

Oracle Financial Services Investigation Hub

User Guide

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ORACLE
Financial Services

Oracle Financial Services Investigation Hub

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Document Control

Table 1: Document Control

Version Number	Revision Date	Changes Done
8.0.7.3.0	Created: March 2020	Created the first version of the Investigation Hub User Guide for 8.0.7.3.0 Release.

This document provides functional information about the Investigation Hub application and enables you to navigate through the various sections of the application. The latest copy of this guide can be accessed from the Oracle Help Center ([OHC](#)) Documentation Library.

Table of Contents

1	Preface	1
1.1	Summary	1
1.2	Audience	1
1.3	Related Documents	1
1.4	Conventions	1
1.5	Abbreviations	2
2	About Oracle Financial Services Investigation Hub	3
2.1	Introduction	3
2.1.1	Key Features	3
3	Getting Started	4
3.1	Investigation Hub Application Access	4
3.2	Investigation Hub Folder	4
3.3	Investigation Hub Notebooks	5
4	Investigating Business Entity	6
4.1	Cloning of Notebook	6
4.2	Initializing the Investigation	7
4.3	Searching for a Business Entity	7
4.4	Viewing the Initial Screening Results	8
4.5	Viewing the Entity Summary Historical Report	9
4.6	Viewing the Graph Result of the Entity Search	9
4.7	Viewing the Reference Data Sources	10
4.8	Viewing the Risk Factors Details	11
4.9	Viewing Red Flag Details	12
4.10	Viewing the Transactions Analysis	12
4.11	Viewing the Summary of Case Findings	12
4.12	Viewing the Network Disposition Score	13
4.13	Viewing Network Disposition Score Breakdown	13
4.14	Viewing the Investigation Recommendation	14
5	Investigating a Case	15
5.1	Searching a Case	15

5.2	Viewing the Case Overview	15
5.3	Viewing the Focal Entity Network	16
5.4	Comparing the Data	16
5.4.1	Comparing the Case Disposition Risk Score	17
5.4.2	Viewing the Comparison of Risk Factors Details	18
5.4.3	Viewing the Comparison of Red Flag Details	18
5.5	Viewing the Investigation Recommendation	19
6	Common Features	21
6.1	Managing the Notebooks	21
6.1.1	Common Screen Elements in Notebooks	21
6.1.2	Exporting a Notebook	23
6.1.3	Refreshing Session	23
6.1.4	Deleting a Notebook	23
6.2	Managing the Paragraphs	24
6.2.1	Common Screen Elements in Paragraph	24
6.2.2	Paragraph Dependencies	25
6.2.3	Run All Notebook Paragraphs	25
6.3	Managing the Results	26
6.3.1	Result Toolbar	26
6.3.2	Results Search Filter	27
6.3.3	Customizing Result Settings	27
7	Graph Details	29
7.1	Working with Graph Nodes	29
7.1.1	Repositioning Nodes	29
7.1.2	Collapsing and Expanding Nodes	29
7.1.3	Viewing the Node Details	30
7.1.4	Deleting a Node	31

1 Preface

This section provides the functional and navigational information about the Oracle Financial Services Investigation Hub (OFS IH) application and includes the following topics:

- [Summary](#)
- [Audience](#)
- [Related Documents](#)
- [Conventions](#)
- [Abbreviations](#)

1.1 Summary

You can find the latest copy of this document in Oracle Help Center ([OHC](#)) Documentation Library which includes all the recent additions/revisions (if any) done till date.

1.2 Audience

Oracle Financial Services Investigation Hub application User Guide is intended for end-users such as Data Analysts and Data Scientists.

1.3 Related Documents

This section identifies additional documents related to OFS IH application.

Oracle Financial Services Analytical Applications Infrastructure Related Documents

The following document is available in Oracle Help Center Documentation Library.

- *Oracle Financial Services Analytical Applications Infrastructure User Guide*

OFS Investigation Hub Application Related Documents

The following IH documents are available in Oracle Help Center Documentation Library:

- *Oracle Financial Services Investigation Hub Installation Guide*
- *Oracle Financial Services Investigation Hub Admin Guide*
- *Oracle Financial Services Investigation Hub Release Notes*

1.4 Conventions

The text conventions used in this document are listed in [Table 1](#).

Table 1: Conventions Used in this guide

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action or terms defined in text or the glossary.

Table 1: Conventions Used in this guide

Convention	Meaning
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
<code>monospace</code>	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

1.5 Abbreviations

The abbreviations used in this document are listed in [Table 2](#):

Table 2: Abbreviations and their meaning

Abbreviation	Meaning
FCC	Financial Crime and Compliance
OFSA	Oracle Financial Services Analytical Applications
SQL	Structured Query Language

2 About Oracle Financial Services Investigation Hub

This chapter provides a brief overview of the Oracle Financial Services Investigation Hub (OFS IH) application.

2.1 Introduction

Oracle Financial Services Crime and Compliance Investigation Hub is an application built on FCC Studio which allows investigators to rapidly view the case and Adhoc information within the Financial Crime and Compliance Graph. The in-built scoring, matching and correlation engines create meaningful units of investigation and pre-configured red flags and risk factors target investigative effort effectively. The Financial Crime and Compliance Graph on which it is built accelerates investigations by bringing relevant information sources together, preventing the need for the manual collation of information from disparate sources for ad hoc investigations. Oracle Financial Services Crime and Compliance Investigation automatically generates case narratives and insights, highlights risk factors and red flags which are meaningful to the investigation and recommends actions based on graph scoring algorithms.

2.1.1 Key Features

- Pre-built user interfaces for case investigation, special and Adhoc investigations and sanctions
- Configurable red flags and risk factors to highlight key areas for investigation
- Case summary in narrative format and case recommendation
- In-built correlation and scoring algorithms
- Exploration of the financial crimes global-graph using an interactive and visual graph explorer tool
- Integrates fully with Oracle Financial Crimes Application Data and external data sources such as watchlist and company hierarchy data and is readily usable across the enterprise financial crimes data lake
- Built on Oracle Financial Service Crime and Compliance Studio which includes a highly scalable in-memory Oracle Graph Analytics Engine (PGX), AI and machine learning.
- Utilizes proven Enterprise Financial Crimes Graph model which accelerates financial crime investigation use cases

3 Getting Started

This chapter introduces you to the OFS IH application and provides the information required to use the application.

This chapter includes the following sections:

- [Investigation Hub Folder](#)

3.1 Investigation Hub Application Access

To access the Investigation Hub application, perform the following steps:

1. Enter the Studio application URL in your browser in the following format:

`http://<HOST_NAME>:7008`

The Studio Login page is displayed as shown in [Figure 1](#).

Figure 1: Studio Login Page



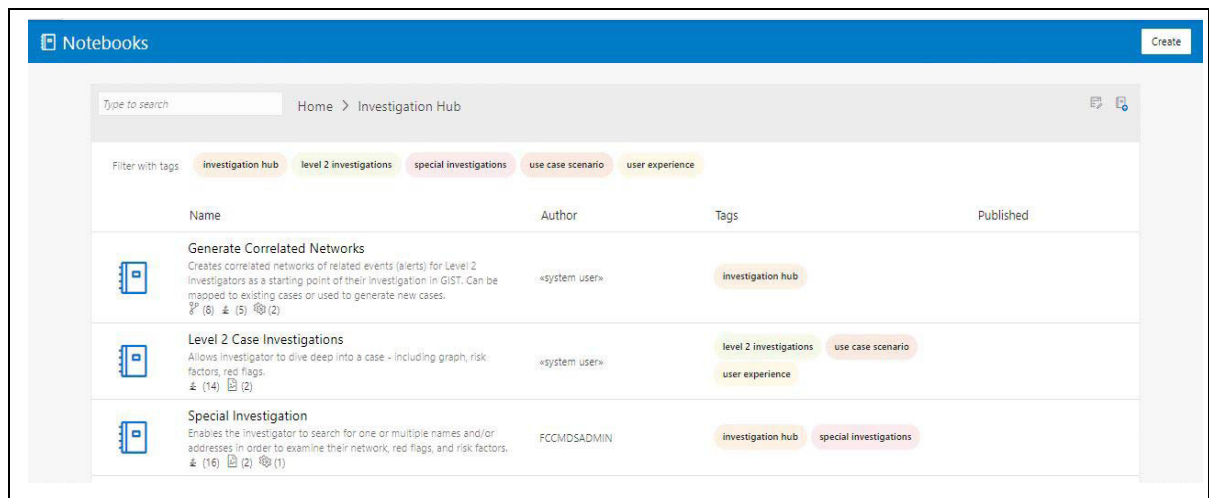
2. Enter the **Username** and **Password**.
3. Click **Login**.

The Studio page is displayed. Click **Investigation Hub** folder. For more information, see the [Investigation Hub Folder](#).

3.2 Investigation Hub Folder

The **Investigation Hub** folder displays the Notebooks that are mapped to the role of the logged-in user and also displays the details of each Notebook, such as Notebook name, Notebook details, date when the Notebook is published, and related tags. The Detailed Information section includes the date and time of Notebook creation, the number of compilations performed using different interpreters in a Notebook, and the username of the Notebook creator. The **Investigation Hub** folder is as shown in [Figure 2](#).

Figure 2: Investigation Hub Folder



3.3 Investigation Hub Notebooks

A Notebook is a collection of paragraphs and acts as a container to hold one or more paragraphs. Paragraph is a piece of code that can be executed to obtain result. The following seeded notebooks of the Investigation Hub application are provided for Investigator:

- **Special Investigation:** Enables the investigator to search for one or multiple names and/or addresses to examine the network, red flags, and risk factors.
- **Level 2 Case Investigations:** Allows the investigator to explore a case - including graph, risk factors, and red flags.

NOTE

An Administrator can configure the parameters for Investigation using the Special Investigation notebook.

4 Investigating Business Entity

The investigation of a case is performed based on the transaction of customers (business entities) using the **Special Investigation** notebook.

Here, you can search the graph nodes that includes business entities (customers, address, and so on), events and external entities. After searching the graph node, you can investigate the network of that node. Business entity network shows the connection of an entity with other entities based on correlation. For more information, see Appendix A in the [Oracle Financial Services Investigation Hub Administration and Configuration Guide](#).

This chapter includes the following topics:

- [Cloning of a Notebook](#)
- [Initializing the Investigation](#)
- [Searching for a Business Entity](#)
- [Viewing the Entity Summary Historical Report](#)
- [Viewing the Graph Result of the Entity Search](#)
- [Viewing the Reference Data Sources](#)
- [Viewing the Risk Factors Details](#)
- [Viewing the Red Flag Details](#)
- [Viewing the Transactions Analysis](#)
- [Viewing the Summary of Case Findings](#)
- [Viewing the Network Disposition Score](#)
- [Viewing the Network Disposition Score Breakdown](#)
- [Viewing the Investigation Recommendation](#)

4.1 Cloning of a Notebook

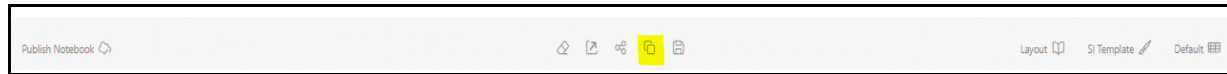
Investigation Hub application is packaged with the seeded notebooks. An administrator shares the notebook with the users (investigators) and users must make a copy of the notebook using the Cloning option and start using that notebook for investigation.

The Clone option is used to create a copy of a Notebook. All paragraphs in the current Notebook are replicated in the new Notebook. The cloned Notebook is created with the default name, Copy of <Current Notebook Name>.

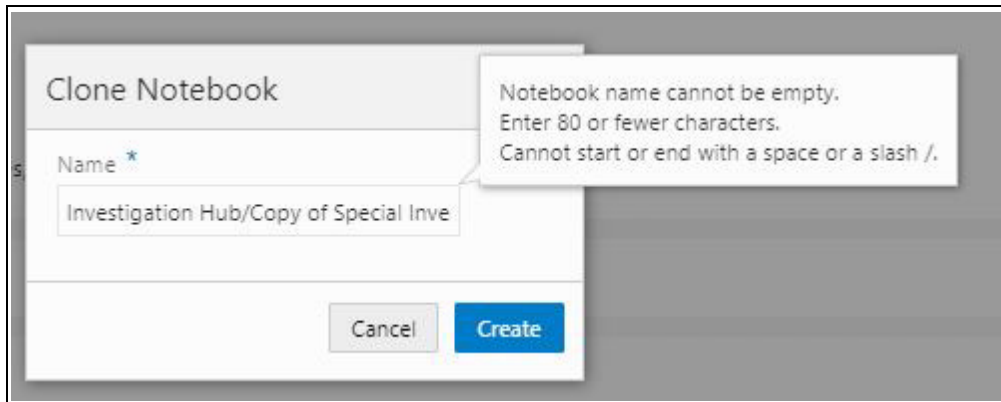
NOTE The default notebooks will be provided and you can clone them as required.

To clone a notebook

1. Navigate to the Investigation Hub application page.
2. Navigate to **the Special Investigation** notebook.
3. Click Clone from the tool bar on the top of notebook.



4. Enter the name of new notebook and click **Create**. A confirmation message is displayed.



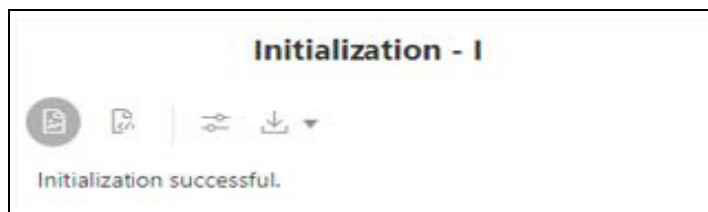
4.2 Initializing the Investigation

Before you investigate a case, you must initialize the graph for the relevant customer (business entity). The **Initialization - I** paragraph allows you to define the conditions in program code view the filtered other paragraphs.

To initialize the graph, perform the following steps:

1. Navigate to the Investigation Hub home page.
2. Navigate to the **Special Investigation** notebook.

Figure 1: Initializing the Paragraph



3. Execute the **Initialization - I** and **Initialization - II** paragraphs.

4.3 Searching for a Business Entity

You can search for FCDM entity (customer, account), derived entity or address or an event or external entity in the graph to find the similar match.

1. Navigate to the **Input Search Results** paragraph.

Figure 2: Input Search Results Paragraph

Input Search Results

Tax Id

Date

2002-03-04

Name

Use date

No

Address

B1901 HOLIDAY INN TOWERS SUITE

Empty the existing entities list

Yes

2. Enter the following search criteria in the **Input Search Results** paragraph:

Table 1: Input Search Results

Field	Description
Tax ID	Tax ID of the entity (for example, customer tax ID). You must enter the complete Tax ID to get the exact search result.
Name	Name of the entity (for example, customer name). This filters the names by the title of the business entity that matches the search criteria.
Address	Address of the customer.
Date	Date when a business entity (for example, customer name) performed a transaction. You must enter the complete date to get the exact match during the search result. The date format must be in DD/MM/YYYY.
Use Date	Allows you to enable or disable the Date field.
Empty the Existing Entities List	Select Y if u want to continue with the existing Search list. The searched items are added in the existing Search list. Select N to view the search results in the new Search list.

To reset the searched entities list, use the **Empty the Existing Entities List** drop-down.

3. Execute the **Input Search Results** paragraph.

The matched results will display in **the Input Search Results** paragraph.

Figure 3: Search Results Paragraph

Tax ID	Name	Address	Date
	Jennifer name		
Page 1 of 1 (1 of 1 items) < 1 > »			

4.4 Viewing the Initial Screening Results

This paragraph allows you to define the result display conditions for Input Search paragraph.

Table 2: Initial Screening Results

Field	Description
Top Critical Matches	The value to decide how many matches you want to view in the search result output.
Sources	The source can be Internal-Only or All. If Internal-Only is selected, then the search result displays only the internal FCDM data. All option displays search result for the internal data along with the external data.
Number of Hops to Pre-Fetch	The number of hops that the search result graph can be expanded up to.
Number of Hops to Display	The number to decide how many hops must be displayed in the search result graph.

Figure 4: Initial Screening Results

The screenshot displays the 'Initial Screening Results' interface. At the top, there are four input fields: 'Top Critical Matches' (set to 50), 'Sources' (a dropdown menu set to 'Internal Only'), 'Number of Hops to Pre-Fetch' (set to 3), and 'Number of Hops to Display' (set to 1). Below these fields is a search bar with the placeholder text 'Type to search'. Underneath the search bar is a table with five columns: 'Match_Name', 'Match_Address', 'Match_TaxId', 'Match_Date', and 'Match_Sour'. The table contains two rows of data:

Match_Name	Match_Address	Match_TaxId	Match_Date	Match_Sour
SOLE INVESTMENTS LIMITED	1900 HOLIDAY INN TOWERS SUITE 904 APT 5 SECTION 5 AREA 5 GRID 5	:S	2015-12-10	FCDM
Champion Fame Limited	1900 HOLIDAY INN TOWERS SUITE 988 APT 89 SECTION 89 AREA 89 GRID 89	:S	2003-05-07	FCDM

4.5 Viewing the Entity Summary Historical Report

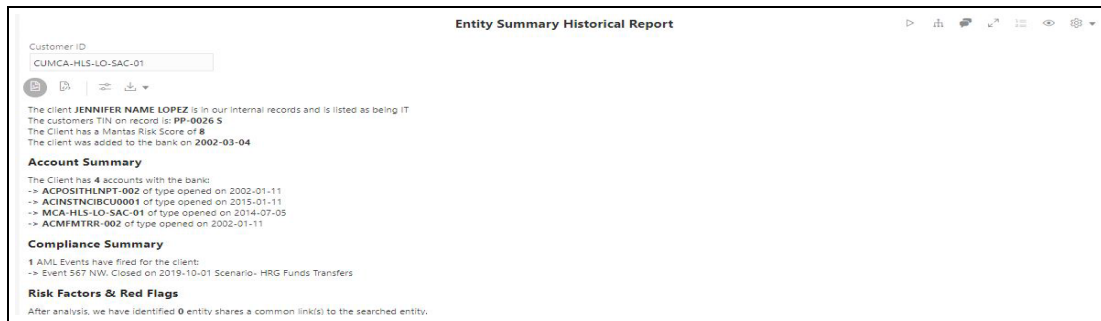
Enter the customer id in **Customer ID** field of **Entity Summary Historical Report** paragraph and execute the paragraph. You can get the customer id from **Initial Screening Results** or **Input Search Results** paragraph.

The Entity Summary Historical Report paragraph allows you to view the historical summary (in text format) of the searched customer ID. This information includes the following parameters: Account Summary, Compliance Summary, Risk Factor, and Red Flags.

For more information on Account Summary, Compliance Summary, Risk Factor and Red Flags, see the Configuring Parameters section.

To view the historical summary of entity, navigate to Entity Summary Historical Report paragraph. Figure 5 shows the sample of historical summary of an entity.

Figure 5: Entity Summary Historical Report



4.6 Viewing the Graph Result of the Entity Search

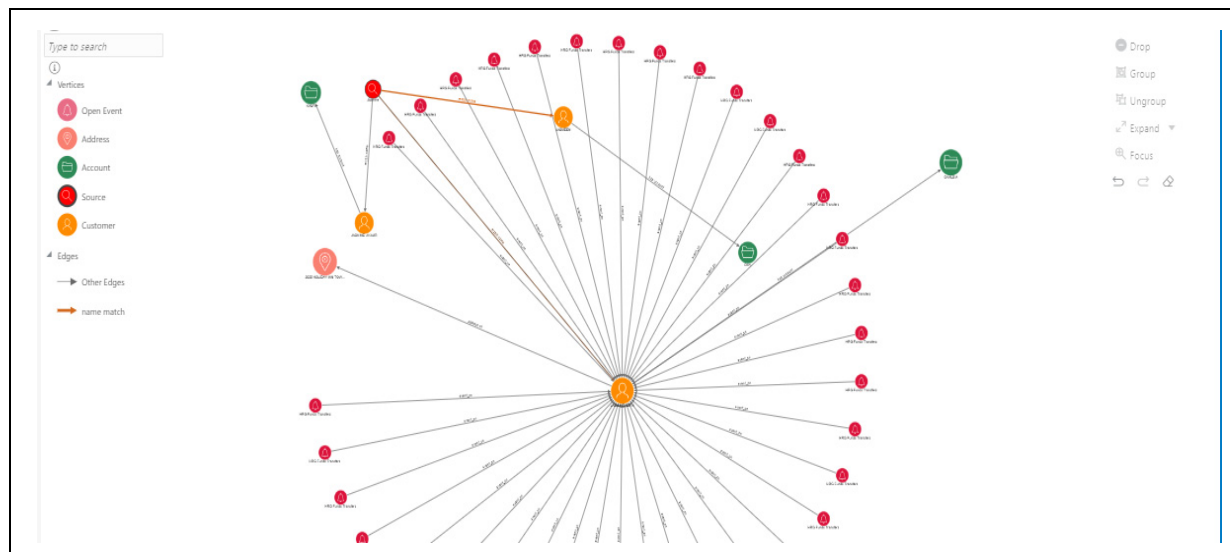
This paragraph allows you to view the network graphical representation of the searched entity that was displayed in the Entity Search paragraph.

A typical network graph shows nodes and links. Nodes are entities such as a customer or account. Each node can join to zero, one or many other nodes via a link. Each type of node is associated with a specific icon on the graph. Table 1 describes the icon displayed on the graph for each type of node. For example, for a customer entity, the links of the customer are displayed with other customers, accounts and so on.

To view the graph result of the entity search, navigate to **Graph Result of Entity Search** paragraph. The graphical view is displayed in Graph Result of Entity Search paragraph.

Figure 6 shows the sample graph.

Figure 6: Graph Details



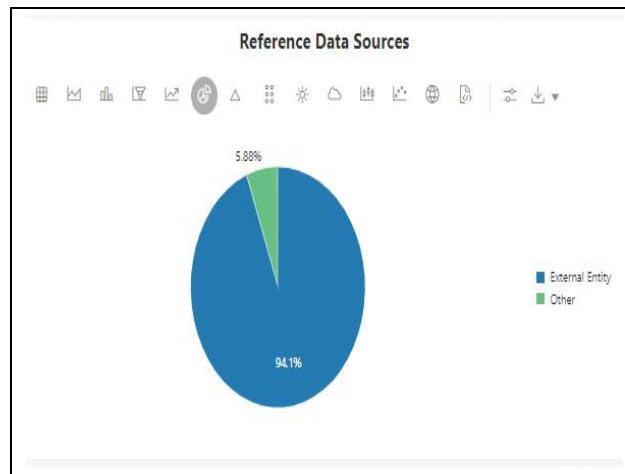
You can perform many actions on a graph. For more information, see the [Graph Details](#).

4.7 Viewing the Reference Data Sources

This paragraph shows the reference data of the searched entity with other associated entities in a pie chart format.

To view the reference data sources, navigate to **Reference Data Sources** paragraph. Figure 7 shows the sample reference data source details.

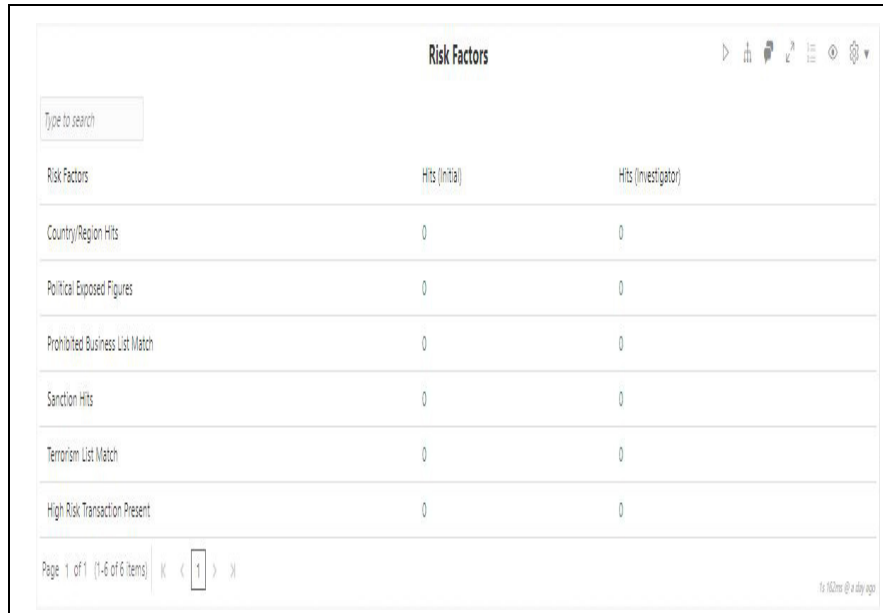
Figure 7: Reference Data Source Details



4.8 Viewing the Risk Factors Details

This paragraph shows the risk factor details of the searched entity with other associated entities. You can also search for a specific risk factor. For more information, see the [Configuring Risk Factors](#) section in [Oracle Financial Services Investigation Hub Administration and Configuration Guide](#).

To view the risk factor details, navigate to Risk Factor paragraph. Figure 8 shows the sample risk factor details.

Figure 8: Risk Factor Details

Type to search		
Risk Factors	Hits (Initial)	Hits (Investigator)
Country/Region Hits	0	0
Political Exposed Figures	0	0
Prohibited Business List Match	0	0
Sanction Hits	0	0
Terrorism List Match	0	0
High Risk Transaction Present	0	0

Page 1 of 1 (1-6 of 6 items) 1 10 items @ a day ago

4.9 Viewing the Red Flag Details

This paragraph shows the red flag details of the searched entity with associated entities. You can search for a specific risk factor. For more information, see the [Configuring Red Flags](#) section in [Oracle Financial Services Investigation Hub Administration and Configuration Guide](#).

To view the red flag details, navigate to Red Flags paragraph. Figure 9 shows the sample red flag details.

Figure 9: Red Flag Details

Type to search		
Red Flags	Hits (Initial)	Hits (Investigator)
Shell companies owned/controlled by Russian UBOs	0	0
Entities with SARs filed related to FRITTH	0	0
Entities who are Oligarchs or political figures	0	0
Transactions with payer in risky country and beneficiary in tax haven	0	0
Accounts interacting with sanctioned Russian banks and entities	0	0

Page 1 of 1 (1-5 of 5 items) 1 10 items @ a day ago

4.10 Viewing the Transactions Analysis

This paragraph shows all the transactions performed by the searched entity. You can view these transactions in various formats.

The screenshot shows the 'Transaction Analysis' interface. It includes two input fields for 'Min Transaction Amount' (set to 0) and 'Max Transaction Amount' (set to 100000000). Below these are icons for a pie chart, a bar chart, and a download arrow. At the bottom, a table header is visible with columns: Account_A, ID_A, Risk_A, Transaction_ID, Transaction_Type, Transaction_Amount, Transaction_Currency, Transaction_Date, Transaction_Risk, Account_B, ID_B, and Risk_B.

To view the transaction details, navigate to the Transaction Analysis paragraph.

4.11 Viewing the Summary of Case Findings

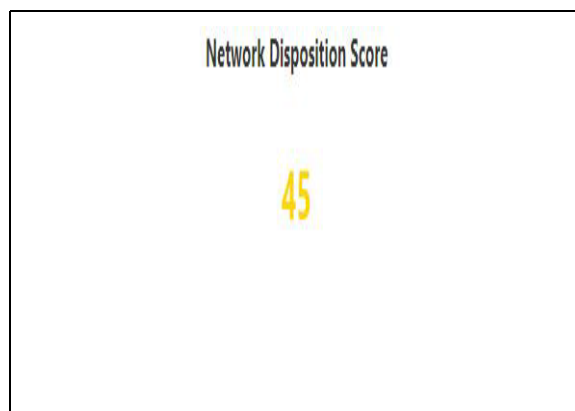
This paragraph shows the details of the case associated with the searched entity.

To view the summary of associated case, navigate to Case Findings Summary paragraph.

The screenshot shows the 'Investigation Case Summary' interface. It has a section titled 'Investigative Summary' with the text 'This investigation identified 1 internal involved parties:'. Below this, it lists '1. JENNIFER NAME LOPEZ - Risk Score 1' and 'Address:'. A list of addresses follows, each preceded by a right-pointing arrow: A1901 HOLIDAY INN TOWERS SUITE 11352 APT 453 SECTION 453 AREA 453 GRID 453, A1901 HOLIDAY INN TOWERS SUITE 11358 APT 459 SECTION 459 AREA 459 GRID 459, A1901 HOLIDAY INN TOWERS SUITE 11366 APT 467 SECTION 467 AREA 467 GRID 467, A1901 HOLIDAY INN TOWERS SUITE 11372 APT 473 SECTION 473 AREA 473 GRID 473, A1901 HOLIDAY INN TOWERS SUITE 11378 APT 479 SECTION 479 AREA 479 GRID 479, A1901 HOLIDAY INN TOWERS SUITE 11384 APT 485 SECTION 485 AREA 485 GRID 485, A1901 HOLIDAY INN TOWERS SUITE 11393 APT 494 SECTION 494 AREA 494 GRID 494, A1901 HOLIDAY INN TOWERS SUITE 11399 APT 500 SECTION 500 AREA 500 GRID 500, A1901 HOLIDAY INN TOWERS SUITE 11405 APT 506 SECTION 506 AREA 506 GRID 506, and A1901 HOLIDAY INN TOWERS SUITE 11411 APT 512 SECTION 512 AREA 512 GRID 512.

4.12 Viewing the Network Disposition Score

This paragraph shows the network disposition score of the searched entity.

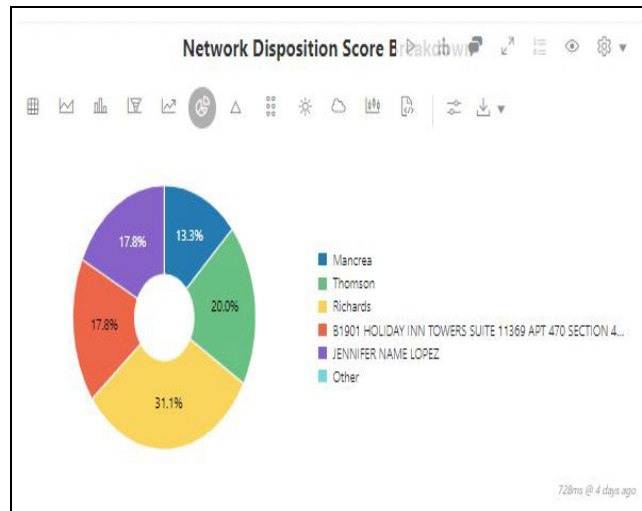


For more information, see the Configuring Network Disposition section in [Oracle Financial Services Investigation Hub Administration and Configuration Guide](#).

To view the network disposition score, navigate to the Network Disposition Score paragraph.

4.13 Viewing the Network Disposition Score Breakdown

This paragraph shows the details of network disposition score of the searched entity.



For more information, see the Configuring Network Disposition section in [Oracle Financial Services Investigation Hub Administration and Configuration Guide](#).

To view the network disposition score breakdown, navigate to Network Disposition Score Breakdown paragraph.

4.14 Viewing the Investigation Recommendation

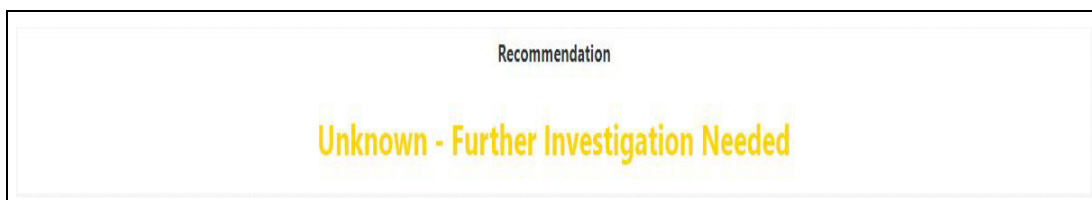
After the case investigation is performed and based on the scores, the recommendation for the case is displayed in the Recommendation section.

The Investigator can investigate the case details and take the further action.

For more information, see the Configuring Investigation Recommendation Score section in [Oracle Financial Services Investigation Hub Administration and Configuration Guide](#).

To view the investigation recommendation, navigate to **Recommendation** paragraph.

Figure 10: Viewing the Investigation Recommendation



Following is the criteria for recommendation:

- If the investigation score is between 25 to 51, the case status is displayed as **Unknown - Further Investigation Needed**.
- If the investigation score is between 50-76, the case status is displayed as **Special Investigation Needed**.
- If the investigation score is greater than 76, the case status is displayed as **Consider Escalation**.

An Investigator can print or save the notebook after viewing the investigation recommendation. Use Export to PDF option to save the notebook. For more information, see [Exporting a Notebook](#) section.

5 Investigating a Case

The comprehensive investigation details of a case are performed using the Level 2 Case Investigations notebook. A case passes through various statuses as part of the investigation and reaches closure through resolution actions. This notebook allows you to view and analyze correlation details, such as source correlation, linked events, and business data correlation.

This chapter includes the following sections:

- [Searching a Case](#)
- [Viewing the Case Overview](#)
- [Viewing the Focal Entity Network](#)
- [Comparing the Data](#)
- [Viewing the Investigation Recommendation](#)

5.1 Searching a Case

The Level 2 Case Investigations notebook enables you to filter the case that you want to view and analyze.

To search for a case, perform the following steps:

1. Navigate to the Investigation Hub home page.
2. Navigate to the **Level 2 Case Investigations** notebook.
3. The code of the **Graph** will be displayed in notebook as shown in Figure 1. Enter the Case ID which you want to investigate.

Figure 1: Level 2 Case Investigations

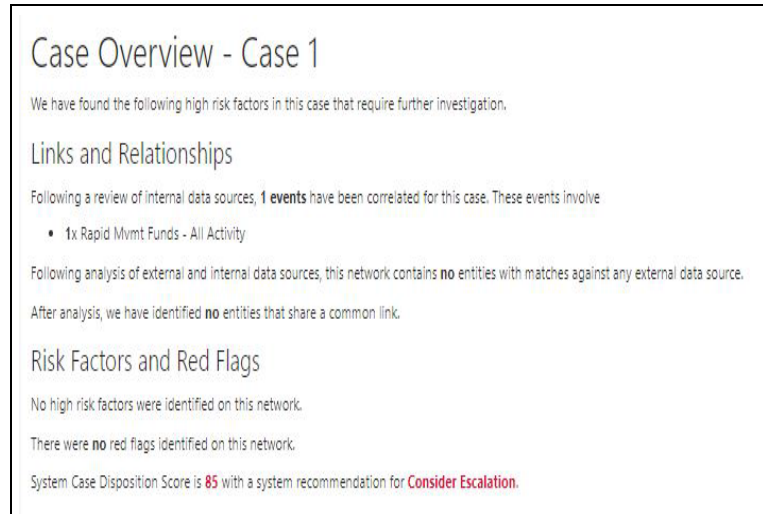


A screenshot of a search input field. The field is rectangular with a light gray border. Inside the field, the text 'Case ID' is displayed in a small, light gray font at the top left. Below it, the number '7165' is entered in a slightly larger, dark gray font. The field is set against a white background.

4. Execute the paragraph. The details of the Case ID will display.

5.2 Viewing the Case Overview

The Case Overview paragraph displays the overall details of the investigated case, such as links and relationships, risk factors and so on, as shown in Figure 2.

Figure 2: Viewing Case Overview

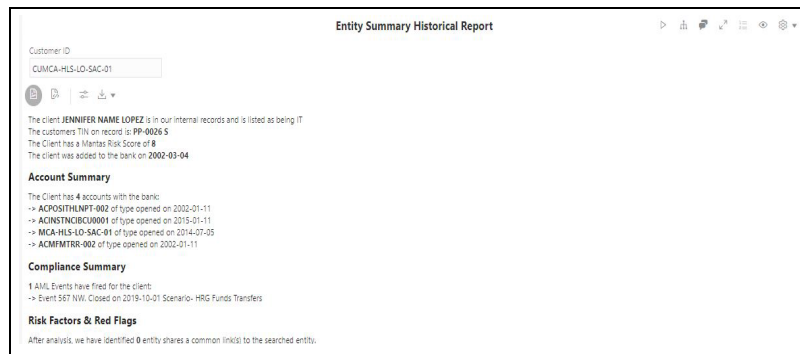
5.3 Viewing the Focal Entity Network

This paragraph shows the entity network of a case in a graphical format.

To view focal entity network, perform the following steps:

1. Navigate to the **Focal Entity Network View** paragraph.

You can perform many actions on a graph. For more information, see the [Graph Details](#).

Figure 3: Focal Entity Network View

5.4 Comparing the Data

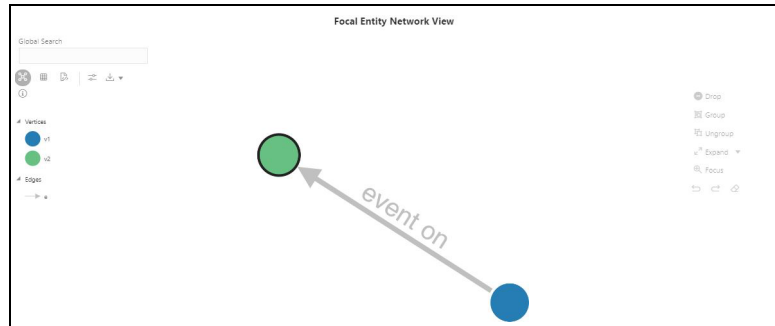
This paragraph shows the comparison of the system reference data and On-screen reference data. The system data will be based on the loaded graph. If you delete or add any node in **Focal Entity Network View** paragraph, then the data On-screen data is effected.

To compare the data, perform the following steps:

1. Navigate to the **Focal Entity Network View** paragraph. Enter **Case ID** and **Global Search** details in paragraph.

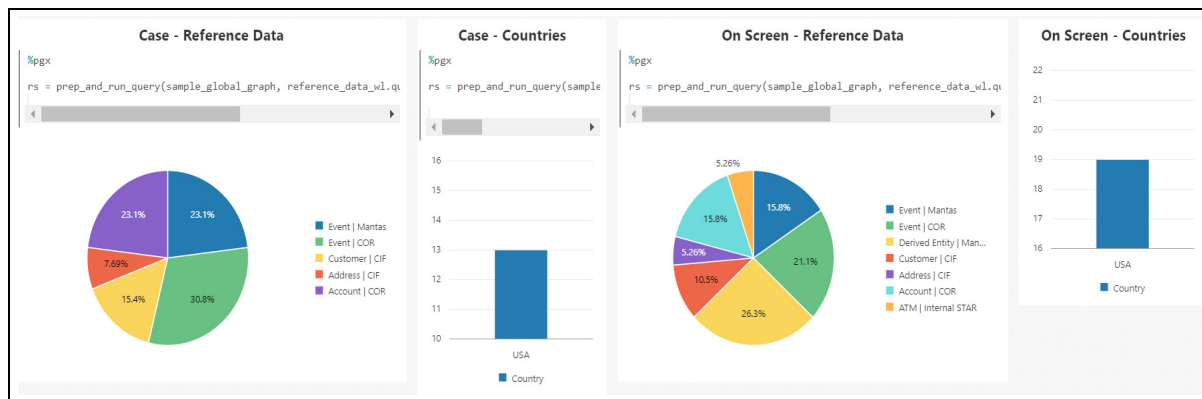
Delete the node from the **Focal Entity Network View** paragraph for which you want to view the result the on On-screen data.

Figure 4: Focal Entity Network View



After modifying the paragraphs, the comparison of reference data is displayed as shown in Figure 5.

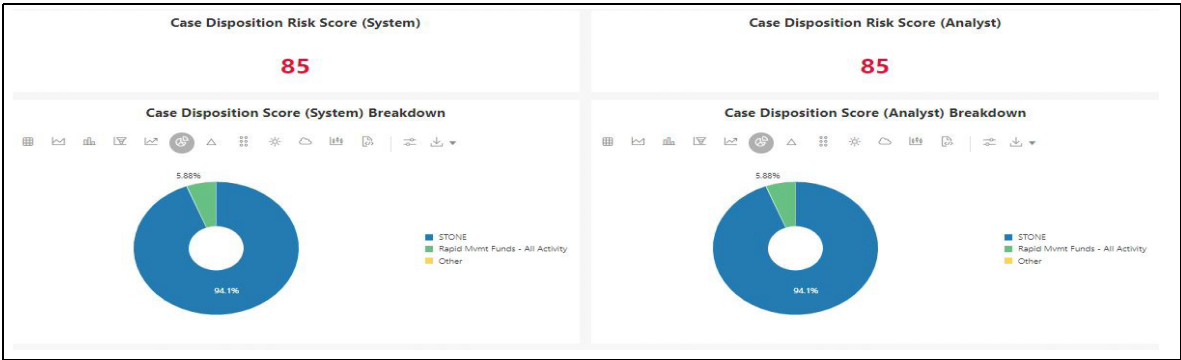
Figure 5: Comparing the Data



5.4.1 Comparing the Case Disposition Risk Score

This paragraph shows the comparison of system reference data and On-screen reference data for the case disposition risk factor.

Figure 6: Case Disposition Risk Score



5.4.2 Viewing the Comparison of Risk Factors Details

This paragraph shows the comparison of system reference data and On-screen reference data for risk factor.

For more information, see the Configuring Risk Factors section in [Oracle Financial Services Investigation Hub Administration and Configuration Guide](#).

Figure 7: Comparison of Risk Factors

Figure 7 displays a table titled 'Risk Factors' comparing hits between the System and Analyst. The table has three columns: Risk Factors, Hits (System), and Hits (Analyst). All risk factors listed show 0 hits for both the System and Analyst.

Risk Factors	Hits (System)	Hits (Analyst)
Country/Region Hits	0	0
Political Exposed Figures	0	0
Prohibited Business List Match	0	0
Sanction Hits	0	0
Terrorism List Match	0	0
High Risk Transaction Present	0	0

5.4.3 Viewing the Comparison of Red Flag Details

This paragraph shows the comparison of system reference data and On-screen reference data for red flag details.

For more information, see the Configuring Red Flags section in [Oracle Financial Services Investigation Hub Administration and Configuration Guide](#).

Figure 8: Comparison of Red Flag Details

Red Flags		
Type to search		
Red Flags	Hits (System)	Hits (Analyst)
Shell companies owned/controlled by Russian UBOs	0	0
Entities with SARs filed related to FROTH	0	0
Entities who are Oligarchs or political figures	0	0
Transactions with payer in risky country and beneficiary in tax haven	0	0
Accounts interacting with sanctioned Russian banks and entities	0	0
Page: 1 of 1 (1-5 of 5 items) < 1 >		

5.5 Viewing the Investigation Recommendation

After the case investigation is performed based on the case scores, the recommendation for the case is displayed in the Recommendation section.

This paragraph shows the investigation recommendation based on the defined case scores. These case scores are defined in the **Initialization - I** paragraph of the Special Investigation notebook.

NOTE

You must execute the notebook before viewing the investigation recommendation.

For more information, see the Configuring Investigation Recommendation in [Oracle Financial Services Investigation Hub Administration and Configuration Guide](#)

Figure 9: Viewing the Investigation Recommendation

Following is the criteria for recommendation:

- If the investigation score is between 25-51, the case status is displayed as **Unknown - Further Investigation Needed**.
- If the investigation score is between 50-76, the case status is displayed as **Special Investigation Needed**.
- If the investigation score is greater than 76, the case status is displayed as **Consider Escalation**.

An Investigator can print or save the notebook (case details) after viewing the investigation recommendation. Use Export to PDF option to save the notebook. For more information, see Exporting a Notebook section.

6 Common Features

This appendix covers the following sections:

- [Managing the Notebooks](#)
- [Managing the Paragraphs](#)
- [Managing the Results](#)

6.1 Managing the Notebooks

This section covers the following topics:

- [Common Screen Elements in Notebooks](#)
- [Exporting a Notebook](#)
- [Refreshing Session](#)
- [Deleting a Notebook](#)

6.1.1 Common Screen Elements in Notebooks

A notebook acts as a frame for Paragraphs.

This section provides you details of the common screen elements available in a Notebook using which you can perform various actions in a the Notebook.

Table 0–1 Common Screen Elements in Notebook






Button	Icon	Action/Description
Modify Notebook		Click this button to modify the details of a notebook such as name, description and/or tags.
Hide Code		Click this button to hide or show the Code Section in all the paragraphs in a notebook.
Hide Result		Click this button to hide or show the Results Section in all the paragraphs in a Notebook.
Read Only		Click this button to set the notebook to Read-only mode. Note: The notebook is protected from edit, clear result, delete, reset session, run paragraphs, and share in Read-only mode.
Write		Click this button to set the notebook to Write mode.

Table 0–1 Common Screen Elements in Notebook










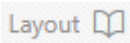
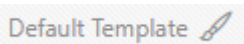
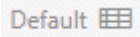

Button	Icon	Action/Description
Run Paragraphs		Click this button to execute all the paragraphs in a notebook in sequential order. For more information, see Run All Notebook Paragraphs . You can view the results in various formats. For more information, see Managing the Results .
Reset Session		Click this button to reset any connection or code executed in a notebook.
Delete Notebook		Click this button to delete a notebook.
Clear Result		Click this button to clear results for all the paragraphs in a notebook. Warning: This action clears all the results. You must run the paragraphs again to view the results.
Clear Paragraph Dependencies		Click this button to remove all defined paragraph dependencies.
Open as IFrame		Click this button to open a notebook in iFrame. This allows a notebook to be embedded inside another webpage.
Share Notebook		Click this button to share a notebook with another user, user group, or role.
Clone Notebook		Click this button to create a copy of a notebook. All paragraphs in the current notebook are replicated in the new notebook. The cloned notebook is created with the default name, Copy of <Current Notebook Name> .
Export Notebook		Click this button to export a notebook to your computer as a DNSB file.
		Click this button to set the preferred layout, Zeppelin or Jupyter.
Default Template		Click this button to apply the overall look and feel of the notebook using the default template.

Table 0–1 Common Screen Elements in Notebook

Button	Icon	Action/Description
Default View		Click this button to switch between Default, Simple, and Report views.
Show Panel		Click this button to show or hide the Paragraph Settings Bar Commands, Results Toolbar and Settings Dialog for a selected paragraph in a panel to the right of the notebook.

6.1.2 Exporting a Notebook

The Export notebook feature enables you to export notebooks available in the Investigation Hub to your local machine. Notebooks are exported in the Investigation Hub Notebook (*.pdf) file format, which can be saved, shared, or printed.

6.1.2.1 Exporting a Notebook to PDF

Export individual notebooks enables you to export selected notebooks in Investigation Hub to your local machine.

To export individual Notebooks, perform the following steps:

1. Navigate to the Investigation Hub **home** page.
2. Click the Notebook that you want to export.

The selected Notebook is opened.

3. Click **Export to PDF** icon.

The Notebook is downloaded to your local machine in **.pdf** format.

6.1.3 Refreshing Session

The Reset button allows you to refresh any connection or code executed in a notebook.

1. Navigate to Investigation Hub application home page.
2. Navigate to any notebook of application.
3. Click Refresh button.

If the refresh is successful, then a confirmation message is displayed.

6.1.4 Deleting a Notebook

1. Navigate to the Investigation Hub application home page.
2. Click the Select Notebooks icon.



The check boxes are displayed for notebooks.

3. Select the required notebooks, and click the Delete icon.



The selected notebooks are deleted.

6.2 Managing the Paragraphs

This section covers the following topics:

- [Common Screen Elements in Paragraph](#)
- [Paragraph Dependencies](#)
- [Run All Notebook Paragraphs](#)

6.2.1 Common Screen Elements in Paragraph

A paragraph is a piece of code that can be executed to obtain the result. Paragraph offers a workbench to author code or query using various interpreter friendly scripting languages supported in Investigation Hub.

This section provides the details of the common screen elements available in a paragraph using which you can perform various actions in a paragraph.

Table C–1 Elements in Paragraph Settings Bar








Button/Icon	Action/Description
Execute Paragraph 	Click this button to execute the code or query in a paragraph. After execution, you can view the result in various formats. For more information, see Managing the Results .
Enter Dependency Mode 	Click this button to add or remove dependent paragraphs. Paragraphs with dependent paragraphs is executed in the dependency order. For more information, see Paragraph Dependencies .
Comments 	Click this button to add comments to a paragraph.
Expand 	Click this button to expand a paragraph and view the paragraph in full-screen mode.

Table C-1 Elements in Paragraph Settings Bar

Button/Icon	Action/Description
Show/Hide Line Numbers 	Click this button to show or hide line numbers in the code in a paragraph. Note: This button is applicable only to the code section.
Visibility 	Click this button to manage the visibility settings in a paragraph. It controls how a paragraph may be viewed by the author and other users who have access to the notebook.
Settings 	Click this button to perform the following: <ul style="list-style-type: none">• Resize the width of a paragraph.• Change the order of placement of the paragraphs by moving them up or down.• Clear the paragraph result.• Delete a paragraph.

6.2.2 Paragraph Dependencies

The Paragraph Dependencies feature allows you to add dependencies between paragraphs. The dependents of a paragraph are automatically executed after the original paragraph itself or any graph manipulation on the original paragraph is executed.

To create paragraph dependencies, follow these steps:

1. Click the Dependency icon in the Paragraph Settings Bar of a paragraph.



The *Dependency Mode* window is displayed.

2. Select or unselect paragraphs in order to add or remove them as dependents.

The order in which the paragraphs are selected appears as a number over the selected paragraphs. The number indicates the order in which the dependent paragraphs will be executed.

3. Click **Save**.

The changes are saved. Every time a paragraph is executed or graph actions are applied, its dependent paragraphs will be executed automatically.

6.2.3 Run All Notebook Paragraphs

Paragraph is a piece of code that can be executed to obtain result. Notebook execution includes the execution of all paragraphs

You can run all the paragraphs in a notebook.

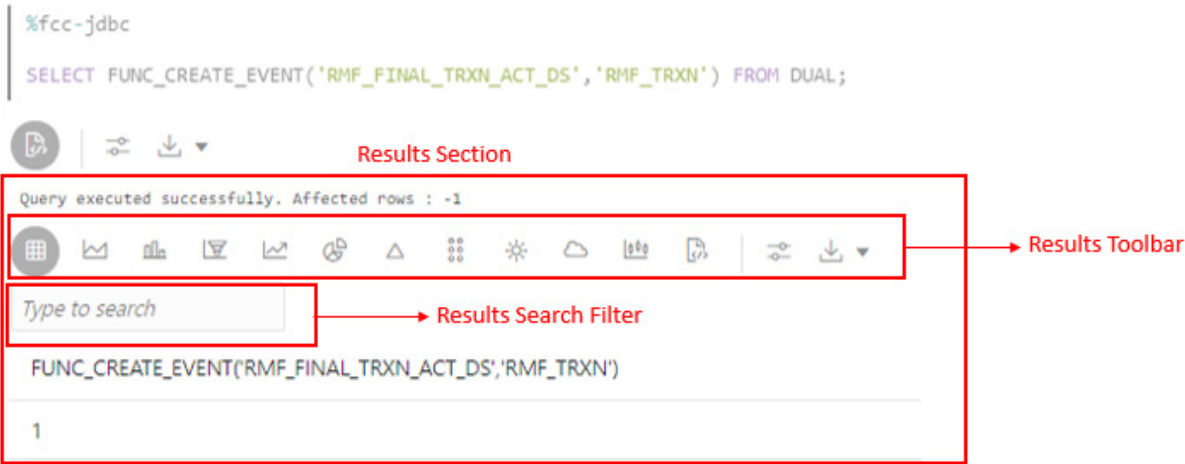
1. Click Run Paragraphs button in the Notebook Toolbar.



All the paragraphs will execute in order from top to bottom. If a paragraph was deleted during the Run Paragraphs job execution, it is ignored and paragraph execution continues for the rest of the paragraphs.

6.3 Managing the Results

After the execution of a paragraph, the result is displayed in the Results section.



This section contains the following topics:

- Result Toolbar
- Results Search Filter
- Customizing Result Settings

6.3.1 Result Toolbar

The details of the various result formats supported in Studio are given in [Table A-1](#).

Table A-1 Result Formats in Studio

	Button/Icon	Action/Description
Table Chart		Click this button to view result in tabular format.

Table A–1 Result Formats in Studio














	Button/Icon	Action/Description
Area Chart		Click this button to view result in the area chart format.
Bar Chart		Click this button to view the result in bar chart format.
Funnel Chart		Click this button to view the result in the funnel chart format.
Line Chart		Click this button to view the result in the line chart format.
Pie Chart		Click this button to view the result in the pie chart format.
Pyramid Chart		Click this button to view the result in the pyramid chart format.
TreeMap		Click this button to view the result in the tree map format.
Sunburst		Click this button to view the result in the sunburst chart format.
Tag Cloud		Click this button to view the result in the tag cloud chart format.
Box Plot		Click this button to view the result in the box plot chart format.
Text		Click this button to view the result in text format.
Settings		Click this button to customize the results based on the selected format. Enter the required values for the General, Visualization, and Text settings.

Table A–1 Result Formats in Studio

	Button/Icon	Action/Description
Download As		Click this button to download the result in the following format: <ul style="list-style-type: none">• Raw: Available for all formats.• SVG Format: Available for Graph and Visualization formats.

6.3.2 Results Search Filter

Available only in Table Format. Instantly searches for an entered value in the results.

6.3.3 Customizing Result Settings

To customize the result format:

1. Navigate to the Notebooks page.
2. Click the required result format for a paragraph in the Result section and then click the Settings icon:



The Settings window is displayed and contains the following category:

- General
 - Visualization
 - Text
3. Select a category and enter the required values for that category.
The result is customized as per the entered values.

7 Graph Details

7.1 Working with Graph Nodes

This appendix covers the following topics:

- [Repositioning Nodes](#)
- [Collapsing and Expanding Nodes](#)
- [Viewing the Node Details](#)
- [Deleting a Node](#)

7.1.1 Repositioning Nodes

The Network Graph page allows you to move nodes around the screen, using the drag and drop feature, to reposition them.

To reposition nodes, perform the following steps:

1. Navigate to the Network Graph in a notebook.
2. Select a node to reposition and click it.
3. Drag and Drop the node to the required position.

NOTE

The graph only uses a specific portion of the browser window to display the graph. Dragging a node beyond a certain point towards the right side of the browser hides the portion of the graph dragged beyond that point. However, you can use the Zoom Out feature on the Graph Toolbar to view the hidden portion again.

7.1.2 Collapsing and Expanding Nodes

This option allows you to hide all outgoing links and nodes to which these outgoing links are connected from the node being collapsed. The collapsed node remains on the graph and the node icon changes to indicate that the node is in a collapsed state. To collapse nodes, follow these steps.

1. Navigate to the Network Graph in a notebook.
2. Select a node to collapse and right-click the node. An option menu is displayed.

3. Select the Collapse option from the menu. The outgoing links are hidden on the page.

NOTE

If any child node has at least one incoming link from any other node, the child node and its child network are not collapsed. But the link from the collapsed node to the child node is hidden and the icon of the collapsed node changes to indicate that the node is in a collapsed state.

On the Node menu of a collapsed node, the Collapse option changes to Expand. If the user collapses a node but there is no impact on the graph (that is, if no part of the graph is hidden), the Node menu remains unchanged. There is no restriction on how many nodes can be collapsed on a graph.

4. To expand the node, select Expand from the menu. The outgoing links are then restored on the page. Note: The Collapse option does not appear for outer nodes. Outer nodes are nodes that do not have any outgoing links.

7.1.3 Viewing the Node Details

This section allows you to view the current information associated with the selected node. This is the same information that is displayed on the Entity Summary Historical Report paragraph for this entity.

To view the node details, follow these steps:

1. Navigate to the Network Graph in a notebook.
2. Select a node and right-click. An option menu is displayed. The Node Details window is displayed with the current information associated with the selected node. This includes the **Properties** and **Risk details** of the node.

7.1.4 Deleting a Node

You can drop a node to view the result on On-screen data. To delete a node, perform the following steps:

1. Navigate to the Network Graph in a notebook.
2. Right-click on any node as shown in the below figure and click **Drop**.

