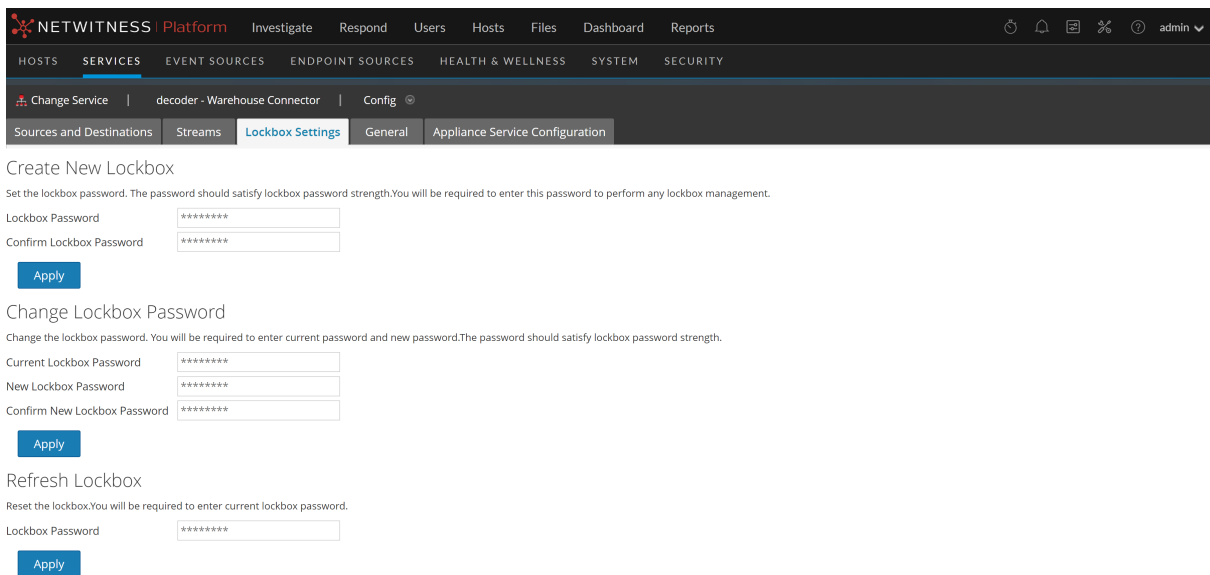
For more information, see "Manage Custom Host Entries in `/etc/hosts`" in the *System Maintenance Guide*.

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.
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.



NETWITNESS Platform Investigate Respond Users Hosts Files Dashboard Reports

HOSTS SERVICES EVENT SOURCES ENDPOINT SOURCES HEALTH & WELLNESS SYSTEM SECURITY

Change Service | decoder - Warehouse Connector | Config

Sources and Destinations Streams **Lockbox Settings** General Appliance Service Configuration

Create New Lockbox

Set the lockbox password. The password should satisfy lockbox password strength. You will be required to enter this password to perform any lockbox management.

Lockbox Password

Confirm Lockbox Password

Apply

Change Lockbox Password

Change the lockbox password. You will be required to enter current password and new password. The password should satisfy lockbox password strength.

Current Lockbox Password

New Lockbox Password

Confirm New Lockbox Password

Apply

Refresh Lockbox

Reset the lockbox. You will be required to enter current lockbox password.

Lockbox Password

Apply

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

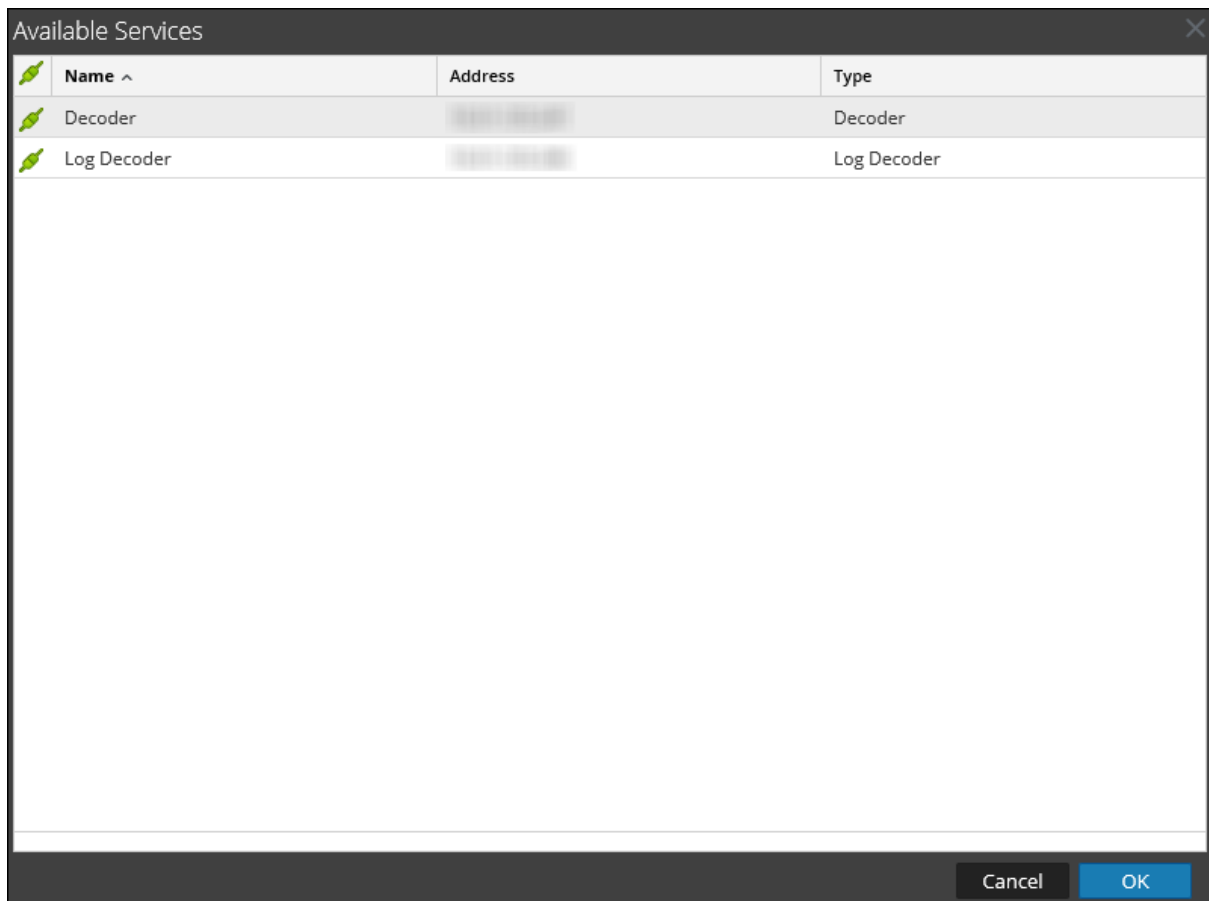
There are two procedures for configuring the data source for the Warehouse Connector:

1. First, you must configure the data source.
2. Then, you need to update the Port Number and SSL Settings for the Data Source.

Configure the Data Source

To configure the data source:

1. Log on to NetWitness.
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 to the port number or SSL settings of the Warehouse Connect data sources, you can update the changes in Explore view of the Warehouse Connector.

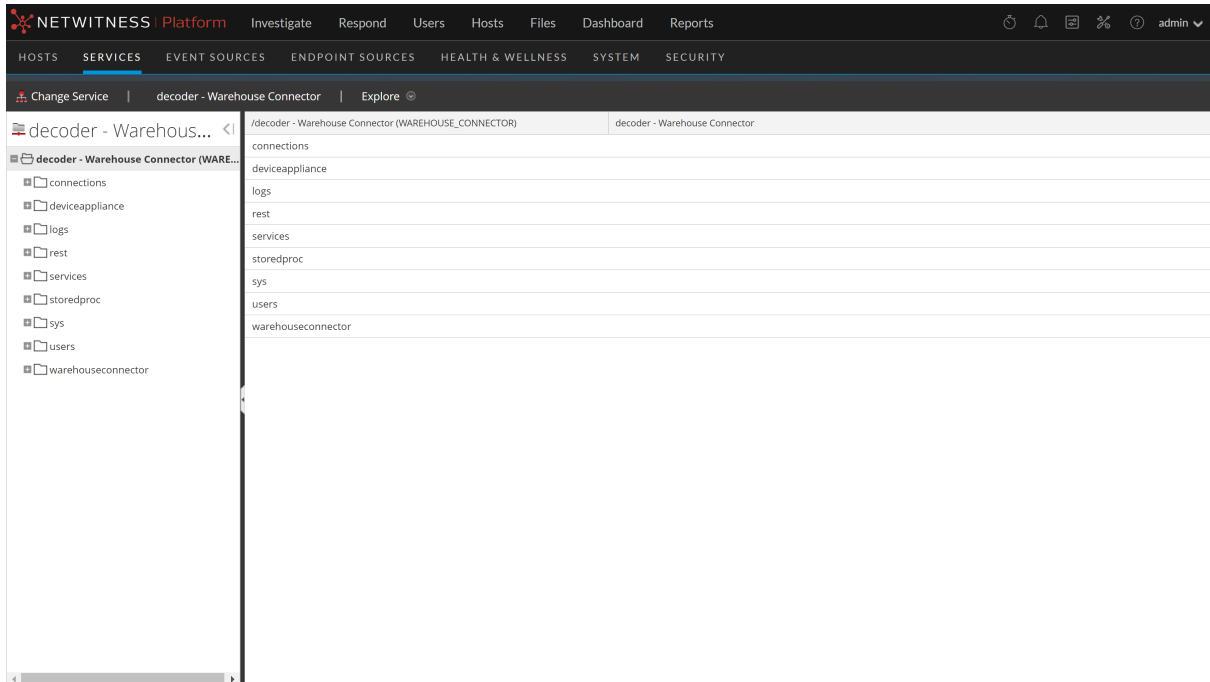
Make sure that:

- You have the changed port number or SSL settings of the data source.
- You have stopped the streams related to the data source that is updated with the port number or SSL settings.

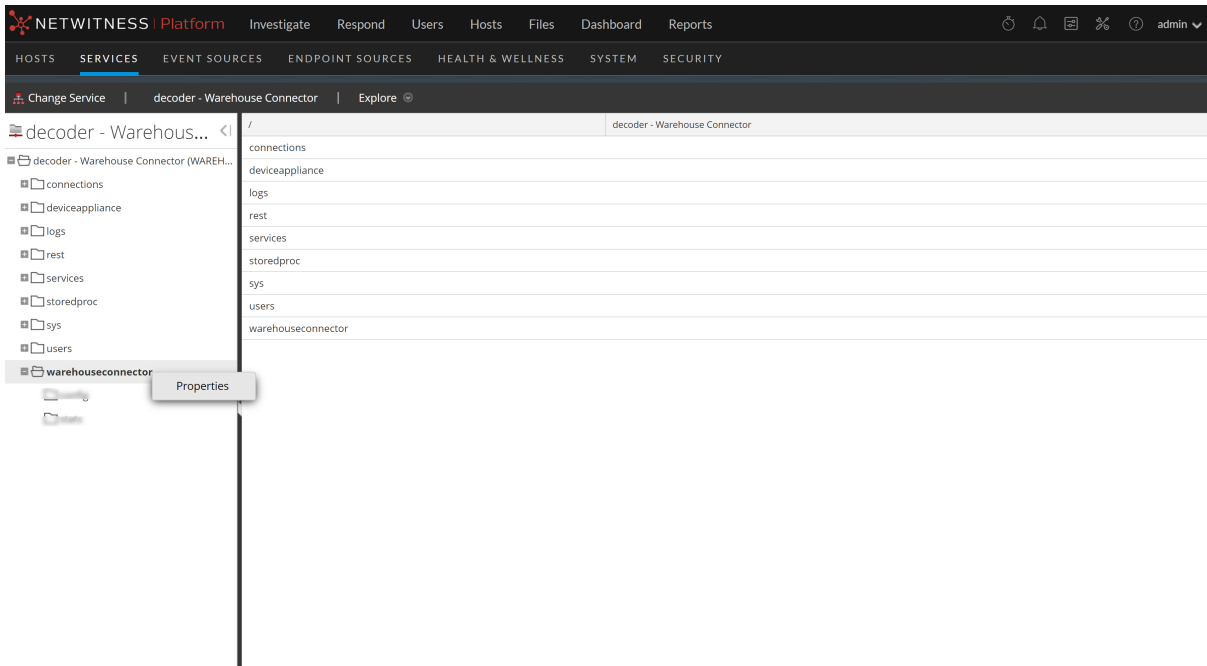
To update the port number or SSL settings:

1. Log on to NetWitness.
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 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**.

Parameters |

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

Parameters |

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

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:

- 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:

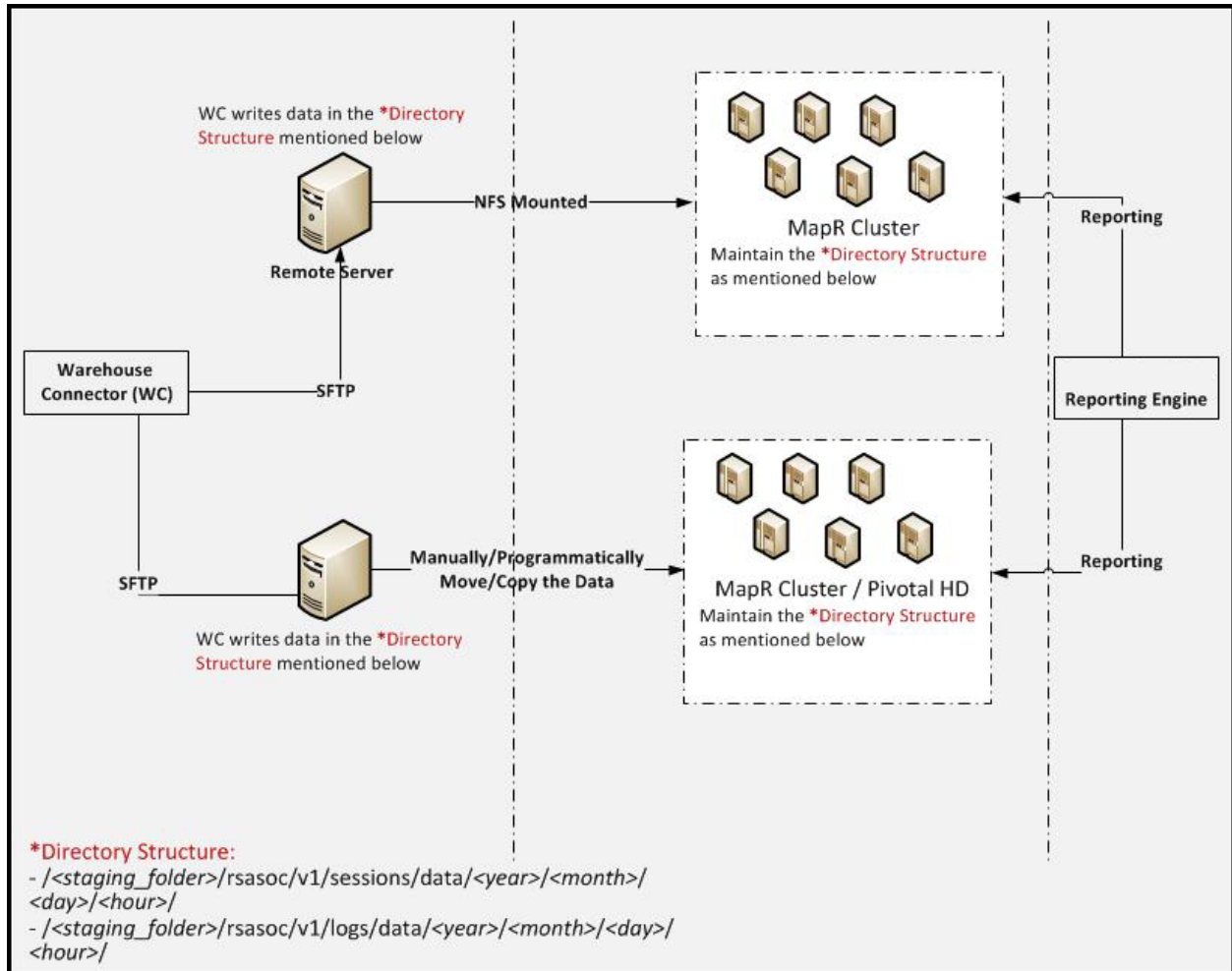
- `<staging_folder>/rsasoc/v1/sessions/data/<year>/<month>/<day>/<hour>/`
- `<staging_folder>/rsasoc/v1/logs/data/<year>/<month>/<day>/<hour>/`
Where `<staging_folder>` is the folder on the remote server where the Warehouse Connector writes the data.

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:

- 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.

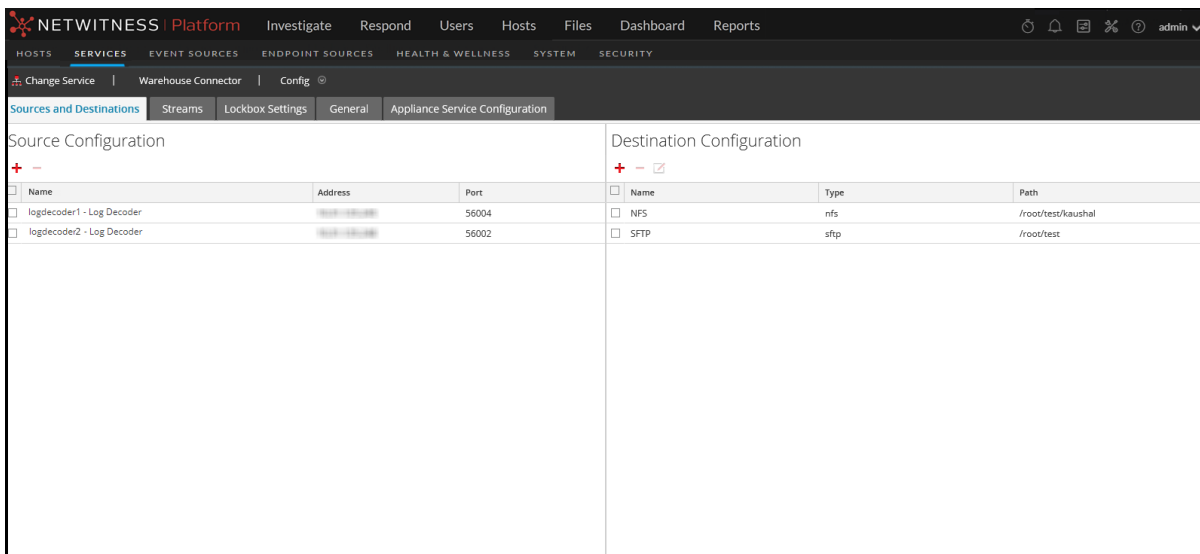
Configure the Destination Using NFS

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.
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.



Source Configuration			Destination Configuration		
Name	Address	Port	Name	Type	Path
logdecoder1 - Log Decoder	192.168.1.100	56004	NFS	nfs	/root/test/kaushal
logdecoder2 - Log Decoder	192.168.1.100	56002	SFTP	sftp	/root/test

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

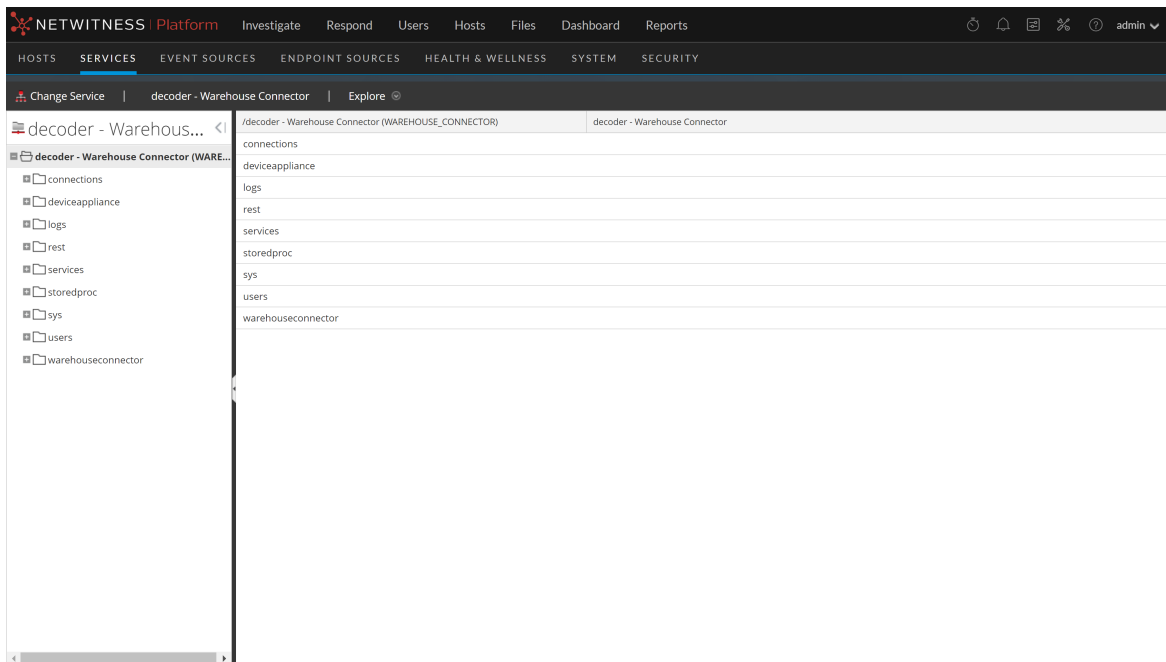
7. In the **Local Mount Path** field, enter the locally mounted directory for HDFS where you want the Warehouse Connector to write the data. For example:
If **/saw** is the local mount point for HDFS that you have configured while mounting the mapr NFS cluster on the host where you have installed the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

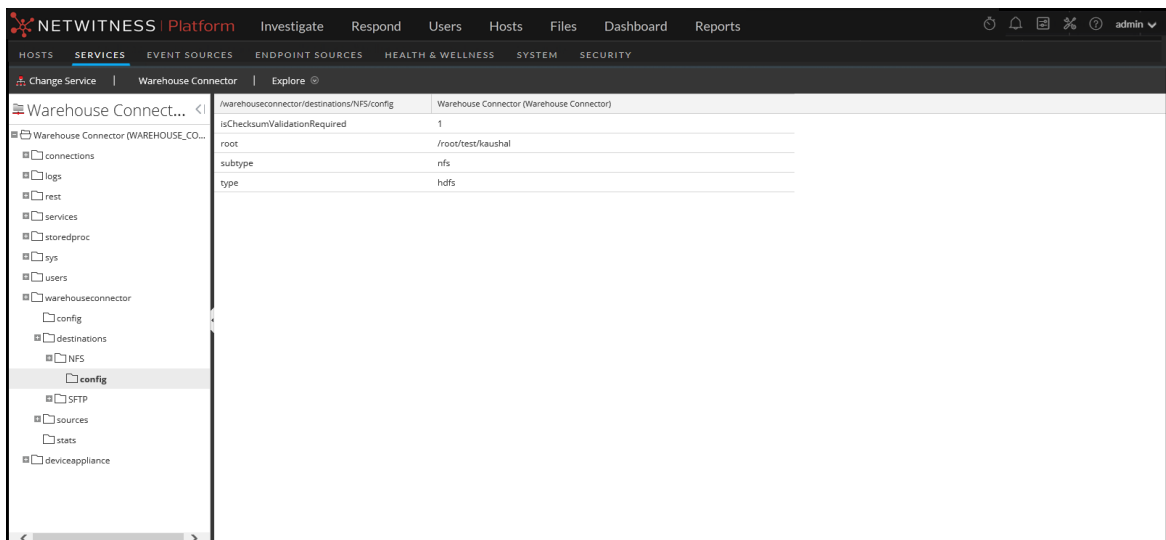
The screenshot shows a dialog box titled "Add Destination" with a close button (X) in the top right corner. It contains three input fields: "Type *" with a dropdown menu showing "NFS", "Name *" which is empty, and "Local Mount Path *" which is also empty. At the bottom, there are two buttons: "Cancel" and "Save".

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. Log in 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 the Warehouse Connector, 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 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. SSH to the Warehouse Connector.
 - b. Type the following command and press ENTER:


```
$ OWB_FORCE_FIPS_MODE_OFF=1 ssh-keygen -t ecdsa -b 521
```
 - 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_ecdsa):

- 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.

Note: If the SSH key is not generated in the default location (/root/.ssh/id_ecdsa), you need to configure the destination for warehouse connector through Explore view. For more information, see [To configure the destination through Explore view:](#).

- e. Change the directory by entering the following command:

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

- f. Move the generated key to the below location:

```
mv ~/.ssh/id_ecdsa ~/.ssh/id_ecdsa.old
```

- g. Type the following command and press ENTER:

```
$ OWB_FORCE_FIPS_MODE_OFF=1 openssl pkcs8 -topk8 -v2 des3 -in id_
ecdsa.old -out id_ecdsa
```

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 ~/.ssh/id_ecdsa
```

- j. Copy the generated public key to append to the remote Warehouse host or Hadoop node.

```
ssh-copy-id -i ~/.ssh/id_ecdsa.pub root@<destination host ipaddress>
```

2. SSH to remote Warehouse host or Hadoop node as "ssh '<user>@<ip address>", if identity key file is at default location.

or

SSH to remote Warehouse host or Hadoop node as "ssh '<user>@<ip address> -i <identity file path>", If identity key file is not at default location.

3. 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.

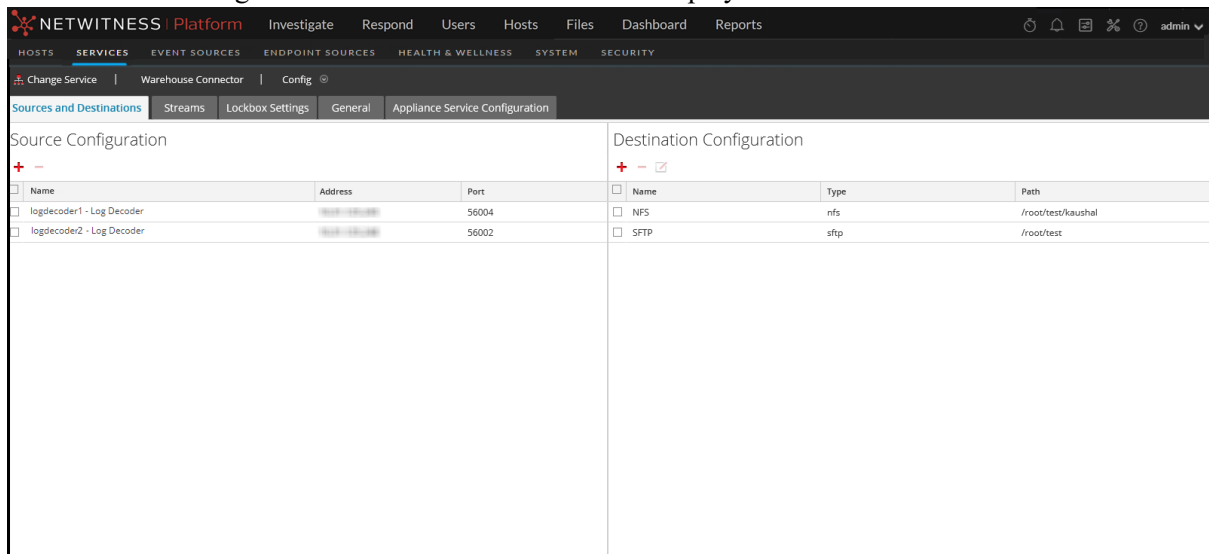
Configure Warehouse Connector to use SFTP destination

Note: If the SSH key is not generated in the default location (`/root/.ssh/id_ecdsa`), you need to configure the destination through Explore view. For more information, see [To configure the destination through Explore view](#).


To configure the destination through User Interface:

1. Log on to NetWitness
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.



The screenshot shows the NetWitness Platform configuration interface for the Warehouse Connector service. The 'Sources and Destinations' tab is selected, and the 'Config' sub-tab is active. The interface is divided into two main sections: 'Source Configuration' and 'Destination Configuration'. The 'Source Configuration' section contains a table with columns for Name, Address, and Port, listing two log decoder services. The 'Destination Configuration' section contains a table with columns for Name, Type, and Path, listing NFS and SFTP destinations. A red plus sign is visible next to the 'Destination Configuration' header, indicating the location to click to add a new destination.

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.

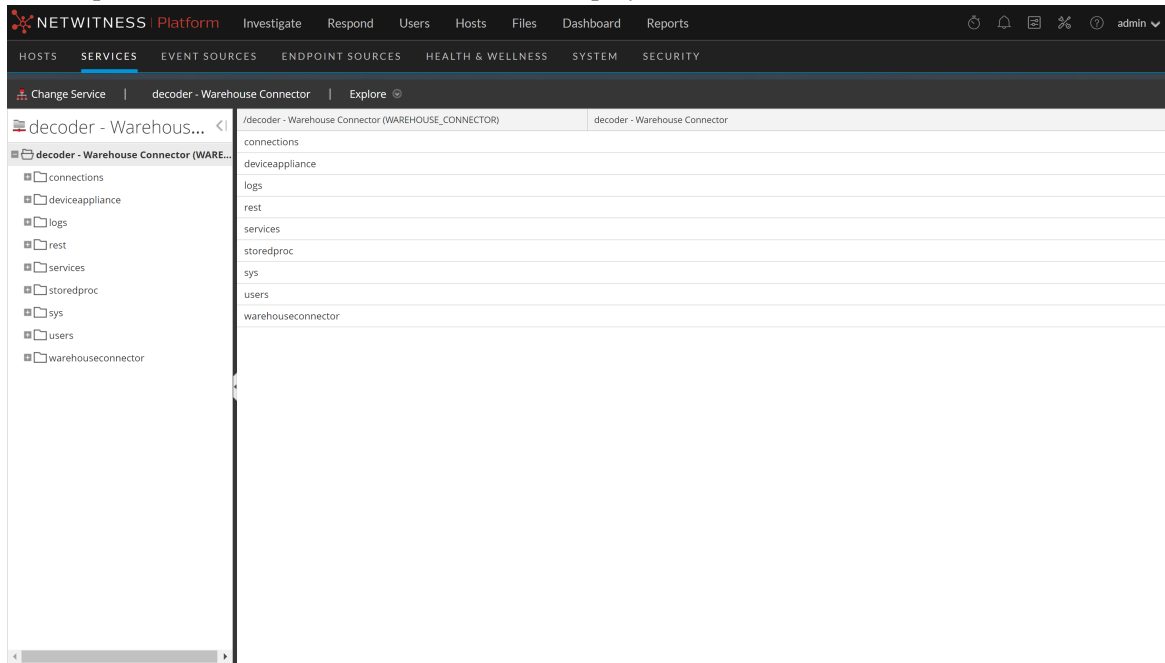
Note: The **Name** field does not support spaces or special characters except underscore (_).

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.

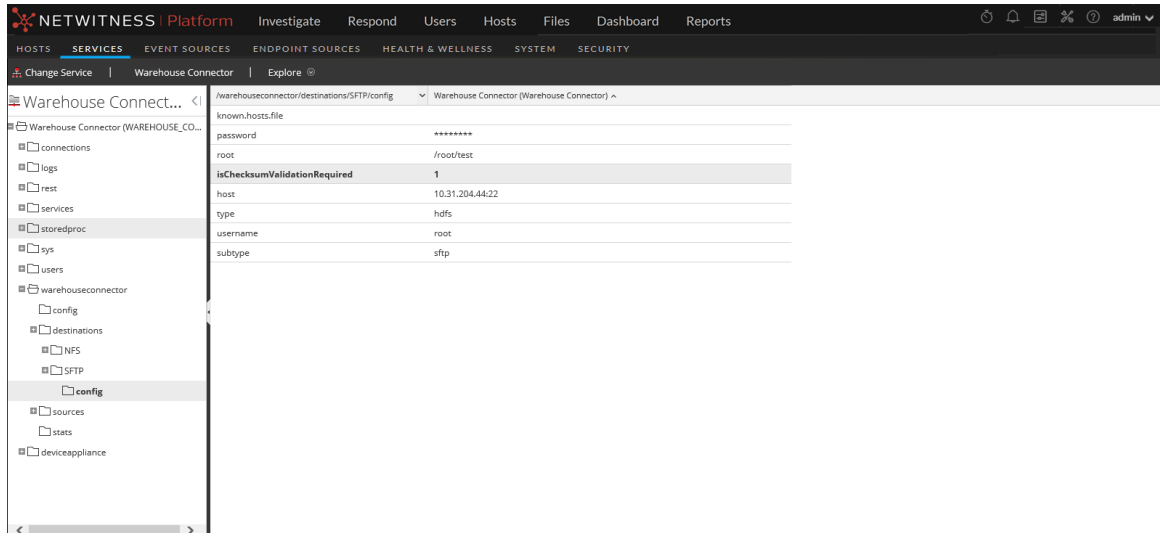
Note: In the case of HortonWorks HD, ensure that the username is gpadmin and for password based access the password for gpadmin should be used. For passphrase-based access, the passphrase used to generate the keys for gpadmin user should be used.

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**.

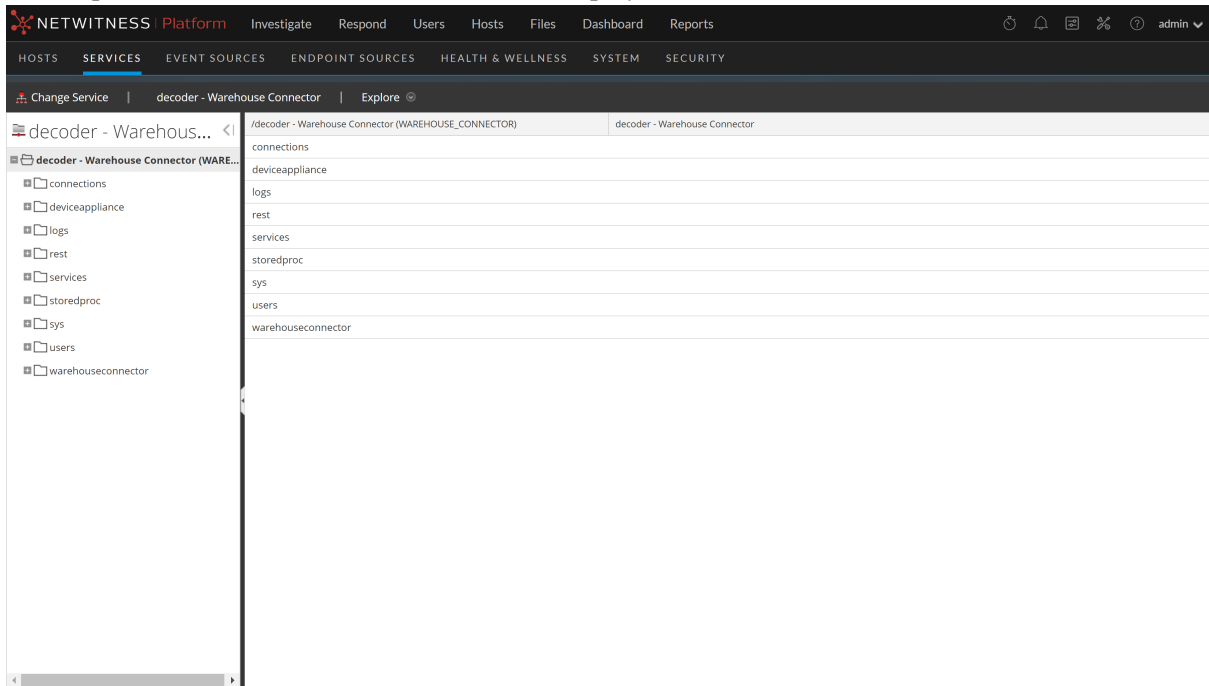


- e. Restart the respective stream.

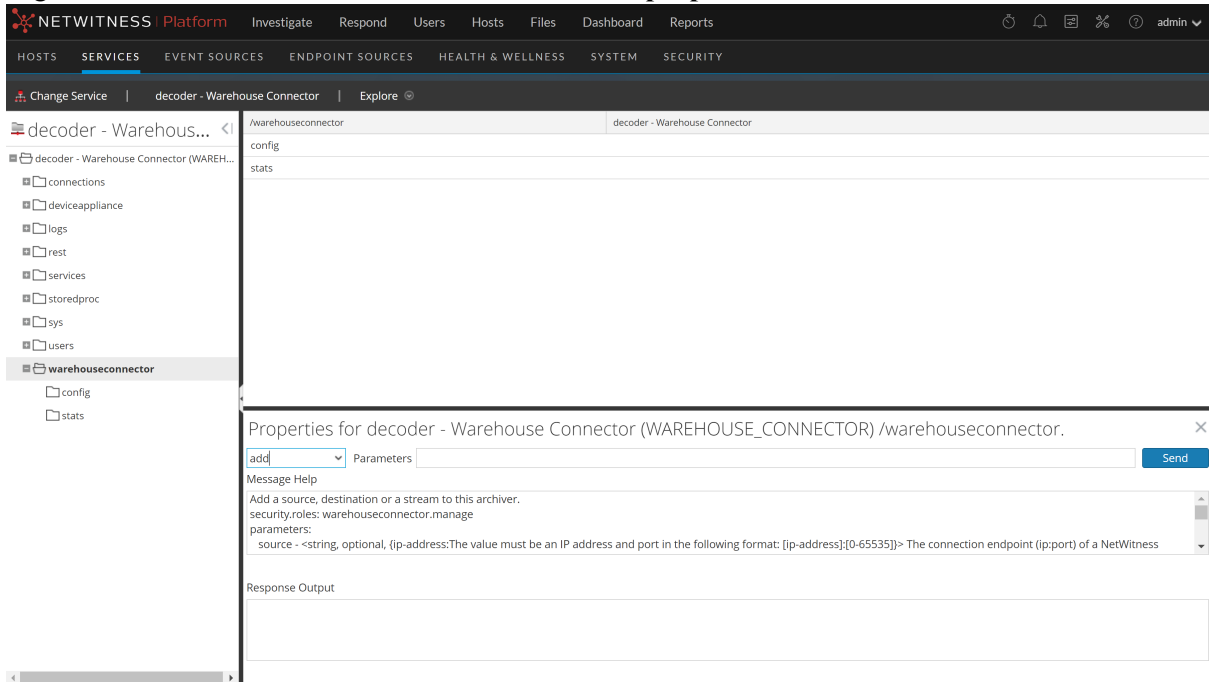
To configure the destination through Explore view:

1. Go to  (Admin) > Services.
2. In the Services view, select the added Warehouse Connector service, and select  > View > Explore.

The Explore view of Warehouse Connector is displayed.





3. Right click on "warehouseconnector" node and select **properties**.



4. Select "add" property and manually enter the below config parameters.
name=<destination name> destination=sftp://<destination path>
host=<destination host ipaddress:port> type=hdfs port=22
username=<username> password=<password> privKeyFile=<private key file path>

Aggregate Metas and Raw Logs for a Log Session

To aggregate raw logs and metas from Log Decoder into a single AVRO file instead of two folders.

1. Go to **ADMIN > Services**.
2. Select a Warehouse Connector service and click  > **View > Explore**.
The Explore view for the Warehouse Connector is displayed.
3. Open `warehouseconnector/streams/<stream name>/loader/config` and in the right pane, select the `export.logAndsession.avro.enabled` parameter.
4. Change the value to **yes**.
5. Restart the service.
6. Go to **ADMIN > Services**.
7. Select a Warehouse Connector service and click  > **View > Config**.
8. On the **Streams** tab, select the stream that you want to reload.
9. Click **Reload**.



Configure the Destination Using WebHDFS

Make sure that you have:

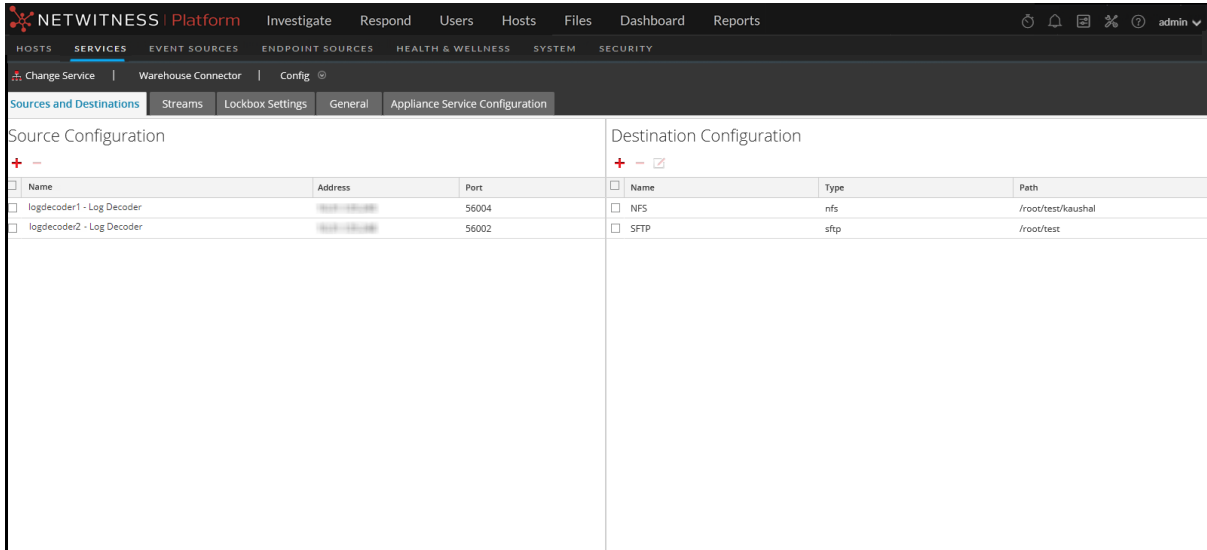
- Installed the Warehouse Connector service or virtual appliance in your network environment.
- Added the hostname (or FQDN) and IP address of the warehouse nodes and Warehouse Connector to the DNS server. If the DNS server is not configured, add the hostname (or FQDN) and IP address of the warehouse 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:

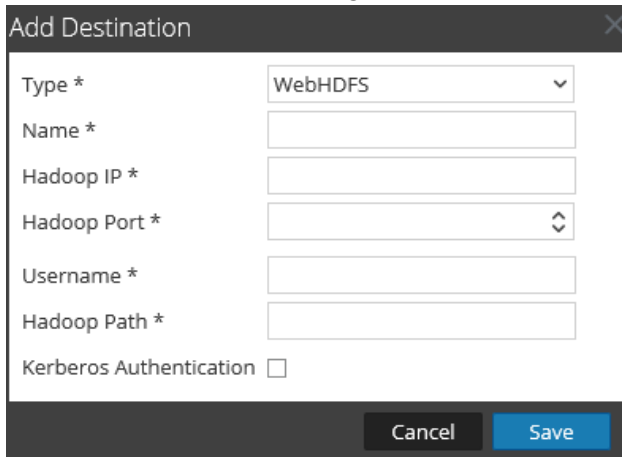
1. Log on to NetWitness.
2. Go to  (Admin) > Services.
3. In the Services view, select the added Warehouse Connector service and select  > **View** > **Config**.

The Services Config view of Warehouse Connector is displayed.



The screenshot shows the NetWitness Platform interface. The top navigation bar includes 'NETWITNESS Platform' and various menu items like 'Investigate', 'Respond', 'Users', 'Hosts', 'Files', 'Dashboard', and 'Reports'. Below the navigation, there are tabs for 'HOSTS', 'SERVICES', 'EVENT SOURCES', 'ENDPOINT SOURCES', 'HEALTH & WELLNESS', 'SYSTEM', and 'SECURITY'. The 'SERVICES' tab is selected, and the 'Warehouse Connector' service is chosen. The 'Config' view is open, showing the 'Sources and Destinations' tab. Under 'Source Configuration', there are two entries: 'logdecoder1 - Log Decoder' and 'logdecoder2 - Log Decoder'. Under 'Destination Configuration', there are two entries: 'NFS' and 'SFTP'. A red plus sign icon is visible in the top left corner of the 'Destination Configuration' section.

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.





The 'Add Destination' dialog box is shown. It has a title bar with a close button. The 'Type' field is a dropdown menu with 'WebHDFS' selected. Below it are several text input fields: 'Name *', 'Hadoop IP *', 'Hadoop Port *', 'Username *', and 'Hadoop Path *'. At the bottom, there is a checkbox for 'Kerberos Authentication' which is currently unchecked. There are 'Cancel' and 'Save' buttons at the bottom right.

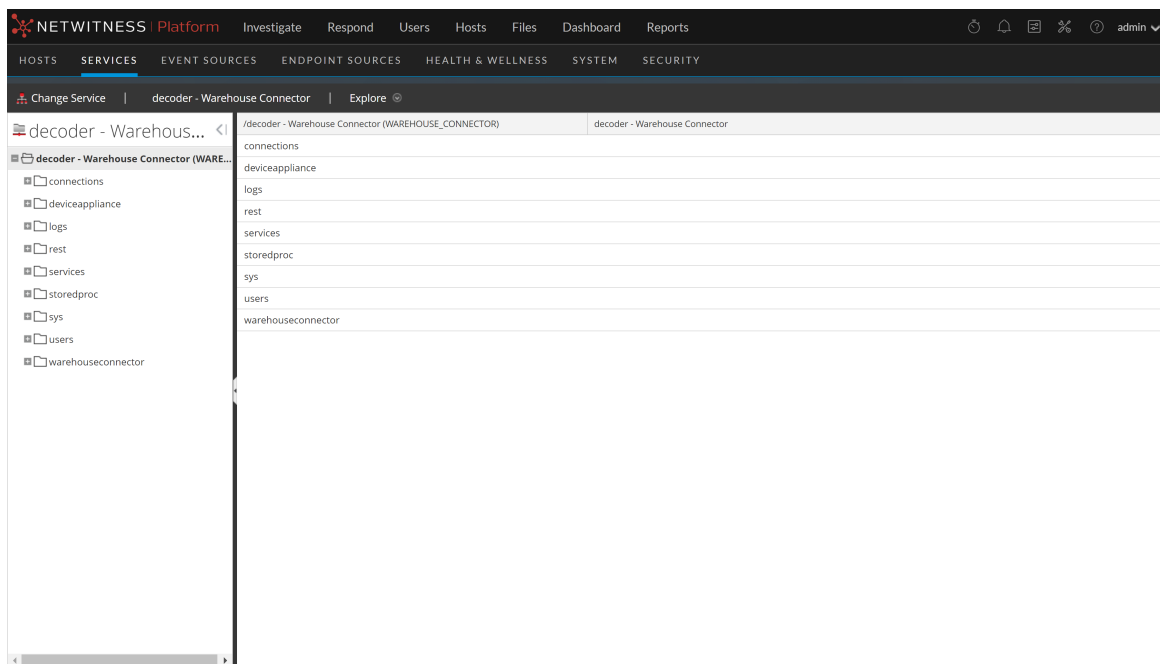
6. In the **Name** field, enter a unique symbolic name for the destination.

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

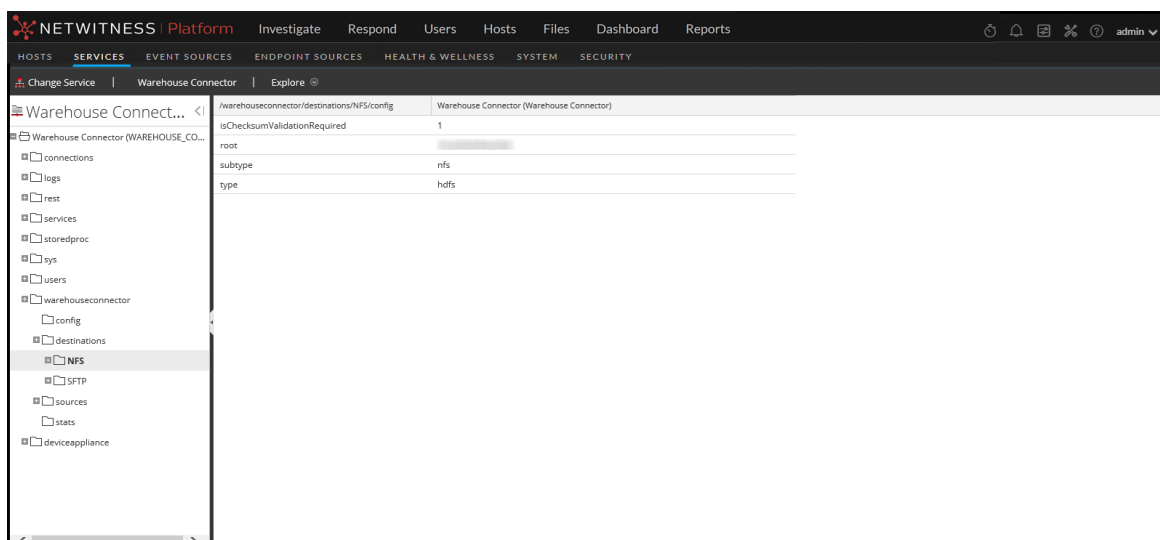
7. In the **Hadoop IP** field, enter the namenode IP address of the warehouse cluster.
8. In the **Hadoop Port** field, enter the base port that is used by the namenode web user interface.
9. In the **Username** field, enter the owner of the directory in the warehouse to which Warehouse Connector should 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](#).

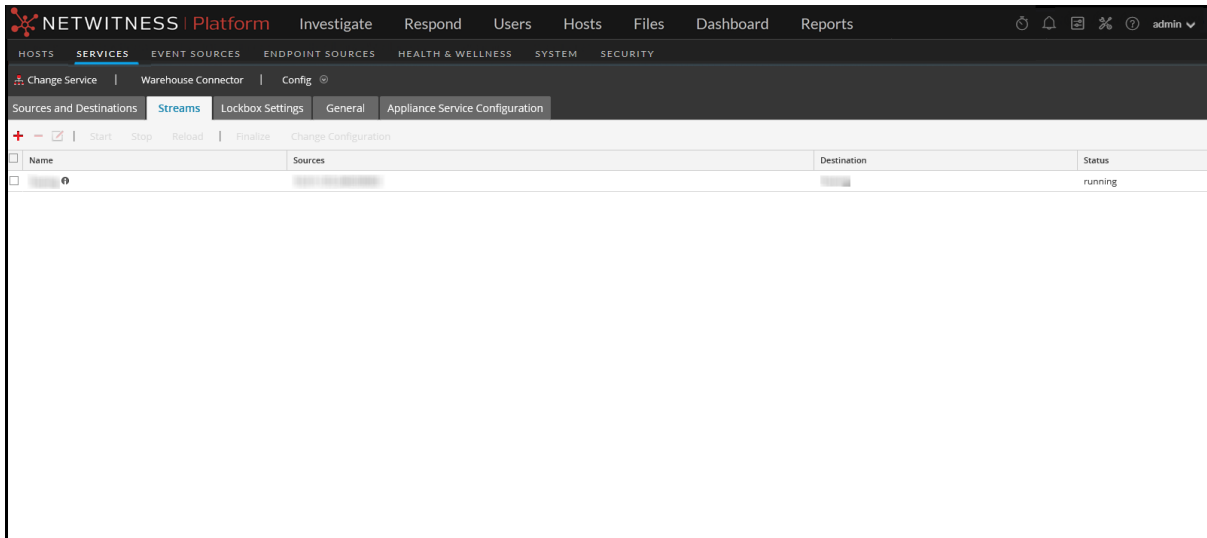
To configure the stream:

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 **+**.

<input type="checkbox"/>	Name	Address	Port	Session ID
<input type="checkbox"/>	[Redacted]	[Redacted]	56004	Enter Session
<input type="checkbox"/>	[Redacted]	[Redacted]	56002	Enter Session

5. In the **Add Stream** dialog, perform the following steps:
- 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 (`_`).

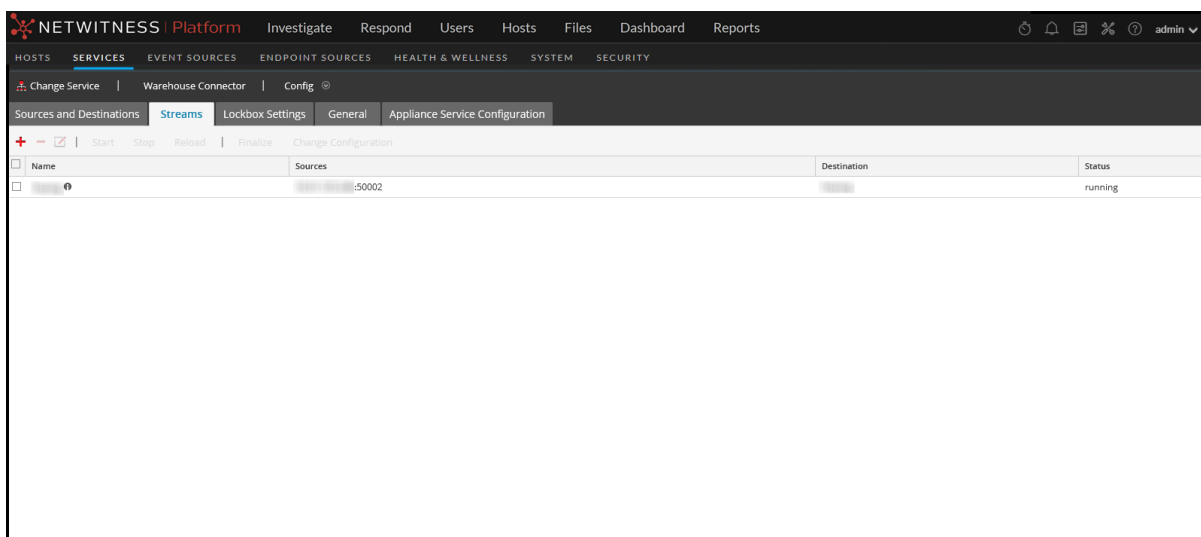
- In the **Select Destination** drop-down menu, select a destination from the list of destinations added to the Warehouse Connector.
- In the **Select Source** field, select sources from the list of sources displayed.

- 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 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.





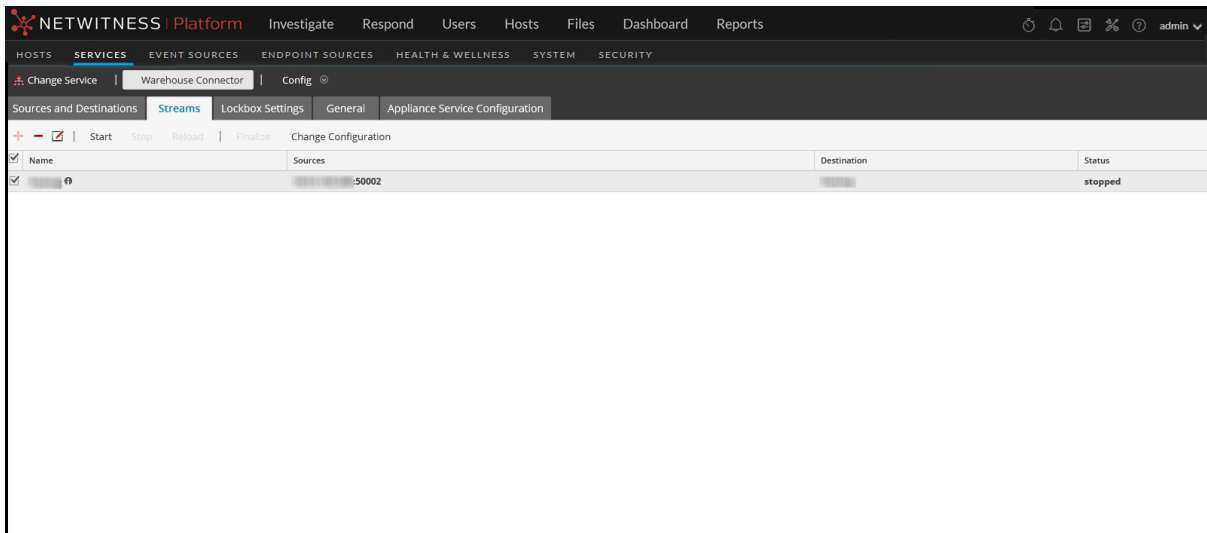
4. Click **Finalize**.

Start a 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 view is displayed.

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 Offline 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 report 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

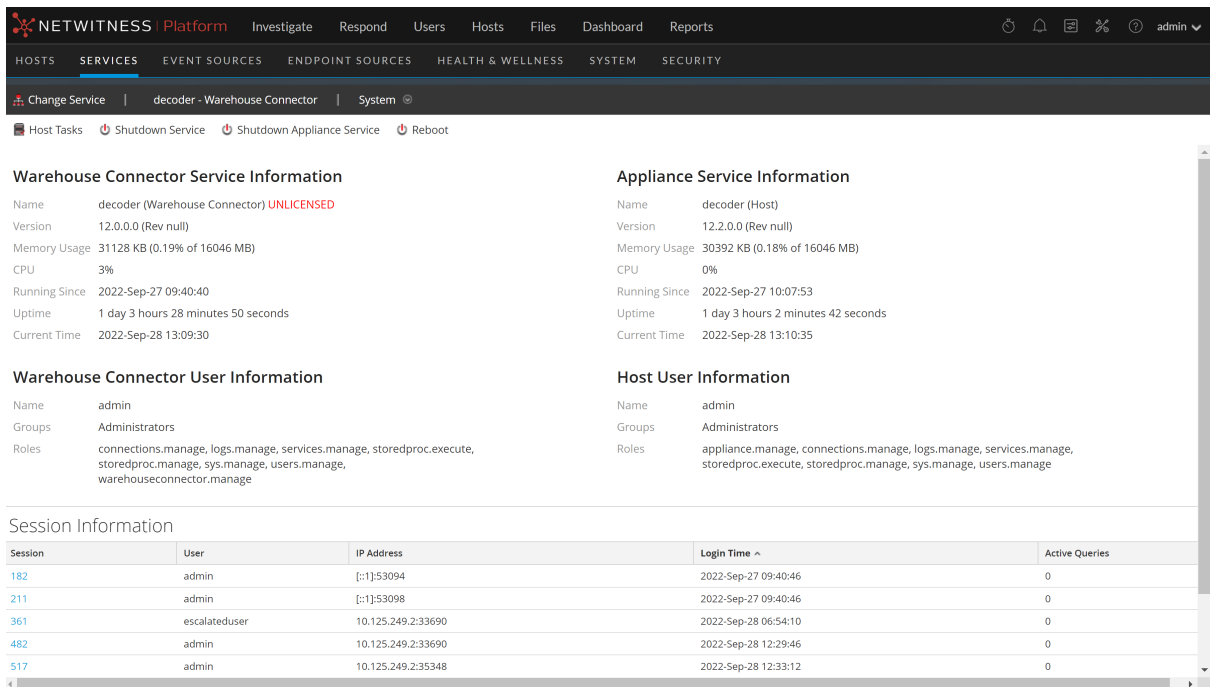
For more information, see "Step 4. Analyze a Warehouse Report" in the *Warehouse Guide*.

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.

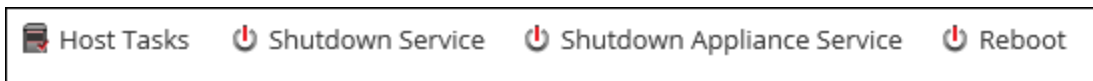


The screenshot shows the NetWitness Platform interface with the following sections:

- Warehouse Connector Service Information:** Name: decoder (Warehouse Connector) UNLICENSED, Version: 12.0.0.0 (Rev null), Memory Usage: 31128 KB (0.19% of 16046 MB), CPU: 3%, Running Since: 2022-Sep-27 09:40:40, Uptime: 1 day 3 hours 28 minutes 50 seconds, Current Time: 2022-Sep-28 13:09:30.
- Appliance Service Information:** Name: decoder (Host), Version: 12.2.0.0 (Rev null), Memory Usage: 30392 KB (0.18% of 16046 MB), CPU: 0%, Running Since: 2022-Sep-27 10:07:53, Uptime: 1 day 3 hours 2 minutes 42 seconds, Current Time: 2022-Sep-28 13:10:35.
- Warehouse Connector User Information:** Name: admin, Groups: Administrators, Roles: connections.manage, logs.manage, services.manage, storedproc.execute, storedproc.manage, sys.manage, users.manage, warehouseconnector.manage.
- Host User Information:** Name: admin, Groups: Administrators, Roles: appliance.manage, connections.manage, logs.manage, services.manage, storedproc.execute, storedproc.manage, sys.manage, users.manage.
- Session Information Table:**

Session	User	IP Address	Login Time ^	Active Queries
182	admin	[::1]:53094	2022-Sep-27 09:40:46	0
211	admin	[::1]:53098	2022-Sep-27 09:40:46	0
361	escalateduser	10.125.249.2:33690	2022-Sep-28 06:54:10	0
482	admin	10.125.249.2:33690	2022-Sep-28 12:29:46	0
517	admin	10.125.249.2:35348	2022-Sep-28 12:33:12	0

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.

The screenshot shows a "New Service" dialog box with the following configuration:

- Source Type *: WAREHOUSE
- Warehouse Source *: HiveServer2
- Name *: PDH2.0-DCA
- HDFS Path *: /
- Advanced:
- Host *:
- Port *: 10000
- Username *: gpadmin
- Password: *****
- Kerberos Authentication:
- Server Principal *:
- User Principal *:
- Kerberos Keytab File *:
- Enable Jobs:

Buttons: Test Connection, Cancel, Save

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	<ul style="list-style-type: none"> 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	<p>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.</p> <pre> root@NWAPPLIANCE: ~]# hadoop fs -lsr /testdata/rsasoc/v1/sessions/meta 14/12/09 10:31:59 INFO util.NativeCodeLoader: Loaded the native-hadoop library 14/12/09 10:31:59 INFO security.JniBasedUnixGroupsMapping: Using JniBasedUnixGroupsMapping for Group resolution -rwxr-xr-x 3 root root 3076 2013-08-28 01:09 /testdata/rsasoc/v1/sessions/meta/nwdev-testing.avro </pre>
Could not open connection to HiveServer, GSS initiate failed	<p>GSS initiate failed errors will be observed only in the case of Kerberos enabled Hive.</p> <p>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).</p> <p>Ensure that the system time is synchronized between KDC, Hadoop (HortonWorks) server, and the Reporting Engine system.</p>

Add SFTP Destination

To add SFTP destination to Warehouse Connector, you need to follow the below steps:

- SSH to NetWitness Host and run the following command to edit `ssd_config` file:
`vi/etc/ssh/sshd_config` file
- Do not comment `HostKey/etc/ssh/ssh_host_rsa_key`
- You must append `KexAlgorithms +diffie-hellman-group14-sha1,diffie-hellman-group-exchange-sha1`
- Run the following command to restart NetWitness Host:
`systemctl restart sshd`
- On Warehouse Connector Host SSH to NetWitness Host and run the following command:
`ssh -o "HostKeyAlgorithms ssh-rsa" root@<NWHost_IP>`
For example, `ssh -o "HostKeyAlgorithms ssh-rsa" root@10.10.10.10`
- Run the following curl command on Warehouse Connector Host to authenticate:
`curl -vvvv sftp://root:netwitness@<NWHost_ip>:22/root/`
For example, `curl -vvvv sftp://root:netwitness@<10.10.10.10>:22/root/`
- You can now add SFTP Destination from UI.

Manage a Stream

You can manage a stream using the following procedures:


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

Edit a Stream

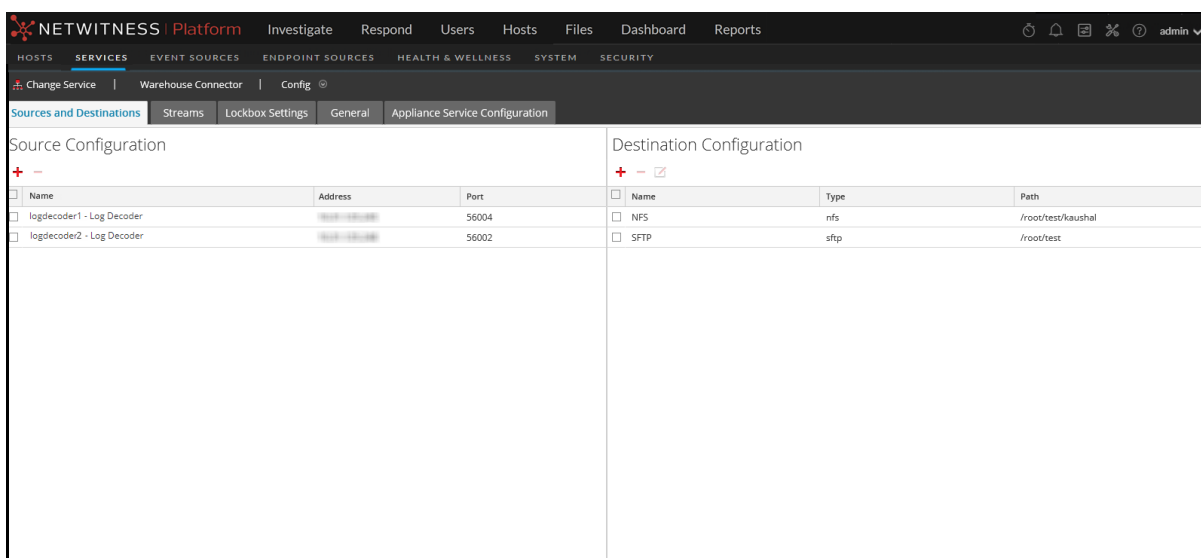
You can edit a stream to perform the following:

- Add 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.



Source Configuration			Destination Configuration		
Name	Address	Port	Name	Type	Path
<input type="checkbox"/> logdecoder1 - Log Decoder	192.168.1.100	56004	<input type="checkbox"/> NFS	nfs	/root/test/kaushal
<input type="checkbox"/> logdecoder2 - Log Decoder	192.168.1.100	56002	<input type="checkbox"/> SFTP	sftp	/root/test

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**.


Stream Name

Destination

Available Sources **Current Sources**

<input type="checkbox"/>	Name	Address	Port	Session ID
<input type="checkbox"/>	:50004		50004	Enter Session


Cancel Save

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

Stream Name

Destination

Available Sources **Current Sources**

 At least one source is required



<input type="checkbox"/>	Name	Address	Port
<input type="checkbox"/>	:50002		50002

Cancel Save

Reload the Stream

When you reload the stream, the Warehouse Connector updates the schema file for the stream. You must reload the stream when 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:

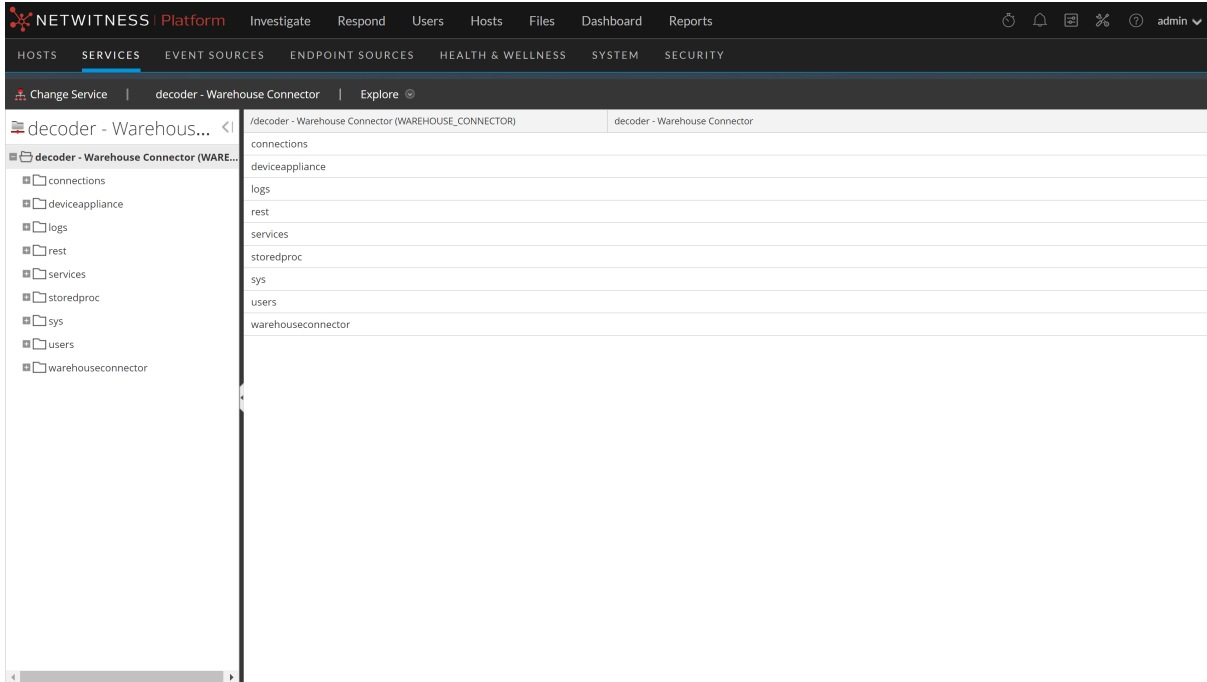
Values	Description
*	All the collected metas are written to SAW.
*, <i>meta1</i> , <i>meta2</i>	All the metas except the defined metas are written to SAW. For example, Filter: *, <i>ip.src</i> All the metas except <i>ip.src</i> is written to SAW.
<i>meta1</i> , <i>meta2</i> , <i>meta3</i>	Only the defined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

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

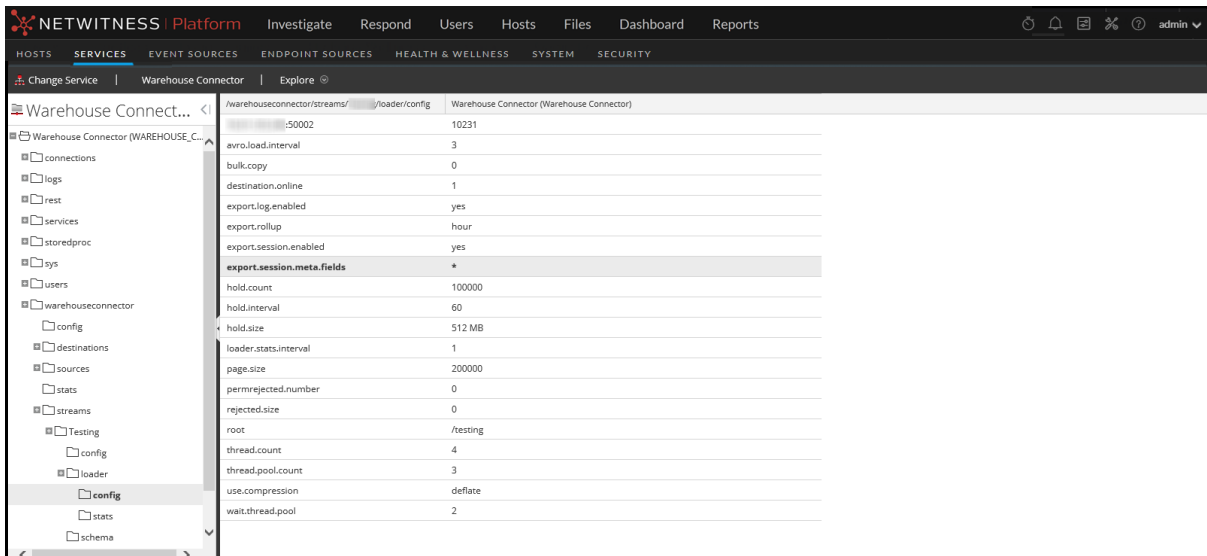
- ng_source
- unique_id
- time

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** > **Config**.
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.

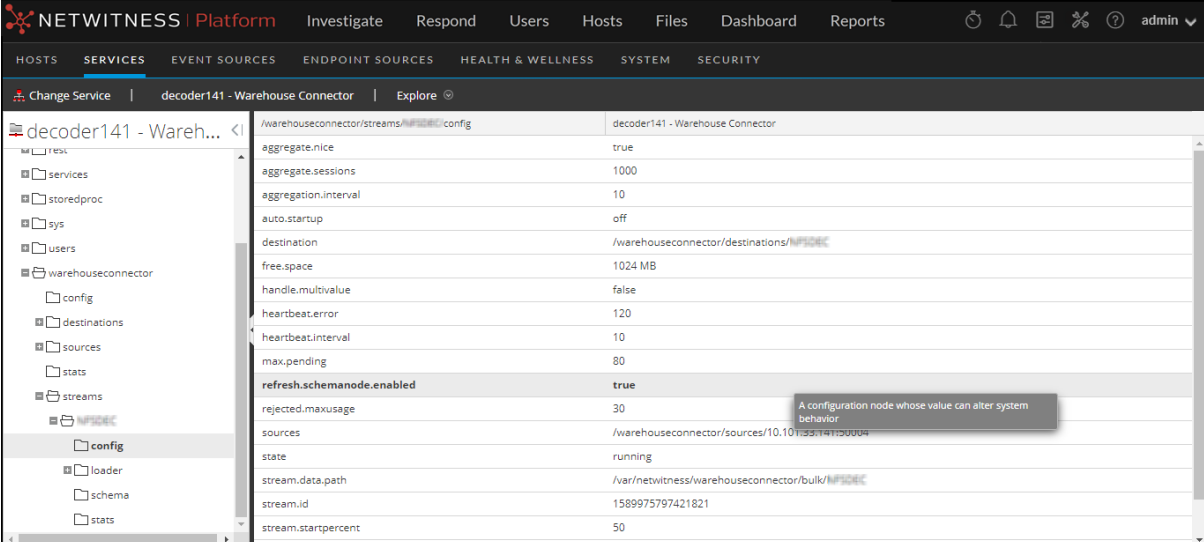
3. Restart the stream.

View the current schema

You can view the current schema that is used by warehouse connector for writing in AVRO files.


To view the current schema:


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>** > **config**.
4. Set the value for `refresh.schemanode.enabled` parameter to **true**. By default, this value is set to false.





The screenshot shows the NetWitness Platform interface. The left sidebar displays a tree view with 'warehouseconnector' expanded to 'streams' > 'NFSDEC' > 'config'. The main panel shows a table of configuration parameters for 'decoder141 - Warehouse Connector'. The parameter 'refresh.schemanode.enabled' is highlighted in blue and has a value of 'true'. A tooltip points to this parameter with the text: 'A configuration node whose value can alter system behavior'.

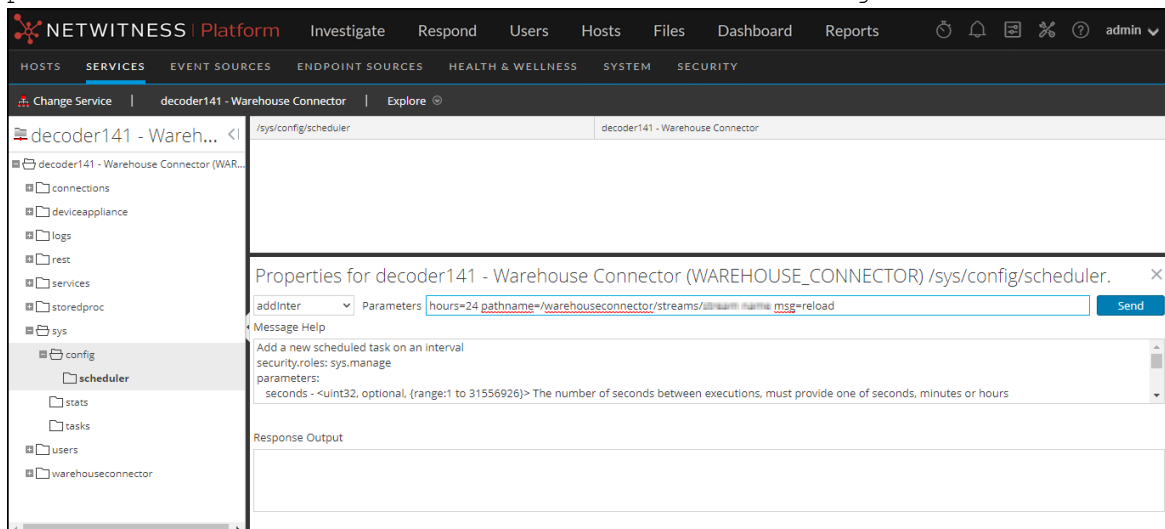
Parameter	Value
aggregate.nice	true
aggregate.sessions	1000
aggregation.interval	10
auto.startup	off
destination	/warehouseconnector/destinations/NFSDEC
free.space	1024 MB
handle.multivalue	false
heartbeat.error	120
heartbeat.interval	10
max.pending	80
refresh.schemanode.enabled	true
rejected.maxusage	30
sources	/warehouseconnector/sources/10.101.33.141:50004
state	running
stream.data.path	/var/netwitness/warehouseconnector/bulk/NFSDEC
stream.id	1589975797421821
stream.startpercent	50

5. Reload the stream. For more information see, [Reload the Stream](#).
6. Restart the Warehouse Connector service.
7. Go to  (Admin) > Services.

8. In the Services view, select a Warehouse Connector services and select  > **View** > **Explore**. The Explore view of the Warehouse Connector service is displayed.
9. In the options panel, select **warehouseconnector** > **streams** > **<stream_name>** > **schema**, to view the current schema.

Note: You must to reload the stream every time, before you want to view the current schema or you can add a scheduler to reload the stream automatically at regular intervals as mentioned in step 10.

10. (Optional) To reload the stream automatically at regular intervals, follow the below steps.
 - a. Go to  **(Admin)** > **Services**.
 - b. In the Services view, select a Warehouse Connector services and select  > **View** > **Explore**. The Explore view of the Warehouse Connector service is displayed.
 - c. In options panel, select **warehouseconnector** > **sys** > **config** > **scheduler**. Right click and select **properties**.
 - d. In the property drop down select **addInter** and in the **Parameters** text box, add "hours=24 pathname=/warehouseconnector/streams/<stream name> msg=reload".



Note: Standard time format used is hours. You can use seconds or minutes format in lieu of hours.

- e. Then click **Send**.

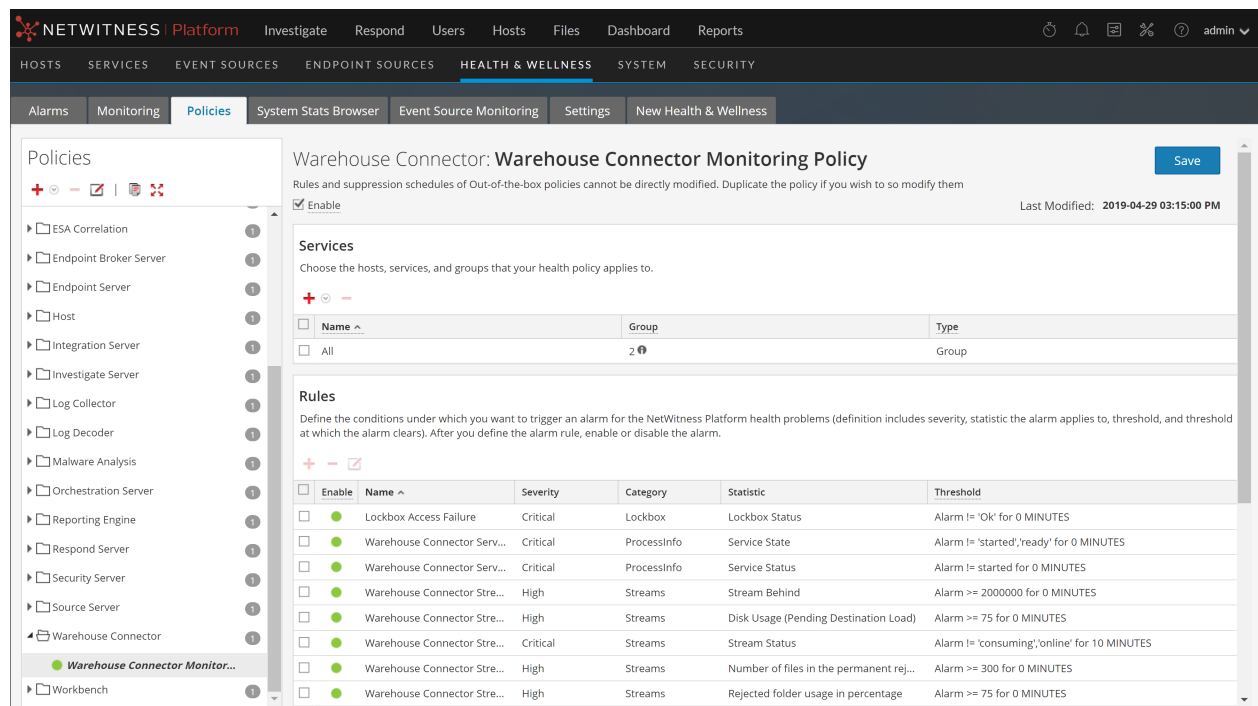
Manage a Lockbox

You can change the lockbox password, as well as refresh the lockbox.

Lockbox Status

Note: NetWitness Platform has added a Health & Wellness stat for Warehouse Connector to indicate the status of its Lockbox. Also, an out-of-the-box rule has been added so that a Health & Wellness alarm is raised when the Lockbox does not exist or cannot be opened.

To see the rule details, go to  (Admin) > Health & Wellness > Policies > Warehouse Connector and select **Warehouse Connector Monitoring Policy**.





The screenshot shows the NetWitness Platform interface. The top navigation bar includes 'NETWITNESS Platform' and various menu items like 'Investigate', 'Respond', 'Users', 'Hosts', 'Files', 'Dashboard', and 'Reports'. Below this is a secondary navigation bar with 'HOSTS', 'SERVICES', 'EVENT SOURCES', 'ENDPOINT SOURCES', 'HEALTH & WELLNESS', 'SYSTEM', and 'SECURITY'. The 'HEALTH & WELLNESS' section is active, showing sub-tabs for 'Alarms', 'Monitoring', 'Policies', 'System Stats Browser', 'Event Source Monitoring', 'Settings', and 'New Health & Wellness'. The 'Policies' tab is selected, displaying a list of policies on the left and the configuration for the 'Warehouse Connector: Warehouse Connector Monitoring Policy' on the right. The policy is enabled and last modified on 2019-04-29 03:15:00 PM. The 'Services' section allows selecting hosts, services, and groups for the policy to apply to. A table below shows the configured services:

Name	Group	Type
All	2	Group

The 'Rules' section defines conditions for triggering an alarm. A table below shows the configured rules:

Enable	Name	Severity	Category	Statistic	Threshold
<input type="checkbox"/>	Lockbox Access Failure	Critical	Lockbox	Lockbox Status	Alarm != 'Ok' for 0 MINUTES
<input type="checkbox"/>	Warehouse Connector Serv...	Critical	ProcessInfo	Service State	Alarm != 'started','ready' for 0 MINUTES
<input type="checkbox"/>	Warehouse Connector Serv...	Critical	ProcessInfo	Service Status	Alarm != started for 0 MINUTES
<input type="checkbox"/>	Warehouse Connector Stre...	High	Streams	Stream Behind	Alarm >= 2000000 for 0 MINUTES
<input type="checkbox"/>	Warehouse Connector Stre...	High	Streams	Disk Usage (Pending Destination Load)	Alarm >= 75 for 0 MINUTES
<input type="checkbox"/>	Warehouse Connector Stre...	Critical	Streams	Stream Status	Alarm != 'consuming','online' for 10 MINUTES
<input type="checkbox"/>	Warehouse Connector Stre...	High	Streams	Number of files in the permanent rej...	Alarm >= 300 for 0 MINUTES
<input type="checkbox"/>	Warehouse Connector Stre...	High	Streams	Rejected folder usage in percentage	Alarm >= 75 for 0 MINUTES

To change the Lockbox password:

1. Log on to NetWitness.
2. Go to  (Admin) > Services.
3. In the Services view, select a Warehouse Connector service, and select  > View > Config.
The Services Config view of Warehouse Connector is displayed.

The screenshot shows the NETWITNESS Platform interface. The top navigation bar includes 'Investigate', 'Respond', 'Users', 'Hosts', 'Files', 'Dashboard', and 'Reports'. The main navigation bar includes 'HOSTS', 'SERVICES', 'EVENT SOURCES', 'ENDPOINT SOURCES', 'HEALTH & WELLNESS', 'SYSTEM', and 'SECURITY'. The breadcrumb trail is 'Change Service | Warehouse Connector | Config'. The 'Lockbox Settings' tab is active, showing two configuration tables:

Source Configuration			Destination Configuration		
Name	Address	Port	Name	Type	Path
<input type="checkbox"/> logdecoder1 - Log Decoder	192.168.1.100	56004	<input type="checkbox"/> NFS	nfs	/root/test/kaushal
<input type="checkbox"/> logdecoder2 - Log Decoder	192.168.1.100	56002	<input type="checkbox"/> SFTP	sftp	/root/test

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

The screenshot shows the NETWITNESS Platform interface with the 'Lockbox Settings' tab selected. The breadcrumb trail is 'Change Service | decoder - Warehouse Connector | Config'. The 'Lockbox Settings' tab is active, showing three sections:

Create New Lockbox
Set the lockbox password. The password should satisfy lockbox password strength. You will be required to enter this password to perform any lockbox management.

Lockbox Password:

Confirm Lockbox Password:

Change Lockbox Password
Change the lockbox password. You will be required to enter current password and new password. The password should satisfy lockbox password strength.

Current Lockbox Password:

New Lockbox Password:

Confirm New Lockbox Password:

Refresh Lockbox
Reset the lockbox. You will be required to enter current lockbox password.

Lockbox Password:

5. In the **Change Lockbox Password** section, perform the following:



- In the **Current Lockbox Password** field, enter the current lockbox password.
- 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.

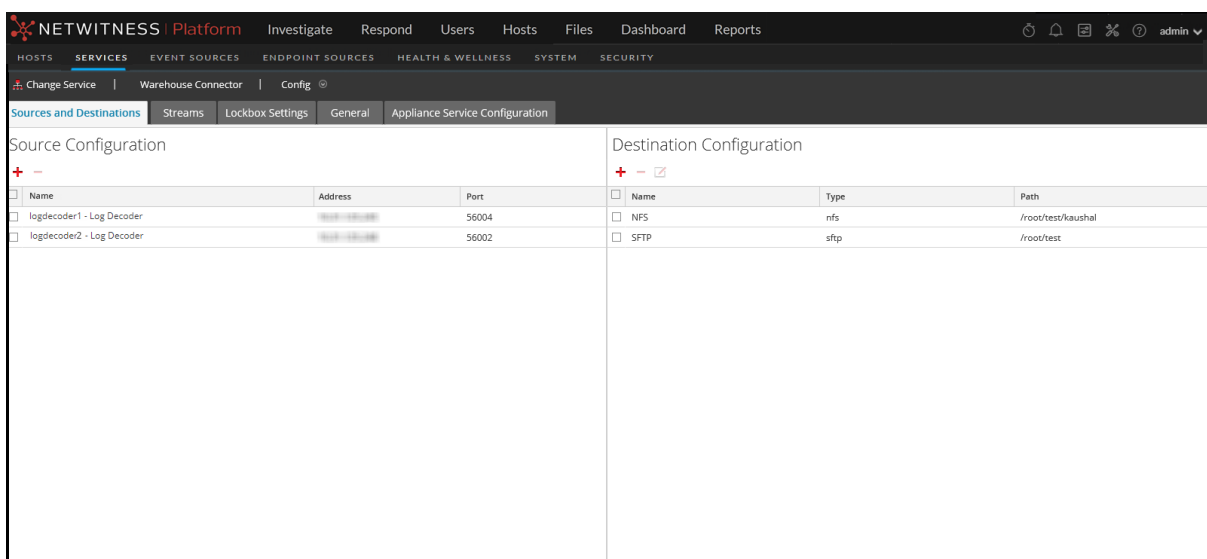
- c. In the **Confirm New Lockbox Password** field, enter the new lockbox password to confirm.
- d. Click **Apply**.

The Lockbox password is successfully changed.

To refresh the Lockbox:

1. Log on to NetWitness.
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.



The screenshot shows the NetWitness Platform configuration interface for a Warehouse Connector service. The page is titled 'Warehouse Connector | Config' and has several tabs: 'Sources and Destinations', 'Streams', 'Lockbox Settings', 'General', and 'Appliance Service Configuration'. The 'Sources and Destinations' tab is active, showing two configuration sections: 'Source Configuration' and 'Destination Configuration'.

Source Configuration			Destination Configuration		
Name	Address	Port	Name	Type	Path
<input type="checkbox"/> logdecoder1 - Log Decoder	192.168.1.100	56004	<input type="checkbox"/> NFS	nfs	/root/test/kaushal
<input type="checkbox"/> logdecoder2 - Log Decoder	192.168.1.100	56002	<input type="checkbox"/> SFTP	sftp	/root/test

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

The screenshot shows the NetWitness Platform configuration page for the Warehouse Connector. The breadcrumb trail is: Change Service | decoder - Warehouse Connector | Config. The active tab is Lockbox Settings, with other tabs being Sources and Destinations, Streams, General, and Appliance Service Configuration. The page is divided into three sections: Create New Lockbox, Change Lockbox Password, and Refresh Lockbox. Each section contains a text instruction, a password field (masked with asterisks), a confirm password field (where applicable), and an Apply button.

Create New Lockbox
Set the lockbox password. The password should satisfy lockbox password strength. You will be required to enter this password to perform any lockbox management.

Lockbox Password

Confirm Lockbox Password

Apply

Change Lockbox Password
Change the lockbox password. You will be required to enter current password and new password. The password should satisfy lockbox password strength.

Current Lockbox Password

New Lockbox Password

Confirm New Lockbox Password

Apply

Refresh Lockbox
Reset the lockbox. You will be required to enter current lockbox password.

Lockbox Password

Apply

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 Pre-Upgrade and Post-Upgrade Steps

Pre-Upgrade Steps:

If NFS destination is configured, unmount the configured directory and disable the entry from */etc/fstab* using the command `umount <directory name>`.

Post-Upgrade Steps:

1. Create a fresh lockbox key.

2. Reauthorize the user account in source configurations using using **Explore** or **REST API**. Reauthorization of source user account is not available in UI. The command to reauthorize the user account from **Explore** is given below:

```
> /warehouseconnector/sources/<source:port> ---> setPass property with password=<password of the configured user in source>
```

3. Reauthorize the user account in SFTP destination configuration from **UI**, **Explore** or **REST API**. The command to reauthorize the password from **Explore** is given below:

```
> /warehouseconnector/destinations/<sftp_destination> ---> setPass property with password=<password of the configured user in SFTP destination>
```

4. If NFS directory mount was removed as part of pre-upgrade step, mount back the same configuration. Additionally, enable back the mount entry in */etc/fstab*.

```
> mount -t nfs -o nolock,tcp,hard,intr <IP_Address_for_SAW>:/mapr/<cluster-name> /<directory_name>
```

Where **<IP_Address_for_SAW>** is the IP address of the primary Warehouse appliance in the cluster and **<cluster-name>** is the name provided in the template file.

Warehouse Connector Configuration References

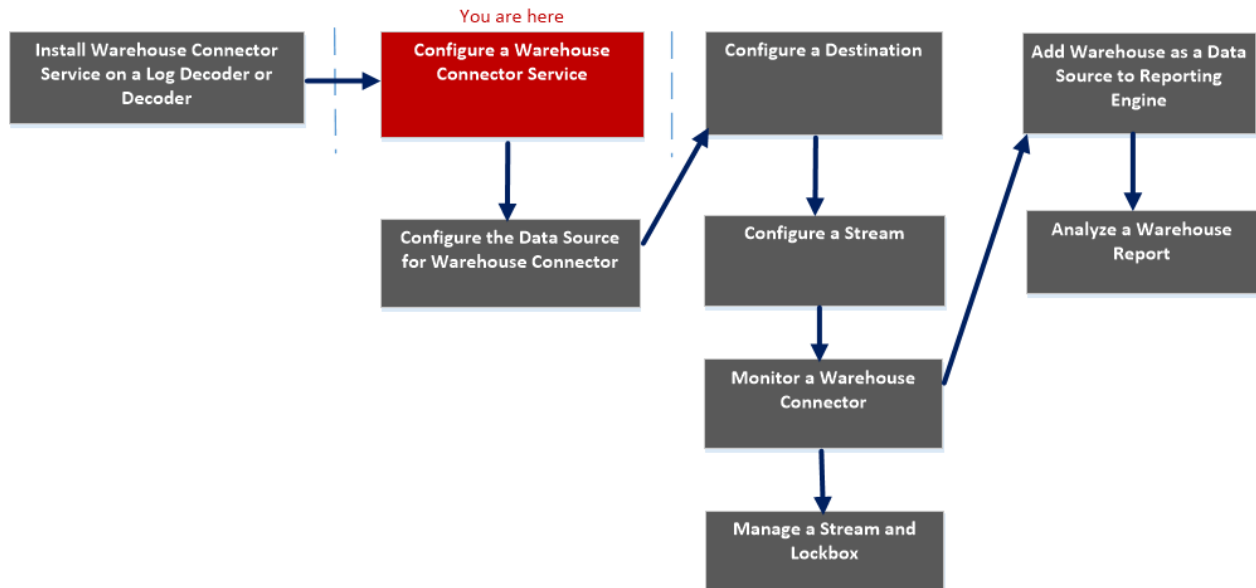
This section contains descriptions of the user interface as well as other reference information.

- [General Tab Settings](#)
- [Appliance Service Configuration Tab Settings](#)
- [Sources and Destinations Configuration](#)
- [Add Stream Dialog](#)
- [Streams Configuration](#)
- [Lockbox Settings](#)

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 <i>Reporting Engine Configuration Guide</i> .
Administrator	Analyze a Warehouse Report	For more information, see "Step 4. Analyze a Warehouse Report" in the <i>Warehouse Guide</i> .
Administrator	Manage a Stream and Lockbox	Manage a Stream

*You can perform this task in the current view

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.

The screenshot shows the NetWitness Platform configuration interface. The top navigation bar includes 'NETWITNESS Platform' and various menu items like 'Investigate', 'Respond', 'Users', 'Hosts', 'Files', 'Dashboard', and 'Reports'. Below this, there are tabs for 'HOSTS', 'SERVICES', 'EVENT SOURCES', 'ENDPOINT SOURCES', 'HEALTH & WELLNESS', 'SYSTEM', and 'SECURITY'. The 'SERVICES' tab is active, and the 'decoder - Warehouse Connector' service is selected. The 'Config' view is open, showing the 'General' tab. The 'System Configuration' section contains a table with the following parameters:

Name	Config Value
Compression	0
Port	50020
SSL FIPS Mode	<input checked="" type="checkbox"/>
SSL Port	56020
Stat Update Interval	1000
Threads	20

At the bottom of the configuration view, there is an 'Apply' button.

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

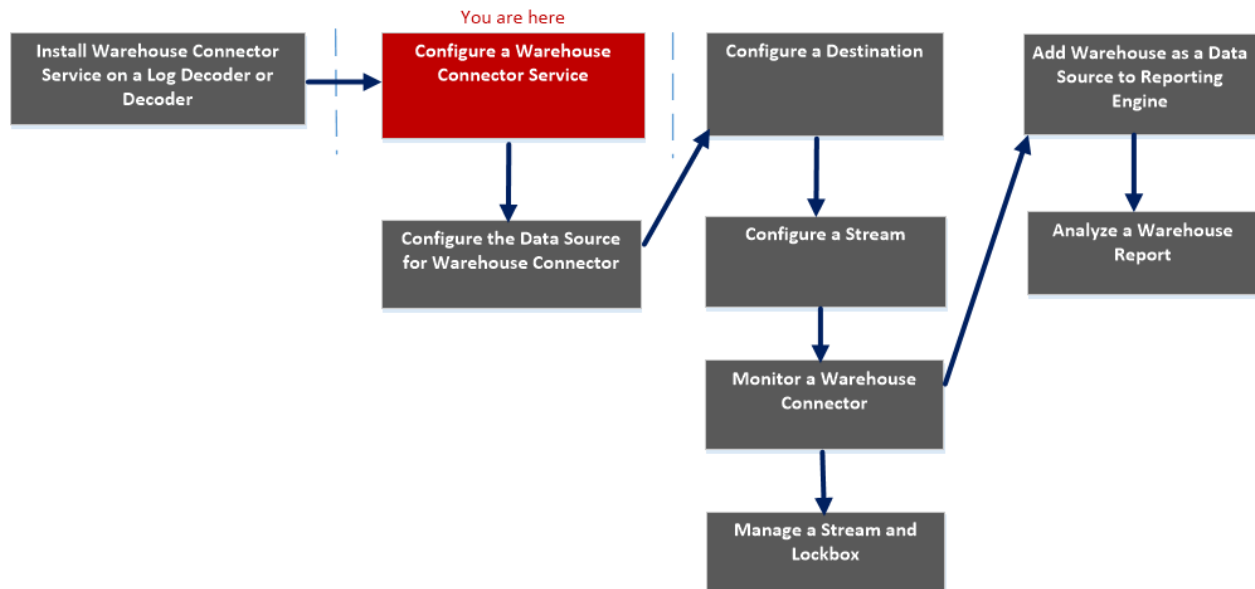
The following table describes the System Configuration parameters:

Name	Config Value
Compression	Determines the minimum amount of bytes before a message is compressed. If set to zero, messages are not compressed.
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 <i>Reporting Engine Configuration Guide</i> .
Administrator	Analyze a Warehouse Report	For more information, see "Step 4. Analyze a Warehouse Report" in the <i>Warehouse Guide</i> .
Administrator	Manage a Stream and Lockbox*	Manage a Stream

*You can perform this task in the current view

Related topics

- [Configure a Warehouse Connector Service](#)

Quick Look

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

The screenshot shows the NetWitness Platform configuration interface. The top navigation bar includes 'NETWITNESS Platform' and various menu items like 'Investigate', 'Respond', 'Users', 'Hosts', 'Files', 'Dashboard', and 'Reports'. Below this, a secondary navigation bar lists categories: 'HOSTS', 'SERVICES', 'EVENT SOURCES', 'ENDPOINT SOURCES', 'HEALTH & WELLNESS', 'SYSTEM', and 'SECURITY'. The 'SERVICES' category is selected, and the breadcrumb trail shows 'Change Service' > 'decoder - Warehouse Connector' > 'Config'. The 'Config' tab is active, and the 'Appliance Service Configuration' sub-tab is selected. The configuration table below shows the following settings:

Name	Config Value
Compression	0
Port	50006
SSL FIPS Mode	<input checked="" type="checkbox"/>
SSL Port	56006
Stat Update Interval	1000
Threads	20

An 'Apply' button is located at the bottom of the configuration area.

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

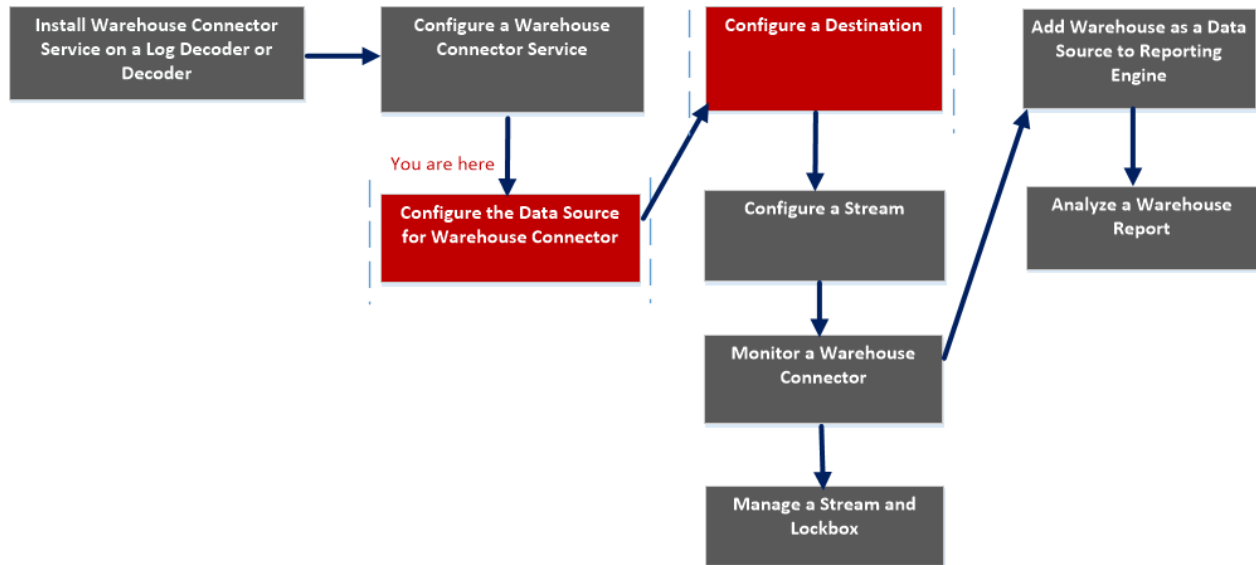
The following table describes the Appliance Service Configuration parameters:

Name	Configuration Value
Compression	Determines the minimum amount of bytes before a message is compressed. If set to zero, messages are not compressed.
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 <i>Reporting Engine Configuration Guide</i> .
Administrator	Analyze a Warehouse Report	For more information, see "Step 4. Analyze a Warehouse Report" in the <i>Warehouse Guide</i> .
Administrator	Manage a Stream and Lockbox	Manage a Stream

*You can perform this task in the current view

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.

Source Configuration

<input type="checkbox"/>	Name	Address	Port
<input type="checkbox"/>	logdecoder1 - Log Decoder	██████████	56004
<input type="checkbox"/>	logdecoder2 - Log Decoder	██████████	56002




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.

Destination Configuration

<input type="checkbox"/>	Name	Type	Path
<input type="checkbox"/>	NFS	nfs	/root/test/██████████
<input type="checkbox"/>	SFTP	sftp	/root/test

The Destination Configuration section allows you to perform the following:

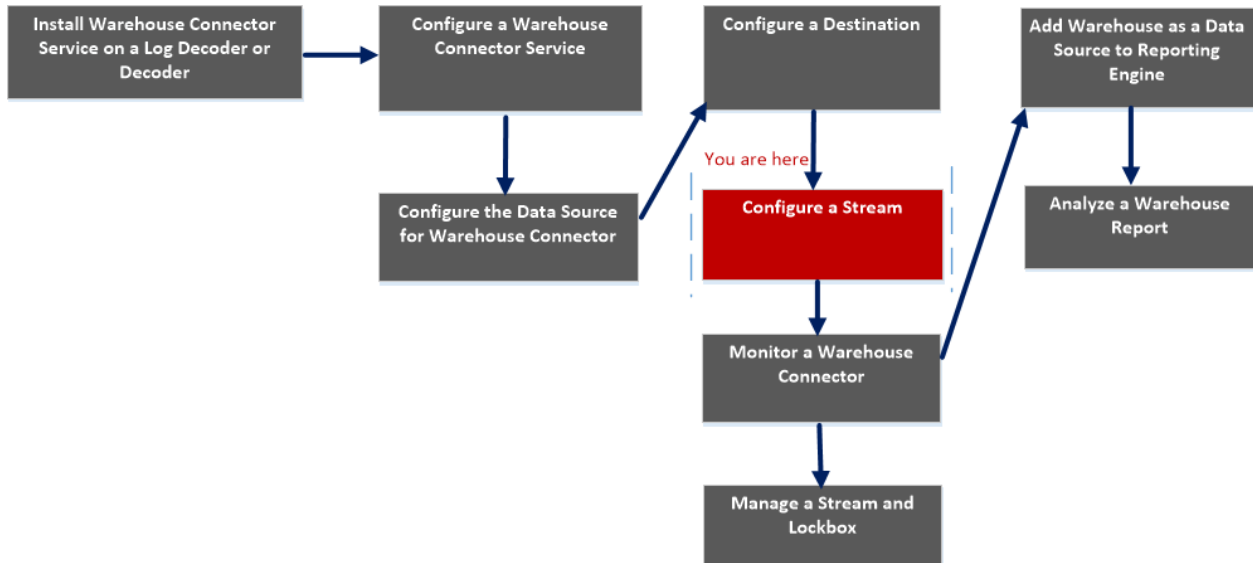
Features	Description
	Add the destination.
	Delete the destination.
	Edit the destination.

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 <i>Reporting Engine Configuration Guide</i> .
Administrator	Analyze a Warehouse Report	For more information, see "Step 4. Analyze a Warehouse Report" in the <i>Warehouse Guide</i> .
Administrator	Manage a Stream and Lockbox	Manage a Stream

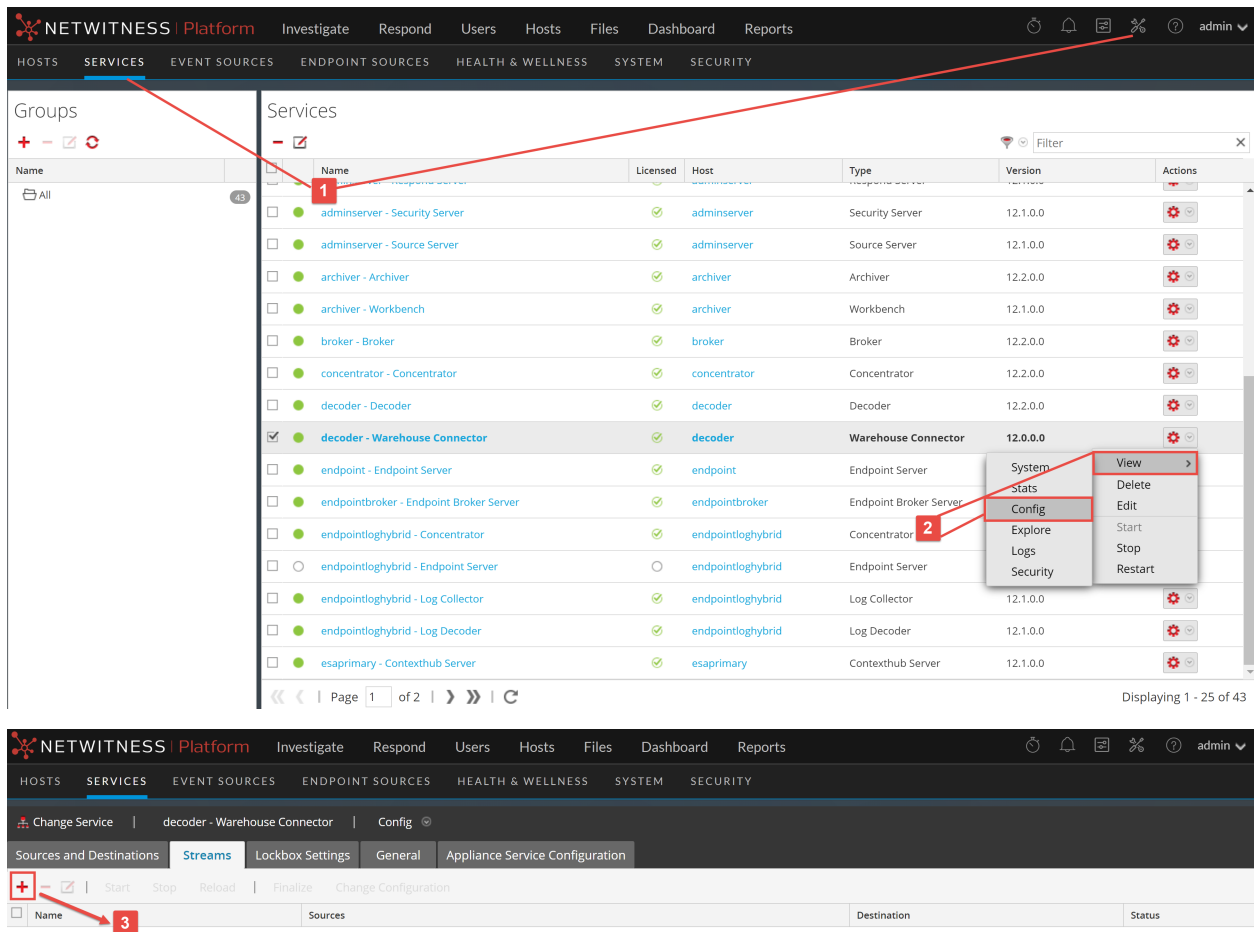
*You can perform this task in the current view

Related Topics

- [Configure a Stream](#)

Quick Look

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



Add Stream




Stream Name *

Select Destination * Choose Destination ...

Select Source *

<input type="checkbox"/>	Name	Address	Port	Session ID
<input type="checkbox"/>	[REDACTED]	[REDACTED]	56004	Enter Session
<input type="checkbox"/>	[REDACTED]	[REDACTED]	56002	Enter Session

Cancel Save

- 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.

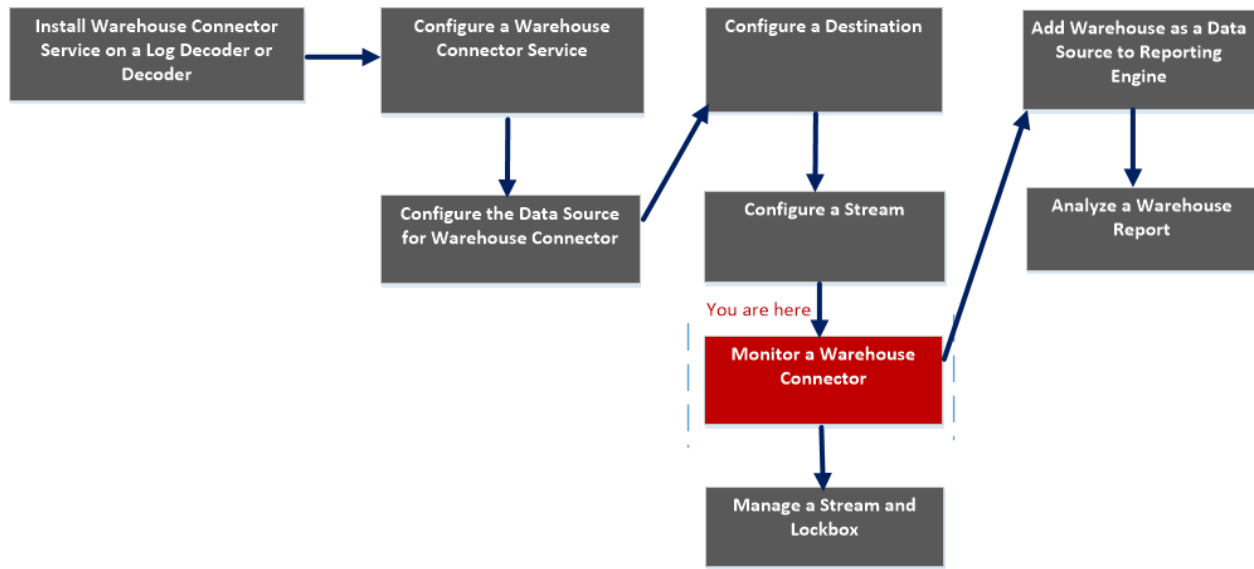
The following table describes the fields in the Add Stream dialog:

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 <i>Reporting Engine Configuration Guide</i> .
Administrator	Analyze a Warehouse Report	For more information, see "Step 4. Analyze a Warehouse Report" in the <i>Warehouse Guide</i> .
Administrator	Manage a Stream and Lockbox	Manage a Stream

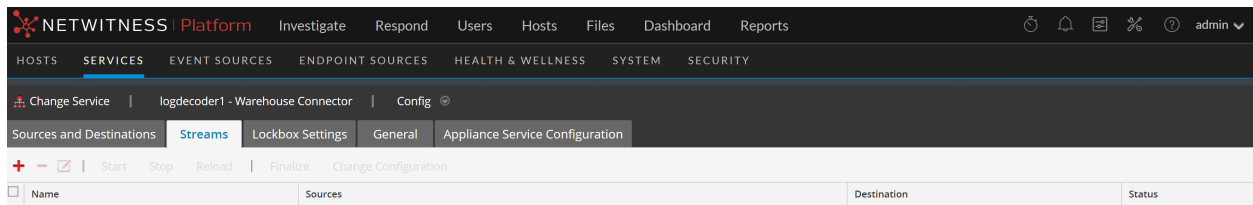
*You can perform this task in the current view

Related topics

[Configure a Stream](#)



Quick Look


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



To configure the alert mechanisms related to the Warehouse Connector navigate [here](#).

The Streams tab allows you to perform the following:


Features	Description
	Add a stream.
	Delete a stream.

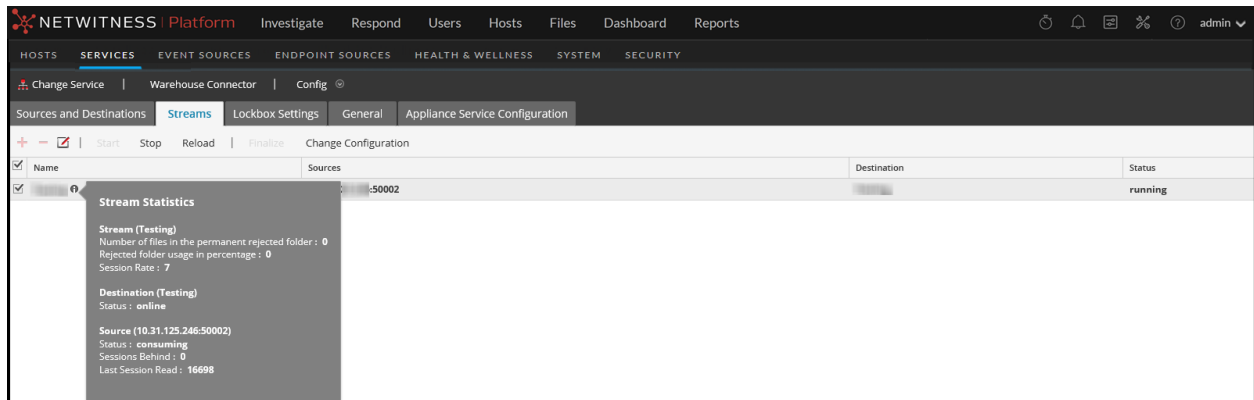
Features	Description
	Edit the stream.
Start	Start the stream.
Stop	Stop the stream.
Finalize	Finalize the stream.
Reload	Reload the stream. If you have added a new meta or if a new meta is added as part of content update to any of the sources, Log Decoder or Decoder, you need to reload the stream for 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		

Section	Parameter	Description
	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.
	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.

Change Configuration : ✕

Stream Configuration

Name	Config Value
Aggregation Configuration	
Aggregate max sessions	1000
Aggregation Interval	10
Loader Settings	
Compress files on disk.	deflate
Export Rollup Interval	hour
Maximum Message Hold Count	100000
Maximum Message Hold Interval (Seconds)	60
Maximum Message Hold Size	512 MB
Page Size	200000
Remote Export Path	/
Session Meta Fields Exported	*
Session Remote Export	<input checked="" type="checkbox"/>
Stream Settings	
Auto Startup	<input type="checkbox"/>

Close Apply

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.

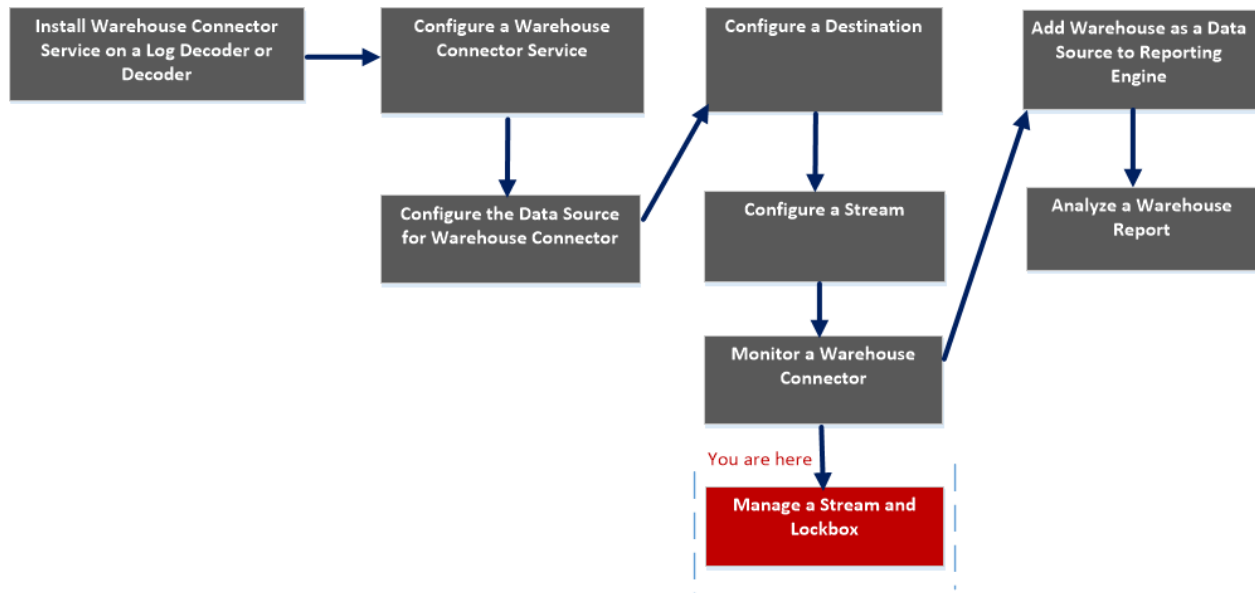
Parameter	Description								
Aggregation Configuration									
Aggregate max sessions	Determines the maximum number of sessions in a response for an aggregation request from the Warehouse Connector to the source .								
Aggregation Interval	Determines the time between the responses from the source.								
Loader Settings									
Compress files on disk	<p>Enable to compress files on disk. Supported values:</p> <ul style="list-style-type: none"> Deflate - Provides smaller compressed files and good performance while generating reports. Off <p>By default, the parameter is set to deflate.</p>								
Export Rollup Interval	<p>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:</p> <table border="1"> <thead> <tr> <th>Value</th> <th>Directory Structure</th> </tr> </thead> <tbody> <tr> <td>hour</td> <td>/rsasoc/v1/[logs sessions]/data/{year}/{month}/{day}/{hour}</td> </tr> <tr> <td>minute</td> <td>/rsasoc/v1/[logs sessions]/data/{year}/{month}/{day}/{hour}/{minute}</td> </tr> <tr> <td>day</td> <td>/rsasoc/v1/[logs sessions]/data/{year}/{month}/{day}</td> </tr> </tbody> </table> <p>If you change the value of the parameter, ensure that you restart the stream. Recommended value is hour.</p>	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}
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}								
Maximum Message Hold Count	<p>Determines the maximum number of sessions to store in the memory before processing.</p> <div style="border: 1px solid green; padding: 5px;"> <p>Note: If you have deployed a Warehouse Connector Virtual Appliance, make sure that you change the default value of the parameter to 800000.</p> </div>								
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.								

Parameter	Description
Page Size	Determines the maximum pages.
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?

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 <i>Reporting Engine Configuration Guide</i> .
Administrator	Analyze a Warehouse Report	For more information, see "Step 4. Analyze a Warehouse Report" in the <i>Warehouse Guide</i> .
Administrator	Manage a Stream and Lockbox*	Manage a Stream Manage a Lockbox

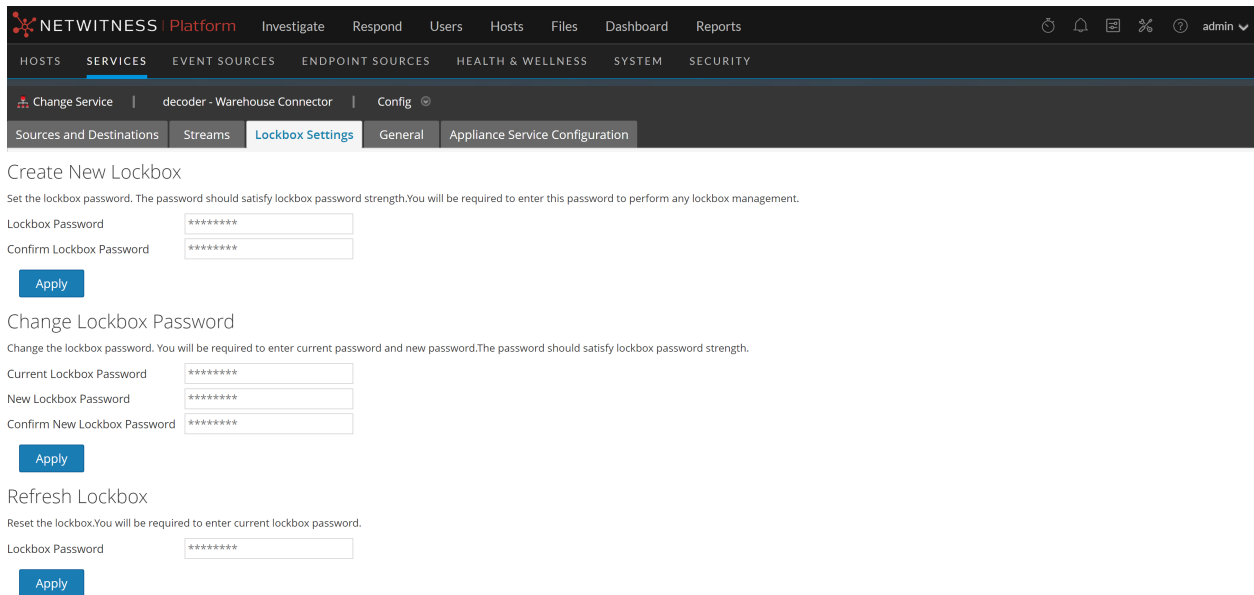
*You can perform this task in the current view

Related topics

- [Configure a Warehouse Connector Service](#)
- [Manage a Stream](#)

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.