Oracle Financial Services Investigation Hub

User Guide

Release 8.0.8.2.0

January 2021

F28095-01

ORACLE
Financial Services

Oracle Financial Services Investigation Hub User Guide

Document Control

The following table provides the version control details of the document.

Table 1: Document Control

Version Number	Revision Date	Changes Done
8.0.8.0.0	Created: September 2020	Quantifind Risk Reports for your Investigation, For more information see, Quantifind Risk Report.
8.0.7.4.0	Created: April 2020	Updated to investigate ECM cases using Investigation Hub. For more information, see Investigating ECM Cases Using Investigation Hub.
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 table records the number of revisions or changes done to this document as part of a release. The version control specifies that the document is last updated as part of the v8.0.8.0.0 release in August 2020.

Table of Contents

1 Preface

This section provides the functional and navigational information about the Oracle Financial Services Investigation Hub (OFS IH) application.

Topics

1.1 Summary

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

1.2 Audience

The Oracle Financial Services Investigation Hub 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 the 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 following table lists the conventions used in this document.

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.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.

Table 1: Conventions Used in This Guide

Convention	Meaning
`monospace`	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 following table lists the abbreviations used in this document.

Table 2: Abbreviations Used in This Guide

Abbreviation	Meaning
FCC	Financial Crime and Compliance
OFSAA	Oracle Financial Services Analytical Applications
SQL	Structured Query Language
IH	Investigation Hub
ECM	Enterprise Case Management

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 generate case narratives and insights, highlights risk factors, and red flags which are meaningful to the investigation and recommend 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 the 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.

Topics:

3.1 Investigation Hub Application Access

To access the Investigation Hub application, follow these 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**.

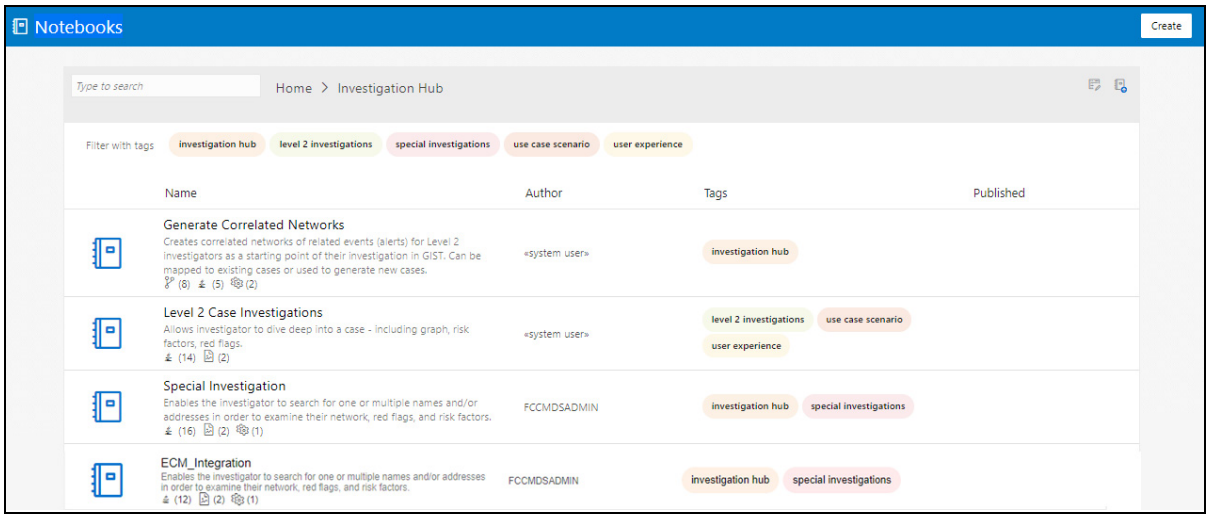
   The Studio page is displayed. Click the **Investigation Hub** folder. For more information, see the Investigation Hub Folder.

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. A Paragraph is a piece of code that can be executed to obtain a result. The following seeded notebooks of the Investigation Hub application are provided for Investigators:

- **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.
- **ECM Integration:** Enable Case Investigators to access additional rich information about a case such as, case summary, a detailed narrative about case entities, graph view of a case, and so on, which is otherwise not available in ECM.

> **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 include business entities (customers, address, and so on), events, and external entities. After searching the graph node, you can investigate the network of that node. The 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*.

Topics:

4.1 Cloning of a Notebook

The 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.

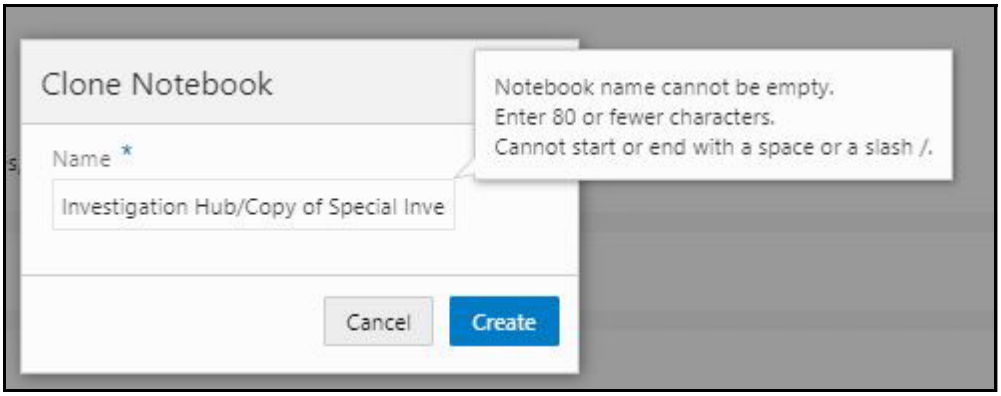
To clone a notebook, follow these steps:

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

Figure 1: Clone Notebook Icon

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

Figure 2: Clone Notebook Window



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 the program code view the filtered other paragraphs.

To initialize the graph, follow these steps:

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

Figure 3: Initializing the Paragraph

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

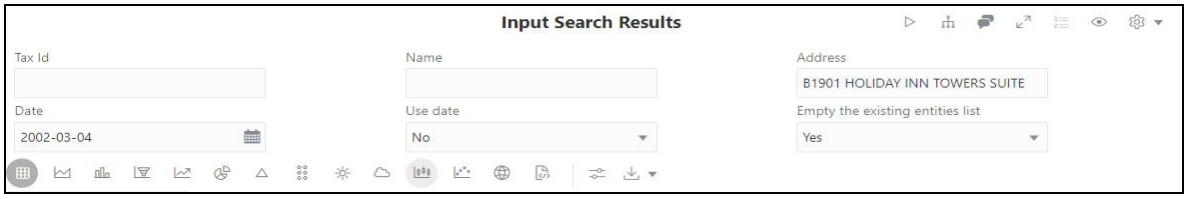
4.3 Searching for a Business Entity

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

To search for an entity, follow these steps:

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

Figure 4: Input Search Results Paragraph



2. Enter the search criteria in the **Input Search Results** paragraph as described in the following table.

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 to 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 5: Input Search Results Paragraph

4.4 Viewing the Initial Screening Results

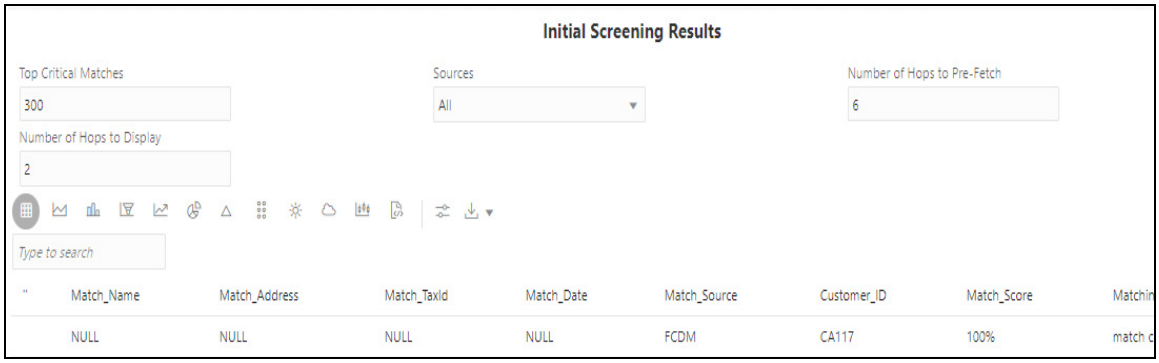
The Initial Screening Results paragraph allows you to define the conditions based on which the initial screening results are filtered and fetched.

The following table describes the conditions to be defined based on which the initial screening results are displayed.

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 6: Initial Screening Results



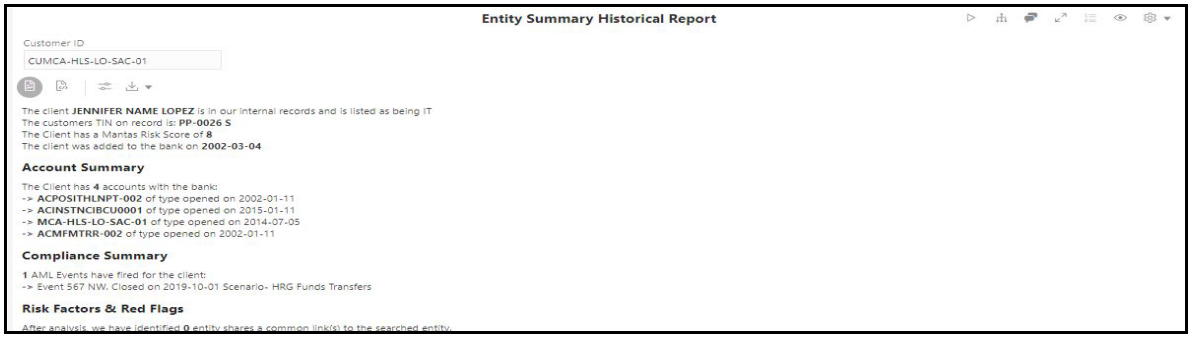
4.5 Viewing the Entity Summary Historical Report

Enter the customer ID in the **Customer ID** field of the **Entity Summary Historical Report** paragraph and execute the paragraph. You can get the customer ID from the **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.

To view the historical summary of an entity, navigate to Entity Summary Historical Report paragraph. Figure 7 shows a sample of the historical summary of an entity.

Figure 7: Entity Summary Historical Report



4.6 Viewing the Graph Result of the Entity Search

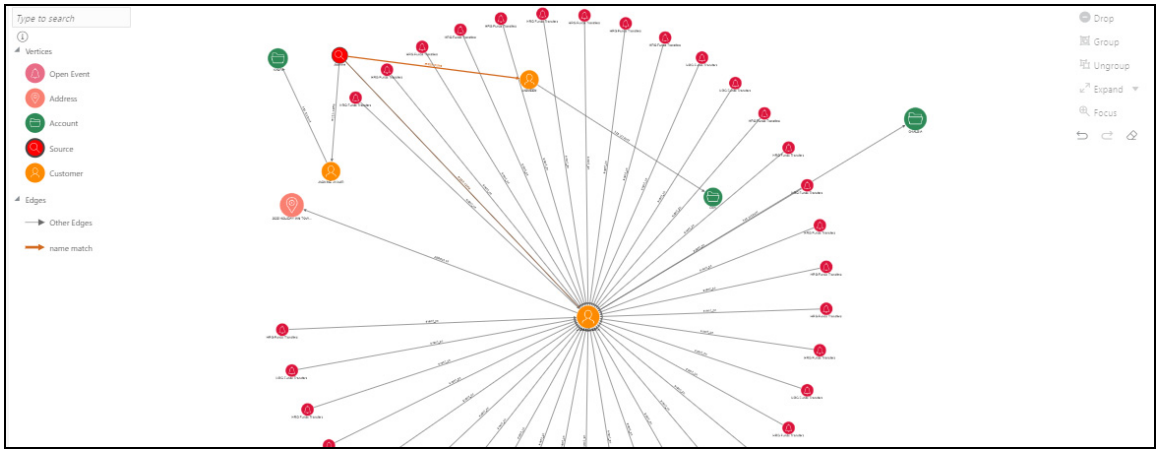
This paragraph allows you to view the network graphical representation of the searched entity that was displayed in the Entity Search paragraph.

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 the Graph Result of Entity Search paragraph.

Figure 8 shows the sample graph.

Figure 8: Graph Result of the Entity Search Paragraph



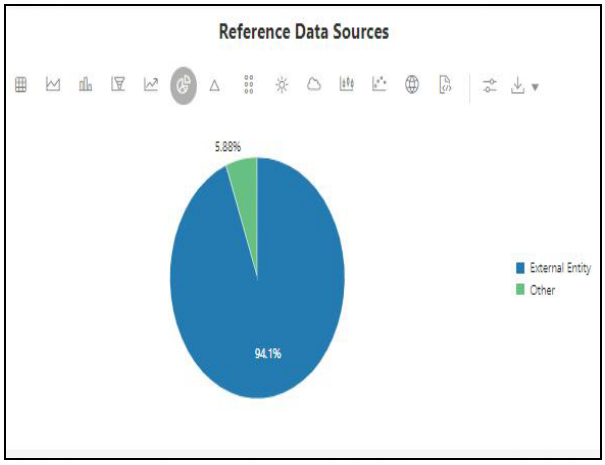
You can perform many actions on a graph. For more information, see the Graph Details.

4.7 Viewing the Reference Data Sources

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

To view the reference data sources, navigate to the **Reference Data Sources** paragraph. Figure 9 shows the sample reference data source details.

Figure 9: Reference Data Source Details Paragraph



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 the *Oracle Financial Services Investigation Hub Administration and Configuration Guide*.

To view the risk factor details, navigate to the Risk Factor paragraph. Figure 10 shows the sample risk factor details.

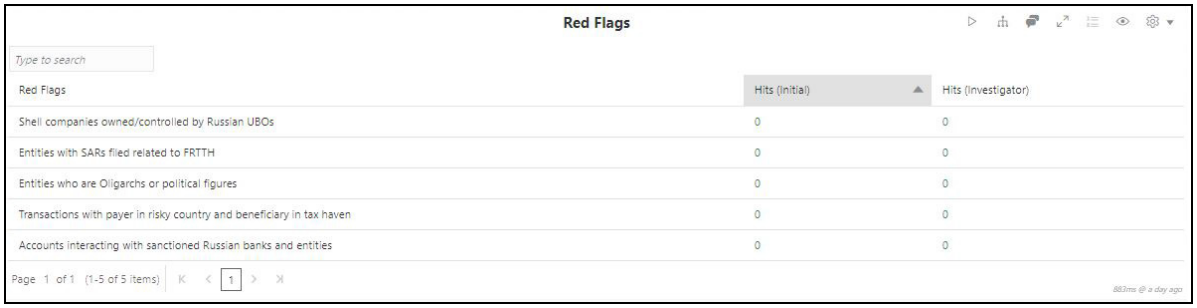
Figure 10: Risk Factor Details

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 the *Oracle Financial Services Investigation Hub Administration and Configuration Guide*.

To view the red flag details, navigate to the Red Flags paragraph. Figure 11 shows the sample red flag details.

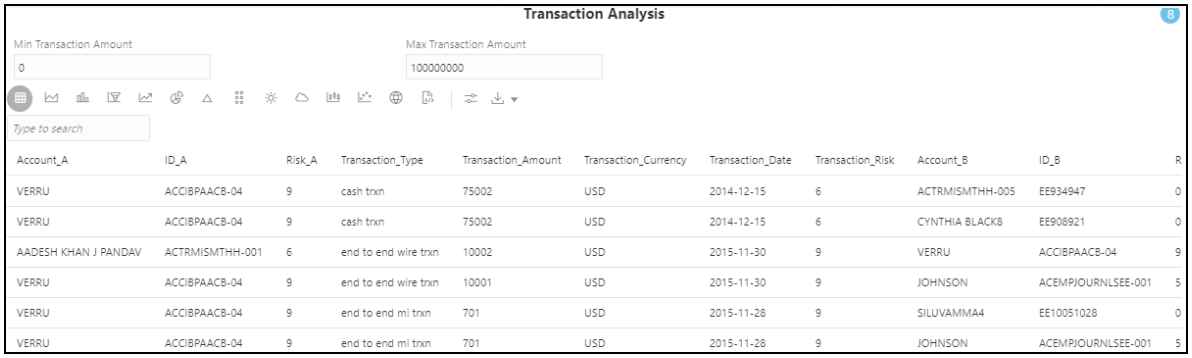
Figure 11: Red Flag Details



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.

Figure 12: Transaction Analysis Paragraph Details



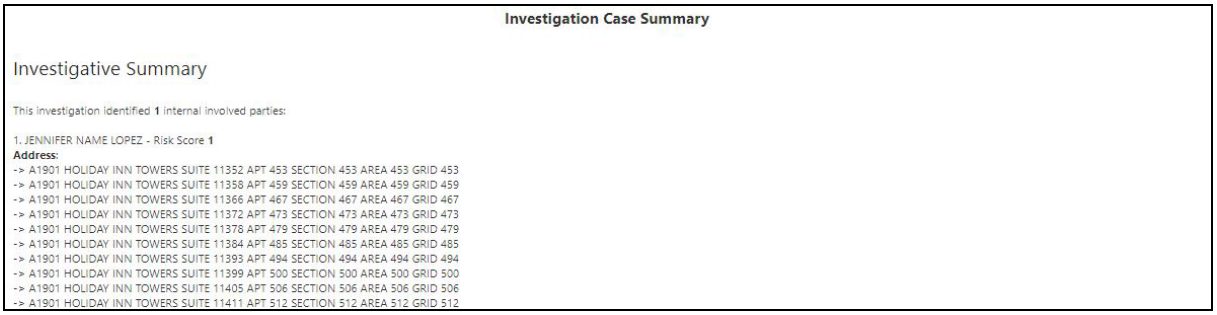
To view the transaction details, navigate to the Transaction Analysis paragraph.

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 the associated case, navigate to Case Findings Summary paragraph.

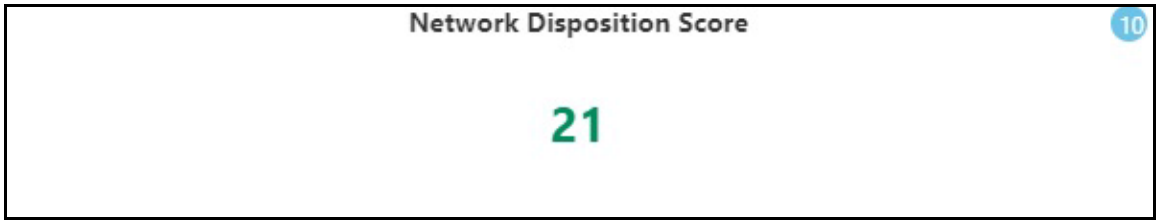
Figure 13: Investigation Case Summary Paragraph Details



4.12 Viewing the Network Disposition Score

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

Figure 14: Network Disposition Score Details



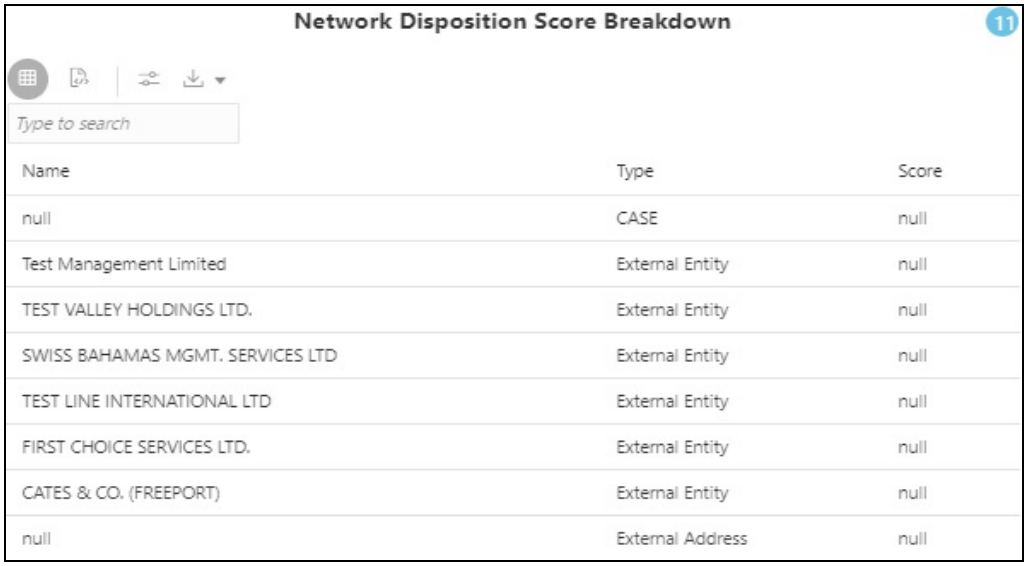
For more information, see the Configuring Network Disposition section in the *Oracle Financial Services Investigation Hub Administration and Configuration Guide*.

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 the network disposition score breakdown of the searched entity.

Figure 15: Network Disposition Score Breakdown Details



For more information, see the Configuring Network Disposition section in the *Oracle Financial Services Investigation Hub Administration and Configuration Guide*.

To view the network disposition score breakdown, navigate to the 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 paragraph.

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

For more information, see the Configuring Investigation Recommendation Score section in the *Oracle Financial Services Investigation Hub Administration and Configuration Guide*.

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

Figure 16: 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 the Export to PDF option to save the notebook. For more information, see Exporting a Notebook.

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.

Topics:

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, follow these steps:

1. Navigate to the Investigation Hub home page.
2. Navigate to the **Level 2 Case Investigations** notebook.

   The code of the **Graph** will be displayed in a notebook as shown in Figure 1

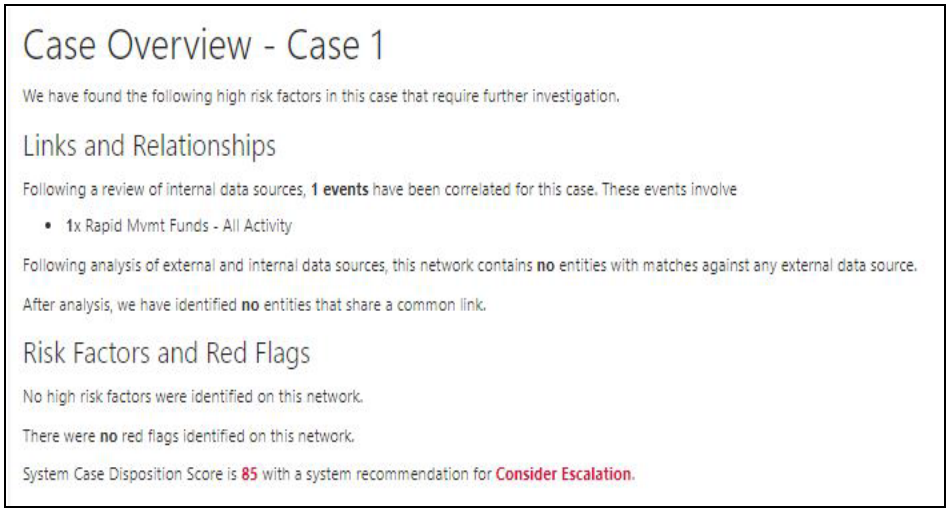
Figure 1: Level 2 Case Investigations

3. Enter the Case ID which you want to investigate.
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

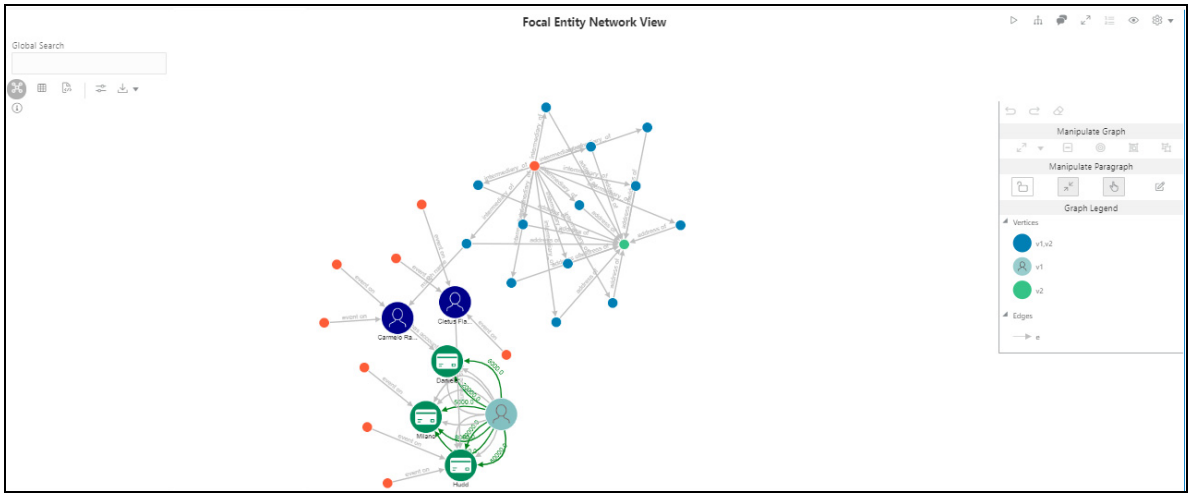
This paragraph shows the focal entity network of a case in a graphical format.

To view the focal entity network, follow these 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 section.

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 is based on the loaded graph. If you delete or add any node in the **Focal Entity Network View** paragraph, then the On-screen data is affected.

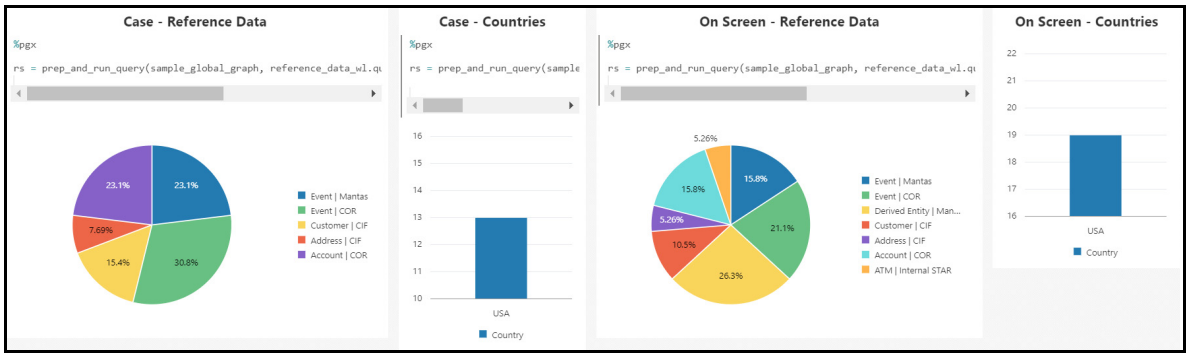
To compare the data, follow these steps:

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

2. Enter the Case ID and Global Search details in the paragraph.
3. Delete the node from the **Focal Entity Network View** paragraph for which you want to view the On-screen data.

   After modifying the paragraphs, the comparison of reference data is displayed as shown in Figure 4.

Figure 4: Compare 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.

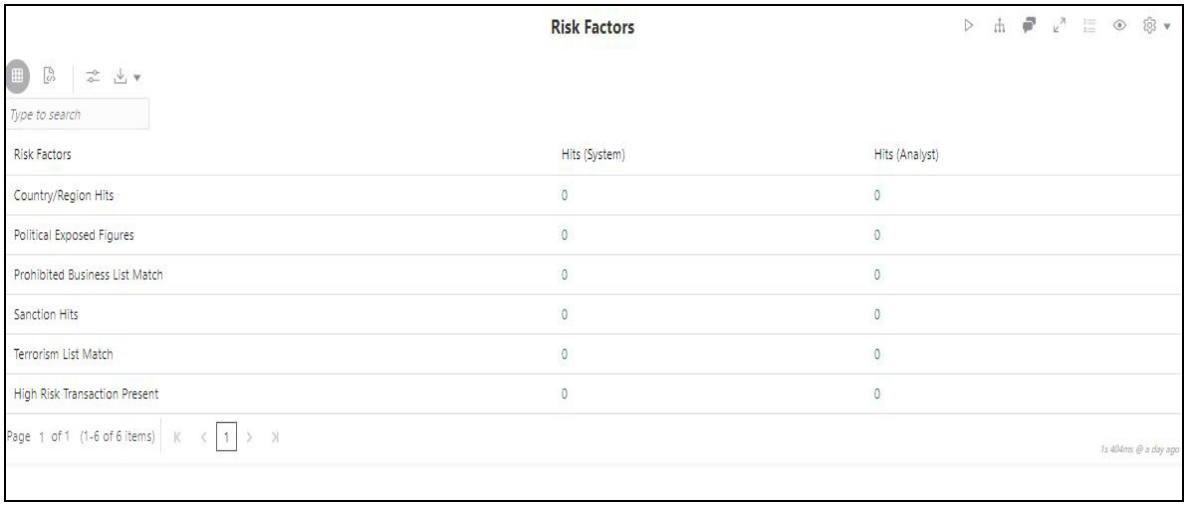
Figure 5: Case Disposition Risk Score

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 factors.

For more information, see the Configuring Risk Factors section in the *Oracle Financial Services Investigation Hub Administration and Configuration Guide*.

Figure 6: Comparison of Risk Factors

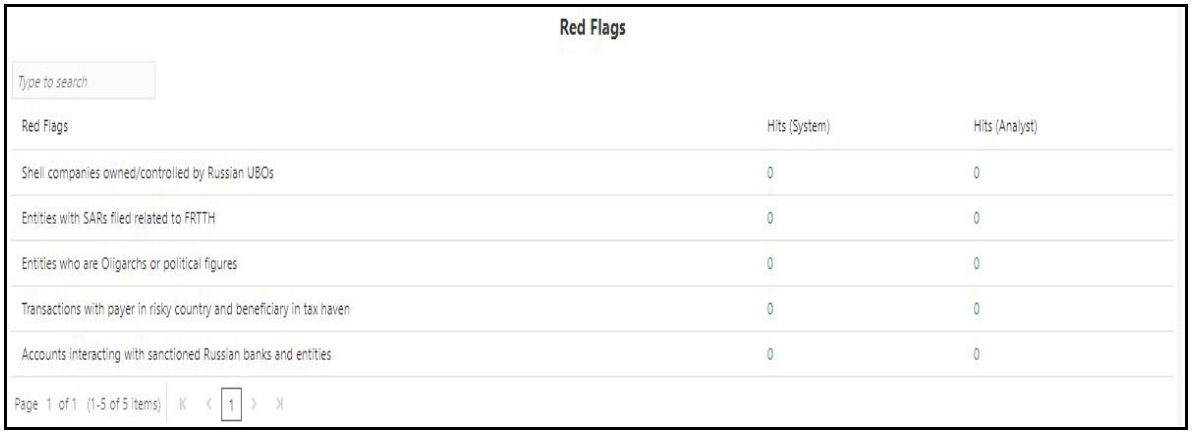


5.4.3 Viewing the Comparison of Red Flag Details

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 the *Oracle Financial Services Investigation Hub Administration and Configuration Guide*.

Figure 7: Comparison of Red Flag Details



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 the *Oracle Financial Services Investigation Hub Administration and Configuration Guide*.

Figure 8: 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 the Export to PDF option to save the notebook. For more information, see Exporting a Notebook.

6 Investigating ECM Cases Using Investigation Hub

Investigation Hub (IH) is integrated with Enterprise Case Management (ECM) to enable Case Investigators to access additional rich information about a case such as, case summary, a detailed narrative about case entities, graph view of a case, and so on, which is otherwise not available in ECM.

Investigators can expand the graph view to view the relationship between case entities and search for additional entities within a graph. Investigators can also update a case with any customers, account, derived entities, or transactions that are part of the graph view.

> **NOTE** All the information shown in a graph will be added to the case.

By default, two different sets of information are displayed in the Investigation Hub tab that are targeted at Level 1 and Level 2 Case Investigators. Depending on a user role, a user is displayed with Level 1 or Level 2 information.

Different Level 1 users are displayed with the same view of information including the changes made to the expand or otherwise manipulate the graph. When Level 1 Investigators have completed the investigation, they must save any changes back to the case. Level 2 Investigators are then able to view the case with this additional information in the Investigation Hub tab which is more pertinent to a detailed investigation.

Topics:

6.1 Accessing Investigation Hub from ECM

You can access the Investigation Hub (IH) tab from ECM to perform graph-based investigation for cases in ECM.

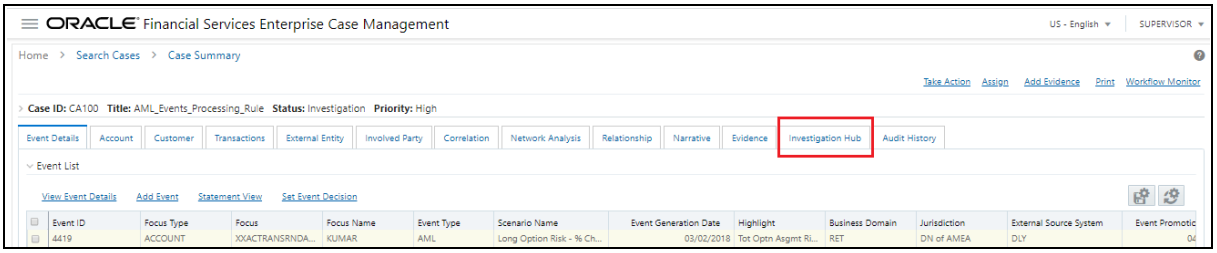
To access the Investigation Hub tab from ECM, follow these steps:

1. Login to the OFS ECM application. For more information, see *Accessing OFSECM Application* section in the *Oracle Financial Services Enterprise Case Management User Guide*.
2. Search for a case that has the **Investigation Hub** tab enabled.

> **NOTE** To access the **Investigation Hub** tab, the Case Type must have the required mapping in the Case Designer in ECM. For more information, see *OFS Investigation Hub Administration Guide*.

3. Click the desired **Case ID.**

Figure 1: Investigation Hub Tab in ECM



4. Click the **Investigation Hub** tab.

   The **Investigation Hub** tab integrated with the ECM case is displayed with all the pre-executed paragraphs for the case.

6.2 Elements of the Investigation Hub Tab

The paragraphs in the Investigation Hub tab are as follows:

- Viewing Case Details
- Searching for Non-Case Entities
- Viewing the Initial Screening Results
- Viewing Investigative Summary
- Viewing the Entity Activity Statistics
- Viewing the Entity Activity Visual
- Viewing the Transactions Analysis
- Viewing the Graph Result of the Entity Search
- Viewing the Network Disposition Score
- Viewing the Network Disposition Score Breakdown

6.2.1 Viewing Case Details

The Case Details paragraph displays the case identifier or ID.

Figure 2: Case Details Paragraph

6.2.2 Searching for Non-Case Entities

Follow these steps to search for an FCDM entity (customer, account), derived entity, address, event, or external entity in the graph to find a similar match.

1. Navigate to the **Search for Non-Case Entities** paragraph.

Figure 3: Search for Non-Case Entities Paragraph

2. Enter the search criteria in the Search for Non-Case Entities paragraph as described in the following table.

Table 1: Search for Non-Case Entities Paragraph Details

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 to 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 **Search for Non-Case Entities** paragraph.

The matched results will display in the **Search for Non-Case Entities** paragraph.

6.2.3 Viewing the Initial Screening Results

The Initial Screening Results paragraph allows you to define the conditions based on which the initial screening results are filtered and fetched.

The following table describes the conditions to be defined based on which initial screening results are displayed.

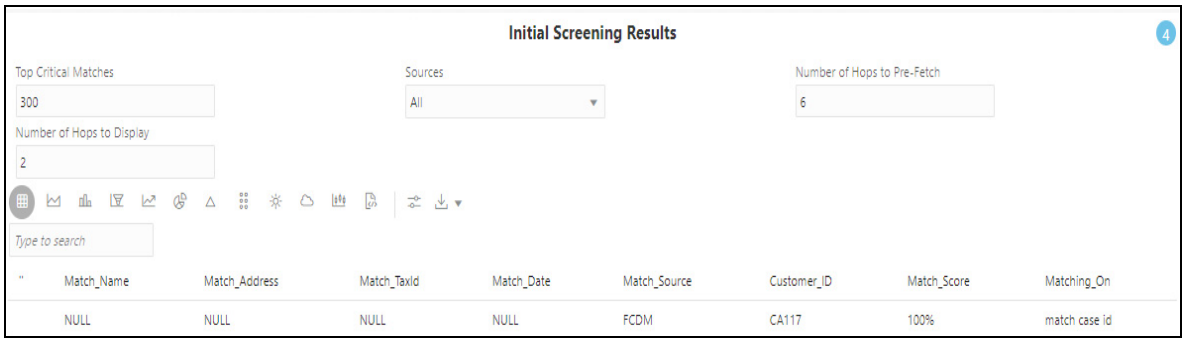
Table 2: Initial Screening Results

Field	Description
Top Critical Matches	The value to decide how many matches you want to view in the search result output.

Table 2: Initial Screening Results

Field	Description
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.

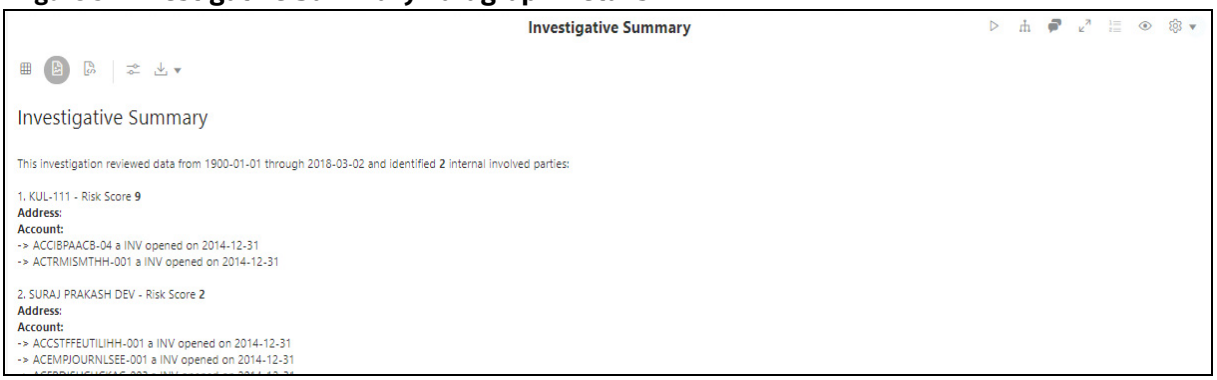
Figure 4: Initial Screening Results Paragraph



6.2.4 Viewing Investigative Summary

The Investigative Summary paragraph provides a narrative overview of the case and its focal entities which are displayed in the graph. This is one of the first paragraphs viewed by an Investigator as it provides a summary of the case.

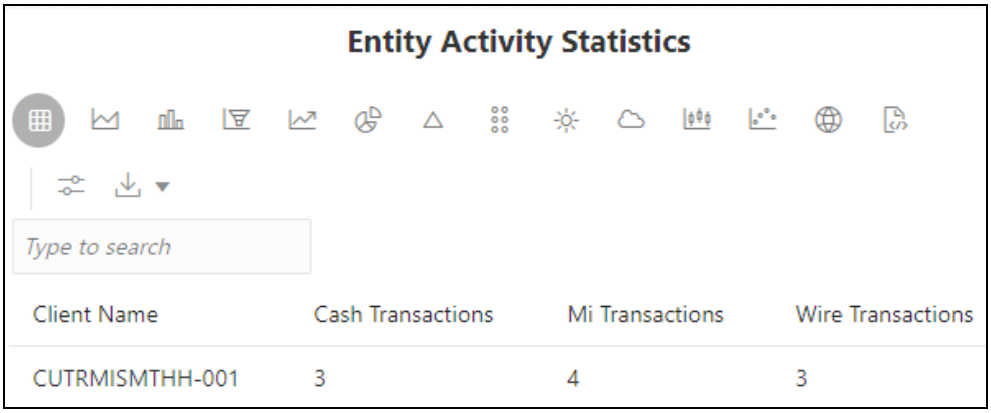
Figure 5: Investigative Summary Paragraph Details



6.2.5 Viewing the Entity Activity Statistics

The Entity Activity Statistics paragraph displays the breakdown of the transactions performed by the customer.

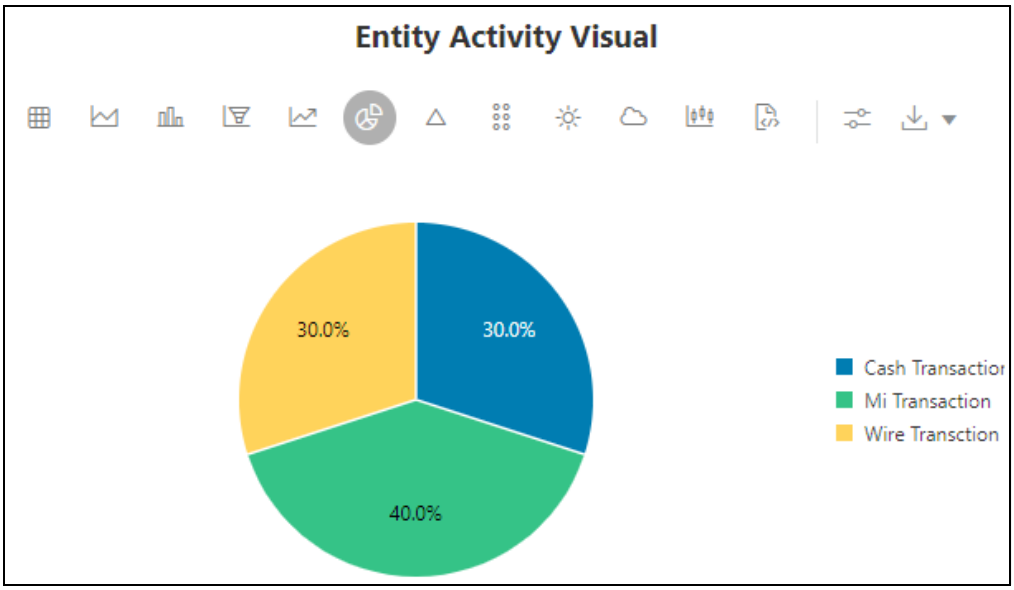
Figure 6: Entity Activity Statistics Paragraph Details



6.2.6 Viewing the Entity Activity Visual

The Entity Activity Visual paragraph displays the breakdown of the transactions performed by the customer in visual format.

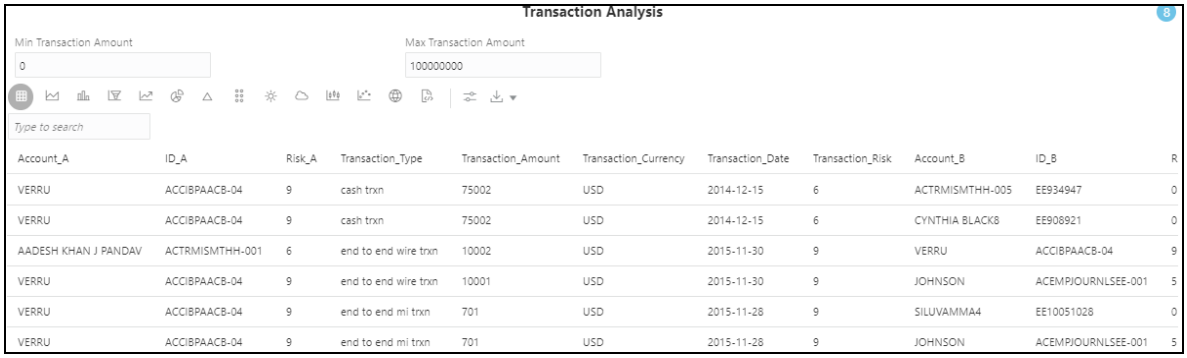
Figure 7: Entity Activity Visual Paragraph Details



6.2.7 Viewing the Transactions Analysis

The Transaction Analysis paragraph displays all the transactions associated with the case. You can view these transactions in various formats.

Figure 8: Transaction Analysis Paragraph Details



Account_A	ID_A	Risk_A	Transaction_Type	Transaction_Amount	Transaction_Currency	Transaction_Date	Transaction_Risk	Account_B	ID_B	R
VERRU	ACCIBPAACB-04	9	cash trxn	75002	USD	2014-12-15	6	ACTRMISMTHH-005	EE934947	0
VERRU	ACCIBPAACB-04	9	cash trxn	75002	USD	2014-12-15	6	CYNTHIA BLACK8	EE908921	0
AADESH KHAN J PANDAV	ACTRMISMTHH-001	6	end to end wire trxn	10002	USD	2015-11-30	9	VERRU	ACCIBPAACB-04	9
VERRU	ACCIBPAACB-04	9	end to end wire trxn	10001	USD	2015-11-30	9	JOHNSON	ACEMPJOURNLSEE-001	5
VERRU	ACCIBPAACB-04	9	end to end mi trxn	701	USD	2015-11-28	9	SILUVAMMA4	EE10051028	0
VERRU	ACCIBPAACB-04	9	end to end mi trxn	701	USD	2015-11-28	9	JOHNSON	ACEMPJOURNLSEE-001	5

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

6.2.8 Viewing the Graph Result of the Entity Search

The Graph Result of the Entity Search paragraph allows you to view the network graphical representation of the case and its associated entities. This paragraph also displays the case graph along with the graph for the entities searched in the Searching for a Business Entity 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 called an edge. 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.

When the Investigation Hub tab is opened for the first time, it displays the following details:

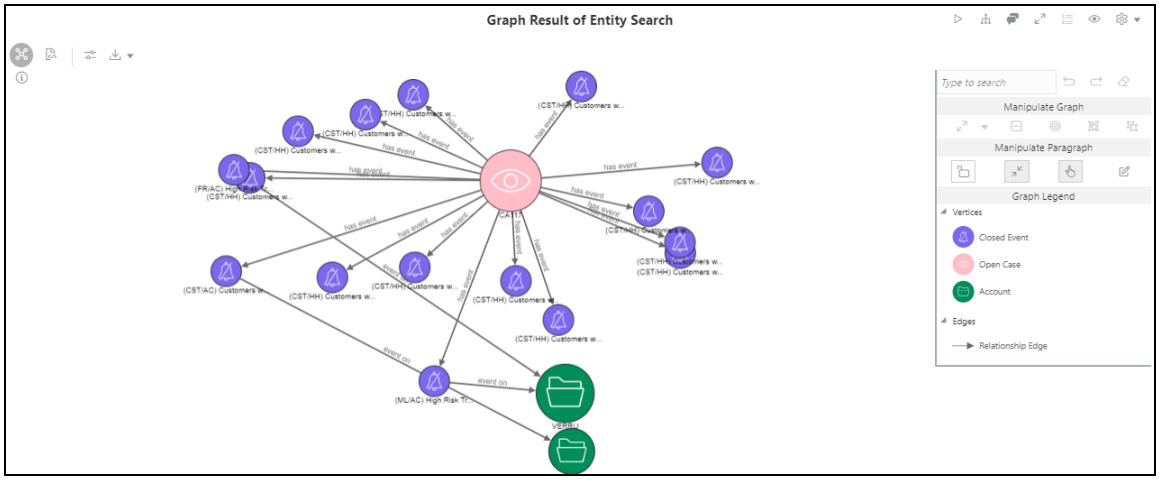
- The case node and four hops from the case node to include all the events, customers, derived entities, accounts, and transactions that are the focal entities and impact the case.
- Additional nodes and edges that provide case context such as relationship and similarity edges to include external data sources.
- If the analyst searches for additional entities, all the search nodes and their surrounding nodes and edges are displayed as part of the graph visualization.

The analyst can then be able to manipulate the graph by expanding any high risk entities or parties on unusual transactions to obtain better understanding of the context and risk associated with the case. The analyst can also remove entities and transactions which are not pertinent to the case to provide a snapshot of only the pertinent information.

When a graph shows the relevant information, the case narrative and other paragraphs can be re-run to provide updated summary information.

Figure 9 shows the sample graph.

Figure 9: Graph Result of Entity Search

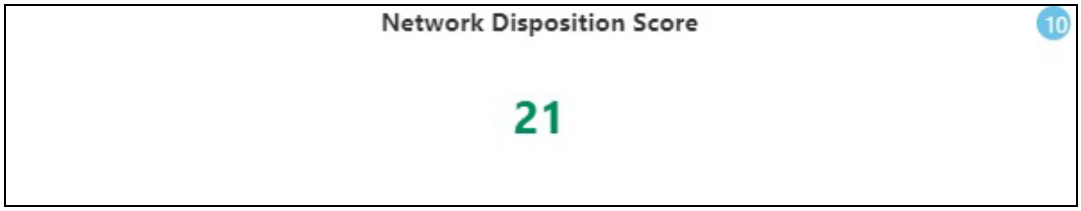


You can perform many actions on a graph. For more information, see the Graph Details.

6.2.9 Viewing the Network Disposition Score

The Network Disposition Score paragraph shows the network disposition score of the searched entity.

Figure 10: Network Disposition Score Paragraph Details



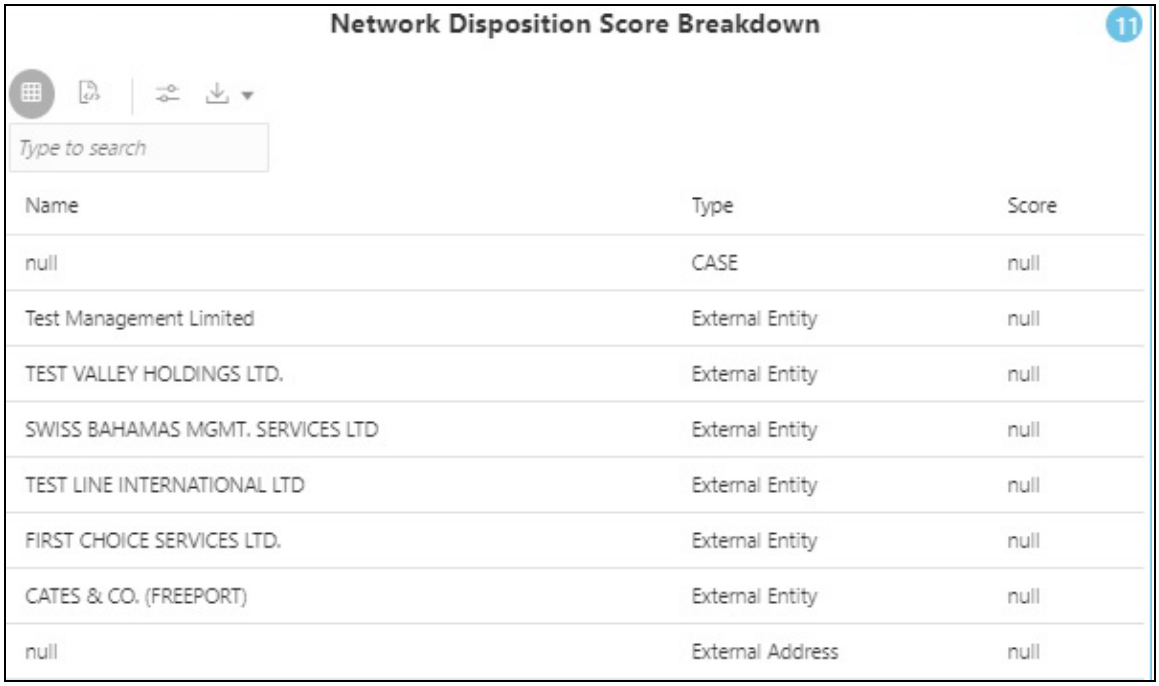
For more information, see the Configuring Network Disposition section in the *Oracle Financial Services Investigation Hub Administration and Configuration Guide*.

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

6.2.10 Viewing the Network Disposition Score Breakdown

The Network Disposition Score Breakdown paragraph shows the details of the network disposition score of the searched entity.

Figure 11: Network Disposition Score Breakdown Paragraph Details



For more information, see the Configuring Network Disposition section in the *Oracle Financial Services Investigation Hub Administration and Configuration Guide.*

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

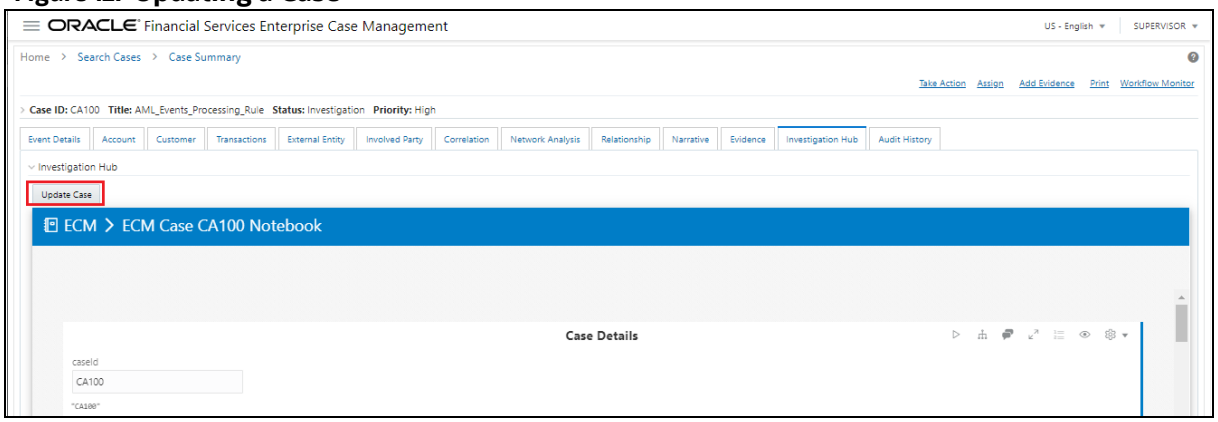
6.3 Updating a Case with Entities in a Graph

Updating a case enables investigators to add additional entities to the case from the graph.

To update a case, follow these steps:

1. Navigate to the **Investigation Hub** tab in a case.
2. Click **Update Case** to add the account, customer, transaction, and external entities.

Figure 12: Updating a Case



NOTE

1. Both Level 1 and Level 2 Investigators can expand the case graph to update a case, to add or remove edges and nodes. For more information, see Working with Graph Nodes.
2. On updating a case, all the customers, accounts, derived entities, and transactions that are part of the visible graph and are not already part of the case are added to the case.
3. Level 1 and Level 2 Investigators are displayed with different information on the Investigation Hub tab depending on the configuration for that user.
4. Level 1 or Level 2 Investigators can continue to work as each other with same privileges but a Level 1 user must update a case before the information can be viewed by a Level 2 user.

7 Common Features

Topics:

7.1 Managing the Notebooks

A notebook acts as a frame for Paragraphs.

Topics:

7.1.1 Common Screen Elements in Notebooks

The following table describes the common screen elements in a notebook that can be used to perform various actions on a notebook.

Table 1: Common Screen Elements in Notebooks

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.
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.

Table 1: Common Screen Elements in Notebooks

Button	Icon	Action/Description
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.
Layout		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.
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.

7.1.2 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.

7.1.2.1 Exporting a Notebook to PDF

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

To export individual Notebooks, follow these 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**.

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

7.1.3 Refreshing Session

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

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

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

7.1.4 Deleting a Notebook

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

   The check boxes are displayed for notebooks.
3. Select the required notebooks, and click  **Delete**.

   The selected notebooks are deleted.

7.2 Managing the Paragraphs

Topics:

- Common Screen Elements in Paragraph
- Paragraph Dependencies
- Run All Notebook Paragraphs

7.2.1 Common Screen Elements in Paragraph

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

The following table describes the elements in the Paragraph Settings Bar that can be used to perform various actions on individual paragraphs in a notebook.

Table 2: 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 are 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.
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 actions: • 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.

7.2.2 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** in the Paragraph Settings Bar of a paragraph.

   The *Dependency Mode* window is displayed.

2. Select or deselect paragraphs 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.

7.2.3 Run All Notebook Paragraphs

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

To run all the paragraphs in a notebook, follow these steps:

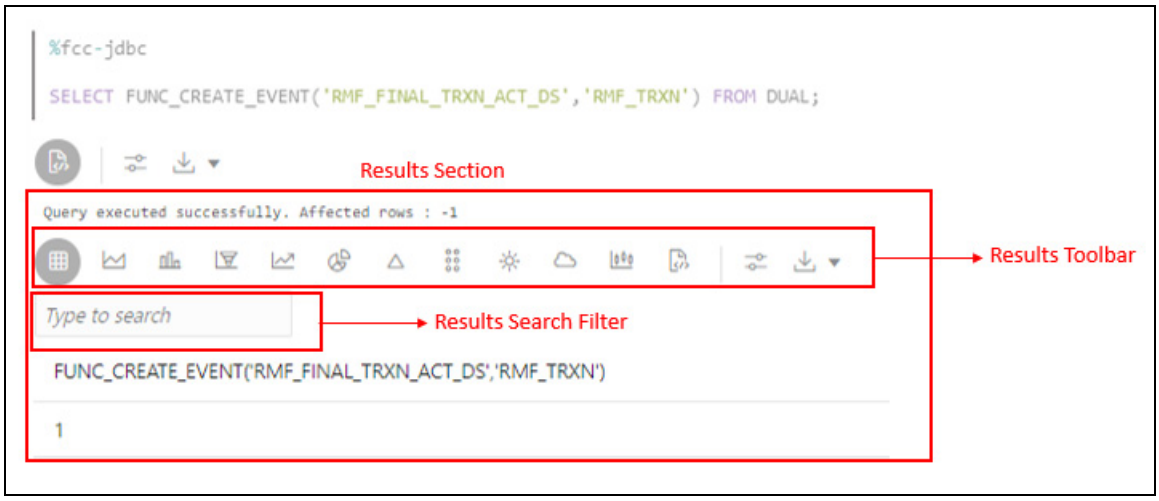
1. Click **Run Paragraphs** in the Notebook Toolbar.

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.

7.3 Managing the Results

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

Figure 1: Paragraph Results Section



Topics:

- Result Toolbar
- Results Search Filter
- Customizing Result Settings

7.3.1 Result Toolbar

The following table describes the various result formats supported in FCC Studio.

Table 3: Result Formats in Studio

	Button/Icon	Action/Description
Table Chart		Click this button to view results in tabular format.
Area Chart		Click this button to view results in the area chart format.
Bar Chart		Click this button to view the results in bar chart format.
Funnel Chart		Click this button to view the results in the funnel chart format.
Line Chart		Click this button to view the results in line chart format.
Pie Chart		Click this button to view the results in pie chart format.
Pyramid Chart		Click this button to view the results in pyramid chart format.
TreeMap Chart		Click this button to view the results in tree map format.
Sunburst Chart		Click this button to view the results in sunburst chart format.
Tag Cloud Chart		Click this button to view the results in tag cloud chart format.
Box Plot Chart		Click this button to view the results in the plot chart format.
Text		Click this button to view the results 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 3: Result Formats in Studio

	Button/Icon	Action/Description
Download As		Click this button to download the result in the following format: • Raw: Available for all formats. • SVG Format: Available for Graph and Visualization formats.

7.3.2 Results Search Filter

The Results Search Filter is available only in Table Format. This feature instantly searches for an entered value in the results.

7.3.3 Customizing Result Settings

To customize the result format, follow these steps:

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

   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.

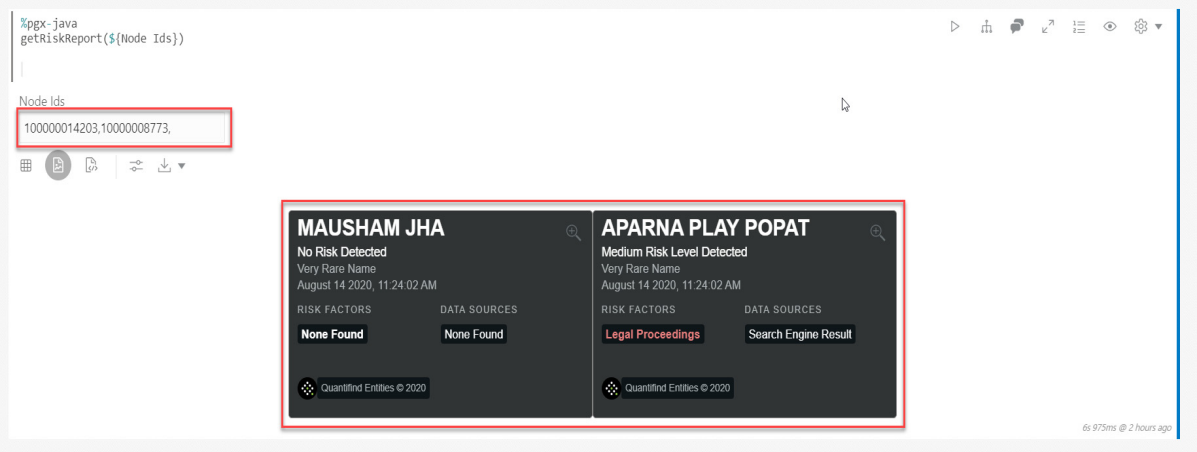
   The result is customized as per the entered values.

7.4 Quantifind Risk Report

Quantifind integration for real-time risk reports in FCC Studio enables the Financial institutions to discover signals of revenue drivers and risk, including fraud and money.

Note: These reports are only available for FCC Studio integration with ECM.

In the ECM notebook, by using the java interpreter you can run the risk report query as shown in the figure.



The results are displayed as card, which displays the risk status of the identified node details. Based on the risk you can perform the required measures for the risk analysis.

8 Graph Details

This chapter provides information on the graph details such as the action that be performed on a graph, nodes in a graph, and so on.

8.1 Working with Graph Nodes

Topics:

8.1.1 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, follow these 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.

8.1.2 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

8.1.3 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:

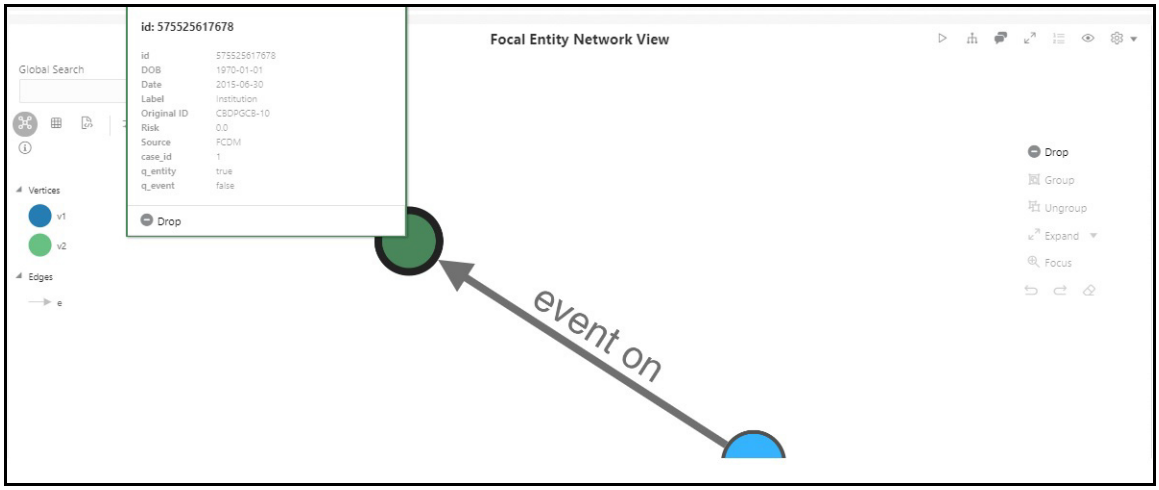
1. Navigate to the Network Graph in a notebook**.**
2. Select a node and right-click. An option menu is displayed. The Node Details window is displayed with the current information associated with the selected node. This includes the **Properties** and **Risk details** of the node.

8.1.4 Deleting a Node

You can drop a node to from a network graph view the result on On-screen data. To delete a node, follow these steps:

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

Figure 1: Deleting a Node

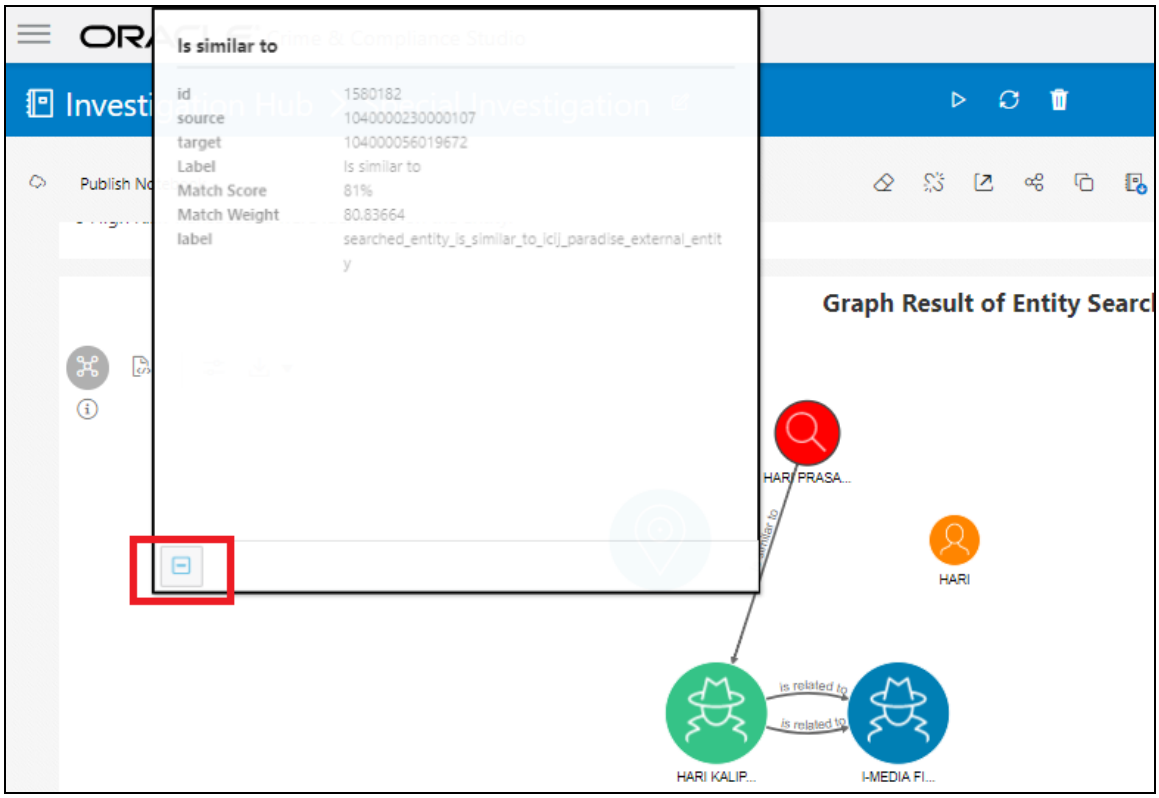


8.1.5 Removing an Edge

You can remove and edge from a network graph to view the result on On-screen data. To remove an edge, follow these steps:

1. Navigate to the Network Graph in a notebook**.**
2. Right- click on any edge and click **Drop - Delete selected vertices**.

Figure 2: Removing an Edge



OFSAA Support Contact Details

Raise a Service Request (SR) in My Oracle Support (MOS) for queries related to OFSAA applications.

Send Us Your Comments

Oracle welcomes your comments and suggestions on the quality and usefulness of this publication. Your input is an important part of the information used for revision.

- Did you find any errors?
- Is the information clearly presented?
- Do you need more information? If so, where?
- Are the examples correct? Do you need more examples?
- What features did you like most about this manual?

If you find any errors or have any other suggestions for improvement, indicate the title and part number of the documentation along with the chapter/section/page number (if available) and contact the Oracle Support.

Before sending us your comments, you might like to ensure that you have the latest version of the document wherein any of your concerns have already been addressed. You can access My Oracle Support site which has all the revised/recently released documents.