# IBM Financial Transaction Repository
# Version 2.0.3

*User Guide*

**Note**

Before using this information and the product it supports, read the information in Notices.

**Product Information**

This document applies to Version 2.0.3 and may also apply to subsequent releases.

# Contents

# Introduction

IBM Financial Transactions Repository provides a trade repository for IBM® Surveillance Insight® for Financial Services. IBM Financial Transactions Repository processes daily trading event data from your organization's order management system from variety of formats and models. All of the incoming trading events are stored to meet regulatory auditing requirements.

### Audience

This guide is intended for administrators and users of the IBM Financial Transactions Repository solution.

### Finding information and getting help

To find product documentation on the web, access IBM Knowledge Center (www.ibm.com/support/knowledgecenter/SSWTQQ).

### Accessibility features

Accessibility features help users who have a physical disability, such as restricted mobility or limited vision, to use information technology products. Some of the components included in the IBM Financial Transactions Repository have accessibility features. For more information, see Appendix A, "Accessibility features," on page 25.

The HTML documentation has accessibility features. PDF documents are supplemental and, as such, include no added accessibility features.

### Forward-looking statements

This documentation describes the current functionality of the product. References to items that are not currently available may be included. No implication of any future availability should be inferred. Any such references are not a commitment, promise, or legal obligation to deliver any material, code, or functionality. The development, release, and timing of features or functionality remain at the sole discretion of IBM.

### Samples disclaimer

Sample files may contain fictional data manually or machine generated, factual data that is compiled from academic or public sources, or data that is used with permission of the copyright holder, for use as sample data to develop sample applications. Product names that are referenced may be the trademarks of their respective owners. Unauthorized duplication is prohibited.

# Chapter 1. Overview

IBM Financial Transactions Repository (FTR), delivers a trade repository as part of a regulatory reporting solution. Financial Transactions Repository processes daily trading events from an organization's order management system.

Trade data can be sent to Financial Transactions Repository in a variety of different formats and models in batch mode. All incoming events are stored as is to meet regulatory auditing requirements. The FTR is designed to be a repository of trade transactions ingested from client systems using analytics components, which provide insights to compliance users. FTR can be configured to process input from a variety of FIX based order management systems. This release of FTR version 2.0.3, consists of the Data Ingestion component. This component entails the following:

- an ingestion component
- a transaction repository
- a communication channel for indicating the status of data ingestion

It can ingest trade transaction records in FIX protocol versions 4.0, 4.1, and 4.2. The ingested data is stored and is available for use by downstream analytics layers. Messages indicating the status of the ingestion at various stages are conveyed periodically.

# Chapter 2. Ingestion

The trading data files that are collected from the trading systems can be ingested into the IBM Financial Transactions Repository (FTR) system using a simple file transfer mechanism.

The FTR system has a designated watch folder on one of the servers. All the trading data files that are placed in this folder are picked up by the FTR system and placed into the HDFS system and processed for consumption by the applications.

The systems and streams for which the data has to be ingested are configurable as described in Configuration Management. The ingestion module expects the filename to contain the stream name and trading date.

The file name of the trading data is expected to be in the format: `strmname_yyyymmdd.extn`

Where,

`strmname` : Name of the stream, such as nets, raptor, or Fidessa.

`yyyymmdd` : Trading date in `yyyymmdd` format.

`extn` : File extensions of log, txt, csv, and psv are supported in this release

The following file name is an example of a nets trading file: `nets_20180415.log`

When the trading data file must be reingested with any modifications or corrections, the same file name as the first ingestion must be used. The ingestion module takes care of renaming the file with the correct version details.

The ingested data is processed by the FTR system to translate into a readable format. The readiness of the processed data is published to a Kafka topic. This notification can be used by the applications to start consuming the trading data using APIs provided by FTR. The Kafka topic name is configurable using the Configuration Management page.

# Chapter 3. User credentials

This chapter guides the analyst on how to login and access the services of the IBM Financial Transactions Repository tool.

## Logging in

The first step is to log in to the IBM Financial Transactions Repository application.

**Procedure**

1. On the Financial Transactions Repository login page, enter your username.
2. Enter your password.
3. Click **Login**.

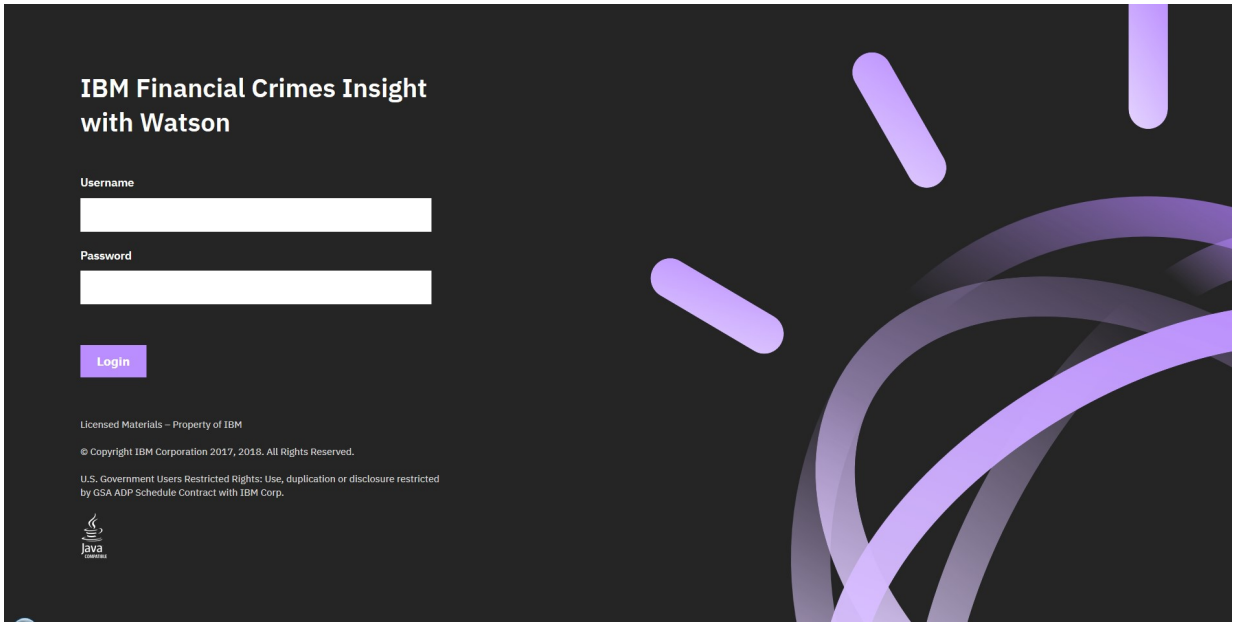



*Figure 1: Login page*

## Landing page for the analyst

After successfully logging into IBM Financial Transactions Repository (FTR), you will see the Surveillance Insights dashboard page.

Access to FTR from the Surveillance Insights user-interface is role based. If the logged in user's role is authorized to access the FTR application, the link to FTR is displayed in the navigation bar.

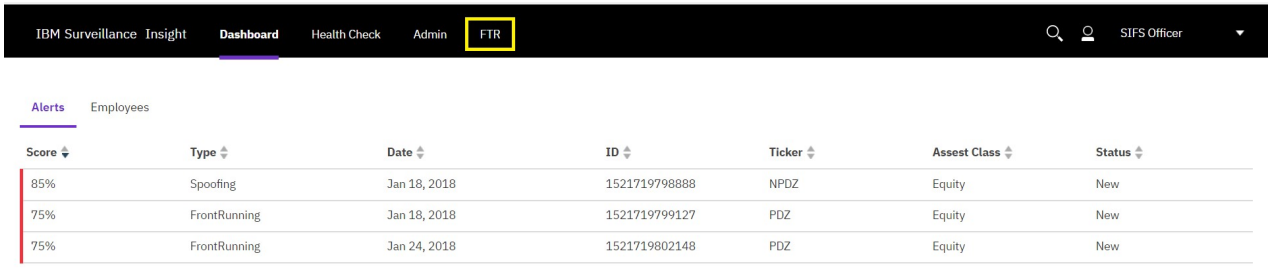



*Figure 2: The link to FTR is displayed*

After clicking the FTR link, the landing page of FTR is displayed. Each component of this page is explained in the following chapters of this guide.

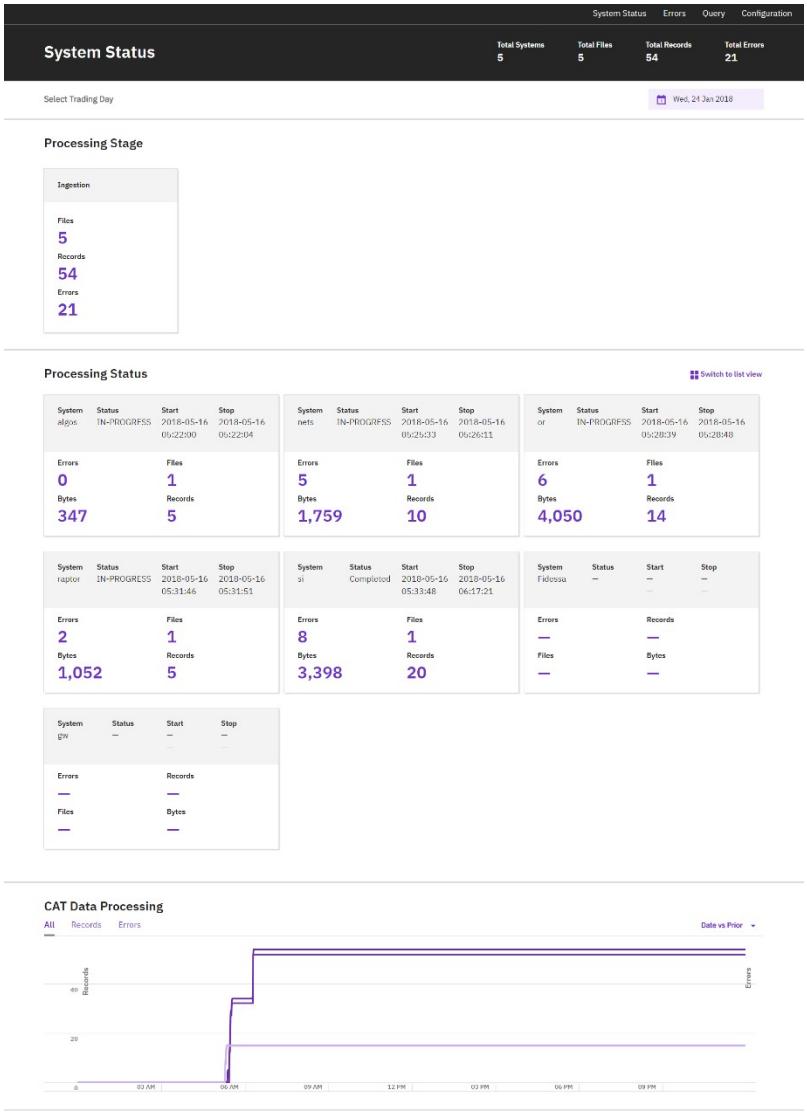



*Figure 3: Financial Transactions Repository landing page*

## Components of the landing page

The following options are available to analysts in IBM Financial Transactions Repository: **System Status**, **Errors**, **Query**, and **Configuration**.


*Figure 4: Landing page components*

**System Status**

This gives the ingestion status for a given trading day with various metrics such as, number of records, number of files, number of errors, bytes per system, errors per system, records per system, start time and end time of ingestion for each system, and the ingestion status for each system. It also provides a time line view of records ingested and the errors encountered, if any, in a chart form. For more information, see Chapter 4, “System Status,” on page 9.

**Errors**

This gives the stream level error and system level error for a given trading date. For more information, see Chapter 5, “Errors,” on page 13.

**Query**

This is used to query errors and records. The errors occurred during the ingestion can be queried using various filters such as, date, start time, end time, systems, stream, and file. The result set for any error query is displayed in a data table. One or more error records can be selected and further details about the error, such as raw record, message, and file details, can be viewed. This page also provides the functionality to query records using date, symbol, start time, and end time. For more information, see Chapter 6, “Query,” on page 15.

**Configuration**

This is used to upload and view configuration properties for internal components such as, streams and DAL components. For more information, see Chapter 7, “Configuration Management,” on page 19.

# Chapter 4. System Status

By default, after the analyst logs into IBM Financial Transactions Repository, the **System Status** page is loaded with the ingestion status for the current day.

The analyst can view the ingestion status of various systems configured in Financial Transactions Repository. The analyst can see the status for any of the past days by changing the date in the date picker.

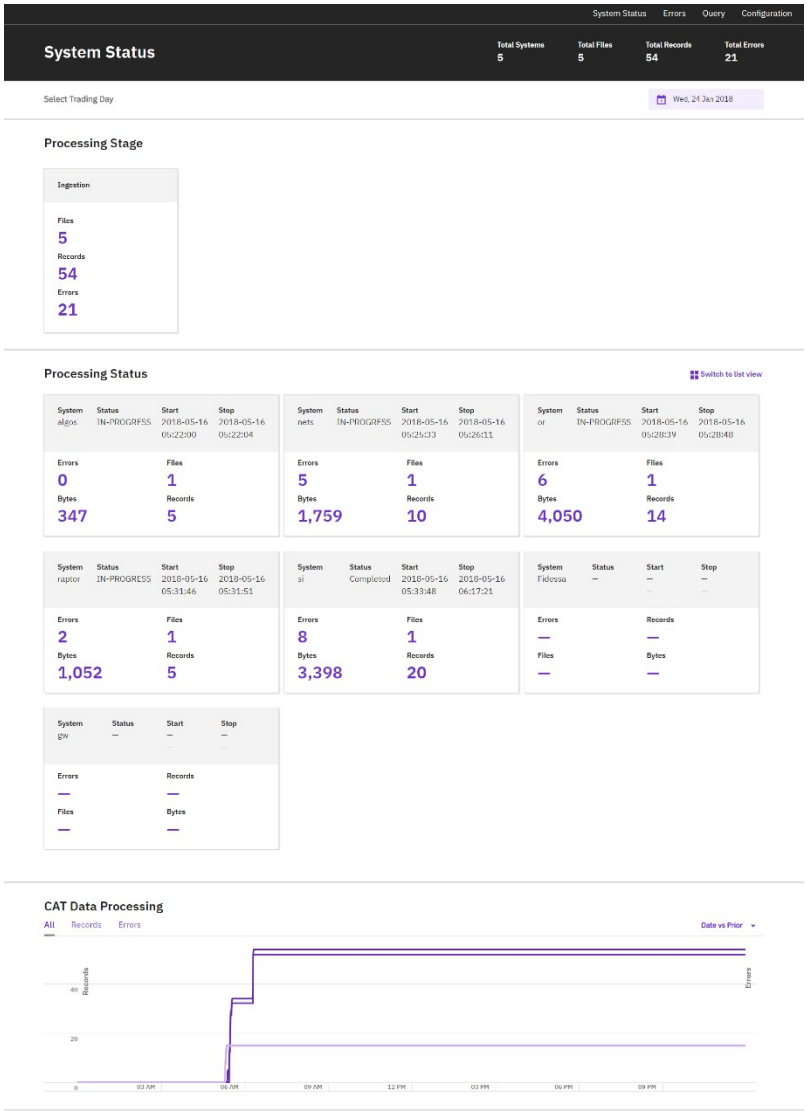



*Figure 5: System Status*

There are four sections on the **System Status** page.

## Head band section

In IBM Financial Transactions Repository, the head band section displays consolidated metrics for the whole application. The metrics displayed are total systems, total files, total records, and total errors.

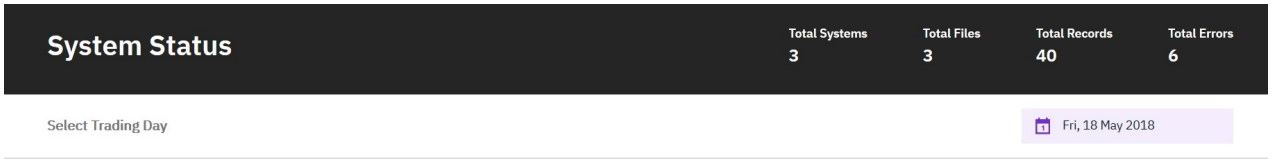



*Figure 6: Head band section*

## Processing Stage

The **Processing Stage** in IBM Financial Transactions Repository displays the consolidated metrics for ingestion, including records ingested, files ingested, and errors encountered during ingestion.

You can click the links in the **Processing Stage**, to display the **Errors** page with the data pre-populated for the selected date.

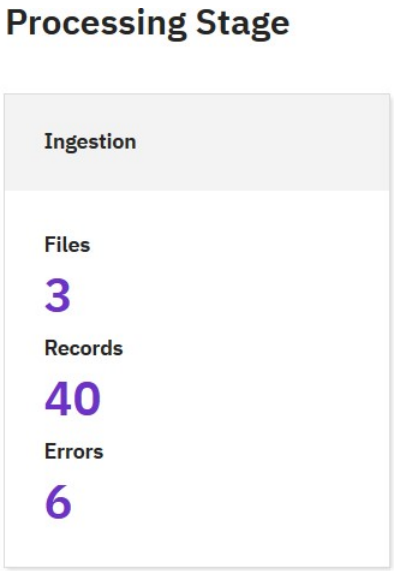



*Figure 7: Processing Stage*

## Processing Status

In IBM Financial Transactions Repository (FTR), the **Processing Status** section displays ingestion metrics consolidated for each system configured in the FTR application.

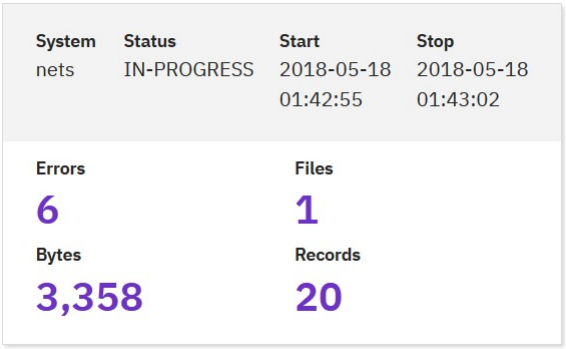



*Figure 8: Processing Status and System Status*

The following details are displayed for each system:

- **System**: The name of the system configured in the FTR application. For example, FIX Gateway.
- **Status**: One of three possible statuses; In Progress, Complete, or Failed.
- **Start**: The timestamp when the ingestion for the system began.
- **Stop**: The timestamp when the ingestion for the system completed.
- **Errors**: The number of errors including both record parsing errors and system level errors.
- **Files**: The number of files ingested for a given system.
- **Bytes**: The memory size of all files ingested for the system.
- **Records**: The number of records ingested from all the files for a given system.

This section has two types of views; the **card view** and **list view**. The **card view** is the default view and it can be changed by clicking on the view toggle button

Switch to list view

.

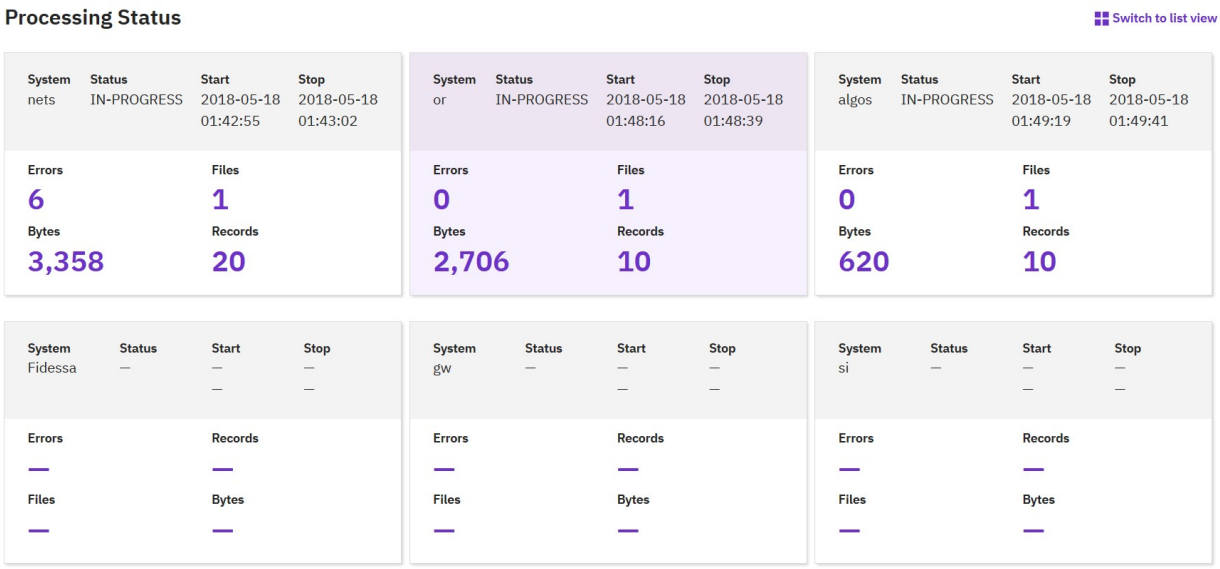



*Figure 9: Processing Status and System Status in card view*

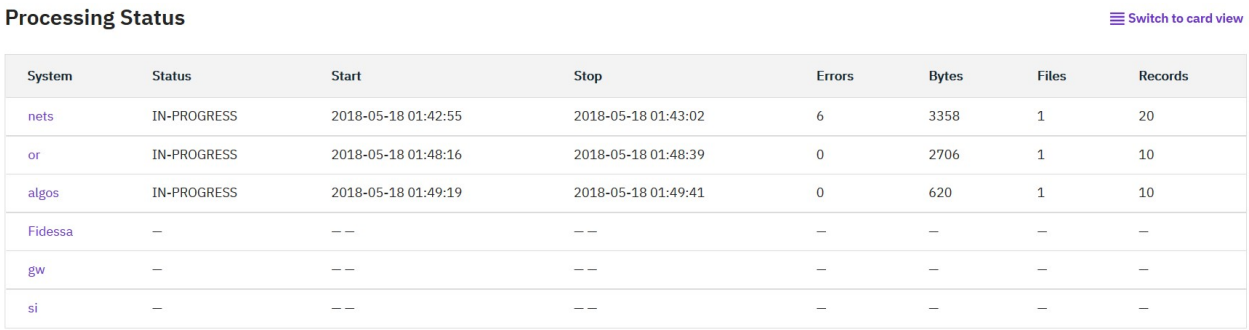



*Figure 10: Processing Status and System Status in list view*

## CAT Data Processing

In IBM Financial Transactions Repository (FTR), the analyst can see the timeline view of the records ingested and errors encountered during the ingestion process.

The consolidated values for records and errors are displayed as a chart with a separate line graph for records and errors. Line graphs for last trading day are also displayed in a different color for the purpose of comparing these values with the selected trading day.

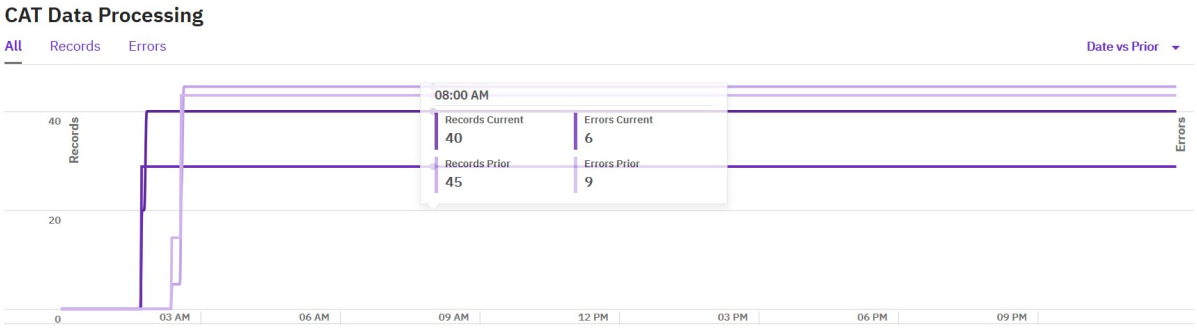



*Figure 11: CAT Data Processing*

You can toggle between three different views of the data in the chart using the drop-down list at the top right corner of the chart. The following three different views are available:

**Date vs Prior**
This is the default selection for the **CAT Data Processing** section. The consolidated values for the records and errors for the current trading day and the previous trading day are displayed. Four line graphs are displayed in this view.

**Absolute Change**
This displays the change in absolute values for the current and previous trading day.

**Percentage Change vs Prior**
This displays the percentage change in the values between the current and previous trading day.

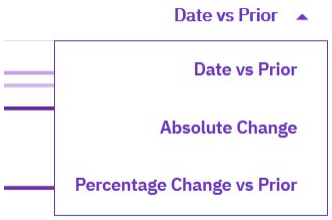



*Figure 12: CAT Data Processing chart views*

# Chapter 5. Errors

In IBM Financial Transactions Repository, the **Errors** page display the errors for a given trading date in more detail than the **System Status** page.

This page provides two sections to display error details; **Streams** and **Systems**. It also displays the number of errors.

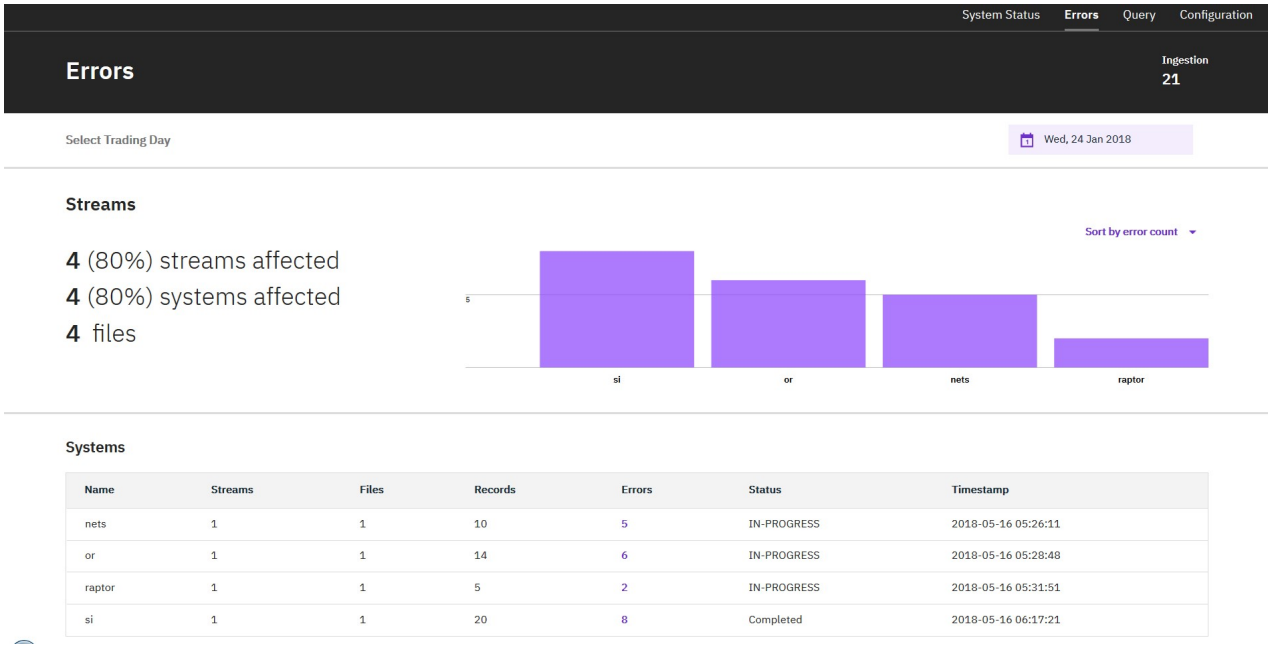



*Figure 13: Errors*

## Streams

This section display the errors that occurred in all files, including both record level errors and file level errors consolidated per stream.

Some additional useful metrics are displayed on the left side of this section, which include the percentage of streams affected, the percentage of systems affected, and the number of files affected. The error by stream is also displayed as a bar chart on the right side of this section. Each stream is represented by a bar, the height of which corresponds to the error count and the color of each bar represents the error percentage. The bars can be sorted by either error count or error percentage by using the drop-down list at the top right of the bar chart. The following tool tips are available for the bar chart:

- **Error%**: The percentage of records that caused errors out of the total records in the given stream.
- **Errors**: The total number of errors in the given stream.
- **File**: The number of files affected in the given stream.
- **Records**: The number of records affected in the given stream.
- **System**: The name of the system in which the stream is present.
- **Stream**: The name of the stream.

You can click on each bar in the chart to view the **Query** page. The errors are filtered by the selected stream and selected date and the error results are displayed in the result section.

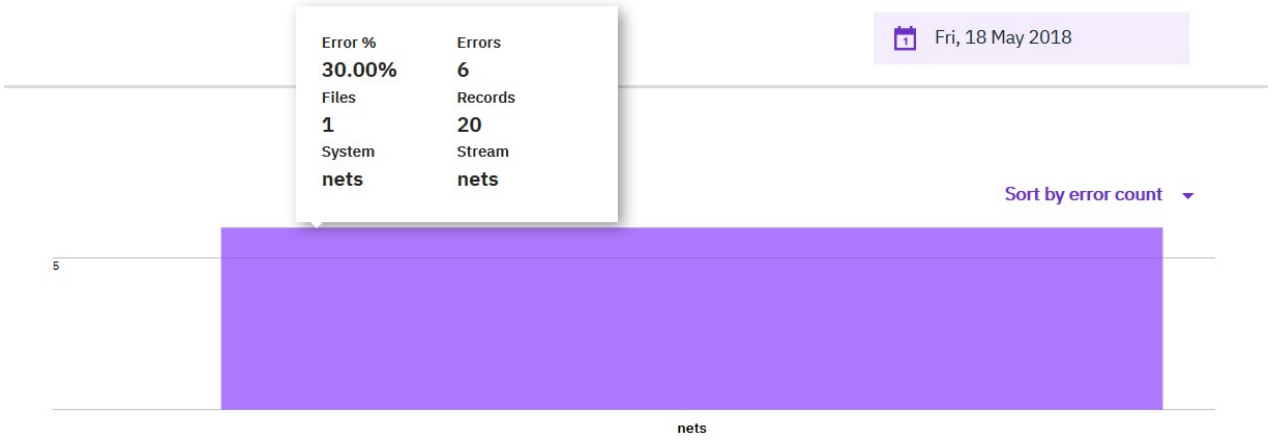



*Figure 14: Streams*

## Systems

The **Systems** section gives the overview of error by system in a data table.

The errors displayed under the **Errors** column can be clicked to navigate to the **Query** page, which displays the errors in the systems in detail.

**Systems**

| Name | Streams | Files | Records | Errors | Status | Timestamp |
|---|---|---|---|---|---|---|
| nets | 1 | 1 | 20 | 6 | IN-PROGRESS | 2018-05-18 01:43:02 |

*Figure 15: Systems section*

# Chapter 6. Query

In IBM Financial Transactions Repository, the **Query** page enables the analyst to search for errors and records.

This page has the following sections:

**Filter section**
This is where you can enter the required filters such as, date, start time, end time, system, stream, and file.

**Result display section**
This displays the results for the selected query in the filter section.

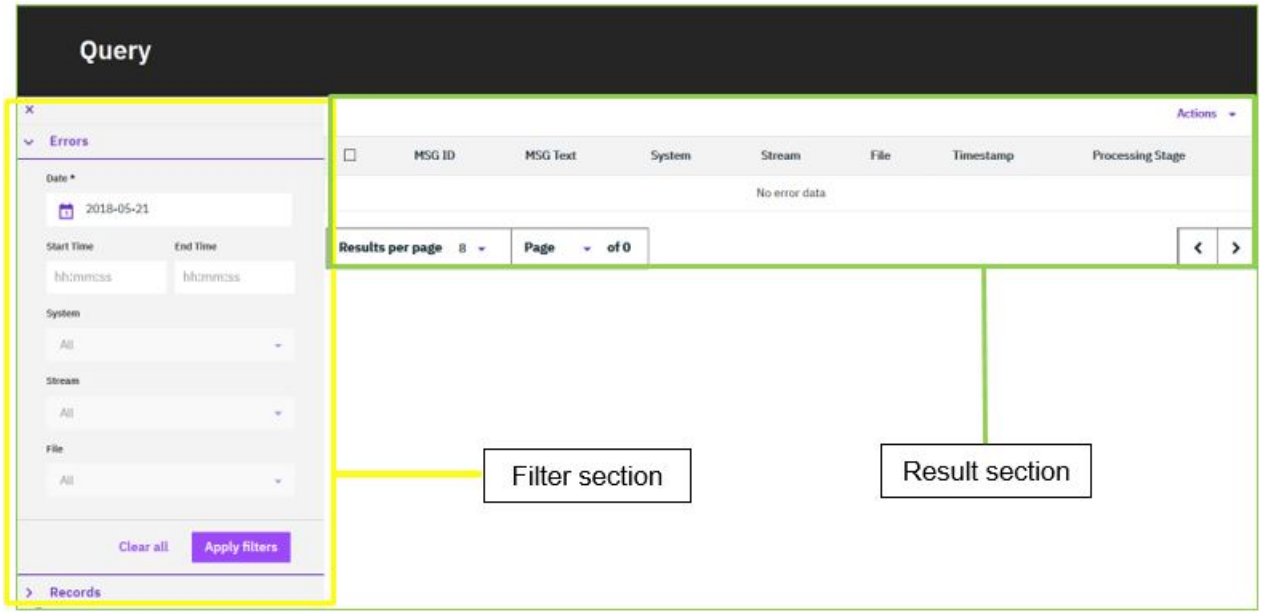



*Figure 16: Query page*

On the **Query** page, the filter section has an accordion panel with two sections; **Errors** and **Records**.

## Query Errors

On the **Query** page, the **Errors** section is used to search for errors that occurred in the system during ingestion.

You can search for errors using various filters such as, date, start time, end time, system, stream, and file. After the required filters are selected and **Apply filters** is clicked, the error results are displayed in the result section.

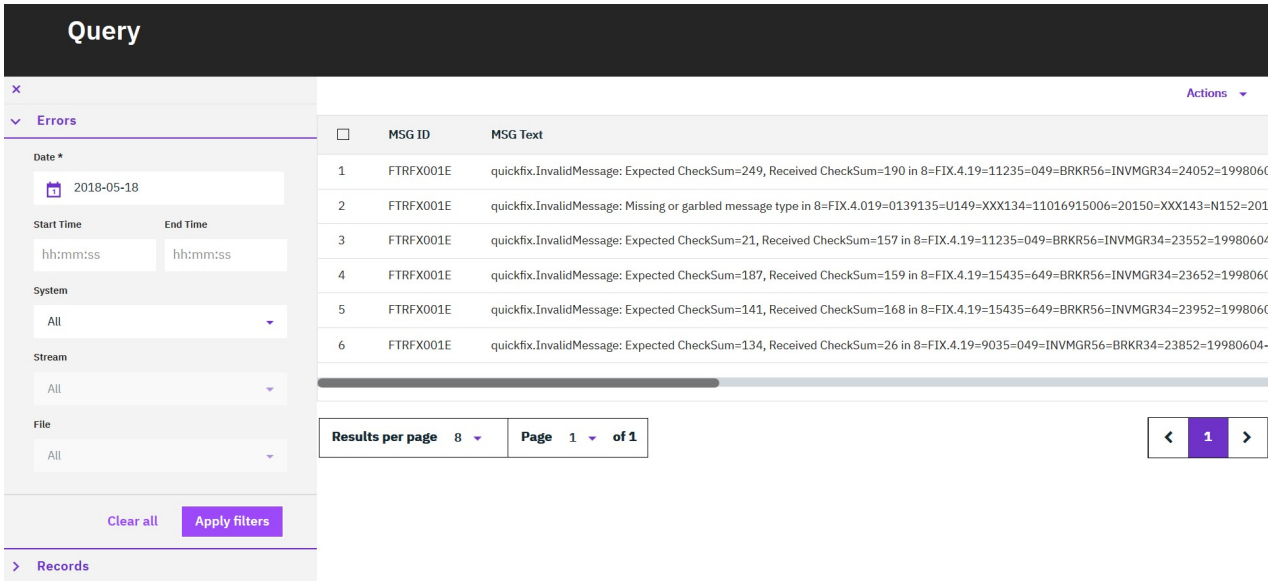



*Figure 17: Query Errors*

The results display several important details about each error in table format. The following details are displayed for each record:

- **MSG ID**: The error code of the error record. For example, FTRAPI0020E.
- **MSG Text**: The detailed error message. For example, `quickfix.InvalidMessage: Expected CheckSum=249, Received CheckSum=190`
- **System**: The name of the system in which the error record is present.
- **Stream**: The name of the stream in which the error record is present.
- **File**: The name of the file in which the error record is present.
- **TimeStamp**: The timestamp of the error that occurred during ingestion.
- **Processing Stage**: The stage in which the error has occurred. In Financial Transactions Repository, the only processing stage is Ingestion.

## Error Details

On the **Query** page, you can view more details for each of the error records displayed in the data table by selecting the error and clicking on the **Actions** drop-down list.

After the **View Details** option is selected the **Error Details** page is displayed with two sections; **Affected Files** and **Records**.

**Note:** Only record level errors can be selected and viewed on the **Error Details** page. File level errors cannot be selected and viewed in the **Error Details** page.

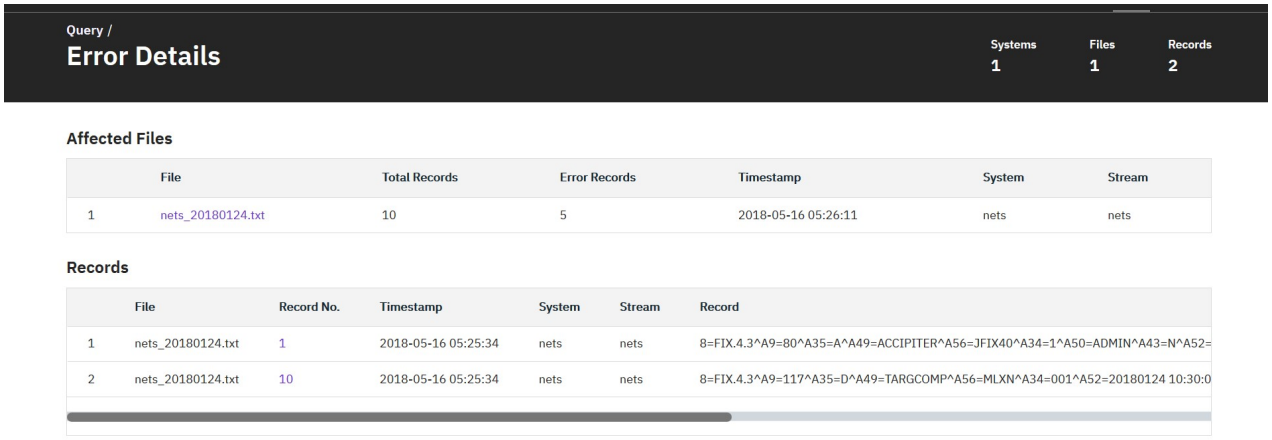



*Figure 18: Error Details page*

**Affected Files**

This section displays the files in which the selected error record is present. It displays the name of the original file, total number of records, number of error records, timestamp, system, and stream.

**Records**

This section displays the record in a readable format in the **Record** column. This enables the analyst to view the actual record data and identify the error, file, record number, timestamp, system, and stream.

## Query Records

In IBM Financial Transactions Repository, the **Records** panel on the **Query** page is used to search for records that were ingested in the system.

The following filters are available; date, symbol, start time, and end time. The start time and end time are related to the trading time of the records to be filtered. After the required filters are selected and you click **Apply filters**, the results are displayed in the results section.

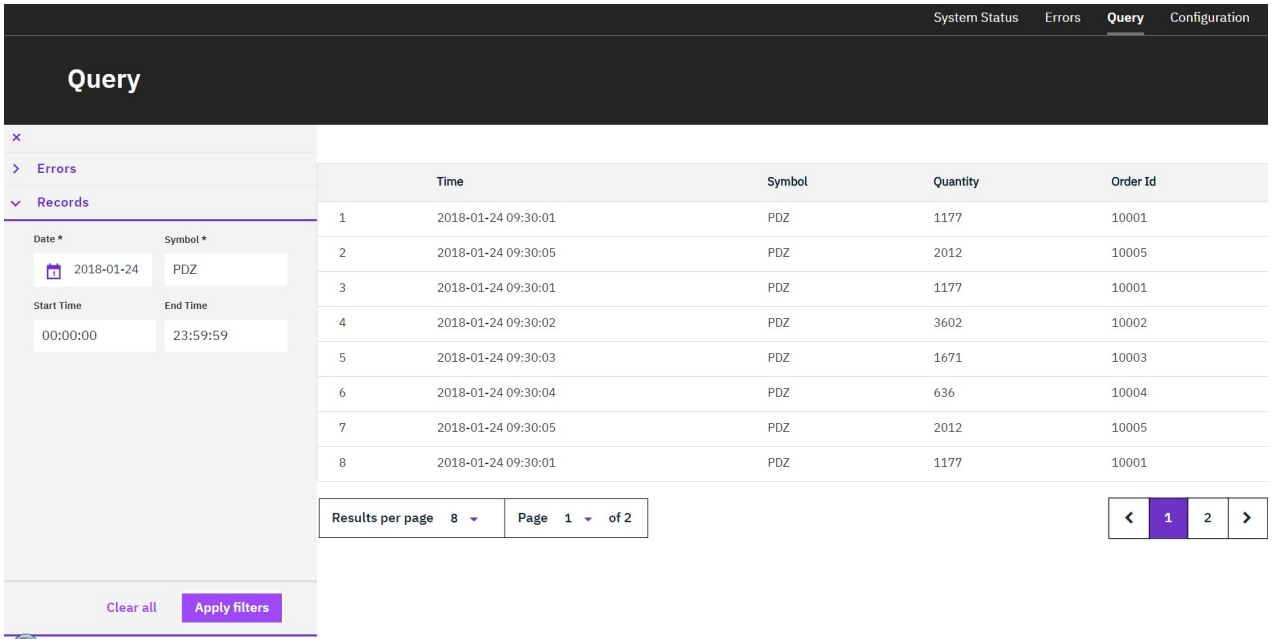



*Figure 19: Query Records*

# Chapter 7. Configuration Management

In IBM Financial Transactions Repository, the **Configuration Management** page enables the analyst to configure various systems for the backend ingestion streams component and FIX parser component.

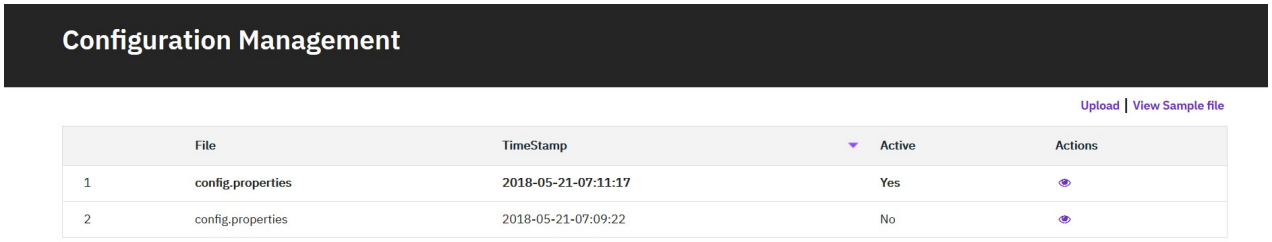



*Figure 20: Configuration Management page*

By default, the page shows the properties files already uploaded into the system. The page show which properties file is active by highlighting the particular row in bold and with the value of **Yes** in the **Active** column. This page provides the ability to view the sample properties, create a new properties file as applicable, and upload the new properties file into the system. After the new properties file is uploaded, a notification indicating the upload was successful is displayed and the data table is refreshed with the new list of configuration files uploaded into the system. Only properties files with a maximum file size of 5MB can be uploaded. The system accepts only properties files with the same format as shown in the sample file.

The existing sample properties file can be viewed by clicking the **View** icon

in the data table.

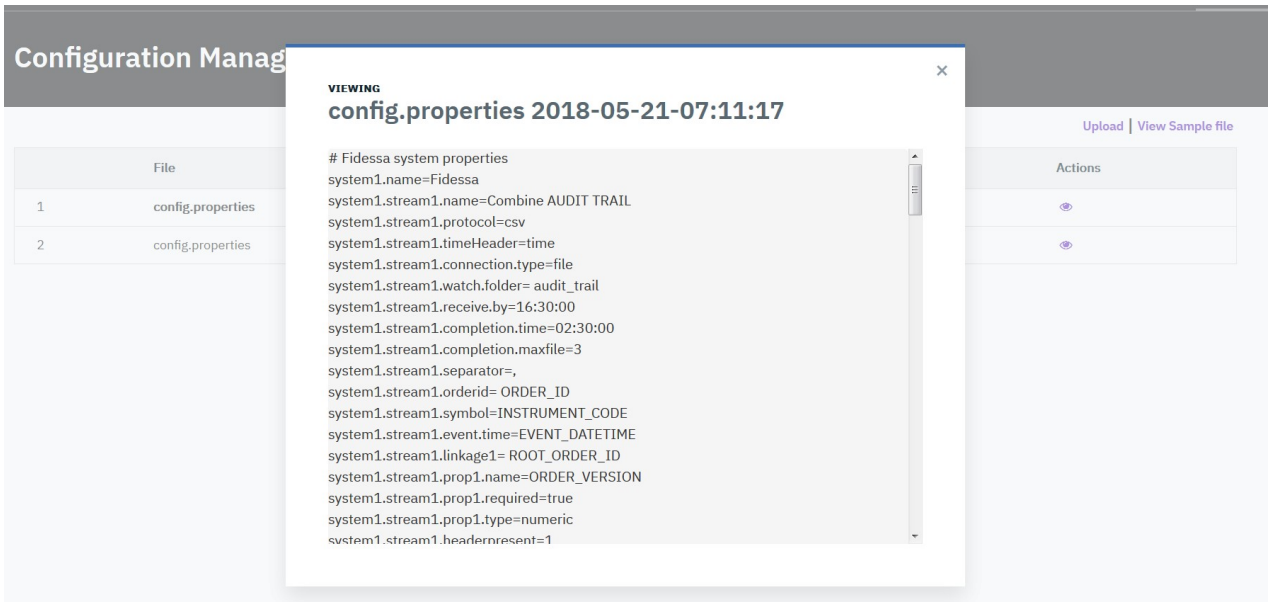



*Figure 21: Viewing configuration properties*

## Configuring systems

In IBM Financial Transactions Repository (FTR), before starting the ingestion component in the backend, the configuration of systems must be completed.

**Procedure**

1. Create a text file and save it as `config.properties`.
2. Open the `config.properties` file and add the following contents. The samples in the table are for adding one system named “raptor” and one stream in that system named “raptor”.

| SI Number | KEY | Description | Sample |
|---|---|---|---|
| 1 | system1.name | Name of the system. | system1.name=raptor |
| 2 | system1.stream1.name | Name of the stream. | system1.stream1.name=raptor |
| 3 | system1.stream1.protocol | Protocol used by the system either FIX or CSV. | system1.stream1.protocol=FIX |
| 4 | system1.stream1.connection.type | | system1.stream1.connection.type=hagdhad |
| 5 | system1.stream1.watch.folder | The folder where the record file will be placed everyday for the FTR system to process it. | system1.stream1.watch.folder=raptor |
| 6 | system1.stream1.receive.by | The time in HHMMSS to wait for a file in the watch folder. | system1.stream1.receive.by=163000 |
| 7 | system1.stream1.completion.time | The time limit, in HHMMSS format, to wait for a file in the watch folder. | system1.stream1.completion.time=120000 |
| 8 | system1.stream1.completion.maxfile | Maximum number of files to listen to in the watch folder before deciding that data is ready for a given stream. | system1.stream1.completion.maxfile=3 |
| 9 | system1.stream1.headerpresent | Specific to CSV formatted files to indicate whether a header is present in the CSV file as the first row. | system1.stream1.headerpresent=0 |
| 10 | system1.stream1.header | Specific to CSV formatted files to provide the headers as | system1.stream1.header= |

| SI Number | KEY | Description | Sample |
|---|---|---|---|
| | | comma separated strings. | |
| 11 | system1.stream1.separator | Used to specify the separator of fields in the messages from systems using FIX protocol. For example, \| or ^A. | system1.stream1.separator=\| |
| 12 | system1.stream1.timeHeader | Used to indicate which fields in readable data correspond to the time field. | system1.stream1.timeHeader=messageHeaderSendingTime |
| 13 | system1.stream1.symbolHeader | Used to indicate which fields in readable data correspond to the symbol field. | system1.stream1.symbolHeader=messageBodySymbol |
| 14 | system1.stream1.orderIdHeader | Used to indicate which fields in readable data correspond to the order ID field. | system1.stream1.orderIdHeader=messageBodyClOrdID |
| 15 | system1.stream1.quantityHeader | Used to indicate which fields in readable data correspond to the quantity field. | system1.stream1.quantityHeader=messageBodyOrderQty |

The following text is an example system properties file:

```
# RAPTOR system properties
system1.name=raptor
system1.stream1.name=raptor
system1.stream1.protocol=FIX
system1.stream1.connection.type=hagdhad
system1.stream1.watch.folder=raptor
system1.stream1.receive.by=163000
system1.stream1.completion.time=120000
system1.stream1.completion.maxfile=3
system1.stream1.headerpresent=0
system1.stream1.header=
system1.stream1.separator=
system1.stream1.timeHeader=messageHeaderSendingTime
system1.stream1.symbolHeader=messageBodySymbol
system1.stream1.orderIdHeader=messageBodyClOrdID
system1.stream1.quantityHeader=messageBodyOrderQty
```

3. To add a second stream for the same system, the keys should follow this naming pattern: `system1.stream2.name`
4. To add a second system, the keys should follow this naming pattern:

```
system2.name=
system2.stream1.name=
```

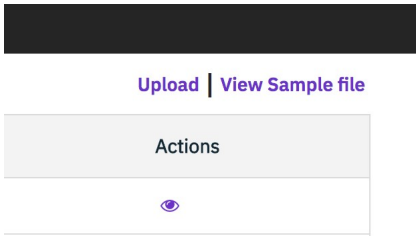
5. After adding the required keys, save the file.

## Uploading configuration files

In IBM Financial Transactions Repository (FTR), after creating your configuration file, you must upload it to the system

**Procedure**

1. On the **Configuration Management** page, click **Upload** to upload the `config.properties` file.




2. After the file is uploaded, the system is ready to ingest the system mentioned in the `config.properties` file.

# Chapter 8. Logout

To log out of IBM Financial Transactions Repository (FTR), you can click the drop-down list next to the username on the top right of the screen.

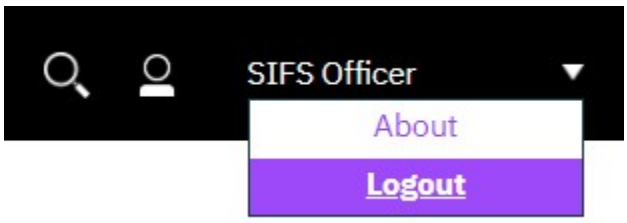



*Figure 22: Logout option*

You can choose one of the following options from this drop-down list; **About** and **Logout**. After you click **Logout**, the user session ends and the login page is displayed.

# Appendix A. Accessibility features

Accessibility features help users who have a physical disability, such as restricted mobility or limited vision, to use information technology products.

For information about the commitment that IBM has to accessibility, see the IBM Accessibility Center (www.ibm.com/able).

HTML documentation has accessibility features. PDF documents are supplemental and, as such, include no added accessibility features.

# Notices

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