DgSecure - User Guide

Version 7.2

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Contents

1 Preface

1.1 Introduction of DgSecure

Dataguise DgSecure is a complete data security solution that enables enterprises to leverage their data to achieve greater business goals while minimizing the risk of exposure and running afoul of data handling regulations such as PII, PCI, HIPAA and GDPR.

DgSecure provides core solution for finding Sensitive data (DETECT), encrypting or masking (PROTECT) it, providing an overall report (AUDIT) and observing the progress over a period of time (MONITOR).

- **DETECT**
  DgSecure DETECT capability enables you to discover, count and report on Sensitive data encountered in the database; On-Premises and in the Cloud based. It processes structured, semi-structured and unstructured data formats.

- **PROTECT**
  The PROTECT capability ensures that the data is protected. There is an automated, policy based encryption for sensitive data for various file formats. The sensitive data gets encrypted with fictitious content using one of many available data replacement options.

- **AUDIT**
  It understands and assess the security risks across the enterprise and in the cloud. The AUDIT report display the details about all the events which were executed by the user, based on the role.

- **MONITOR**
  DgSecure MONITOR offers an early warning system focused solely on safeguarding the sensitive data. It tracks how and where Sensitive data is being accessed. It also generates alerts.

1.2 Logging In

To log in to the DgSecure, follow the below steps:

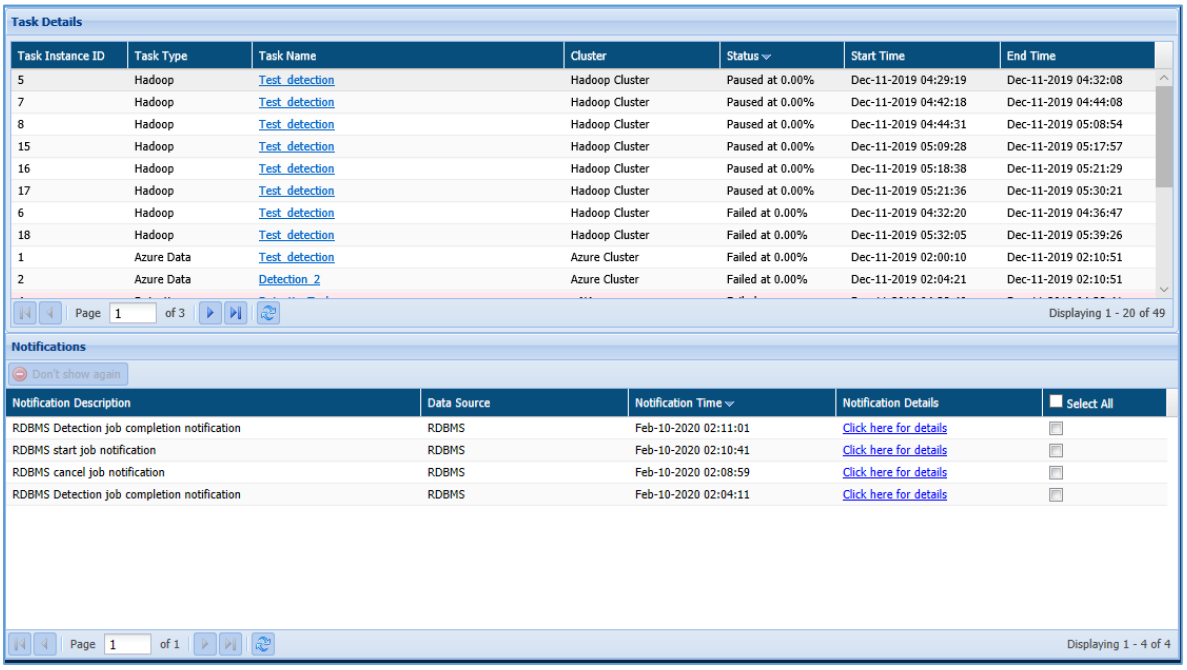
1. Click the DgSecure link: https://<ip_address>/dgadmin/login.html

2. Enter your credentials.

3. Click the **Sign In** button.

1.2.1 Home Page

The Home page displays all task instances the user is authorized to see along with any associated notifications.



The page is divided into two panes. These are:

1. **Task Details:**
   A detailed information about the task will be displayed on this pane. The details about the task includes Task Instance ID, Task Type, Task Name, Cluster, Status, Start Time and End Time.

Additionally, you can sort the values in columns in ascending and descending order and can also view the list of columns headers in the pane.

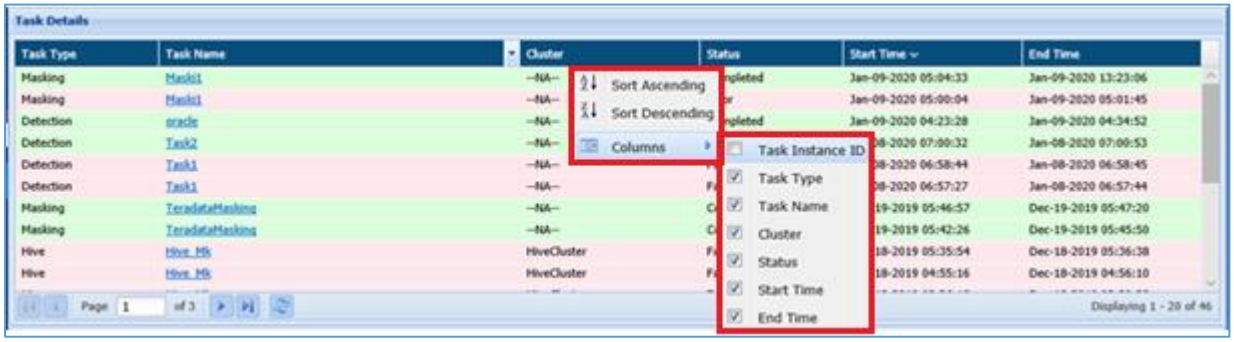
If you click on column header, following options will appear:

a. **Sort Ascending** – Click on the Sort Ascending option on column header to sort the column values in ascending order, i.e. A-Z.

b. **Sort Descending -** Click on the Sort Descending option on column header to sort the column values in descending order, Z-A.

c. **Columns** – Click the Columns option to include or remove any column from this pane. When you click on Columns option, it will display the list of all Column headers. By default, all the columns are checked.

To remove a column from the pane, check the checkbox next to the column header name.

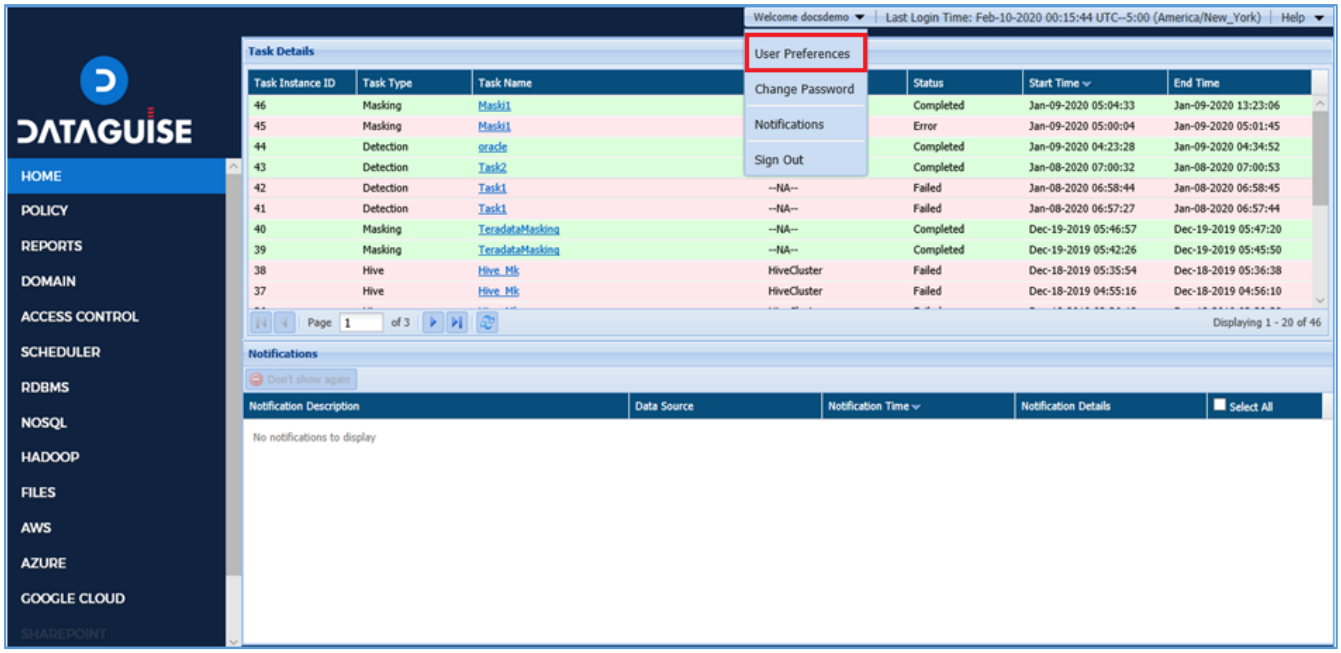


2. **Notifications:**
This pane shows the event based notifications related to the selected tasks. Notifications are either event based or time based. The details include Notification Description, Data Source, Notification Time, Notification Details.

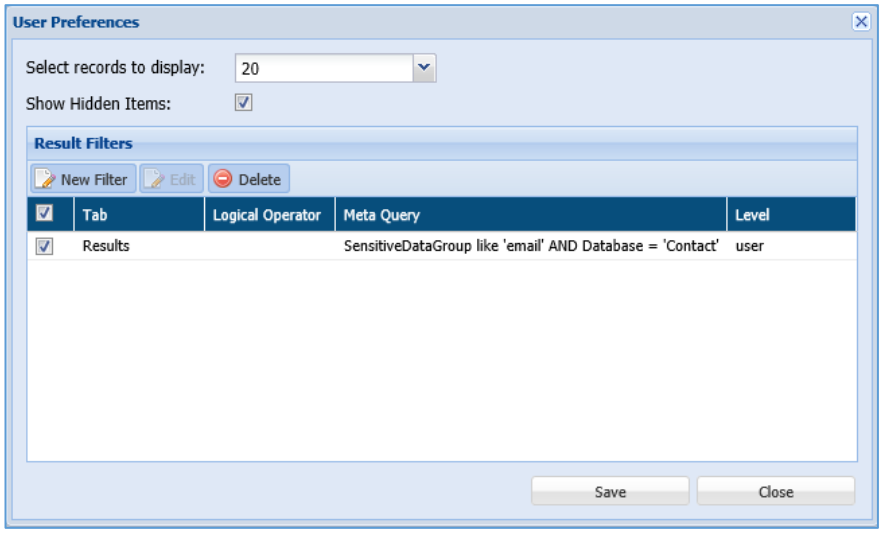
1.2.1.1 User Preferences

User Preferences allows you to create/edit/delete and update the filters. You can also unhide the items by checking the Show Hidden Item checkbox.

To access User Preferences dialog box, Click **Welcome <username>** drop-down in **Home** Page. Click User Preferences.



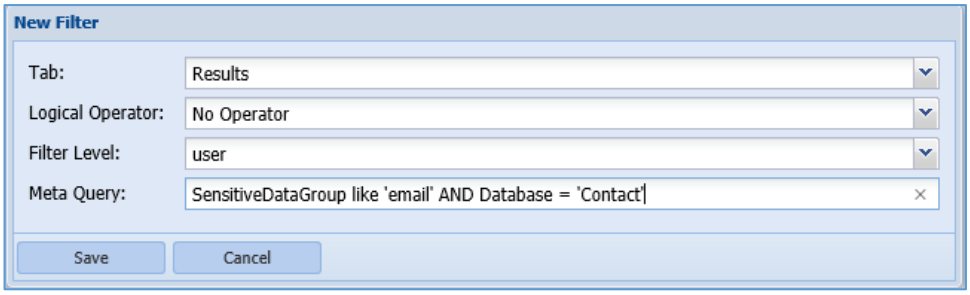
1. Click the User Preferences option from the drop-down. It will open User Preferences dialog box.



a) **Select records to display:** Select the number of records to be displayed on the **Home** page.

b) **Show Hidden Item:** Check this checkbox to display the hidden tasks on the screen.

c) **Result Filters:** It will display the list of filters created by you. Using Preferences option you can create, update, delete and edit filters. Follow the below steps to create a filter:



i. Click the **New Filter** button.

ii. Enter the details:

1. **Tab** name where the filter will be applied. For Example, Results, Detailed Results, Skipped Results, etc.

2. **Logical Operator** is used when new filter is appended with previously created filter. If there is no previous filter, then do not apply logical operator.

   For Example: if we have Filter F1 and creating a New Filter F2, then the results for both filters will be combined.

3. **Filter Level**: A user can select the User or System filter in Filter Level drop-down.

4. **MetaQuery:** you can use the defined keywords to create Meta Query. Meta Query will be parsed to the actual query.

   To create a Meta Query remove the space and special characters from the header names and use relational operators such as '=' (Equals), '!=' (Not Equals), < (Less Than), > (Greater Than) and Like in between the query.

   For Example: if we want to add a filter where Sensitive Type should contain address and table/view should be equal to Base table. Then query will be:

   SensitiveType Like 'Address' AND Database = 'Contact'

iii. **Edit:** Click on **Edit** button. It will allow you to edit a filter.

iv. **Delete:** Check the checkbox against the filter which you wish to delete. Click the **Delete** button.

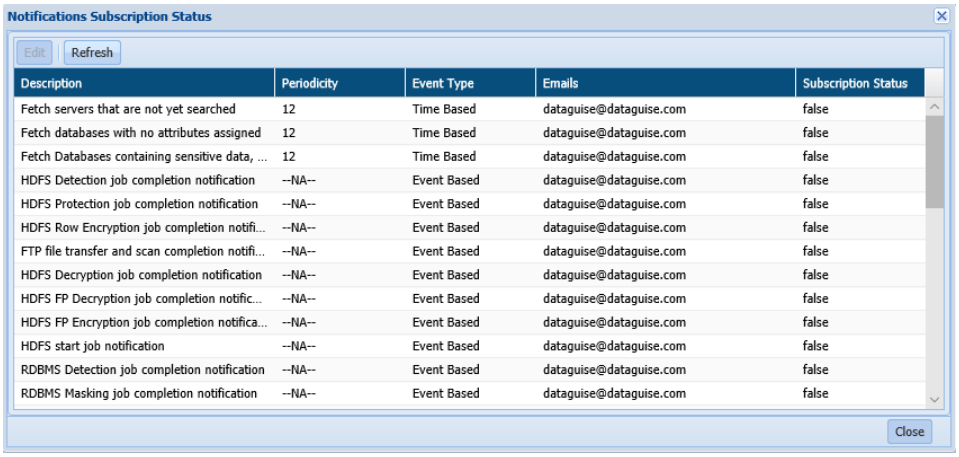
Note: Keywords for Meta Query

Collection	DatabaseUser	FilePath	NullRatio	SampledDate
Column	DataType	FileSize	ObjectPath	SampledRows
ColumnName	DetectionType	FileType	ObjectType	SampleMode
Confidence	DirectoryPath	HitCount	QuickSearch	SensitiveDataGroup
ConnectionName	Error	HostName	ReferentialType	SensitiveDataType
Content Read	FieldName	KeyPath	ReferringTo	SensitiveGroupConfidence
Database	FieldNameMatch	Masked	RowScanned	SensitiveType
DatabaseName	FieldNo	MatchCount	RowsScanned	SkippedReasons
DatabaseType	FileName	NullCount	Safe	Table
TableName	TableSize	TableView	TaskName	TotalData
TotalRows	ValuesScanned			

1.2.1.2 Notifications

In here, you can define the notifications for logged in user in DgAdmin. The Notifications are either event or time based. You can also define the periodicity of the notifications in DgAdmin.

Once you have defined notifications in DgAdmin, you can select to receive it by clicking on Notifications in the drop-down on top right corner of the page.

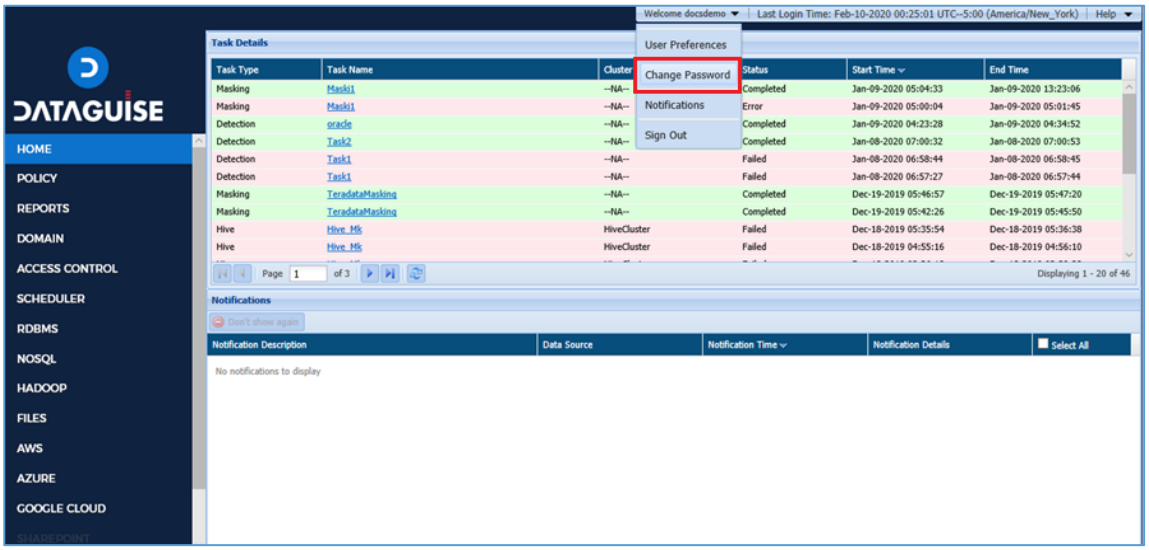


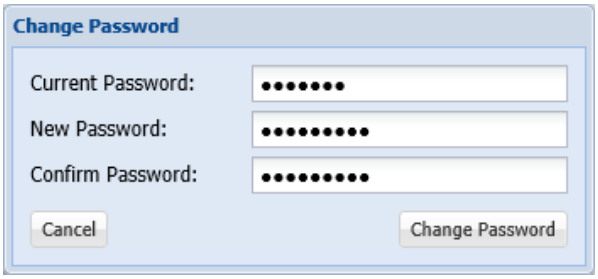
To activate a notification, you need to change the value in the Subscription status to ‘True’.

1.2.1.3 Password Change

To change password. Click the **Welcome <username>** drop-down, follow below steps:

1. Go to **Welcome <username>**. Click **Change Password** from the drop-down.





i. Click the **Change Password.**

ii. Enter your **Current Password.**

iii. Enter your **New Password**.

***Note**: Password is case- sensitive.

iv. Confirm your **New Password** by entering it again in **Confirm Password** textbox.

v. Click **Change Password** button to set the new password as your credentials.

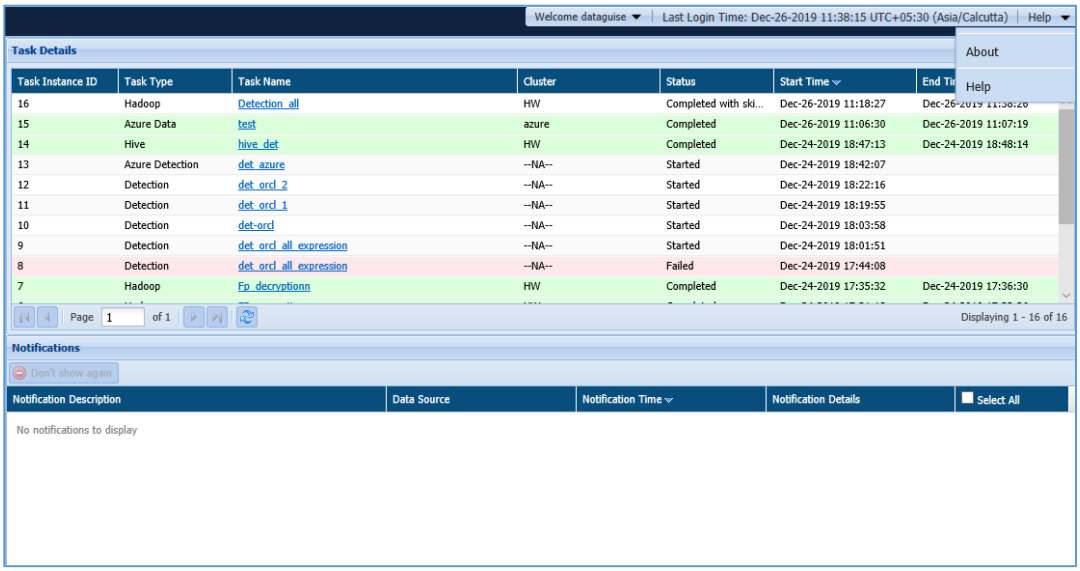
vi. Click **Cancel** button, if you do not want to save the changes.

1.2.1.4 Help

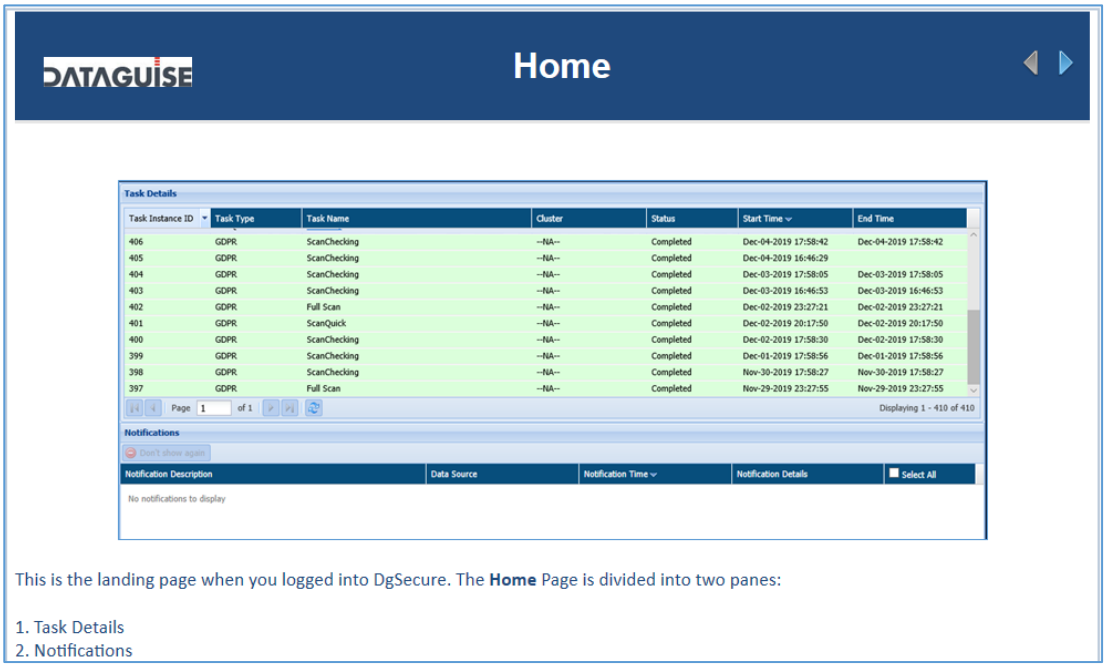
A screen specific discussion of the DgSecure application is found in the Online Help. The Online Help can be accessed from any page in DgSecure via Help button.

To access the Online Help, follow the below steps:

1. Go to the top right corner of the application. Click the Help Button.



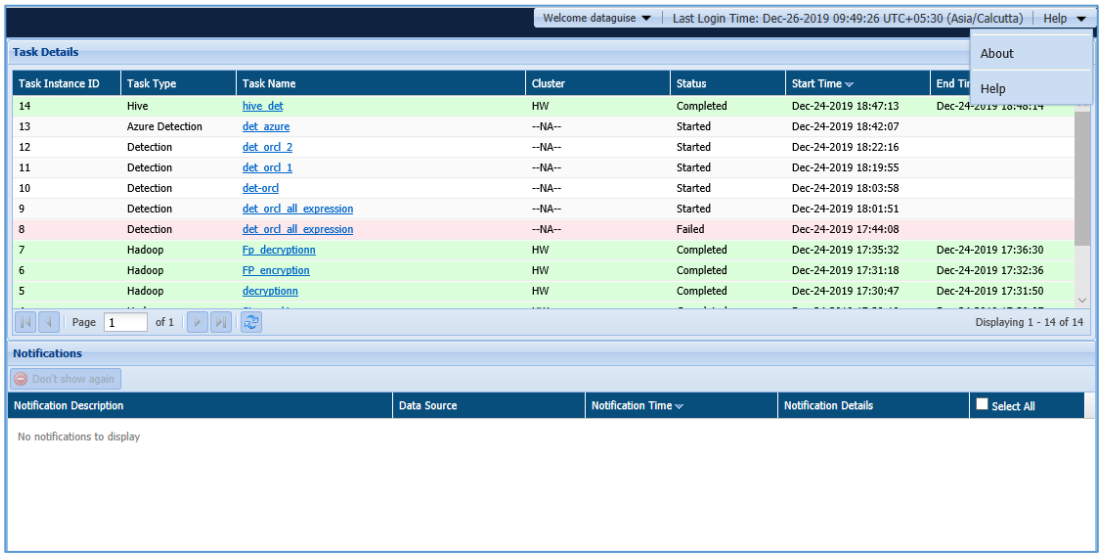
2. Click the Help option. This will open a new window in the browser which will display screen specific information.



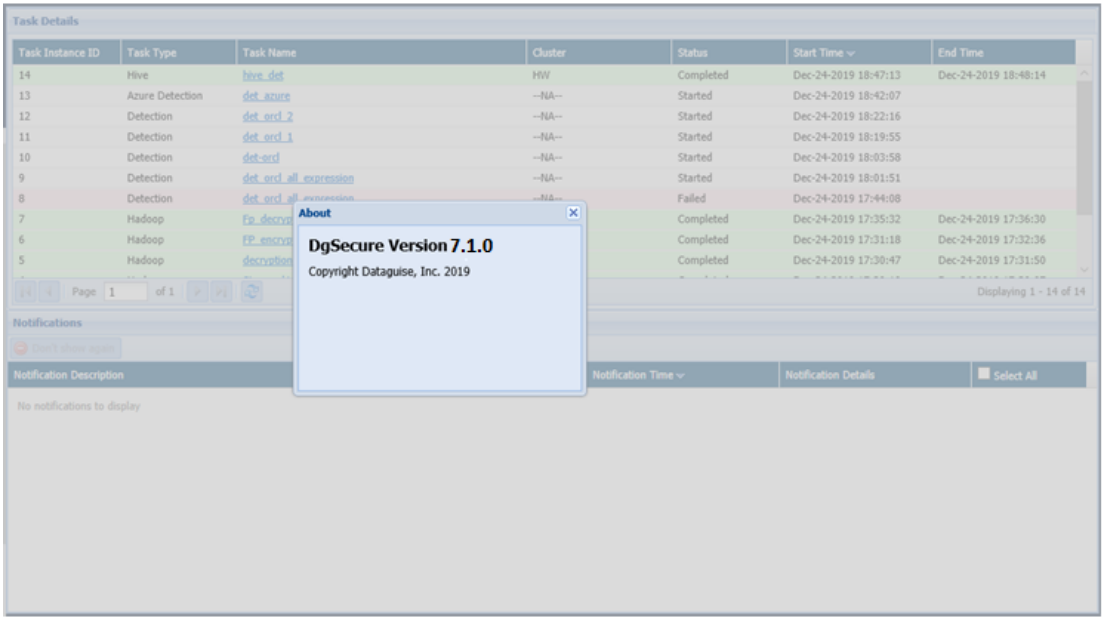
1.2.1.5 About

The About option give the update about the application version. To see the version of the application, follow the below steps.

1. Go to the top right corner of the application. Click the Help drop-down.



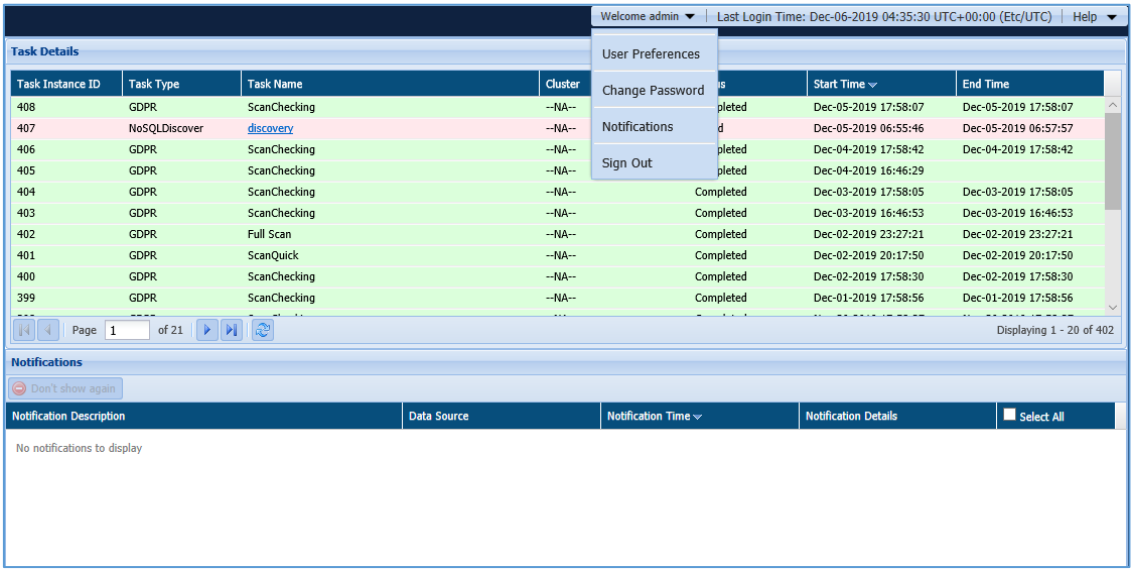
2. Click the About option. It will show the current version of the DgSecure application.



1.3 Sign Out

To sign-out from the DgSecure application, follow the below steps:

1. Go to the top right corner of the application. Click the **Welcome <username>** drop-down.



2. Click the **Sign-Out** option. This option lets your sign-out from the DgSecure application.

1.4 Related Source

This document is intended to support user deployment of DgSecure on the customer site. Other documents are also available:

- **DgSecure Installation and Configuration Guide** – This document walks through how to install and configure DgSecure on both single and multi-node systems. It also documents the DgSecure Admin controller.

- **Online Help** – Accessible from any screen in DgSecure, it shares in-depth information on each screen as well as context specific tips.

2 Getting Started

2.1 Detection

In Detection, you need to locate and identify sensitive data, based on the policy defined within big data, and traditional repositories such as databases and file stores.

2.2 Sampling configuration

In DgSecure, the Sampling Configuration will detect the sensitive information in the database. By Default, the DgSecure provides two options for sampling the data.

2.3 Masking

In DgSecure, you can create, edit or delete a Masking tasks to encrypt the sensitive information which were spotted in the detection task.

2.4 Encryption/Decryption

In DgSecure, you can replace sensitive data with fictitious content using one of many available data replacement options.

2.5 Privacy

Regulations such as the European Union's General Data Protection Regulation (GDPR) and California's Consumer Privacy Act (CCPA) are forcing organizations worldwide, to revisit their Data Privacy policies and practices. Other privacy regulations around the world are likely to have data subject rights as their core principles. While there are minor variations in the specific types of information involved and the conditions under which these rights are to be respected, the fundamental requirements are similar.

2.6 Monitoring

DgSecure Monitor allows users to set alerts around data handling and/or data access in HFDS, S3, MapR-FS, Hive, Oracle, or Teradata. Rules can be set around several conditions including specific users, specific data type groups, specific systems, a specific command, source path, or destination path. Rules can be set using one or all of these conditions.

The alerts are based off the targeted platform's log files. Set alert rules on the **Alert Rules** page. Review triggered alerts on the **Alerts** page. The **Monitor Overview** page provides a comprehensive overview. In order to most effectively utilize DgSecure Monitor, DgSecure detection tasks need to be run in order to identify where sensitive data resides.

The Monitor Overview page provides a centralized location to track the monitoring status of known sensitive data. Monitoring capabilities are broken down according to the percentage of sensitive types covered by alert rules, the number of people who receive alert notifications, source systems, related DgSecure policies, and alerts issued over the past 24 hours.

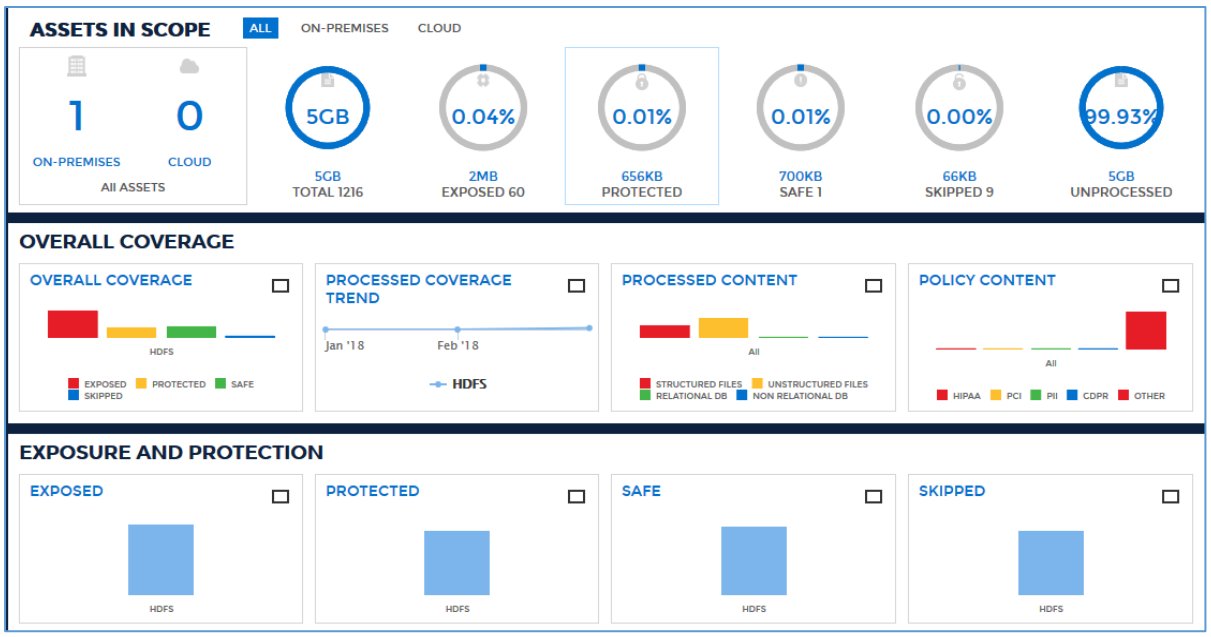
3 Dashboard

The **Overview page** provides a complete, up-to-the minute picture of the security of the company's sensitive data. It provides information in three rows of panels:

1. Assets in Scope
2. Overall Coverage
3. Exposure & Protection.

The graphics in each row provide insight of the sensitive data in the data sources DBMS, HDFS, S3, Hadoop.

Access the **Overview page** from the menu under **Reports > Overview.** It is divided into three separate panels which are described below.

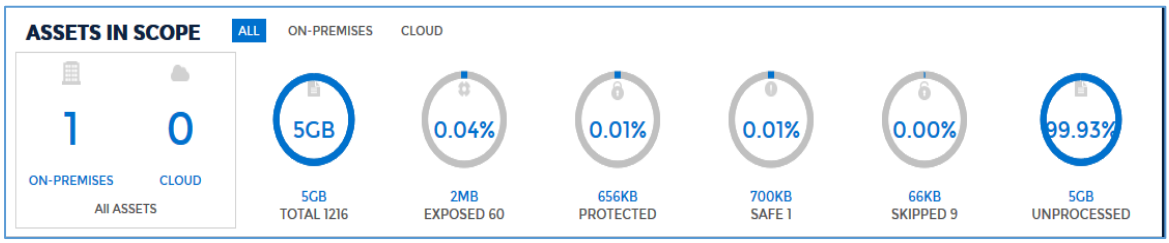


1. **Assets in Scope**

   The Assets in Scope charts provide an overview of your data assets. The first graphic indicates how many assets are on-premises vs in the cloud. Any AWS and Azure assets are considered in the cloud, while all other Hadoop and RDBMS assets are considered to be on-premises or in the cloud according to their designation. Hadoop location is set when setting up the cluster connection. RDBMS location is set when creating a database connection. One asset is equal to one Hadoop cluster or one database. The second chart relates the total number of sensitive objects discovered across all data assets.

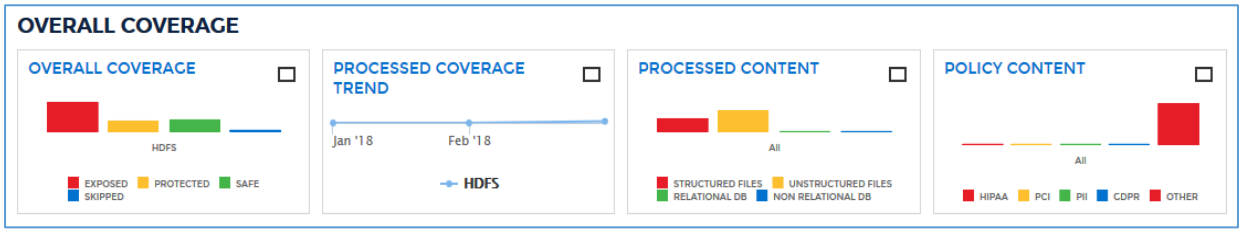
   A sensitive object is any table or file that contains at least one sensitive data element. The third chart indicates the percentage of files and tables that contain sensitive data, while the fourth chart indicates the percentage of sensitive objects DgSecure has masked or encrypted. The fifth chart indicates the percentage of safe items within the assets. The sixth

chart indicates the percentage of skipped data. The seventh chart indicates the percentage of unprocessed data.



2. **Overall Coverage**

These Overall Coverage graphs offer insight into the current level of sensitive data coverage across your data assets. The first graph shows the number of tables and files involved in the coverage. The "Safe" bar indicates scanned files found to have no sensitive data. The second graph shows when sensitive data detection and protection occurred. The third graph shows the breakdown of structured vs unstructured data.



3. **Exposure and Protection**

The Exposure & Protection graphs break down the objects according to whether the sensitive data in them has been protected (masked or encrypted), exposed (detected but unprotected) or skipped. Any files or tables that have yet to be scanned show in the unscanned graph.

4 Connection Manager

4.1 Concept

In order for DgSecure to detect, protect and monitor sensitive information on a database, a connection to the database from DgSecure must first be established. The Connections screen under Connection Manager houses all the connections made to different databases and enables the user to create a new connection or edit the existing connections in DgSecure.

Based on the IDP type i.e., Detection IDP and Masking IDP, all connections can broadly be classified as connections for Detection and connections for masking. A detection connection can be used to create a task for Detection and Metadata discovery and for executing masking, encryption and decryption tasks a masking connection is used.

Further sections detail the steps for creating connections, editing connections and viewing available connections in DgSecure.

***Note**: Before creating a connection, ensure that the required IDP is up and running before creating before creating a connection. If the IDP is inactive or, wrong IP ranges have been assigned to it, a new connection could still get created, however, an error will come up at the time of task execution with this connection and the task will not be processed.

4.2 Create a Connection

To execute detection and/or masking on databases, the first step is creating a connection to the database from the DgSecure controller. Detection and Masking IDPS are required to process the required tasks.

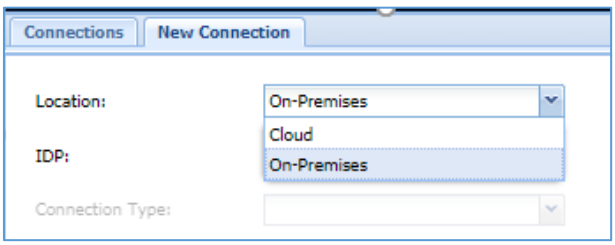
For more details on creating an IDP, please refer to section **6.2.1. Create IDPs** of the DgSecure Admin Guide. This section outlines the steps to create and/or edit a connection.

4.2.1 RDBMS

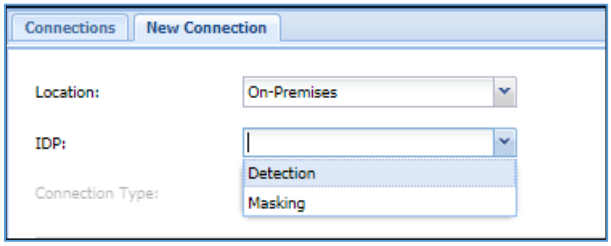
DgSecure supports masking and detection in RDBMS. This section outlines how to create a connection in RDBMS for masking and detection. Perform the following steps:

1. Click **RDBMS > Connection Manager > Connections > New Connection** tab.

2. Select the **Location** either **On premises** or **Cloud**, depending on where your database is located.



3. Select **IDP** type either **Detection** or **Masking**, depending on which of the two tasks has to be executed on the database.

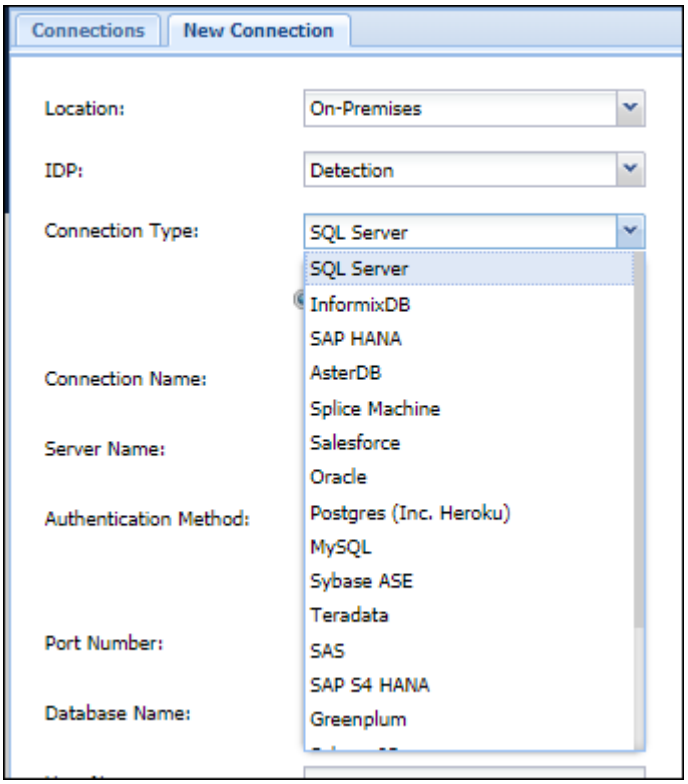


4. Following are the steps to create a connection for Detection and Masking

Detection

When creating a detection task, you can filter Databases and fetch metadata to specify databases and schemas for detection. Perform the following steps to create a detection connection for your database:

1. Select the database from the **Connection Type** drop-down.



Following are the different options for different databases:

SQL Server

Following are the options specific to the SQL Server:

a) **Single Instance:** Provide the following details.

i. **Connection Name:** Enter unique connection name. This fields accepts letters, numbers, and symbols.

ii. **SSL:** For an additional layer of security, check the SSL (Secure Socket Layer) checkbox. For details on how to setup SSL please refer to DgSecure Admin Guide.

iii. **Server Name:** Enter the name of the SQL Server or select from the list of available IPs. You can also search for the hostnames and IP addresses of databases by **Find DBMS**

iv. **IP Address:** Enter the IP Address for the connection.

v. **Authentication Method:** The following authentication methods are available for SQL Server:

- **SQL Server:** Authenticates the connection using SQL Server Username and Password.
- **Windows Impersonation:** Authenticates the connection using the Windows Impersonation Username and Password.
- **Windows:** Authenticates the connection based on the connection to the local IP address.

vi. **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.

vii. **Database Name**: Enter the name of the database.

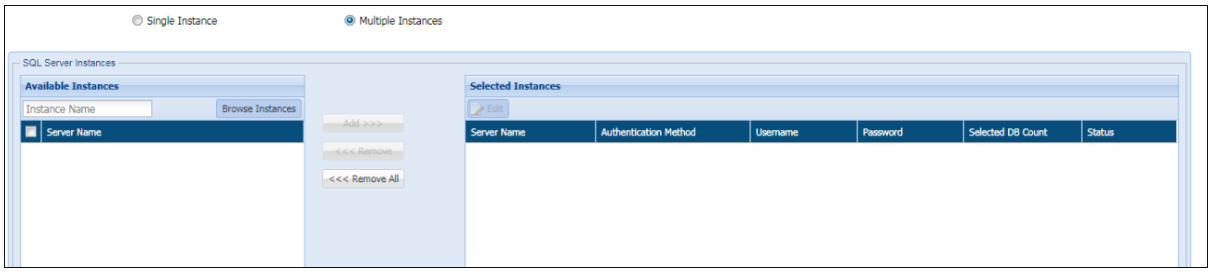
viii. **User Name**: Enter the database user name.

ix. **Password**: Enter the database password.

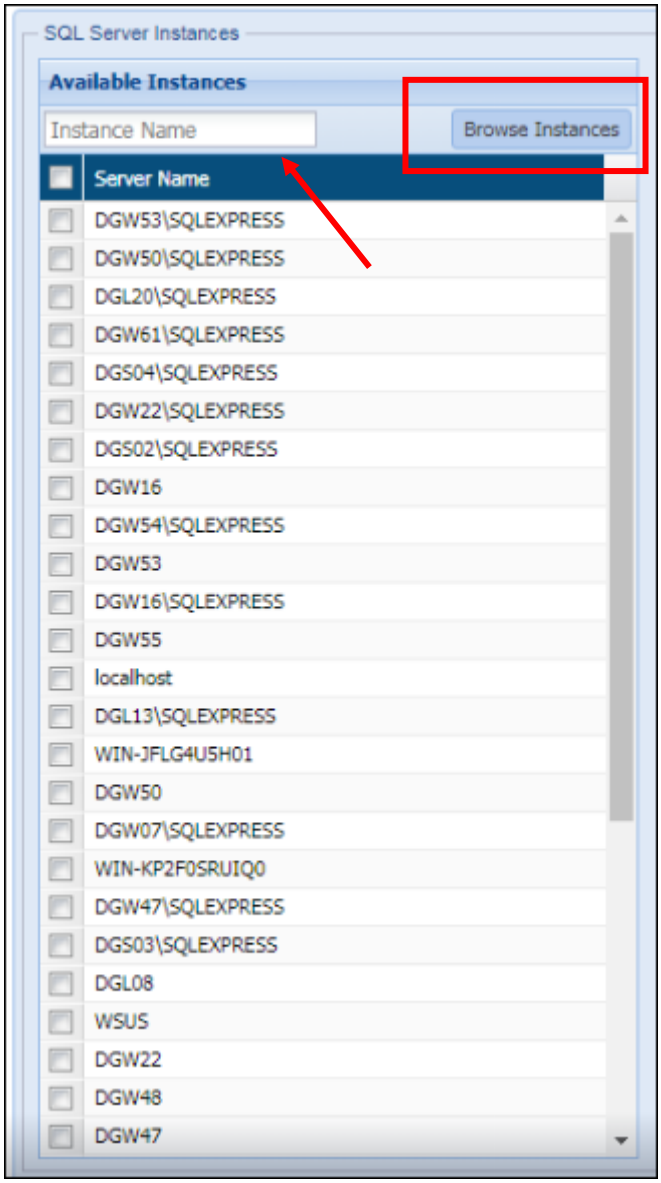
x. **Use Connection String**: It specifies the information about the data source and the means of connecting to it. Check the Use Connection String checkbox, and provide the connection string. Use this option if you want to authenticate the connection using a connection string instead of through username and password.

b) **Multiple Instances:** To connect to multiple instances on an SQL Server, perform the following steps:

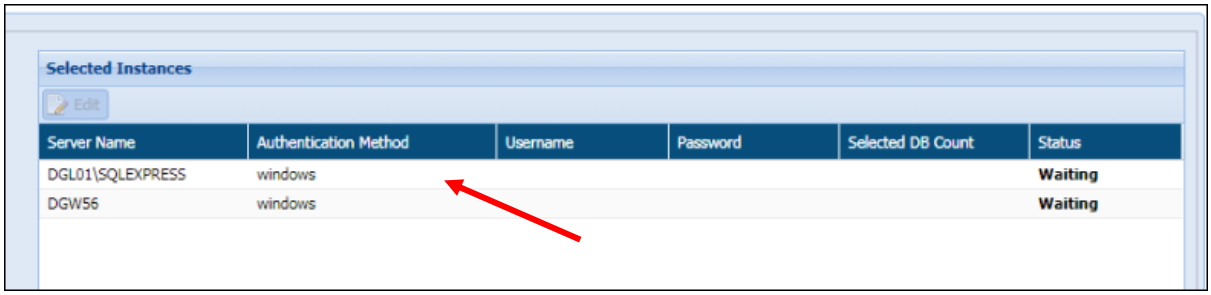
xi. Select the option Multiple Instances, below the Connection Type. The SQL Server Instances panel will appear:



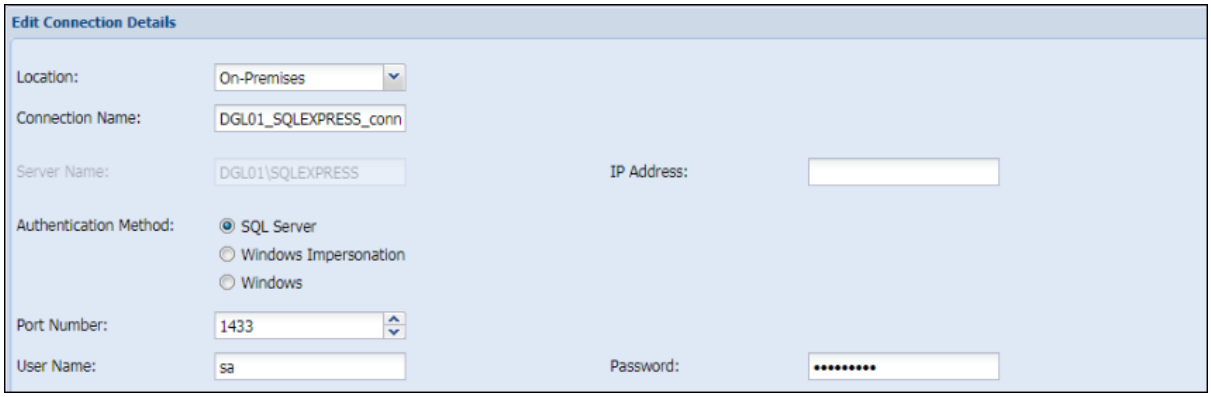
xii. Enter the name of the SQL Server instance or click **Browse Instances** to view all the instances available on the SQL Server.



xiii. Select the required instances and click **Add**. The default authentication method is Windows.



xiv. To change the authentication method for an instance, select the instance and click **Edit**. The following pop-up will appear:



xv. Provide the following details in the **Edit Connection Details** popup:

- **Location:** On-Premises or Cloud.
- **Connection Name:** Enter unique connection name. This fields accepts letters, numbers, and symbols.
- **Server Name:** This field is autopopulated.*
- **IP Address:** Enter the IP Address for the connection.
- **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.
- **Authentication Method:** The following authentication methods are available for SQL Server:

  i. **SQL Server:** Authenticates the connection using SQL Server **Username** and **Password**.

  ii. **Windows Impersonation:** Authenticates the connection using the Windows Impersonation **Username** and **Password**.

  iii. **Windows:** Authenticates the connection based on the connection to the local IP address.

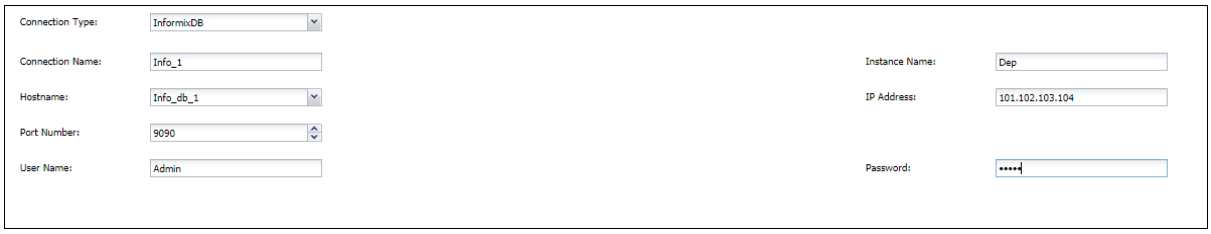
***NOTE:** The prerequisites for creating a connection to multiple instances on an SQL Server, are:

- The sqlcmd utility must be installed.
- Sqlcmd-L command must be executed to get the list of the available instances.
- The Server name is auto populated when the detection agent fetches the name of the server where the command sqlcmd-L is executed.

Refer to Appendix J: Configure Multiple SQL Server Instances in DgSecure for more details.

InformixDB

Following are the options specific to the InformixDB :



a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **Hostname:** Enter the Hostname of the InformixDB or select from the list of available IPs. You can also search for the hostnames and IP addresses of databases by Find DBMS tasks

c) **IP Address:** Enter the IP Address for the connection.

d) **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.

e) **User Name**: Enter the database user name.

f) **Password**: Enter the database password.

SAP HANA

Following are the options specific to the SAP HANA:

a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **Hostname:** Enter the Hostname of the SAP HANA database or select from the list of available IPs. You can also search for the hostnames and IP addresses of databases by Find DBMS tasks

c) **IP Address:** Enter the IP Address for the connection.

d) **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.

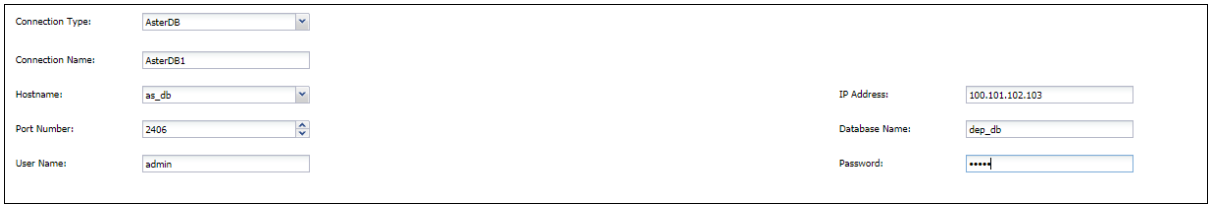
e) **Database Name**: Enter the name of the database.

f) **User Name**: Enter the database user name.

g) **Password**: Enter the database password.

AsterDB

Following are the options specific to the AsterDB:



a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **Hostname:** Enter the Hostname of the AsterDB or select from the list of available IPs. You can also search for the hostnames and IP addresses of databases by Find DBMS tasks

c) **IP Address:** Enter the IP Address for the connection.

d) **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.

e) **Database Name**: Enter the name of the database.

f) **User Name**: Enter the database user name.

g) **Password**: Enter the database password.

Splice Machine

Following are the options specific to the Splice Machine:

a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **Hostname:** Enter the Hostname of the Splice Machine database or select from the list of available IPs. You can also search for the hostnames and IP addresses of databases by Find DBMS tasks.

c) **Group/IP Range:** Select the Group/IP range from the dropdown. For details on how to create and assign an IP range, please refer to the DgSecure Admin Guide.

d) **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.

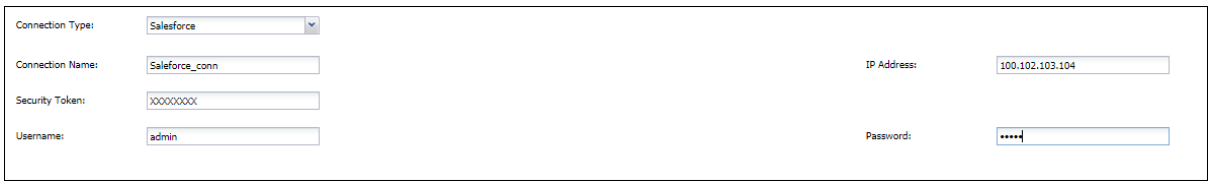
e) **Database Name**: Enter the name of the database.

f) **Authentication Method**: There are two authentication methods for Splice Machine databases, these are as follows:

1. **Native**: Provide the following details to authenticate:
    - User Name: Enter the database user name.
    - Password: Enter the database password.
2. **Kerberos with Principal:** If Splice machine has been installed with Kerberos, provide the following details of the Kerberos setup to authenticate:
    - Principal Name: Enter the principal name.
    - Keytab: Enter the keytab.

Salesforce

Following are the options specific to the Salesforce



a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **IP Address:** Enter the IP Address for the connection.

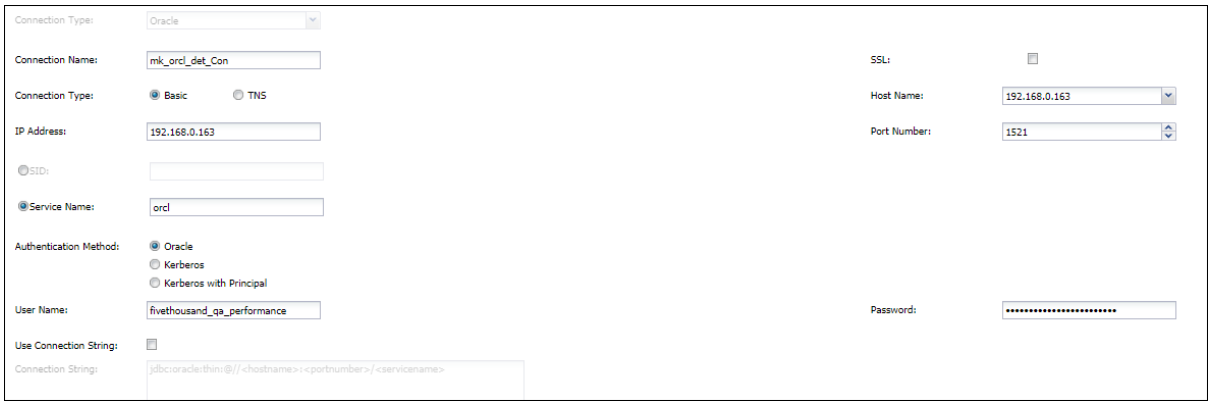
c) **Security Token**: Enter the Salesforce security token.

d) **User Name**: Enter the database user name.

e) **Password**: Enter the database password.

Oracle

Following are the options specific to the Oracle:



a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **SSL:** For an additional layer of security check the SSL (Secure Socket Layer) checkbox. For details on how to setup SSL please refer to DgSecure Admin Guide.

c) **Connection Type:** There are two connection types in oracle:

1. **Basic:** Provide the following details for a basic connection:
   - **Hostname:** Enter the Hostname of the Oracle server or select from the list of available IPs. You can also search for the hostnames and IP addresses of databases by Find DBMS tasks
   - IP Address: Enter the IP Address for the connection.
   - Port Number: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.
   - SID or Service Name: Enter the Service ID (SID) or Service Name.
2. **TNS:** Provide the following details for a basic connection:
   - TNS Name: Enter the TNS Name of the Oracle server.
   - IP Address: Enter the IP Address for the connection.

d) **Authentication Method:** The following authentication methods are available for Oracle Server:

1. **Oracle:** Authenticates the connection using Oracle Server Username and Password.
2. **Kerberos:** Authenticates the connection using the Kerberos.
3. **Kerberos with Principal:** Authenticates using Kerberos system's Principal name and password.

*Note: For using the authentication method, Kerberos, and Kerberos with Principal, the environment should be set up on the IDP. Following are the steps to perform the same:

i. Check that correct krb5.conf file is available on the IDP machine. If not, copy the krb5.conf file on Windows directory or /etc/ directory.

ii. Ping KDC server and database server using hostname from IDP to verify network connectivity. Add entries in /etc/hosts file, if required.

iii. Verify that the clock time should be same on IDP, KDC and DB2, Oracle server machine.

iv. (For Kerberos) Obtain TGT manually at agent machine.
   a. Login to OS with the Kerberos user.
   b. Run "kinit user" command to obtain TGT. Verify using "klist" command.
      i. kinit is available in Java/jre/bin folder.
      ii. The default paths are set when client is configured, but if faced with any issues add the following property in "javaOptions" in jetty-embedded.properties present in agent installation. Once this step has been done, restart the agent.

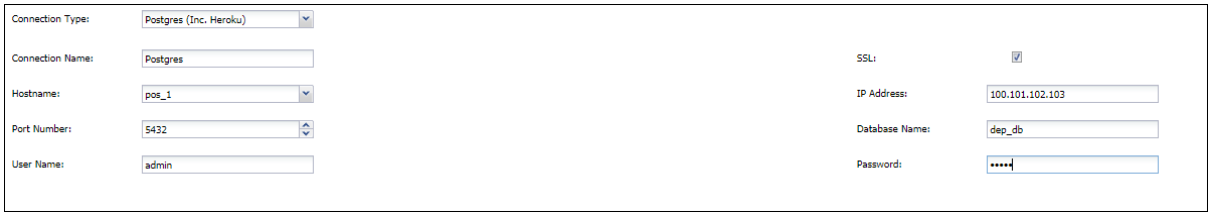
      -Doracle.net.kerberos5_cc_name=<path to krb5 cache file> -Djava.security.krb5.conf=<path to krb5.conf>

v. Connect through DgSecure by entering the required information.

e) **Use Connection String**: A Connection String specifies the information about the data source and the means of connecting to it. Check the Use Connection String checkbox, and provide the connection string. Use this option if you want to secure the connection using connection string instead of SSL.

Postgres (Inc. Heroku)

Following are the options specific to the Postgres (Inc. Heroku):



a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **SSL**: For an additional layer of security check the SSL (Secure Socket Layer) checkbox. For details on how to setup SSL please refer to DgSecure Admin Guide.

***Note:** It is mandatory to check the SSL checkbox if connecting with Heroku database.

c) **Hostname:** Enter the Hostname of the Postgres server or select from the list of available IPs. You can also search for the hostnames and IP addresses of databases by Find DBMS tasks

d) **IP Address:** Enter the IP Address for the connection.

e) **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.

f) **Database Name**: Enter the name of the database.

g) **User Name**: Enter the database user name.

h) **Password**: Enter the database password.

MySQL

Following are the options specific to the MySQL Server:

a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **SSL:** For an additional layer of security check the SSL (Secure Socket Layer) checkbox. For details on how to setup SSL please refer to DgSecure Admin Guide.

c) **Hostname**: Enter the Hostname of the MySQL server or select from the list of available IPs. You can also search for the hostnames and IP addresses of databases by Find DBMS tasks

d) **IP Address:** Enter the IP Address for the connection.

e) **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.

f) **User Name**: Enter the database user name.

g) **Password**: Enter the database password.

h) **Use Connection String**: A Connection String specifies the information about the data source and the means of connecting to it. Check the Use Connection String checkbox, and provide the connection string. Use this option if you want to connect using the connection string instead of the hostname and port number.

Sybase ASE

Following are the options specific to the Sybase ASE:

a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **SSL:** For an additional layer of security check the SSL (Secure Socket Layer) checkbox. For details on how to setup SSL please refer to DgSecure Admin Guide

c) **Hostname**: Enter the Hostname of the Sybase ASE server or select from the list of available IPs. You can also search for the hostnames and IP addresses of databases by Find DBMS tasks

d) **IP Address:** Enter the IP Address for the connection.

e) **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.

f) **User Name**: Enter the database user name.

g) **Password**: Enter the database password.

h) **Use Connection String**: A Connection String specifies the information about the data source and the means of connecting to it. Check the Use Connection String checkbox, and provide the connection string. Use this option if you want to connect using the connection string instead of the hostname and port number.

Teradata

Following are the options specific to the Teradata:

a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **Hostname**: Enter the Hostname of the Teradata server or select from the list of available IPs. You can also search for the hostnames and IP addresses of databases by Find DBMS tasks

c) **IP Address:** Enter the IP Address for the connection.

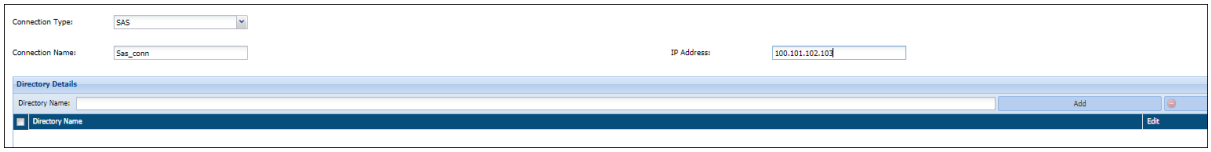
d) **Authentication Method:** The following authentication methods are available for Teradata Server:

1. **Teradata:** Authenticates the connection using Teradata Server Username and Password.
2. **Kerberos:** Authenticates the connection using the Kerberos.
3. **Kerberos with Principal:** Authenticates using Kerberos system's Principal name and password.

e) **Use Connection String**: A Connection String specifies the information about the data source and the means of connecting to it. Check the Use Connection String checkbox, and provide the connection string. Use this option if you want to secure the connection using connection string.

SAS

Following are the options specific to the SAS:

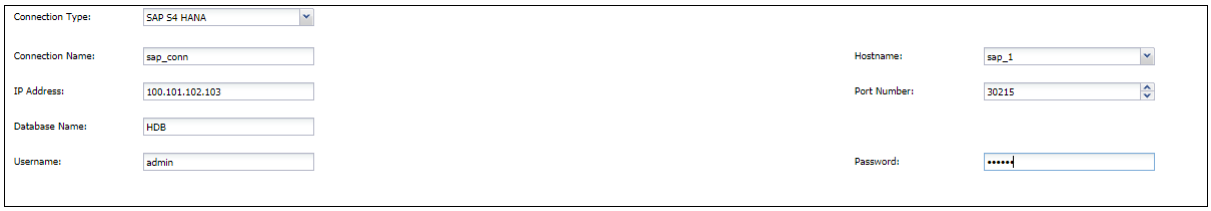


a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **IP Address:** Enter the IP Address for the connection.

SAP S4 Hana

Following are the options specific to the SAP S4 Hana:



a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **Hostname**: Enter the Hostname of the SAP S4 Hana Server or select from the list of available IPs. You can also search for the hostnames and IP addresses of databases by Find DBMS tasks

c) **IP Address:** Enter the IP Address for the connection.

d) **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.

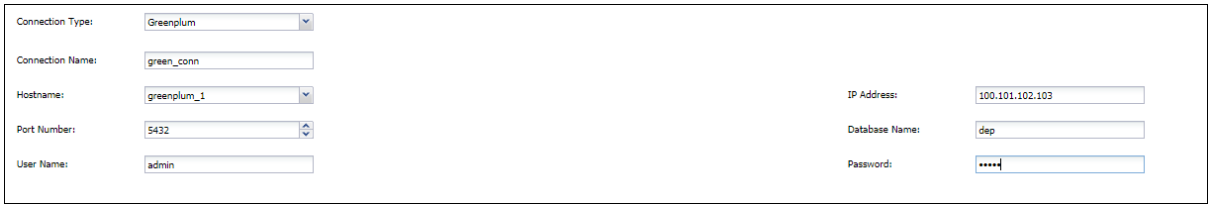
e) **Database Name**: Enter the name of the database.

f) **User Name**: Enter the database user name.

g) **Password**: Enter the database password.

Greenplum

Following are the options specific to the Greenplum:



a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **Hostname**: Enter the Hostname of the Greenplum database or select from the list of available IPs. You can also search for the hostnames and IP addresses of databases by Find DBMS tasks

c) **IP Address:** Enter the IP Address for the connection.

d) **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.

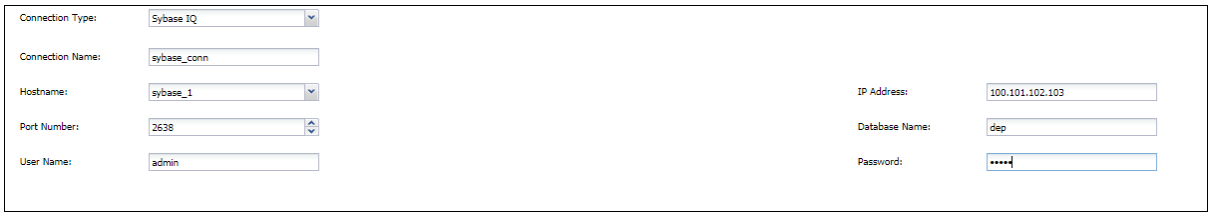
e) **Database Name**: Enter the name of the database.

f) **User Name**: Enter the database user name.

g) **Password**: Enter the database password.

Sybase IQ

Following are the options specific to the Sybase IQ:



a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **Hostname**: Enter the Hostname of the Sybase IQ database or select from the list of available IPs. You can also search for the hostnames and IP addresses of databases by Find DBMS tasks.

c) **IP Address:** Enter the IP Address for the connection.

d) **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.

e) **Database Name**: Enter the name of the database.

f) **User Name**: Enter the database user name.

g) **Password**: Enter the database password.

DB2

Following are the options specific to the DB2:

a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **SSL:** For an additional layer of security check the SSL (Secure Socket Layer) checkbox. For details on how to setup SSL please refer to DgSecure Admin Guide.

c) **Hostname:** Enter the Hostname of the DB2 database or select from the list of available IPs. You can also search for the hostnames and IP addresses of databases by Find DBMS tasks

d) **IP Address:** Enter the IP Address for the connection.

e) **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.

f) **Database Name**: Enter the name of the database.

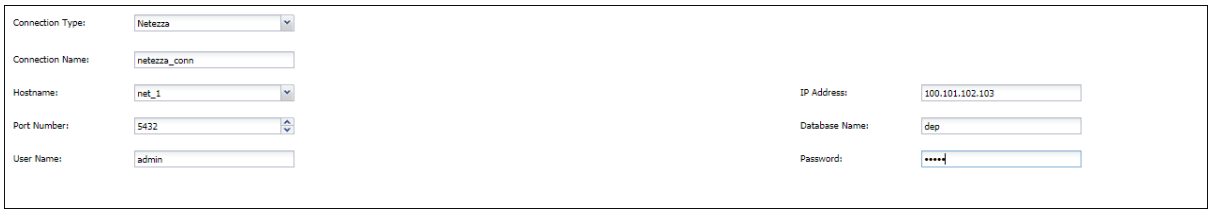
g) **Authentication Method**: There are to authentication methods for DB2 databases, these are as follows:

1. **Native:** Provide the following details to authenticate:
   - User Name: Enter the database user name.
   - Password: Enter the database password.
2. **Kerberos with Principal:** If Splice machine has been installed with Kerberos, provide the following details of the Kerberos setup to authenticate:
   - Principal Name: Enter the principal name.
   - Keytab: Enter the keytab.

h) **Use Connection String**: A Connection String specifies the information about the data source and the means of connecting to it. Check the Use Connection String checkbox, and provide the connection string. Use this option if you want to secure the connection using connection string instead of SSL.

Netezza

Following are the options specific to the Netezza:



a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **Hostname**: Enter the Hostname of the Netezza database or select from the list of available IPs. You can also search for the hostnames and IP addresses of databases by Find DBMS tasks.

c) **IP Address:** Enter the IP Address for the connection.

d) **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.

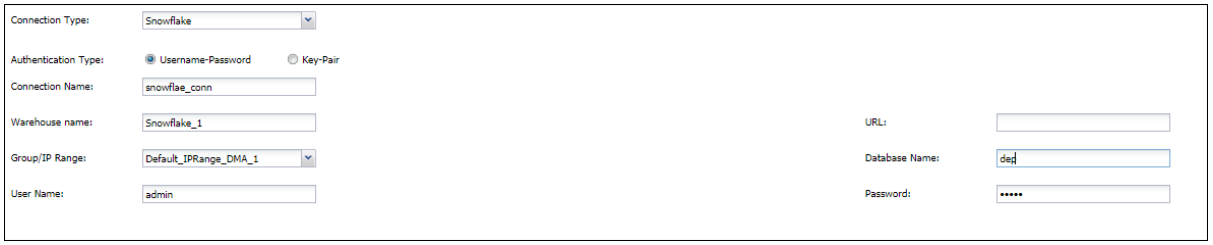
e) **Database Name**: Enter the name of the database.

f) **User Name**: Enter the database user name.

g) **Password**: Enter the database password.

Snowflake

Following are the options specific to the Snowflake:



a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **Warehouse name:** Enter the name of the Snowflake warehouse.

c) **URL**: Enter the URL to the snowflake setup

d) **Group/IP Range:** Select the Group/IP range from the dropdown. For details on how to create and assign an IP range, please refer to the DgSecure Admin Guide.

e) **Database Name**: Enter the name of the database.

f) **Authentication Method**: There are to authentication methods for DB2 databases, these are as follows:

1. **Username password:** Provide the username and password to authenticate.
2. **Key pair:** Provide the username, keypath and passphrase to authenticate.

g) **Use Connection String**: A Connection String specifies the information about the data source and the means of connecting to it. Check the Use Connection String checkbox, and provide the connection string. Use this option if you want to secure the connection using connection string instead of SSL.

SAS SPD

Following are the options specific to the SAS SPD :

a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **Hostname:** Enter the Hostname of the SAS SPD database or select from the list of available IPs. You can also search for the hostnames and IP addresses of databases by Find DBMS tasks.

c) **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.

d) **Libname domain:** Enter the Libname domain for the connection.

e) **SNET Port Number**: Enter the SNET Port Number.

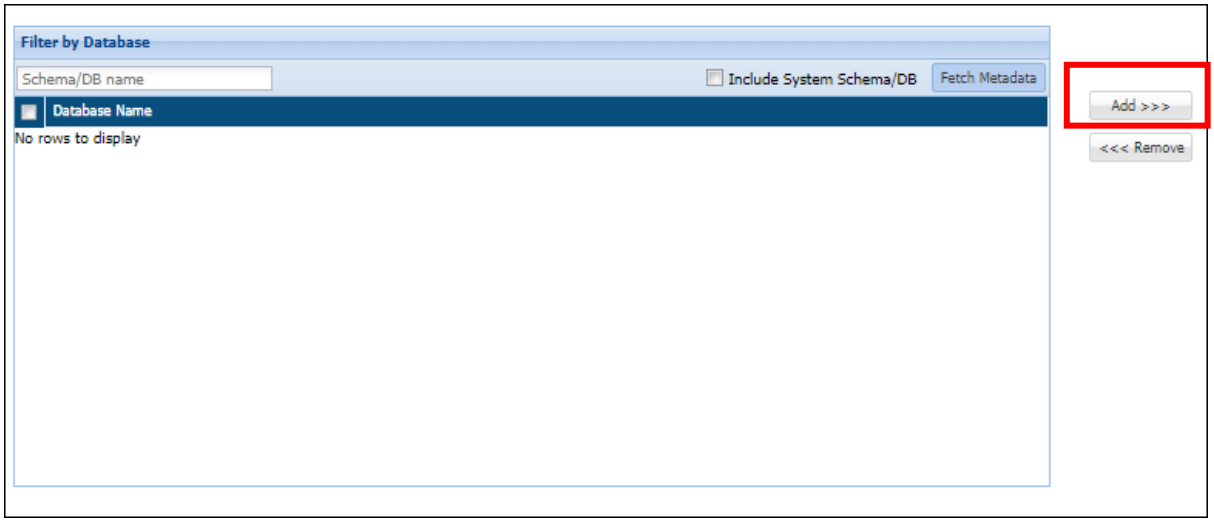
f) **SNET Hostname**: Enter the SNET Hostname.

g) **Group/IP Range:** Select the Group/IP range from the dropdown. For details on how to create and assign an IP range, please refer to the DgSecure Admin Guide.

h) **User Name**: Enter the database user name.

i) **Password**: Enter the database password.

2. After providing the connection details enter the name of the database in the bottom left filter by database panel, select the required schemas and databases and click **Add**. The selected databases will appear in the panel on the bottom right.



***NOTE:**

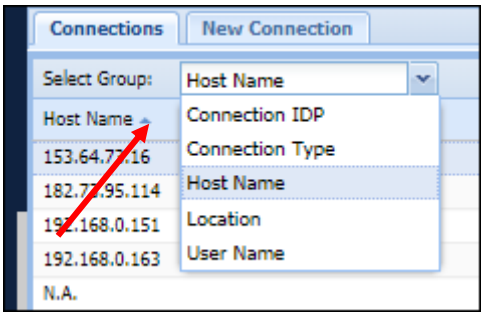
- For multiple Instances in SQL Server, select the required instance and click **Edit** to view and select the databases and schemas.
- For SAS and SAS SPD servers there is no **Fetch Metadata** functionality, user has to select the directories for SAS and for SAS SPD, select the directories available on the SNET server at the time of task execution.

3. Click the **Test** button, to test the connection.

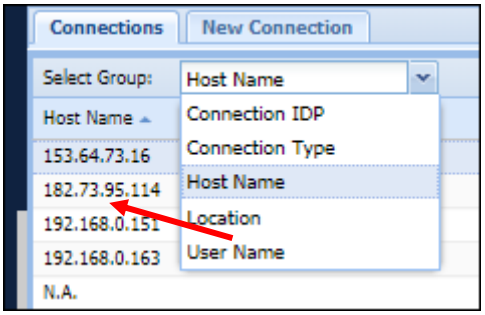
4. Click **Save** button, to save the changes.

5. To edit a connection, go RDBMS > Connection Manager > Connections.

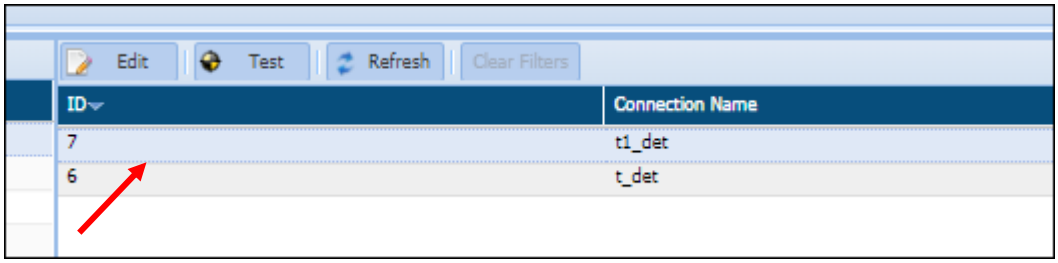
6. Select the connection classification from the Select Group dropdown.



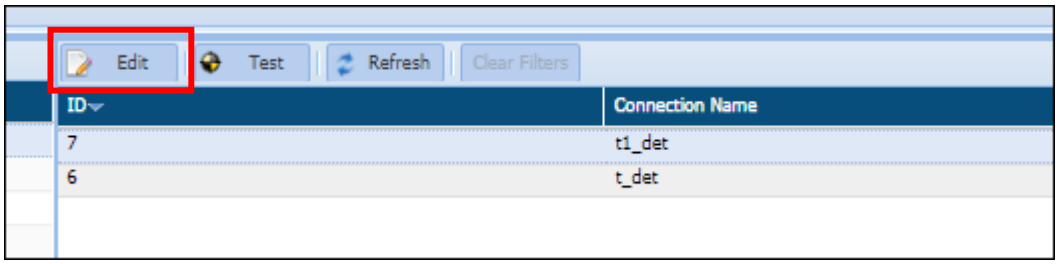
7. Select the classification type.



8. Select the connection.



9. Click **Edit**.

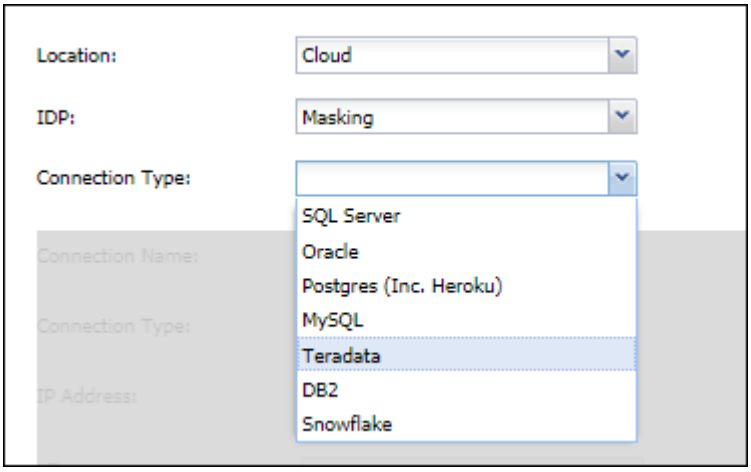


10. Location, IDP and connection type cannot be edited. A connection can be edited using the same steps as task creation.

4.2.1.1 Masking

Perform the following steps to create a masking connection for different databases:

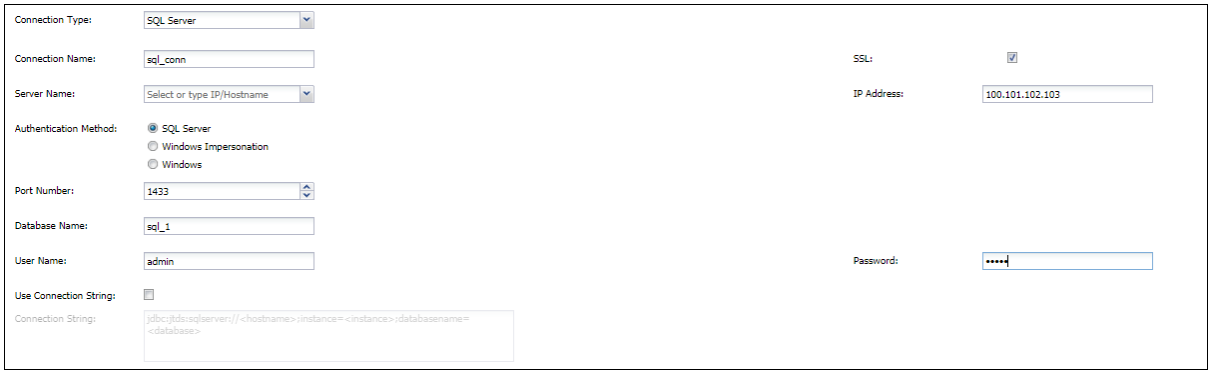
1. After selecting the Location (On-premises or Cloud) and IDP (Masking), select the database from the **Connection Type** drop-down.



2. Masking is supported on the following RDBMS databases:

SQL Server

Following are the options specific to the SQL Server:



a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **SSL:** For an additional layer of security check the SSL (Secure Socket Layer) checkbox. For details on how to setup SSL please refer to DgSecure Admin Guide.

c) **Server Name:** Enter the name of the SQL Server or select from the list of available IPs. You can also search for the hostnames and IP addresses of databases by Find DBMS tasks

d) **IP Address:** Enter the IP Address for the connection.

e) **Authentication Method:** The following authentication methods are available for SQL Server:

- **SQL Server:** Authenticates the connection using SQL Server Username and Password.
- **Windows Impersonation:** Authenticates the connection using the Windows Impersonation Username and Password.
- **Windows:** Authenticates the connection based on the connection to the local IP address.

f) **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.

g) **Database Name**: Enter the name of the database.

h) **User Name**: Enter the database user name.

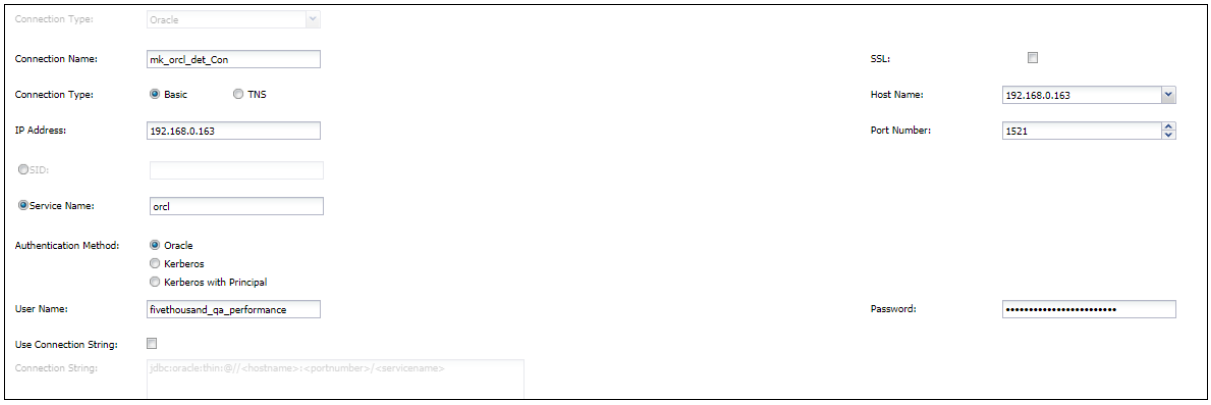
i) **Password**: Enter the database password.

j) **Use Connection String**: A Connection String specifies the information about the data source and the means of connecting to it. Check the Use Connection String checkbox,

and provide the connection string. Use this option if you want to authenticate the connection using a connection string instead of through username and password.

Oracle

Following are the options specific to the Oracle:



a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **SSL:** For an additional layer of security check the SSL (Secure Socket Layer) checkbox. For details on how to setup SSL please refer to DgSecure Admin Guide.

c) **Connection Type:** There are two connection types in oracle:

1. **Basic:** Provide the following details for a basic connection:

   - Hostname: Enter the Hostname of the Oracle server or select from the list of available IPs. You can also search for the hostnames and IP addresses of databases by Find DBMS tasks
   - IP Address: Enter the IP Address for the connection.
   - Port Number: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.
   - SID or Service Name: Enter the Service ID (SID) or Service Name.

2. **TNS:** Provide the following details for a basic connection:

   - TNS Name: Enter the TNS Name of the Oracle server.
   - IP Address: Enter the IP Address for the connection.

d) **Authentication Method:** The following authentication methods are available for Oracle Server:

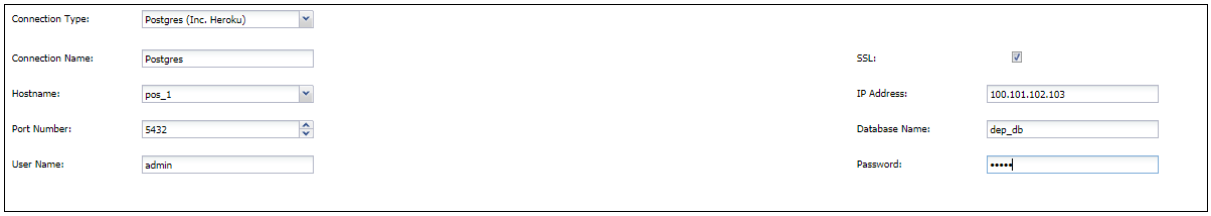
   - **Oracle:** Authenticates the connection using Oracle Server Username and Password.
   - **Kerberos:** Authenticates the connection using the Kerberos.
   - **Kerberos with Principal:** Authenticates using Kerberos system's Principal

name and password.

e) **Use Connection String**: A Connection String specifies the information about the data source and the means of connecting to it. Check the **Use Connection String** checkbox, and provide the connection string. Use this option if you want to secure the connection using connection string instead of SSL.

Postgres (Inc. Heroku)

Following are the options specific to the Postgres (Inc. Heroku):



a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **SSL:** For an additional layer of security check the SSL (Secure Socket Layer) checkbox. For details on how to setup SSL please refer to DgSecure Admin Guide.

c) **Hostname**: Enter the Hostname of the Postgres server or select from the list of available IPs. You can also search for the hostnames and IP addresses of databases by Find DBMS tasks

d) **IP Address:** Enter the IP Address for the connection.

e) **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.

f) **Database Name**: Enter the name of the database.

g) **User Name**: Enter the database user name.

h) **Password**: Enter the database password.

MySQL

Following are the options specific to the MySQL Server:

a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **SSL:** For an additional layer of security check the SSL (Secure Socket Layer) checkbox. For details on how to setup SSL please refer to DgSecure Admin Guide.

c) **Hostname**: Enter the Hostname of the MySQL server or select from the list of available IPs. You can also search for the hostnames and IP addresses of databases by Find DBMS tasks

d) **IP Address:** Enter the IP Address for the connection.

e) **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.

f) **Database Name**: Enter the name of the database.

g) **User Name**: Enter the database user name.

h) **Password**: Enter the database password.

i) **Use Connection String**: A Connection String specifies the information about the data source and the means of connecting to it. Check the Use Connection String checkbox, and provide the connection string. Use this option if you want to connect using the connection string instead of the hostname and port number.

Teradata

Following are the options specific to the Teradata:

a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **Hostname**: Enter the Hostname of the Teradata server or select from the list of available IPs. You can also search for the hostnames and IP addresses of databases by Find DBMS tasks

c) **IP Address:** Enter the IP Address for the connection.

d) **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.

e) **Database Name**: Enter the name of the database.

f) **User Name**: Enter the database user name.

g) **Password**: Enter the database password.

h) **Use Connection String**: A Connection String specifies the information about the data source and the means of connecting to it. Check the Use Connection String checkbox, and provide the connection string. Use this option if you want to secure the connection using connection string.

DB2

Following are the options specific to the DB2:

a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **SSL:** For an additional layer of security check the SSL (Secure Socket Layer) checkbox. For details on how to setup SSL please refer to DgSecure Admin Guide.

c) **Hostname:** Enter the Hostname of the DB2 database or select from the list of available IPs. You can also search for the hostnames and IP addresses of databases by Find DBMS tasks

d) **IP Address:** Enter the IP Address for the connection.

e) **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.

f) **Database Name**: Enter the name of the database.

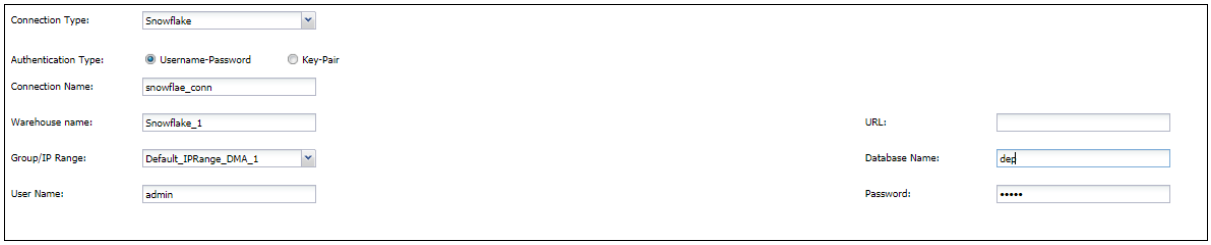
g) **User Name**: Enter the database user name.

h) **Keytab**: Enter the keytab value.

i) **Use Connection String**: A Connection String specifies the information about the data source and the means of connecting to it. Check the Use Connection String checkbox, and provide the connection string. Use this option if you want to secure the connection using connection string instead of SSL.

Snowflake

Following are the options specific to the Snowflake:



a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **Warehouse name:** Enter the name of the Snowflake warehouse.

c) **URL**: Enter the URL to the snowflake setup

d) **Group/IP Range:** Select the Group/IP range from the dropdown. For details on how to create and assign an IP range, please refer to the DgSecure Admin Guide.

e) **Database Name**: Enter the name of the database.

f) **Authentication Method**: There are to authentication methods for DB2 databases, these are as follows:

- **Username password:** Provide the username and password to authenticate.
- **Key pair:** Provide the username, keypath and passphrase to authenticate.

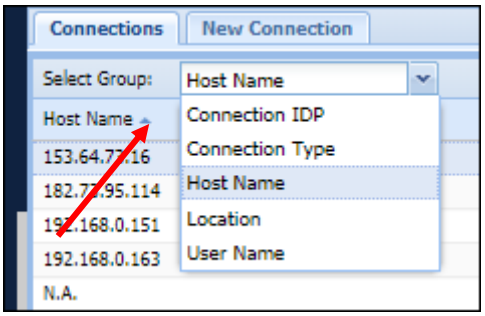
g) **Use Connection String**: A Connection String specifies the information about the data source and the means of connecting to it. Check the Use Connection String checkbox,

and provide the connection string. Use this option if you want to secure the connection using connection string instead of SSL.

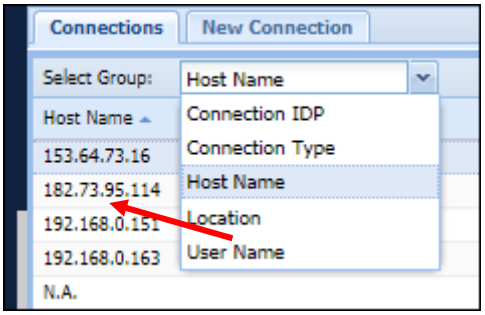
3. Click the **Test** button, to test the connection.

4. Click **Save** button, to save the changes.

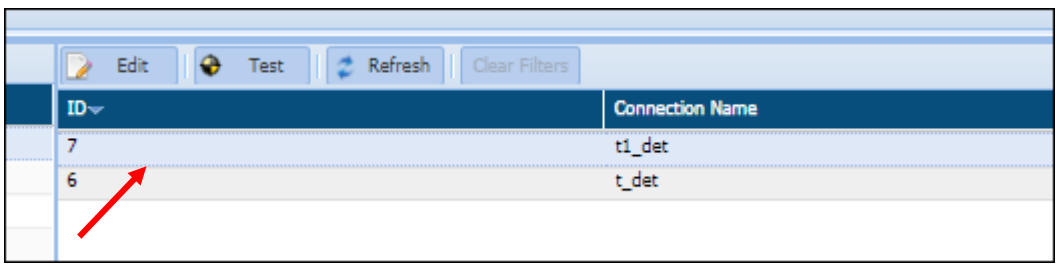
5. To edit a connection, go to RDBMS > Connection Manager > Connections.
6. Select the connection classification from the Select Group dropdown.



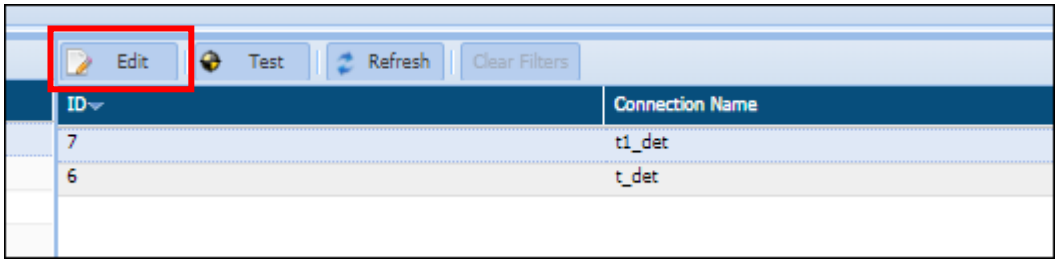
7. Select the classification type.



8. Select the connection.



9. Click **Edit**.

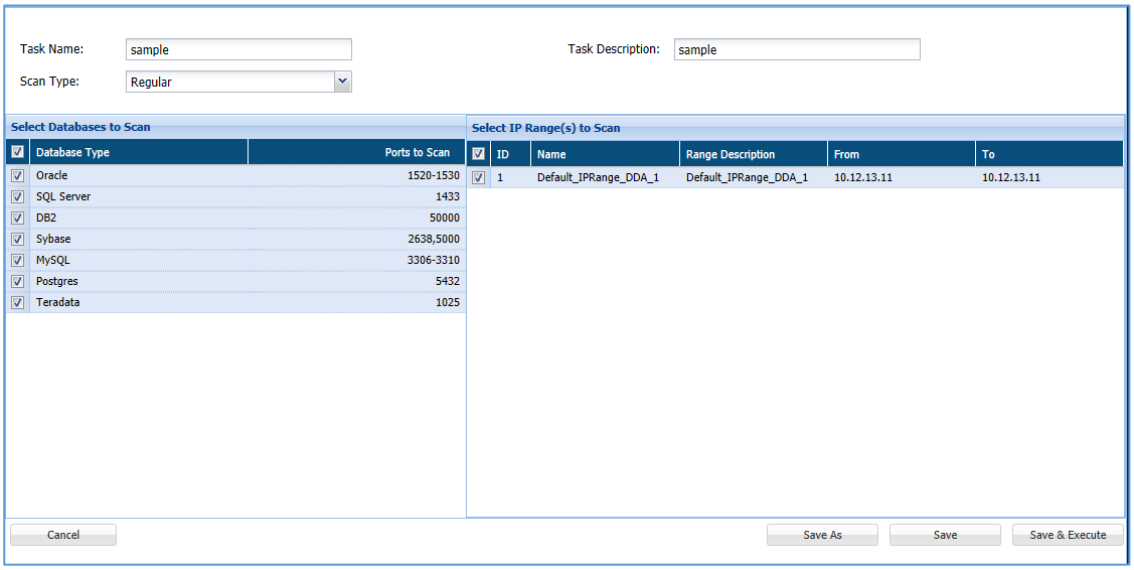


4.2.1.2 Create a Task in Find DBMS

In RDBMS, you can also search for an IP address using the FIND DBMS in DgSecure application.

To create a Connection. Click **RDBMS > Connection Manager > FIND DBMS > Tasks > New Task** tab.

The below image shows the user interface for creating a Task.



1. **Task Name**: Enter the Task Name. The Task Name text box accepts letters, numbers and symbols. The name should be unique to each individual task name.

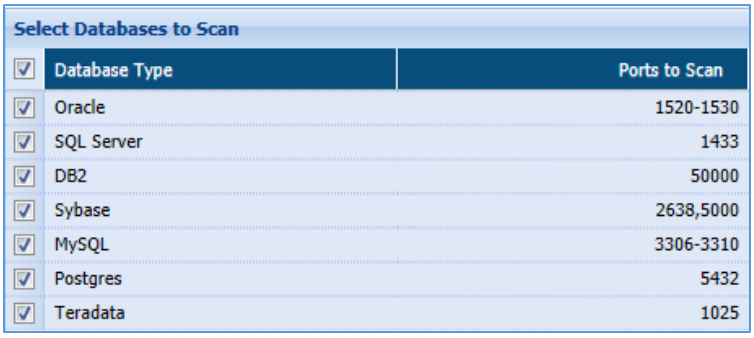
2. **Task Description**: Enter the description for the task name.

3. **Scan Type**: Select either 'Regular' or 'Intense' from the Scan Type drop-down.

    a) **Regular**: This option allows you to search for the default port in the network. For Example: Oracle default port is 1521.

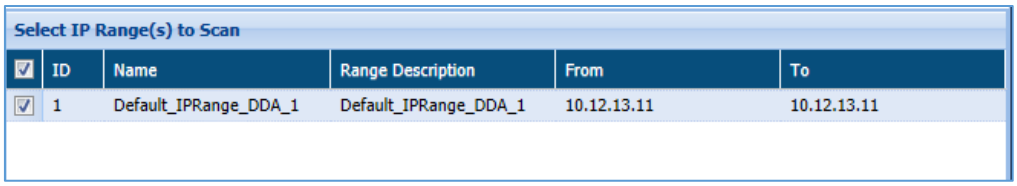
    b) **Intense**: This option search for the custom as well as default port in the network.

4. **Select Database to Scan**: This pane displays the list of all available database along with their assigned ports. The ports are editable. You can select the available databases from the given list.



c) **Select IP Ranges(s) to Scan**: This pane shows the available scan ranges. You can select as many connections for scanning.

***Note**: All the IP ranges which are being displayed in the window are setup in the DgSecure Admin Application.



d) **Cancel**: Click the **Cancel** button, if you do not want to save the changes.

e) **Save**: Click the **Save** Button, if you want to save the changes.

f) **Save & Execute**: Click the **Save & Execute** button, if you wish to save and execute the task at the same time.

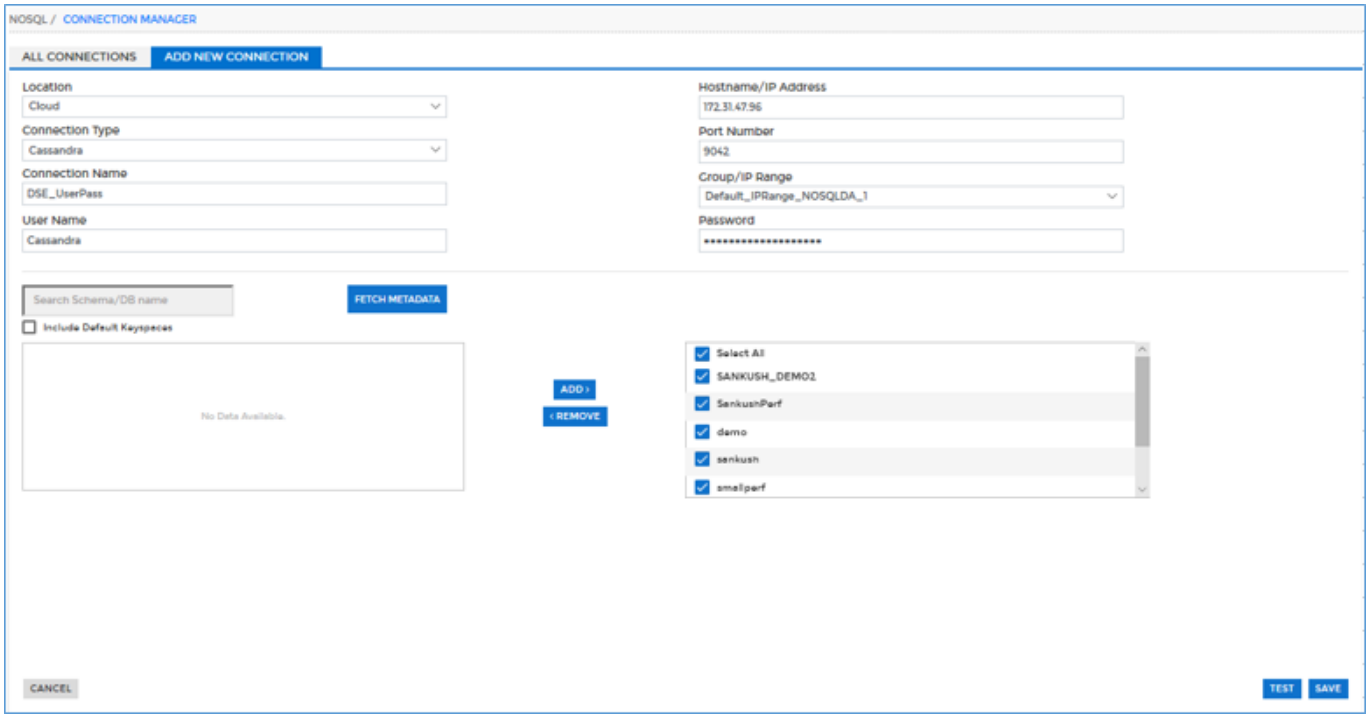
g) **Save As**: Click the **Save As** button, if you have edited the name of the task.

4.2.2 NoSQL

DgSecure Supports Detection for the NoSQL databases: MongoDB, Couchbase and Cassandra. Each of these databases is available under the NoSQL in the menu.

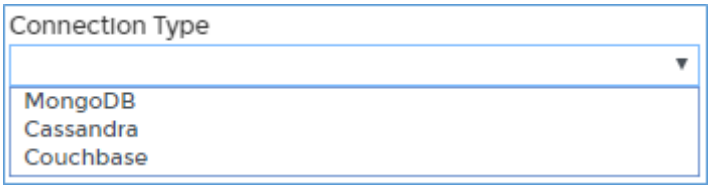
To create a Connection. Click **NoSQL > CONNECTION MANAGER > All CONNECTIONS > ADD NEW CONNECTION** tab.

The below image shows the user interface for creating a connection.



1. **Location:** Select either 'On-Premises' or 'Cloud' option from the Location drop-down.

2. **Connection Type:** Select the Connection Type from the given option. NoSQL support Cassandra, MongoDB and Couchbase connections.



3. **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, symbols.

4. **Extra Option**: For security, enable Mongo DB provide **AuthSource** and **AuthMechanism** in the **Extra Option** panel. To set the AuthSource and AuthMechanism, perform the steps:

***Note**: The **Extra Option** field is visible only when 'MongoDB' is selected in **Connection Type**.

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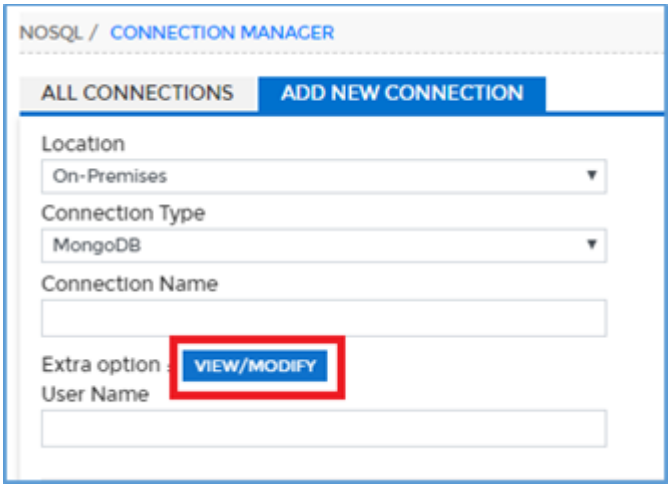
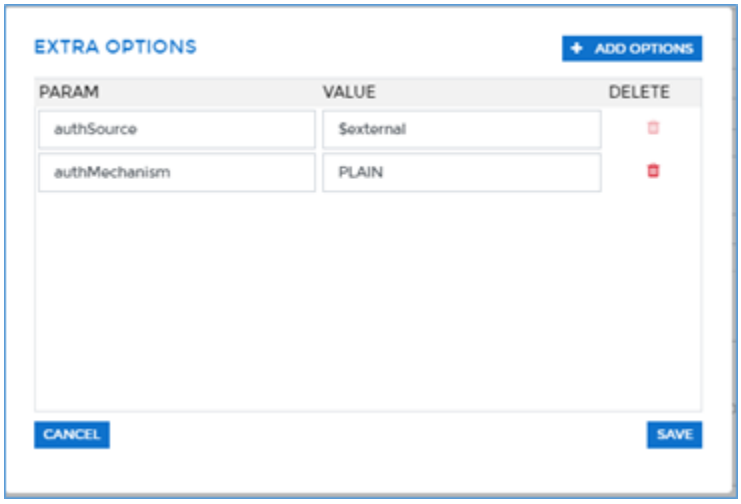
   i. Click the **View/Modify** button.



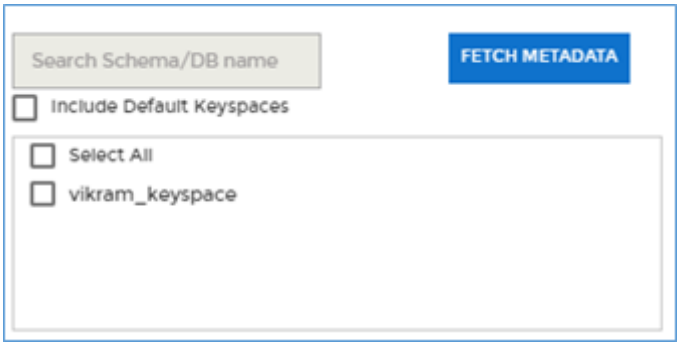
ii. Enter the values for **AuthSource** and **AuthMechanism** paramters.



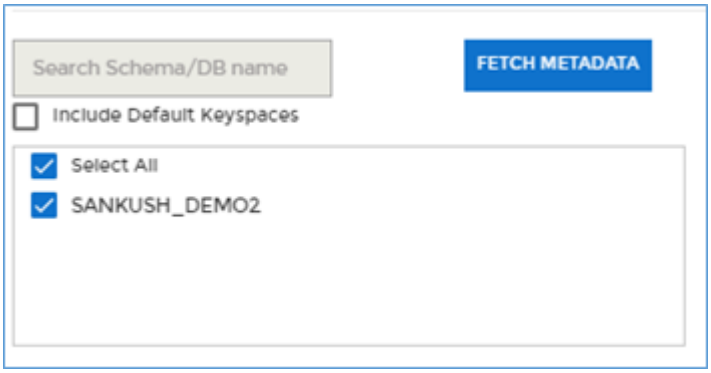
- Click on **+Add Options** to add a new parameter and value textbox.
- Click **Save** to make the changes effective.

5. **Hostname/IP Address**: Enter the Host Name or IP address in the field.
6. **Port Number**: Enter the Port Number for establishing the connection. You can also edit the port number later, if required.
7. **Group/IP Range:** Select the Group/IP Range from the Group/IP range drop-down.
8. **User Name**: Enter the database user name.
9. **Password**: Enter the database password.

10. **Filter By Database**: This pane will list down all the database/schema for the entered connection. To populate the bottom window, click Fetch Metadata button and it will list down the available database/schema for the connection.



To select the database/schema name, check the checkbox next to the database or you can search the database by entering the schema name in the textbox.



11. **Add**: Click the **Add** button, if you want to add the selected database name in **Selected Databases/Schemas** panel.

12. **Remove**: Click the **Remove** button, if you want to remove the selected database from the **Selected Databases/Schemas** panel.

13. **Selected Databases/Schemas**: This pane will display the list of all selected schemas or databases name.

14. **Cancel**: Click the **Cancel** button, if you do not want to save the changes.

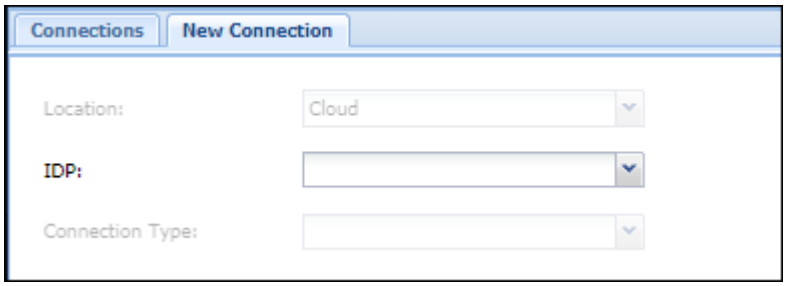
15. **Test**: Click the **Test** button, if you wish to test the connection before using it.

16. **Save:** Click the **Save** button to make the changes effective.

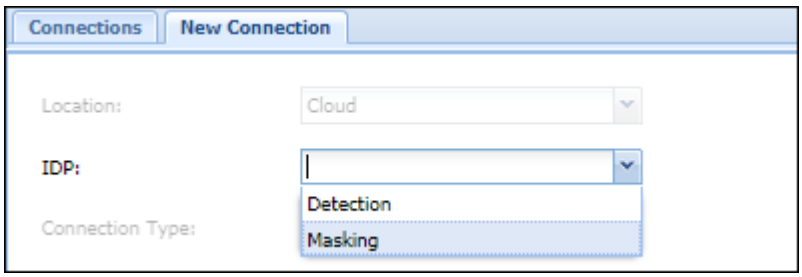
4.2.3 AWS

DgSecure supports masking and detection in Redshift on AWS. Perform the following steps to create a connection:

1. Click AWS>RDS/Redshift > Connection Manager > Connections > New Connection tab.



2. The location is **Cloud** by default.
3. Select the IDP type as **Detection** or **Masking**, depending on task that has to be executed on the database.

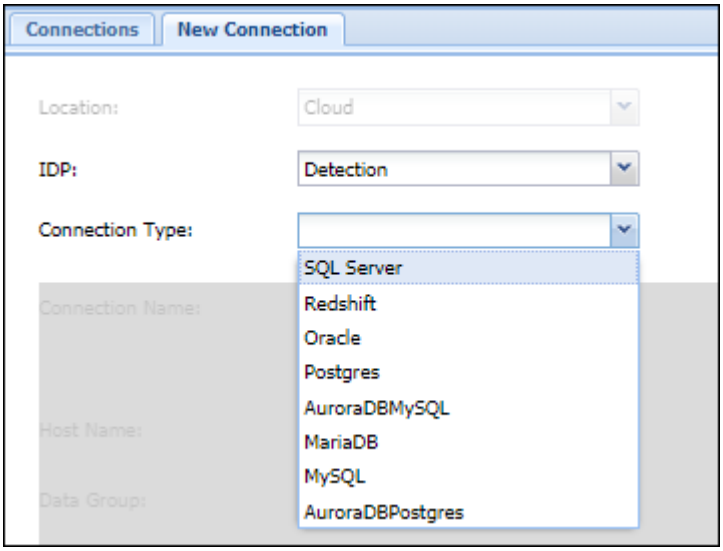


4. Steps to create a connection for Detection and Masking are as follows:

Detection

Perform the following steps to create a detection connection for your database:

a) Select the database from the **Connection Type** drop-down.



5. Detection is supported on the following RDS/Redshift databases:

SQL Server

Refer to section SQL Server in RDBMS.

Redshift

Following are the options specific to Redshift:

a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **SSL:** For an additional layer of security check the SSL (Secure Socket Layer) checkbox. For details on how to setup SSL please refer to DgSecure Admin Guide.

c) **Hostname**: Enter the Hostname of the Redshift server or select from the list of available IPs.

d) **Group/IP Range:** Select the Group/IP range from the dropdown. For details on how to create and assign an IP range, please refer to the DgSecure Admin Guide.

e) **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.

f) **Database Name**: Enter the name of the database.

g) **User Name**: Enter the database user name.

h) **Password**: Enter the database password.

i) **Use Connection String**: A Connection String specifies the information about the data source and the means of connecting to it. Check the Use Connection String checkbox, and provide the connection string. Use this option if you want to connect using the connection string instead of the hostname and port number.

Oracle

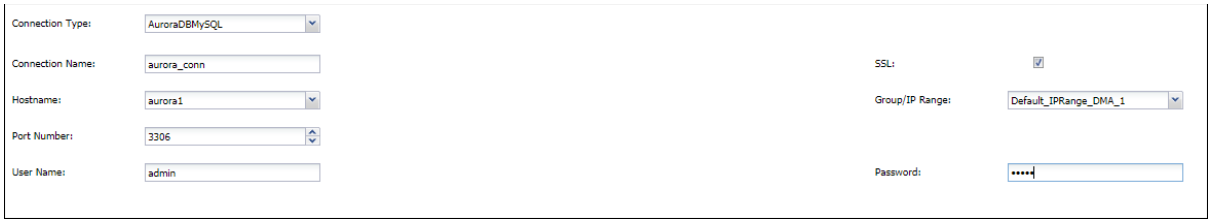
Refer to section Oracle in RDBMS.

Postgres

Refer to section Postgres (Inc. Heroku) in RDBMS.

AuroraDBMySQL

Following are the options specific to AuroraDBMySQL:



a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **SSL:** For an additional layer of security check the SSL (Secure Socket Layer) checkbox. For details on how to setup SSL please refer to DgSecure Admin Guide.

c) **Hostname**: Enter the Hostname of the AuroraDBMySQL server or select from the list of available IPs.

d) **Group/IP Range:** Select the Group/IP range from the dropdown. For details on how to create and assign an IP range, please refer to the DgSecure Admin Guide.

e) **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.

f) **User Name**: Enter the database user name.

g) **Password**: Enter the database password.

MariaDB

Following are the options specific to MariaDB:

a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **SSL:** For an additional layer of security check the SSL (Secure Socket Layer) checkbox. For details on how to setup SSL please refer to DgSecure Admin Guide.

c) **Hostname**: Enter the Hostname of the MariaDB server or select from the list of available IPs.

d) **Group/IP Range:** Select the Group/IP range from the dropdown. For details on how to create and assign an IP range, please refer to the DgSecure Admin Guide.

e) **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.

f) **User Name**: Enter the database user name.

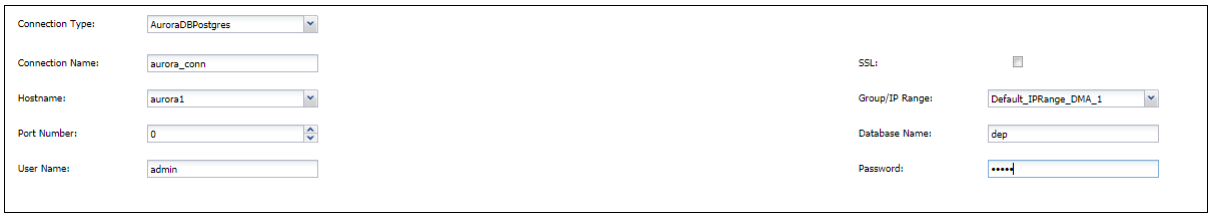
g) **Password**: Enter the database password.

MySQL

Refer to section MySQL in RDBMS.

AuroraDBPostgres

Following are the options specific to AuroraDBPostgres:



a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **SSL:** For an additional layer of security check the SSL (Secure Socket Layer) checkbox. For details on how to setup SSL please refer to DgSecure Admin Guide.

c) **Hostname**: Enter the Hostname of the AuroraDBPostgres server or select from the list of available IPs.

d) **Group/IP Range:** Select the Group/IP range from the dropdown. For details on how to create and assign an IP range, please refer to the DgSecure Admin Guide.

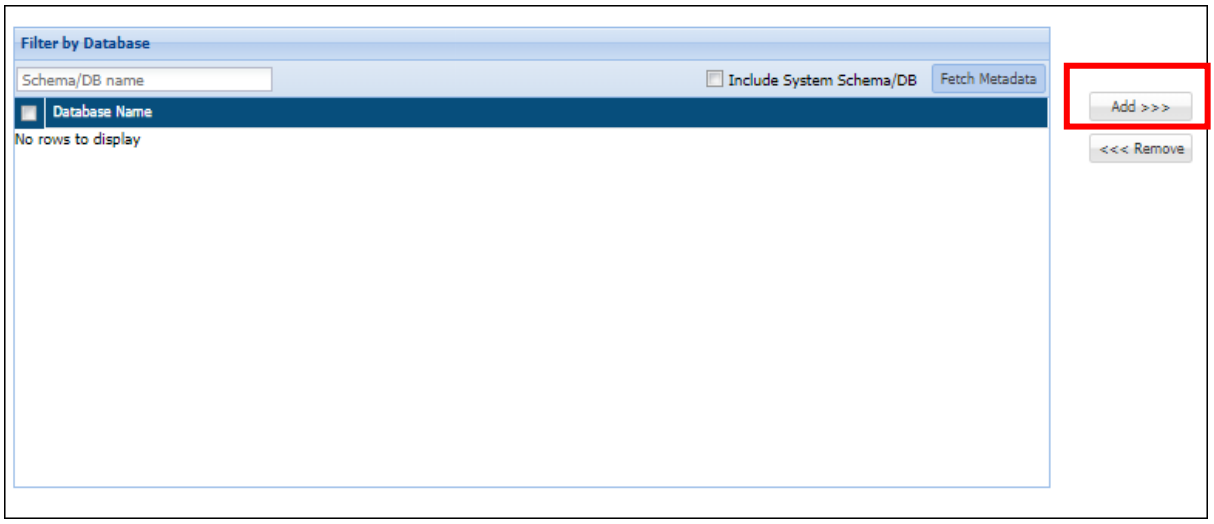
e) **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.

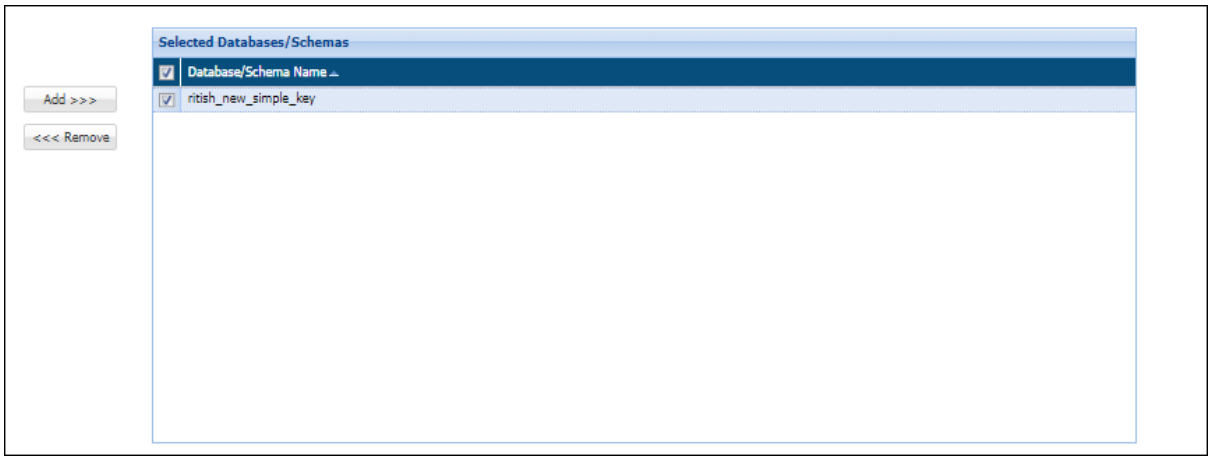
f) **Database Name**: Enter the name of the database.

g) **User Name**: Enter the database user name.

h) **Password**: Enter the database password.

6. After providing the connection details enter the name of the database in the bottom left filter by database panel, select the required schemas and databases and click **Add**. The selected databases will appear in the panel on the bottom right.

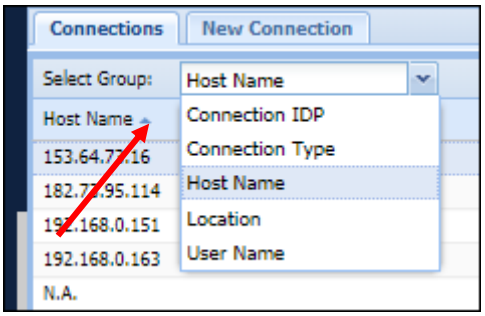




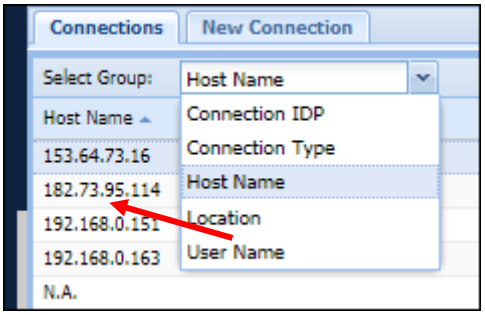
7. Click the **Test** button, to test the connection.

8. Click **Save** button, to save the changes.

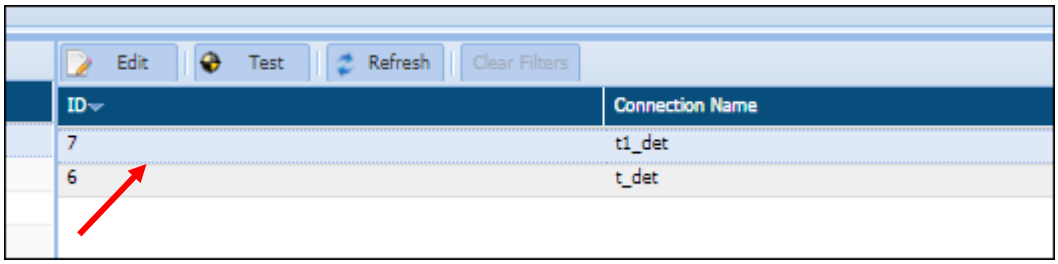
9. To edit a connection, go to AWS>RDS/Redshift > Connection Manager > Connections.
10. Select the connection classification from the Select Group dropdown.



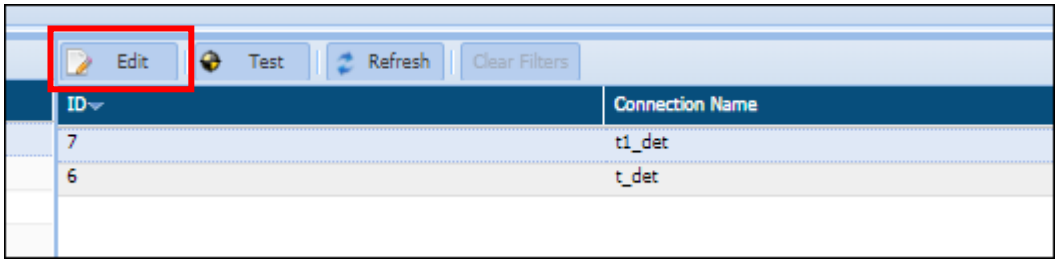
11. Select the classification type.



12. Select the connection.



13. Click **Edit**.

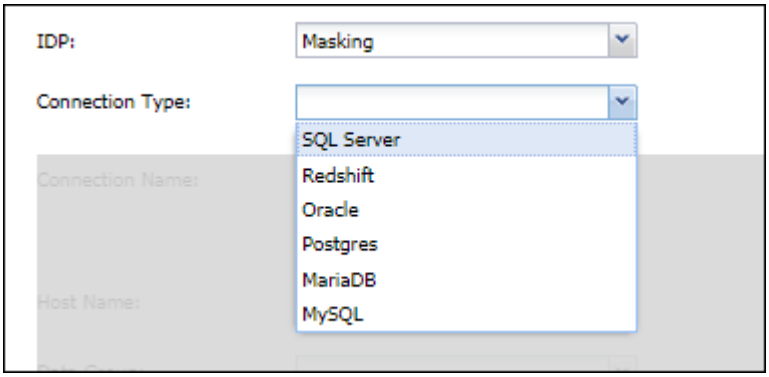


14. IDP and connection type cannot be edited. A connection can be edited using the same steps as task creation.

Masking

Perform the following steps to create a masking connection for different databases:

1. Select the database from the **Connection Type** drop-down.



2. Masking is supported on the following RDS/Redshift databases:

SQL Server

Refer to section SQL Server

Redshift

Following are the options specific to Redshift:

a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **SSL:** For an additional layer of security check the SSL (Secure Socket Layer) checkbox. For details on how to setup SSL please refer to DgSecure Admin Guide.

c) **Hostname**: Enter the Hostname of the Redshift server or select from the list of available IPs.

d) **Group/IP Range:** Select the Group/IP range from the dropdown. For details on how to create and assign an IP range, please refer to the DgSecure Admin Guide.

e) **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.

f) **Database Name**: Enter the name of the database.

g) **User Name**: Enter the database user name.

h) **Password**: Enter the database password.

i) **Use Connection String**: A Connection String specifies the information about the data source and the means of connecting to it. Check the Use Connection String checkbox, and provide the connection string. Use this option if you want to connect using the connection string instead of the hostname and port number.

Oracle

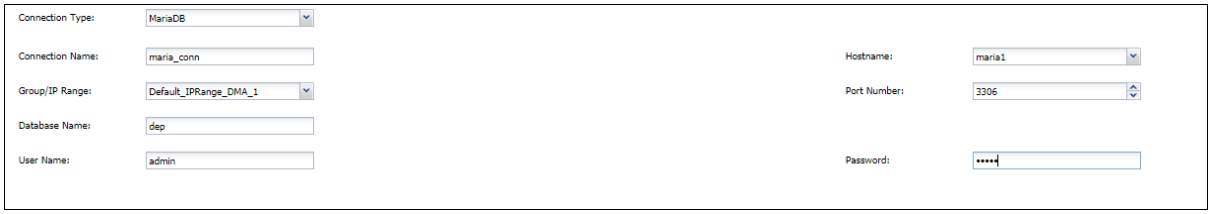
Refer to section Oracle

Postgres

Refer to section Postgres (Inc. Heroku).

MariaDB

Following are the options specific to MariaDB:



a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **Hostname**: Enter the Hostname of the MariaDB server or select from the list of available IPs.

c) **Group/IP Range:** Select the Group/IP range from the dropdown. For details on how to create and assign an IP range, please refer to the DgSecure Admin Guide.

d) **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.

e) **Database Name**: Enter the name of the database.

f) **User Name**: Enter the database user name.

g) **Password**: Enter the database password.

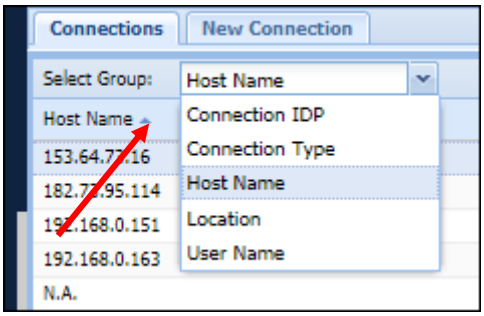
MySQL

Refer to section MySQL

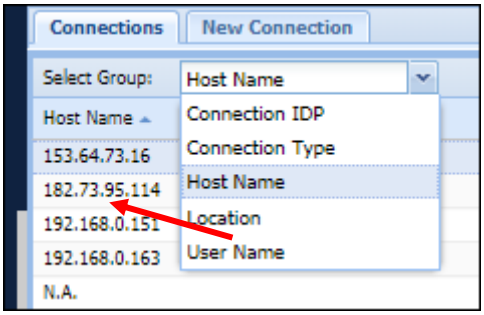
3. Click the **Test** button, to test the connection.

4. Click **Save** button, to save the changes.

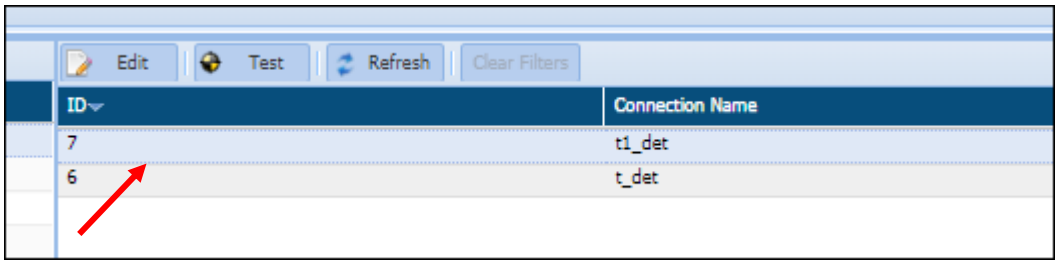
5. To edit a connection, go to AWS>RDS/Redshift > Connection Manager > Connections.
6. Select the connection classification from the **Select Group** dropdown.



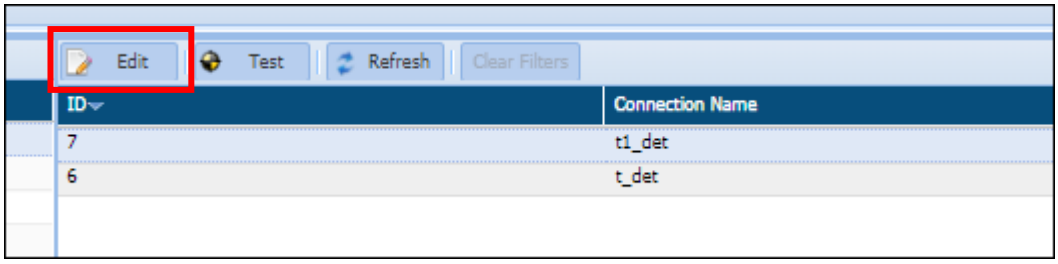
7. Select the classification type.



8. Select the connection.



9. Click **Edit**.

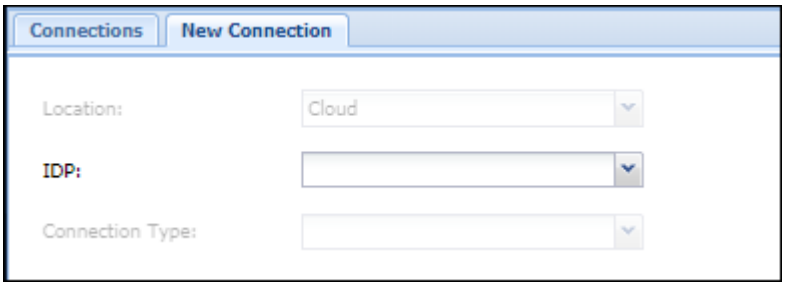


IDP and connection type cannot be edited. A connection can be edited using the same steps as task creation.

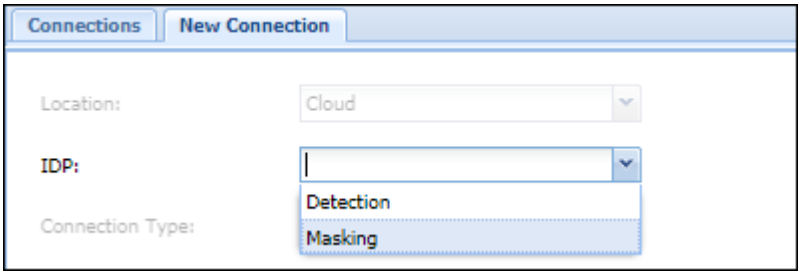
4.2.4 Azure

DgSecure supports masking and detection in Databases on Azure. Perform the following steps to create a connection:

1. Click **Azure>Databases > Connection Manager > Connections > New Connection** tab.



2. The location is **Cloud** by default.
3. Select the IDP type as Detection or Masking, depending on task that has to be executed on the database.

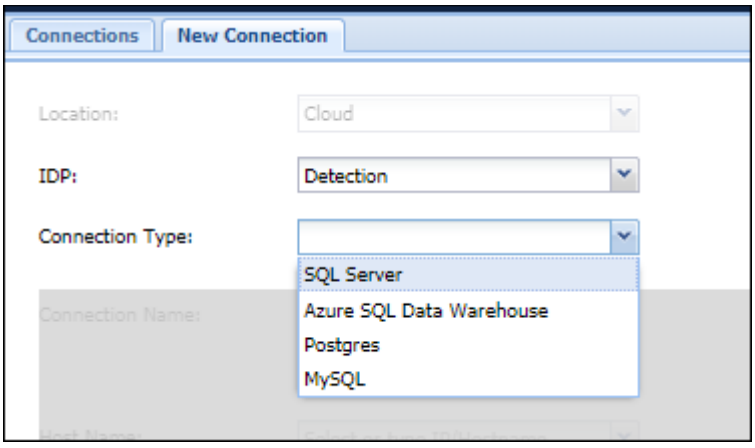


4. Following are the steps to create a connection for Detection and Masking:

Detection

Perform the following steps to create a detection connection for your database:

a) Select the database from the **Connection Type** drop-down.



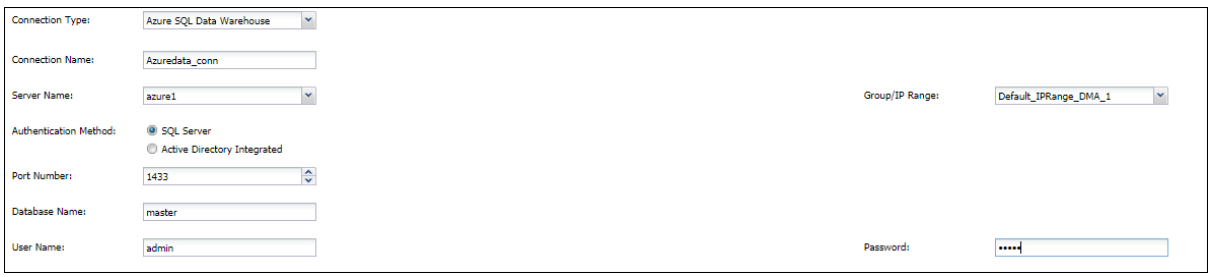
b) Detection is supported on the following RDS/Redshift databases:

SQL Server

Refer to section SQL Server.

Azure SQL Data Warehouse

Following are the options specific to the Azure SQL Data Warehouse:



a) **Connection Name:** Enter unique Connection Name. This fields accepts letters, numbers, and symbols.

b) **Server Name:** Enter the name of the Azure SQL Data Warehouse Server or select from the list of available IPs.

c) **Group/IP Range:** Select the Group/IP range from the dropdown. For details on how to create and assign an IP range, please refer to the DgSecure Admin Guide.

d) **Authentication Method:** The following authentication methods are available for SQL Server:

- **SQL Server:** Authenticates the connection using SQL Server Username and Password.
- **Active Directory Integrated:** Authenticates the connection using the details provided at the time of Azure Active Directory setup. For more details refer to DgSecure Admin Guide.

e) **Port Number**: Enter the Port Number for establishing a connection. You can also edit the port number later, if required.

f) **Database Name**: Enter the name of the database.

g) **User Name**: Enter the database user name.

h) **Password**: Enter the database password.

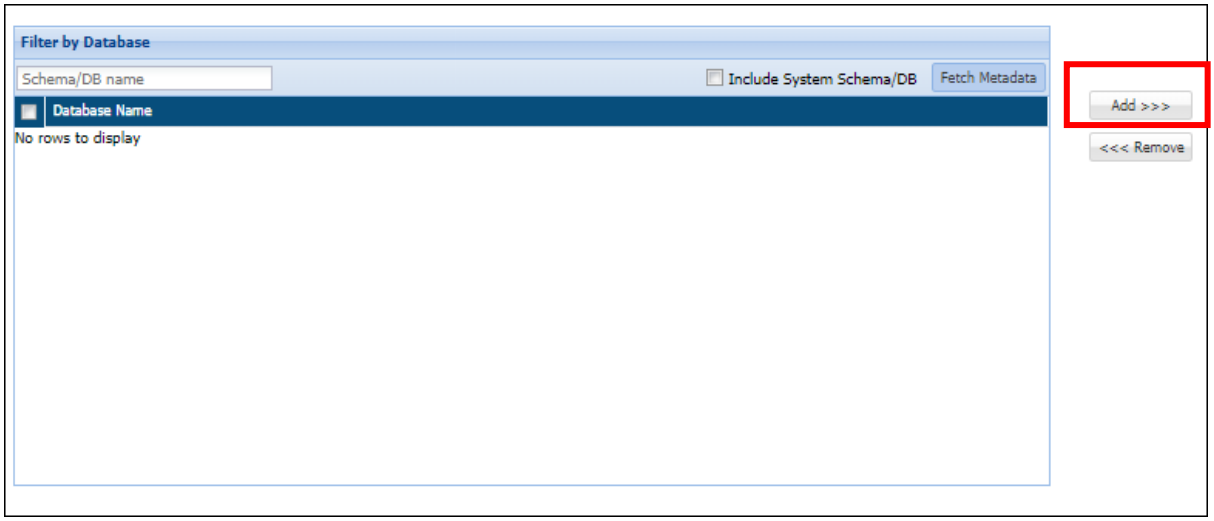
Postgres

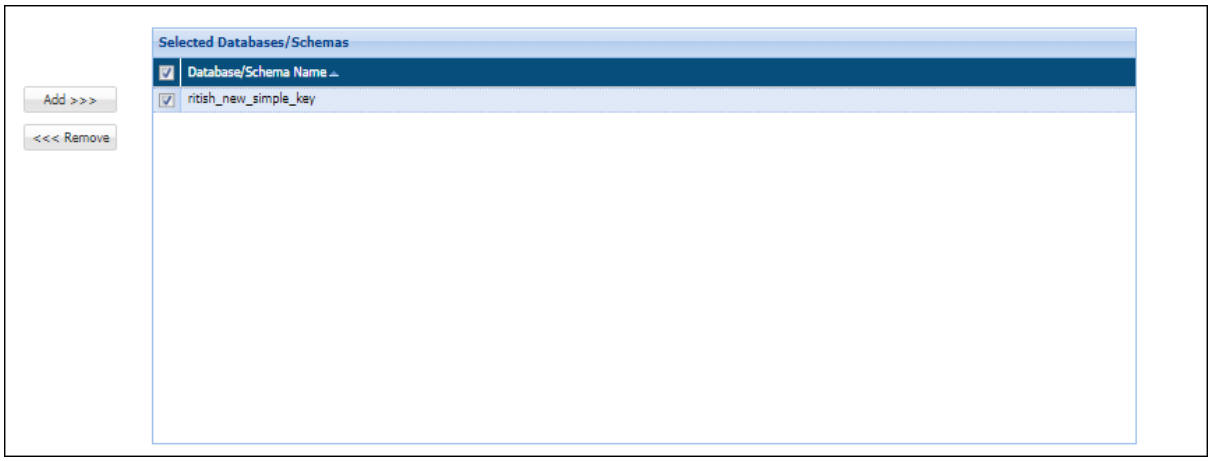
Refer to section Postgres (Inc. Heroku).

MySQL

Refer to section MySQL

5. After providing the connection details enter the name of the database in the bottom left filter by database panel, select the required schemas and databases and click **Add**. The selected databases will appear in the panel on the bottom right.

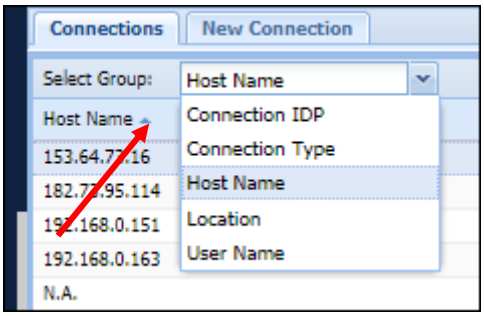




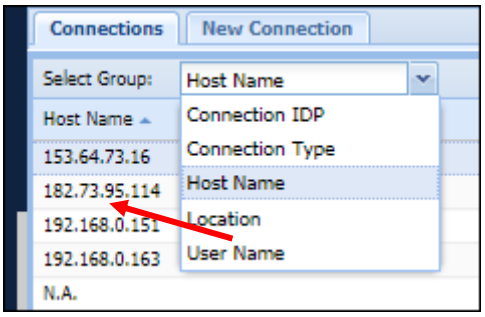
6. Click the **Test** button, to test the connection.

7. Click **Save** button, to save the changes.

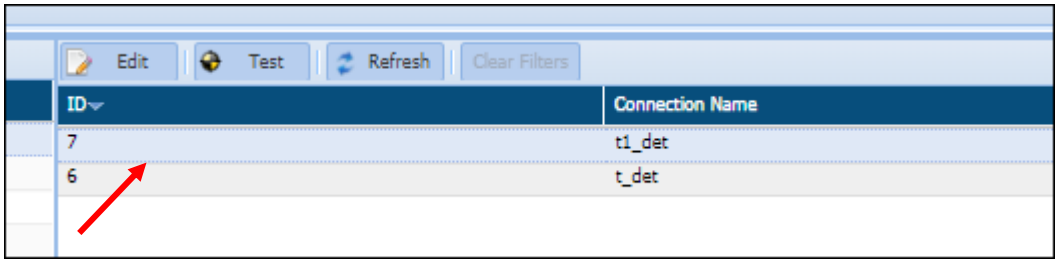
8. To edit a connection, go to AWS>RDS/Redshift > Connection Manager > Connections.
9. Select the connection classification from select group.



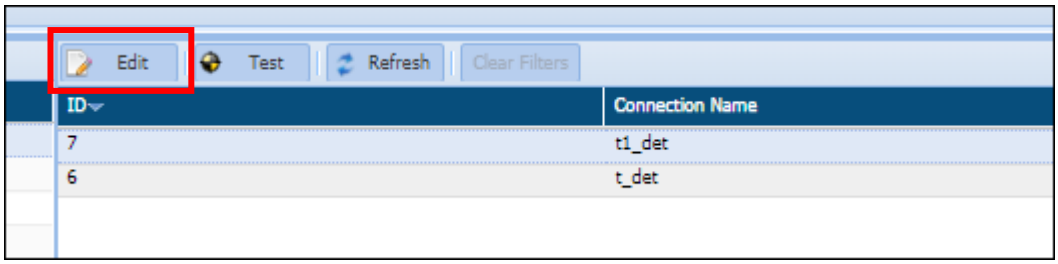
10. Select the classification type.



11. Select the connection.



12. Click edit.

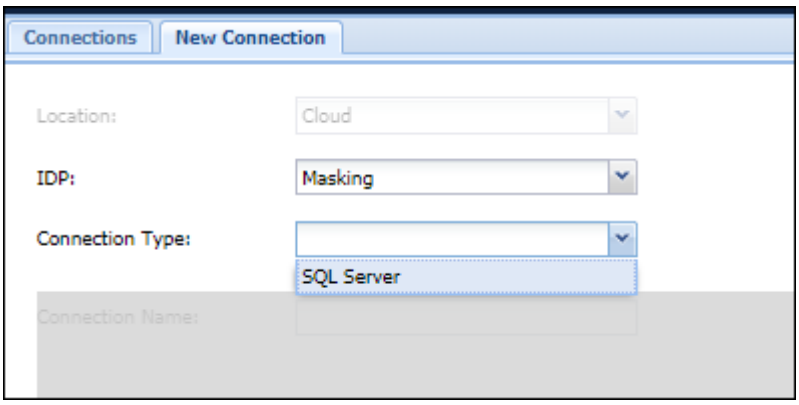


IDP and connection type cannot be edited. A connection can be edited using the same steps as task creation.

4.2.4.1 Masking

Perform the following steps to create a masking connection for the database:

1. Select the database from the **Connection Type** drop-down.

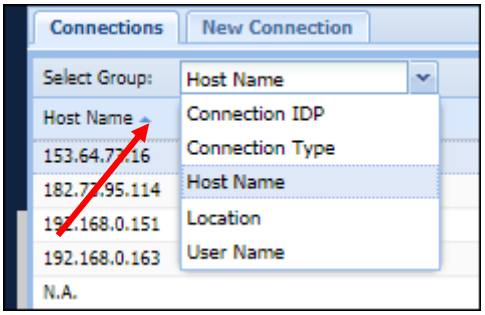


2. Masking is supported on SQL Server. Refer to section SQL Server for details on how to create a connection.

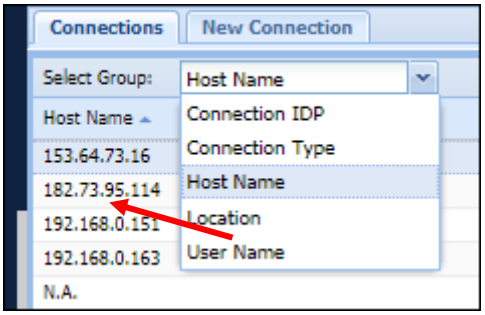
3. Click the **Test** button, to test the connection.

4. Click **Save** button, to save the changes.

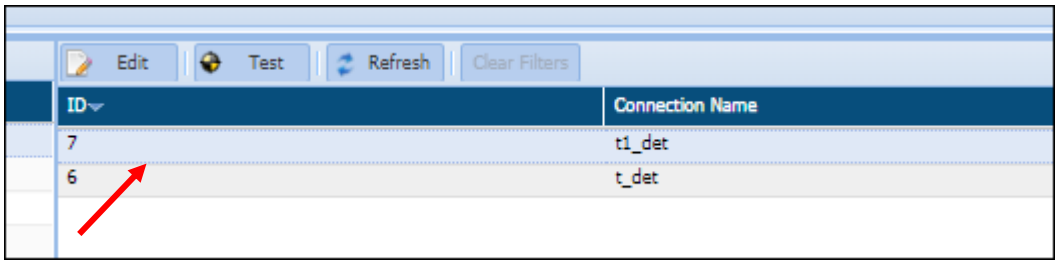
5. To edit a connection, go to **AWS>RDS/Redshift > Connection Manager > Connections.**
6. Select the connection classification from the **Select Group** dropdown.



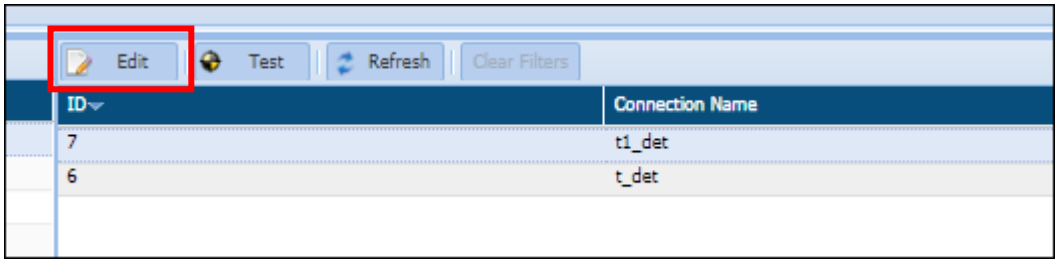
7. Select the classification type.



8. Select the connection.



9. Click **Edit**.



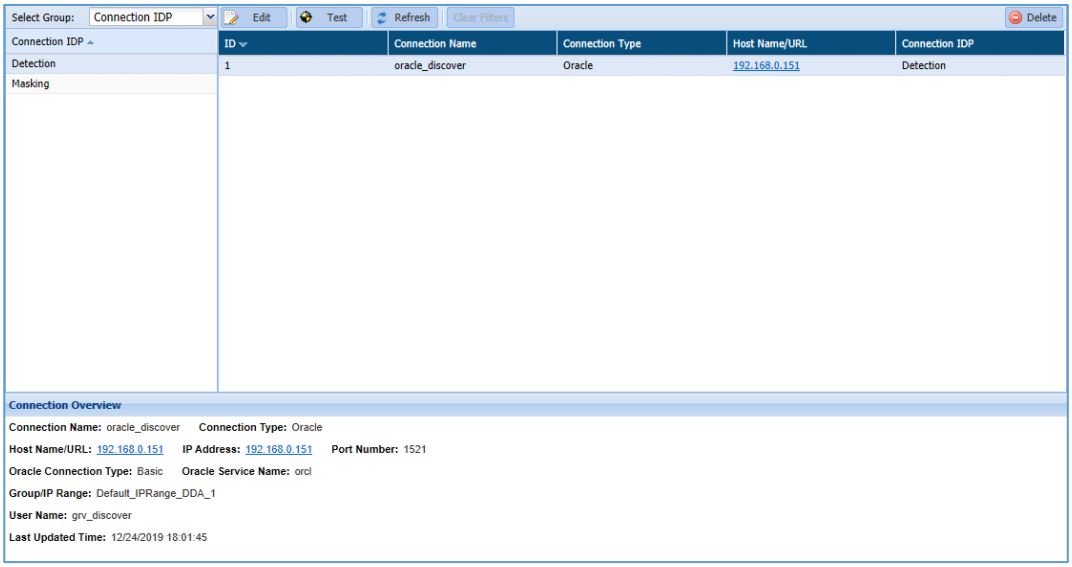
IDP and connection type cannot be edited. A connection can be edited using the same steps as the task creation.

4.3 List a Connection

4.3.1 RDBMS

This section will explain the screen of the Connections tab.

The below screenshot shows the user interface for Connections.

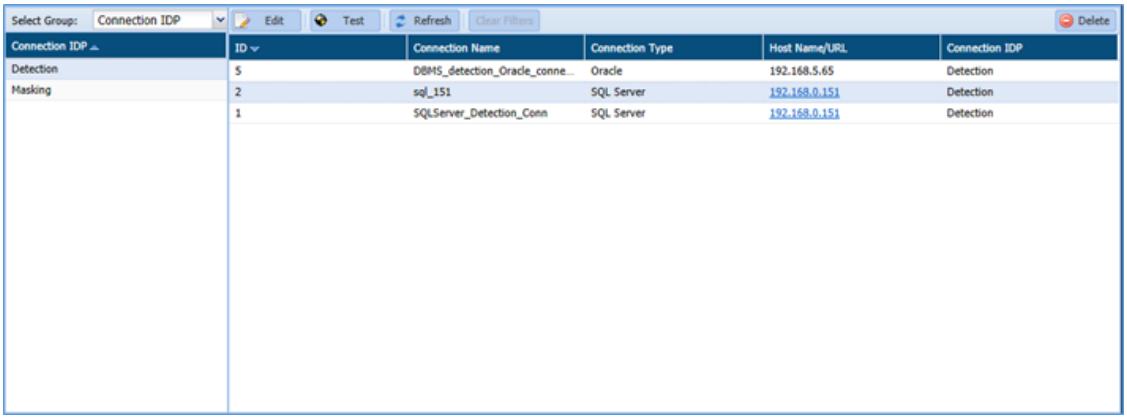


The Connections screen is divided into two panes. These are:

1. Connection List
2. Connection Overview

a) **Connection List:**

This pane list down all the connections groups and number of available connections for each selected connection group. It provides the basic details for the listed connection such as ID, Connection Name, Connection Type, Host Name/URL and Connection IDP.



- **Select Group**: The Select Group drop-down list the five pre-defined connections groups. These are:
  - Connection IDP
  - Connection Type
  - Host Name
  - Location
  - User Name

- **Edit**: Click the Edit button, if you want to edit any information for the listed connection.

- **Test**: Click the Test button to test the listed RDBMS connection.

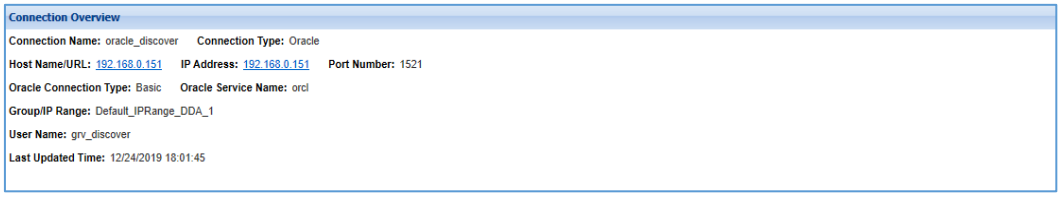
- **Refresh**: Click the Refresh button to update the current page with updated information.

- **Clear Filters**: Click the Clear Filters button. It will remove any applied filters on the Connection page.

- **Delete**: Select the Connection which you want to delete. Click the Delete button.

b) Connection Overview

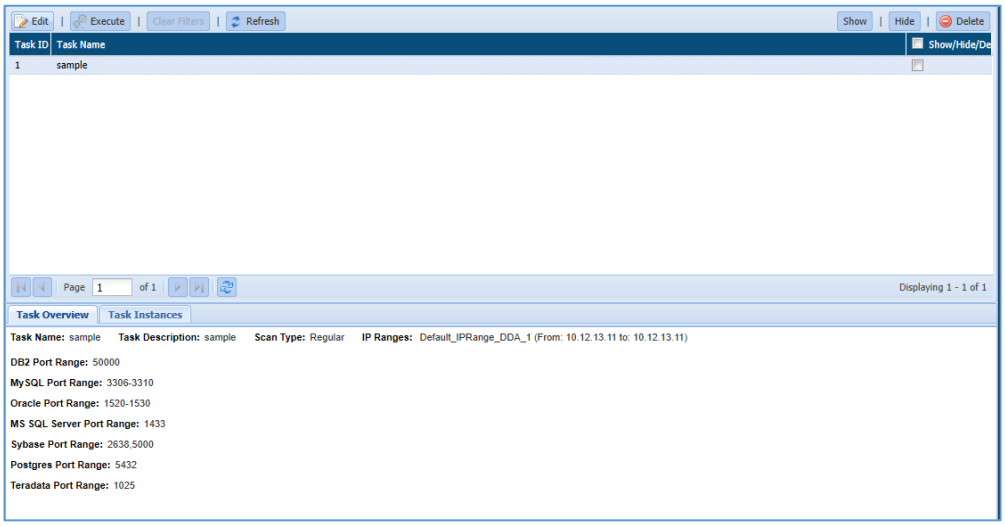
This pane displays the information for the selected connection. The Details include Connection Name, Connection Type, Host Name/URL, IP Address, Port Number, etc.



4.3.1.1 Find DBMS

This section will explain the screen of the Task tab in Find DBMS section.

The below screenshot shows the user interface for Task tab.

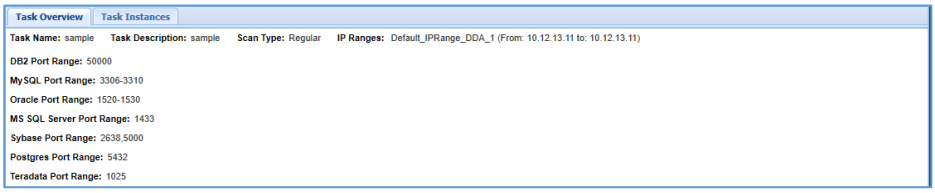


The Task page in Find DBMS is divided into three panes:

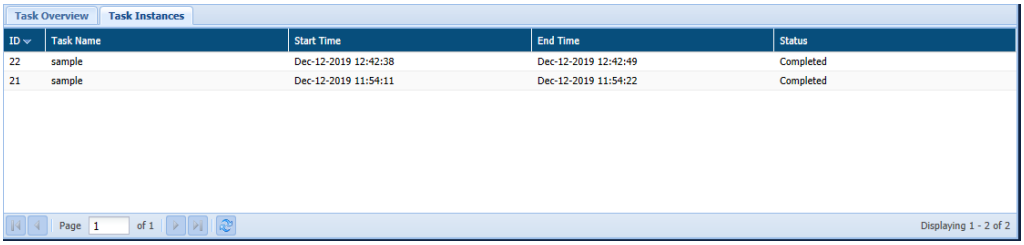
1. Task Detail: The Task Detail pane will display the list of all available task in this pane. It will display the information for the task such as Task ID (system generated), Task Name.

   You can Edit, Execute, Show, Hide or Delete a task.

2. Task Overview: The Task Overview tab display information for the selected task in the Task Detail pane. The information includes basic details such as Task Name, Task Description, IP Range, Scan Type, DB2 Port Range etc.



3. Task Instance: The Task Instance pane shows information about each instance of the task selected in the Task Detail pane. Information such as ID (system generated), Task Name, Start Time, End Time, Status of the Task.

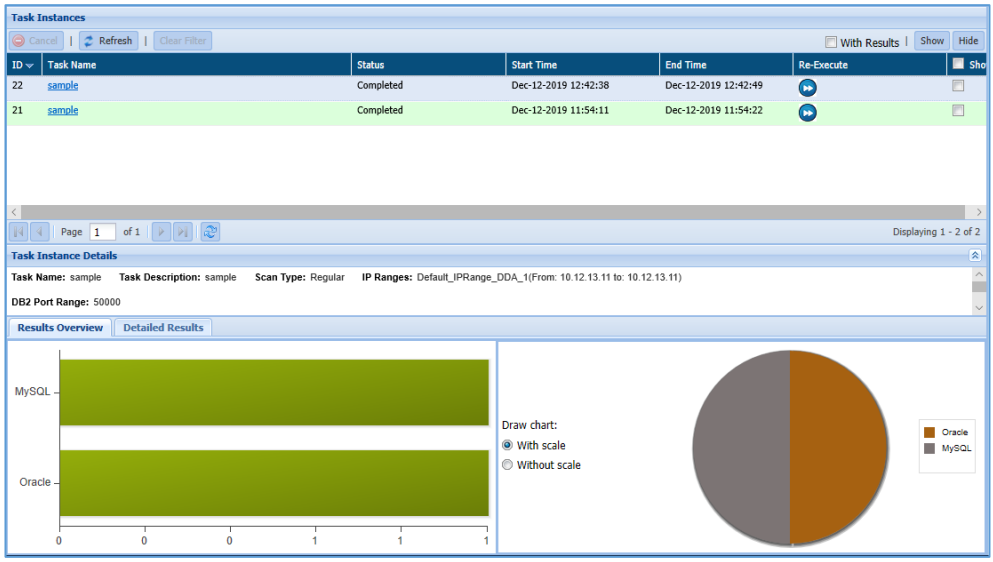


4.3.1.2 Result

The Find DBMS result page displays the information about the databases discovered on an organization's IP ranges or n network.

To Access the Result page. Click **RDBMS > Connection Manager > Find DBMS > Result**.

The below image shows user interface of the Result Page.

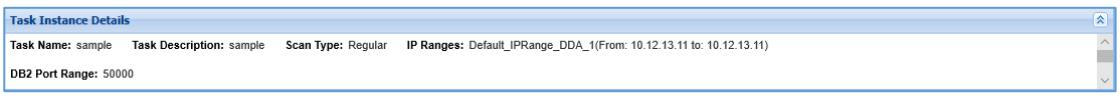


The Result page is divided into three panes. These are:

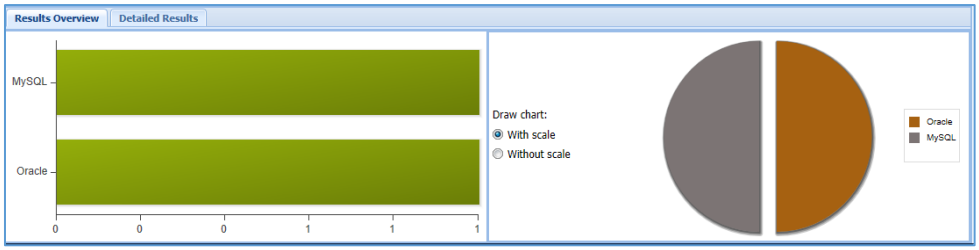
1. **Task Instances**: This pane displays the information for all the tasks. The information includes ID (system generated), Task Name, Status of the task, Start Time, End Time etc.

   You can also re-run the task by clicking on **Re-Execute** button.

2. **Task Instance Details**: This pane displays display the parameters and results. Information includes Task Name, Task Description, Scan Type, IP Ranges, DB2 Port Range, etc.

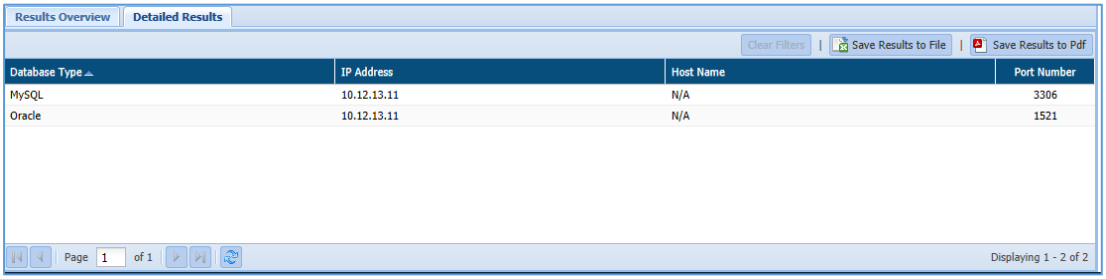


3. Overview: The overview pane provides the basic information in Results and Detailed Results tabs. The information is displayed is dependent on the currently selected tab.



- **Results Overview:**
  The Results Overview pane gives a graphical summary for the search results. The bar chart shows the number of databases detected. The pie chart on the right shows the same information as the bar chart with each segment representing a different database type.

- **Detailed Results:**
  The Detailed Results lists the specific databases that the task instance detected, grouped by type. For each database, it displays the name and IP address of the host machine and the port number on which the database listens for requests.



- **Save Results to File:** Click the Save Results to File button to download the data in Doc format.

- **Save Results to PDF:** Click the Save Results to PDF button to download the data in PDF format.

4.3.2 NoSQL

This section will explain the screen of the Connections tab.

The below screenshot shows the user interface for Connections.

To know more about the connections screen, refer section RDBMS

4.3.3 AWS

This section will explain the screen of the Connections tab.

The below screenshot shows the user interface for Connections.

To know more about the connections screen, refer section RDBMS

4.3.4 Azure

This section will explain the screen of the Connections tab.

The below screenshot shows the user interface for Connections.

To know more about the connections screen, refer section RDBMS

5 Sensitive Type

A **Sensitive Type** is the basis for detection of sensitive information in DgSecure. Different **Sensitive Types** are data elements within databases that indicate or comprise of private and confidential information. This information must be protected from unauthorized access to safeguard the privacy or security of an individual or organization. Detection is performed on a database, to locate this sensitive information within it and the scan is based on the **Sensitive Type** parameter. Various **Sensitive Types** can be used in combinations or as singular entities to detect where sensitive information is stored in a data source. Some examples of such sensitive data are, **Credit Card numbers, Social Security numbers, Addresses** etc. DgSecure houses several Sensitive Types to detect sensitive information suited to various scenarios. DgSecure's capability to create new **Sensitive Types**, furthers the flexibility and accuracy of detection. Creating a new sensitive type is discussed in detail under further sections.

The function of a **Sensitive Type** is to facilitate and serve as the basis for protection and detection of sensitive information. **Sensitive Types** can be defined as **singleton, dependent or composite** entities. These have been described below:

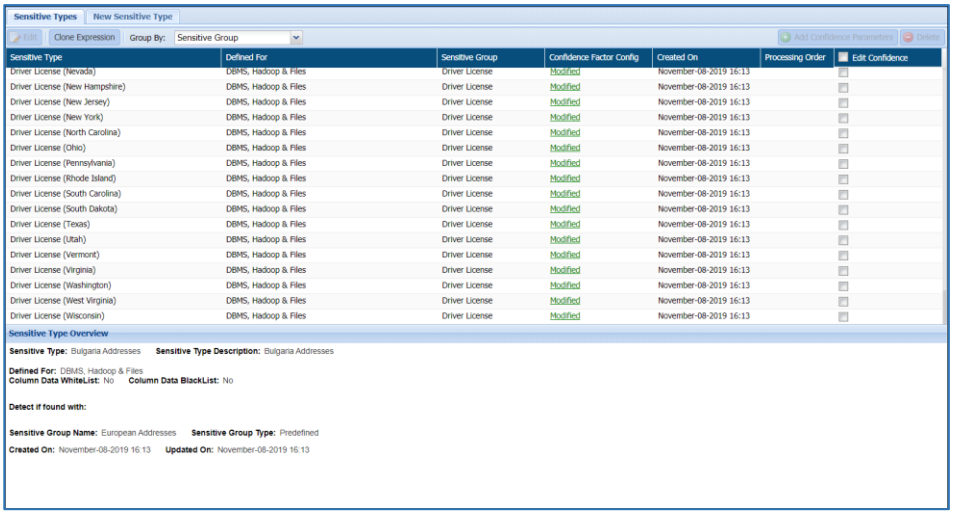
- **Singleton Sensitive Type**
  A standalone **Sensitive Type** that is capable of being uniquely identifiable by its description is defined as a **Singleton Sensitive Type.** Detection of a **Singleton Sensitive Type** is based on the **Sensitive Types'** characteristics, and is independent and unrelated to any other data within the data source.

- **Dependent Sensitive Type**
  As the name suggests, this is a **Sensitive Type** that is dependent on another. For example, there is a good chance of finding a credit card number in the same row as a phone number, this can be used to define the dependency between the sensitive information. A simple relationship can be established in such a scenario, by using the **Detect if Found with** option when creating a new **Sensitive Type.**

- **Composite Sensitive Type**
  A family of **Sensitive Types** that have compound dependencies on one another can be termed as a **Composite Sensitive Type.** Contact information, for example, consists of many such data points, i.e., addresses, phone numbers, area codes, fax numbers etc., and there a very good possibility of detecting these in the same row. A composite sensitive type in DgSecure can be defined using the feature to **Group** different **Sensitive Types** when creating a new **Sensitive Type.**

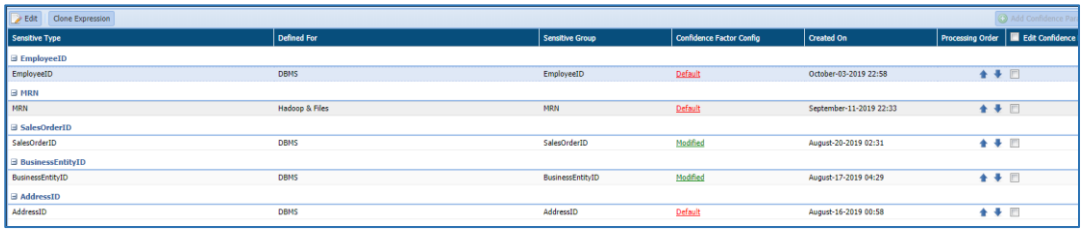
5.1 Default Sensitive Type

The **Sensitive Types** tab in **Sensitive Type Manager**, lists all the available **Sensitive Types** in DgSecure. There are more than 90 different available **Sensitive Types** to detect all kinds of sensitive data, be it addresses, emails, phone numbers, bank details, personal information, insurance details or salary. **Sensitive Types** can be used in combinations for further streamlining the search. Multiple **Sensitive Types** can be grouped together under a policy (Section no.) and selected in isolation at the time of task creation (Section no.)

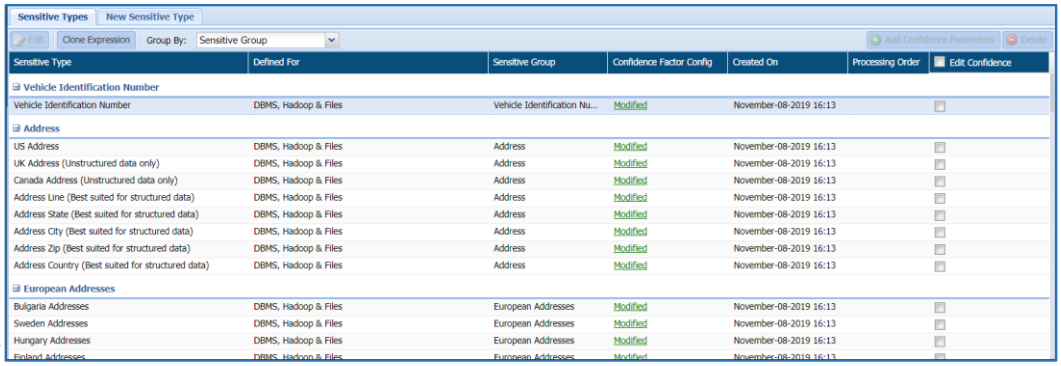


The top panel of the **Sensitive Types** screen lists all the available **Sensitive Types**. When a new **Sensitive Type** is created it will appear on this screen. This panel shows the sensitive type **name** along with **the assigned data type (DBMS or Hadoop & Files), sensitive group, creation date,** and **processing order.**

Processing order is applicable only to the custom **Sensitive Types** and is used to determine which of two similar **Sensitive Types** should be given preference when both are used in a task. Custom **Sensitive Types** at the top of the screen take precedence over those at the bottom. Increase or decrease priority using the arrows in the **Processing Order** column.

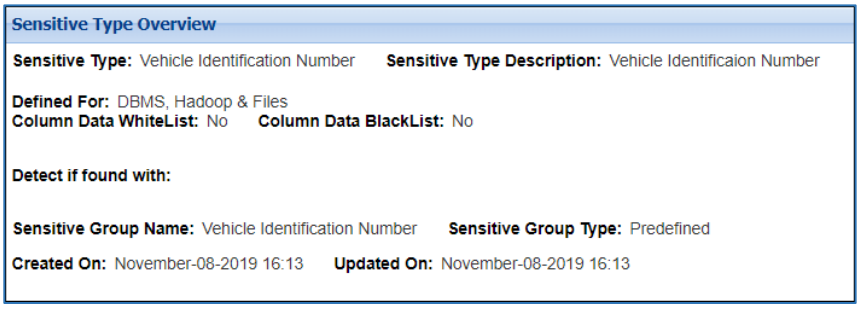


Select the **Sensitive Type** to **Edit**, **Delete or Add Confidence Parameters** to it (Confidence factor is discussed under section.) To filter **Sensitive Types** on this screen, use the **Group by** dropdown to select sensitive type groups for viewing.



***NOTE: Default sensitive types cannot be edited or deleted, however they can be cloned.**

The bottom panel provides information about the name, description, whether it is applicable to Hadoop & Files or DBMS, the parameters of the sensitive type, the assigned sensitive group, creation date, and update date of the selected **Sensitive Type**.

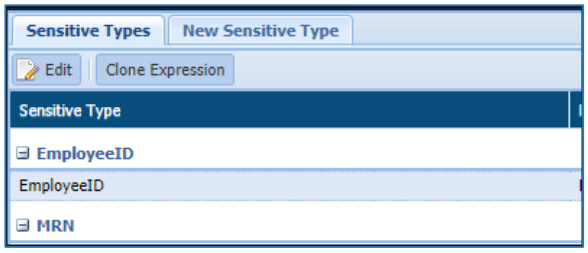


5.2 New Sensitive Type

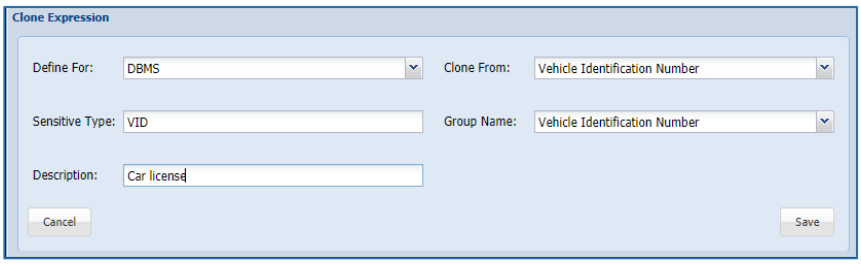
For increased flexibility and efficiency in sensitive data detection suitable to any platform, environment, data source and nature of the data, DgSecure comes complete with the capability to support user defined-custom **Sensitive Types**. A **Sensitive Type** filters data based on a regular expression and narrows down the search using additional inputs such as validation functions, inclusion and exclusion lists etc.

The simplest method to create a **Sensitive Type** in DgSecure is to clone it from an existing **Sensitive Type**. The out-of-the-box **Sensitive Types** in DgSecure are immutable. By cloning from an existing Sensitive Type, DgSecure's default sensitive types can be edited to conform them to the target data source. Take the following steps to clone a sensitive type:

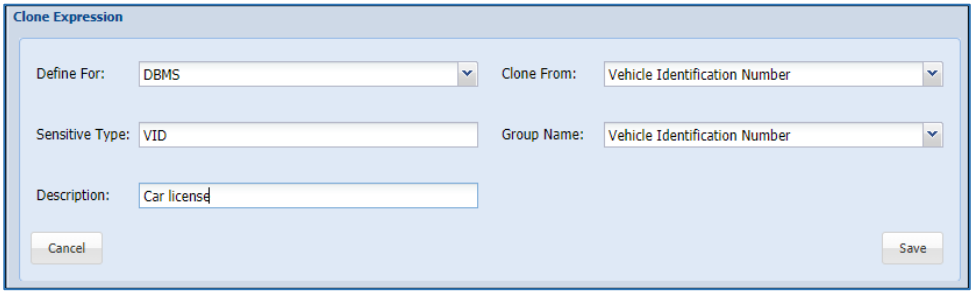
1. Go to the Sensitive Types tab and click Clone Expression.



2. Provide the required details, select the target data source from the **Define For** dropdown (DBMS or Hadoop and Files), select the **Sensitive Type** you would like to clone from the **Clone From** dropdown, provide a **Sensitive Type** name, select the **Sensitive Type** group from the **Group Name** dropdown and enter a **Description.**



3. **Save** the **Sensitive Type**. The cloned sensitive type will appear on the **Sensitive Types** screen.

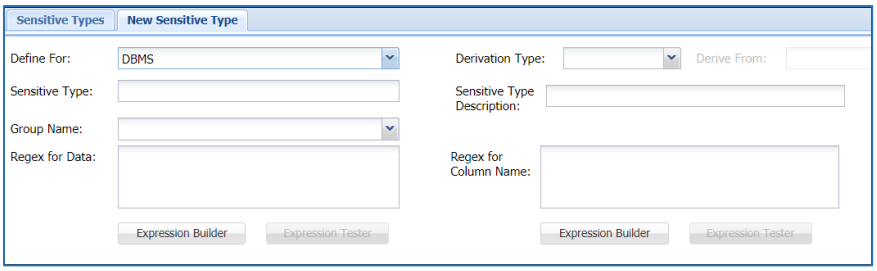


Alternatively, a completely new **Sensitive Type** can also be created. The process for creation of a new **Sensitive Type** differs in DBMS and Hadoop and Files. These have been discussed below.

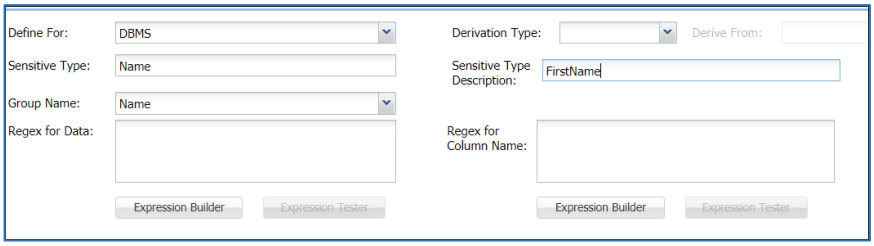
5.2.1.1 DBMS

Preform the following steps to create a **New Sensitive Type** for **DBMS:**

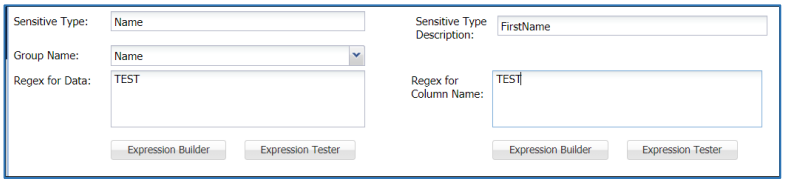
1. Go to the **New Sensitive Type** tab and select **DBMS** from the **Define For** dropdown.



2. Provide a **name**, **description** and select the **group** of the **Sensitive Type**.

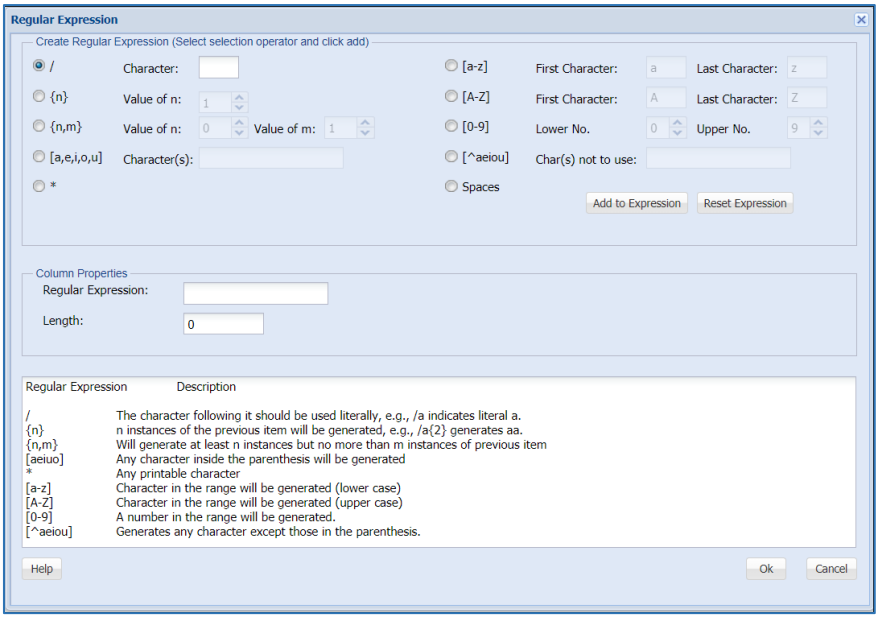


3. Enter a **Data** and **Column Regex**.

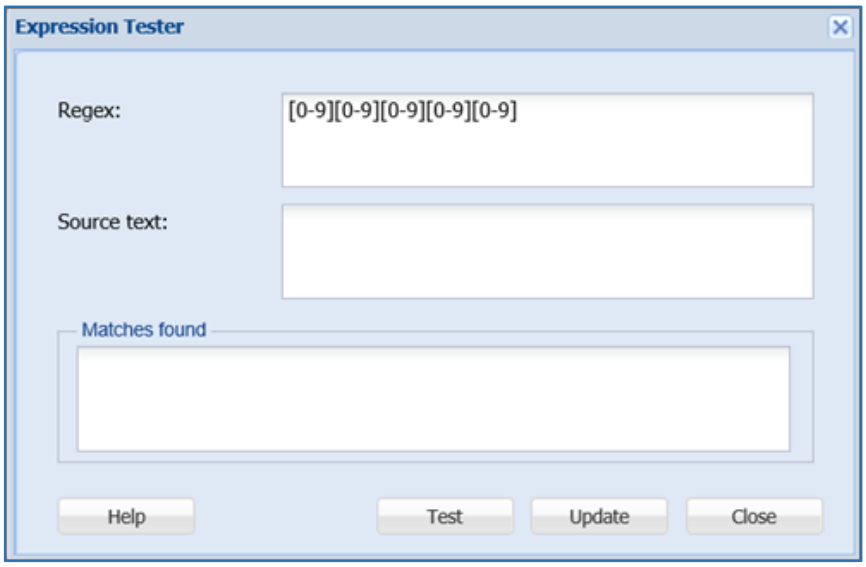


Following DgSecure tools have been added to this screen to provide assistance in creating regexes. Alternatively, Regex can also be directly entered into the indicated fields.

- **Expression Builder:** Use expression builder tool to create a Regex.

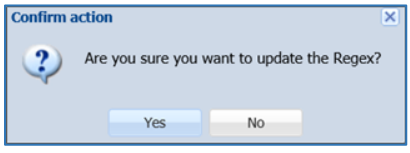


- **Expression Tester:** Use the expression tester tool to test if the created regex is working on a sample data. The **Regex** field is editable.



Perform the following steps to edit a regex:

a) Provide a different regular expression in the **Regex** field.
b) Click **Update** to save the changes.
c) A pop up appears:

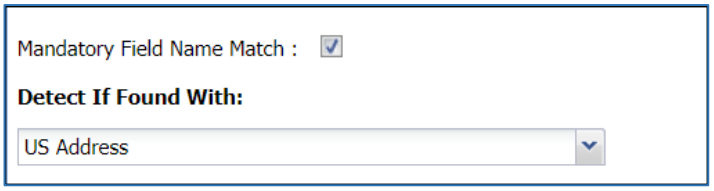


Click **Yes** to make the changes effective.

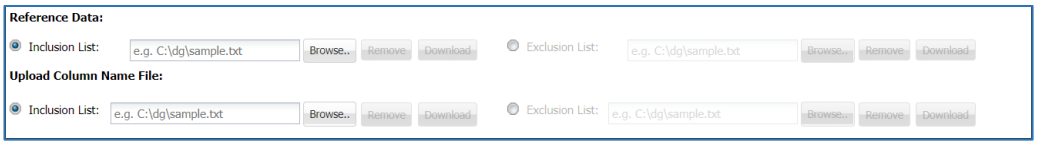
***Note**: It is mandatory to define both Data and Column Regexes to create a sensitive type for DBMS.

4. The **Mandatory Field Name Match** checkbox ensures that detection results appear only if Data and Column, both Regexes match.

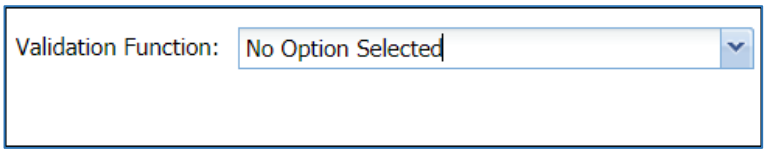
5. Select additional **Sensitive Types** under **Detect if Found With** dropdown. This will create dependency between two **Sensitive Types** and report the **Sensitive Type** if found in the same row as the selected **Sensitive Type.**



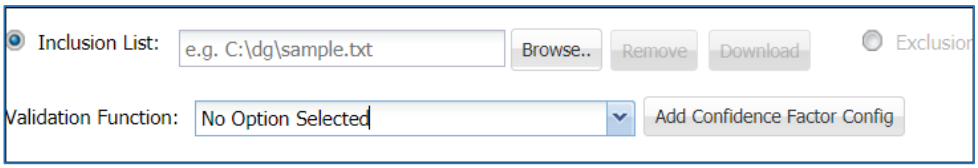
6. Additionally, an **inclusion** or **exclusion list** can also be added to include or exclude certain data and fields from the detection.



7. Upload a **validation function** to verify the detection.



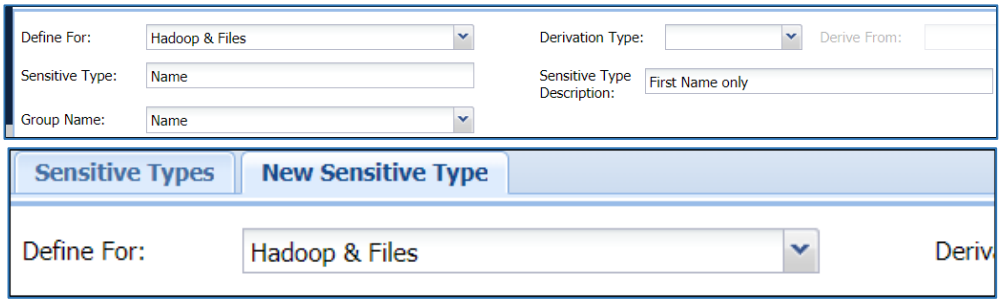
8. Click **Add Confidence Factor Config** to setup confidence factor calculations for the **Sensitive Type. Confidence factor** is discussed in detail under Section no.



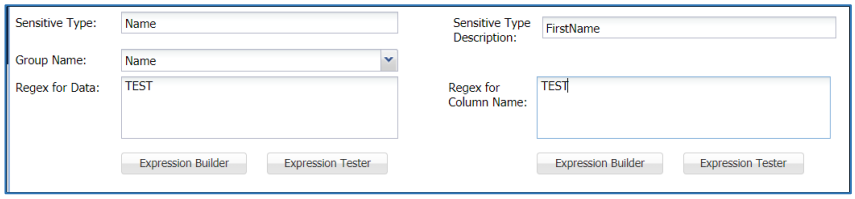
5.2.1.2 Hadoop and Files

Preform the following steps to create a **New Sensitive Type** for **Hadoop and Files:**

1. Go to the **New Sensitive Type** tab and select **Hadoop and Files** from the **Define For** dropdown.

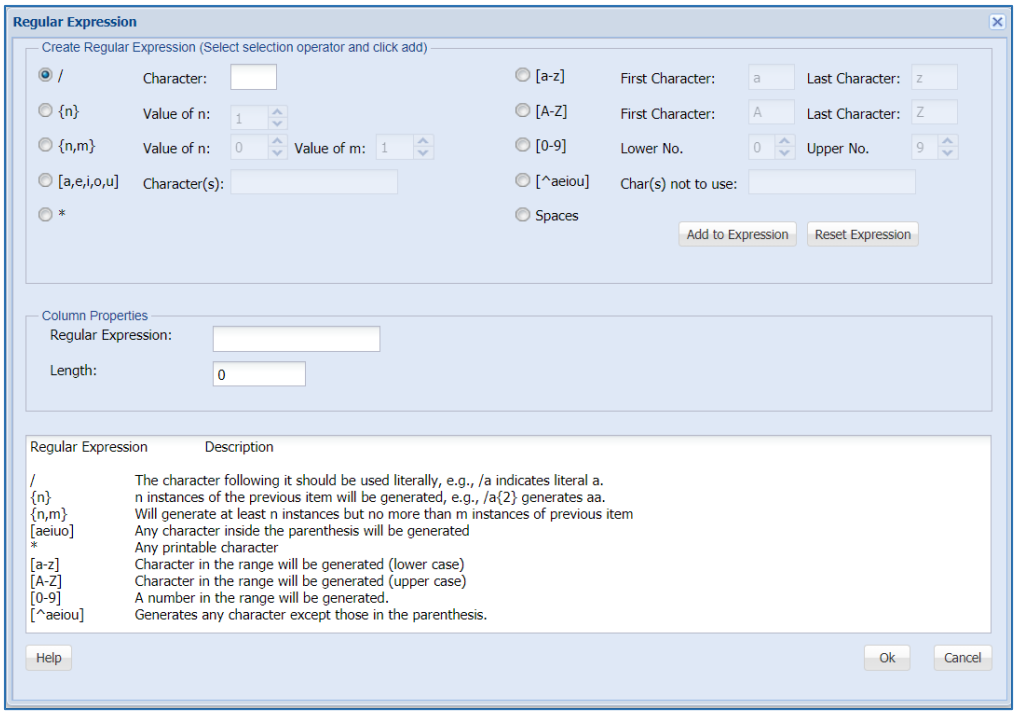


2. Provide a **name**, **description** and select the **group** for the **Sensitive Type.**
3. Enter a Data and Column Regex.

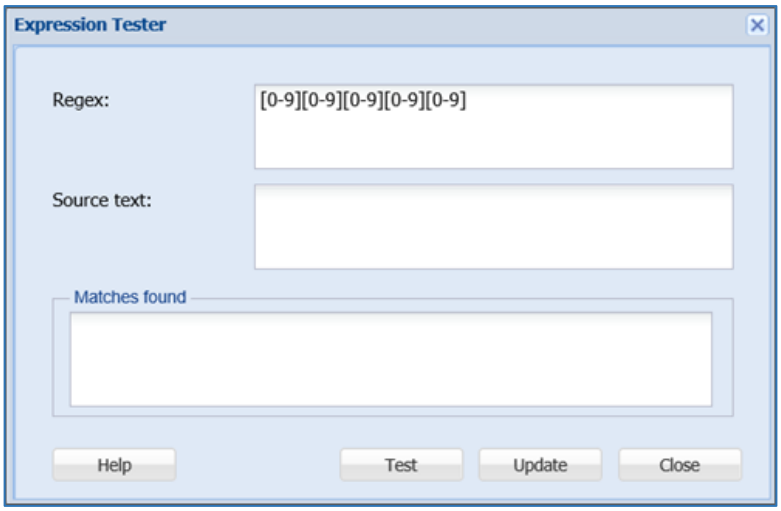


Following DgSecure tools have been added to this screen to provide assistance in creating regexes. Alternatively, Regex can also be directly entered into the indicated fields.

- **Expression Builder:** Use expression builder tool to create a Regex.

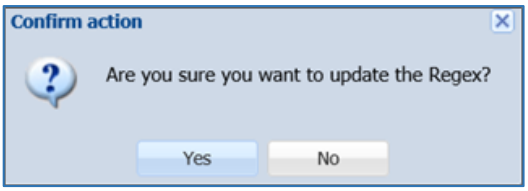


- **Expression Tester:** Use the expression tester tool to test if the created regex is working on a sample data. The **Regex** field is editable.



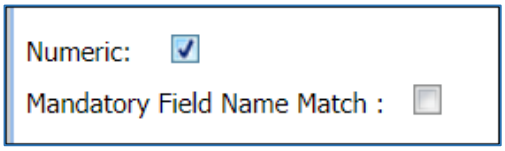
Perform the following steps to edit a regex:

a) Provide a different regular expression in the **Regex** field.
b) Click **Update** to save the changes.
c) A pop up appears:

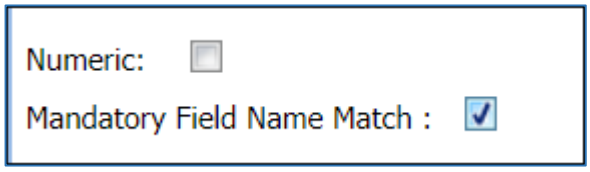


Click **Yes** to make the changes effective.

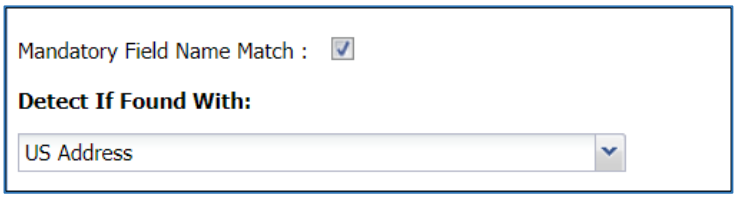
4. Check the **Numeric** checkbox if the data is in numeric format.



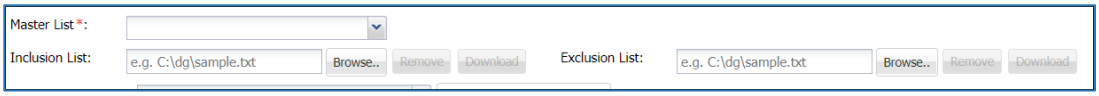
5. The Mandatory **Field Name Match** checkbox ensures that detection results appear only if Data and Column, both Regexes match.



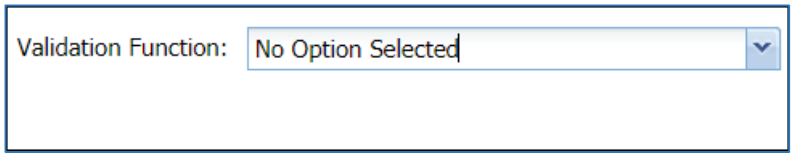
6. Select additional **Sensitive Types** under **Detect if Found With** dropdown. This will create dependency between two **Sensitive Types** and report the **Sensitive Type** if found in the same row as the selected **Sensitive Type.**



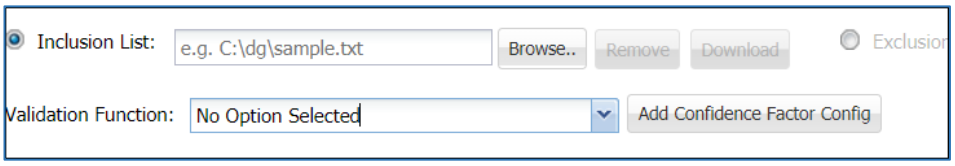
7. Additionally, a **master list** and an **inclusion** or **exclusion list** can also be added to include or exclude certain data and fields from the detection.



8. Upload a validation **function** to verify the detection.



9. Click **Add** Confidence **Factor Config** to setup confidence factor calculations for the sensitive type. **Confidence Factor** is discussed in detail under Section 4.5.



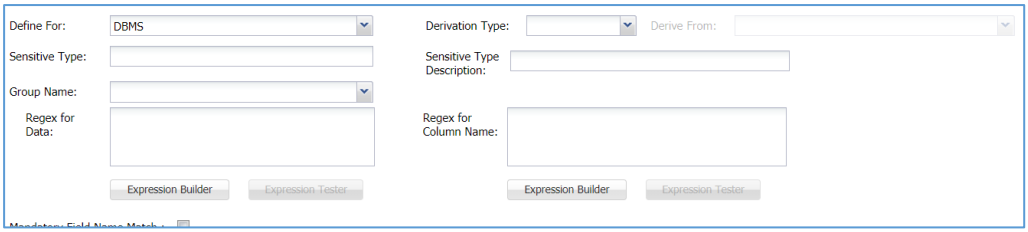
5.3 Inherit Sensitive Type

In addition to the default **Sensitive Types** and custom **Sensitive Types,** properties of a **Sensitive Type** can also be derived from another-parent **Sensitive Type** to create a new **Sensitive Type**. This is termed as inheritance in DgSecure. Inheritance provides the option to pick some or all aspects of previously defined or default **Sensitive Types** and use them to define a new **Sensitive Type.**

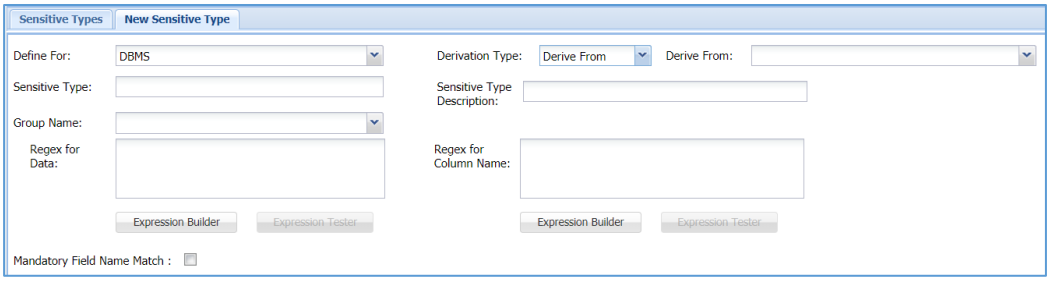
The advantage of this feature over **Cloning** of a **Sensitive Type** is that, when the base/ parent **Sensitive Type** is changed, the changes will automatically reflect to the derived **Sensitive Type**. Perform the following steps to create a **Sensitive Type** with the derived properties:

1. Go to New Sensitive Type tab in the Sensitive Type Manager.

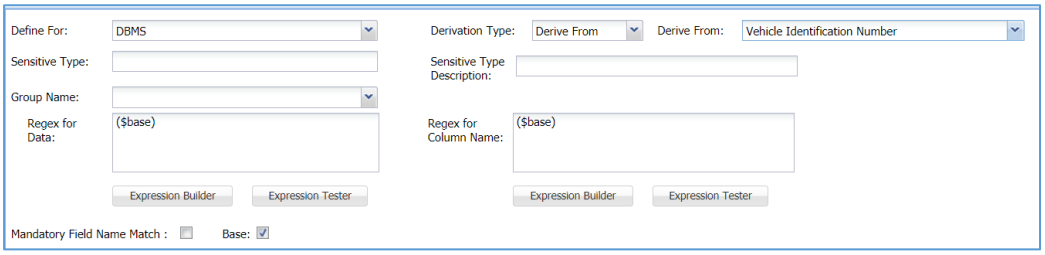
2. Select the module from the **Define For** dropdown.



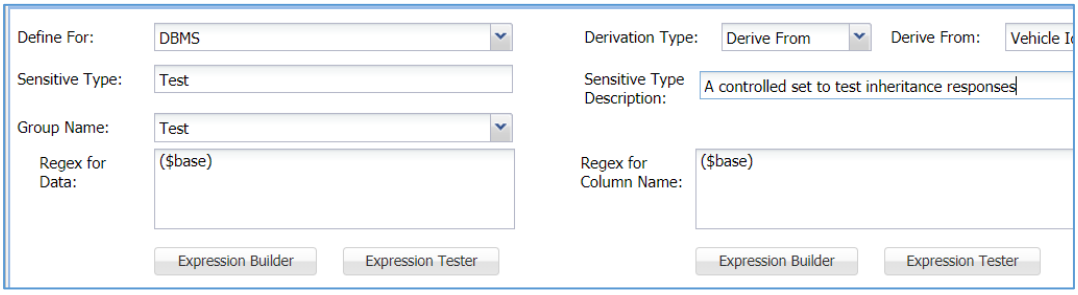
3. Select the **Derive From** option from the **Derivation Type** dropdown to enable the inheritance.



4. Select the required parent **Sensitive Type** from the **Derive From** dropdown.

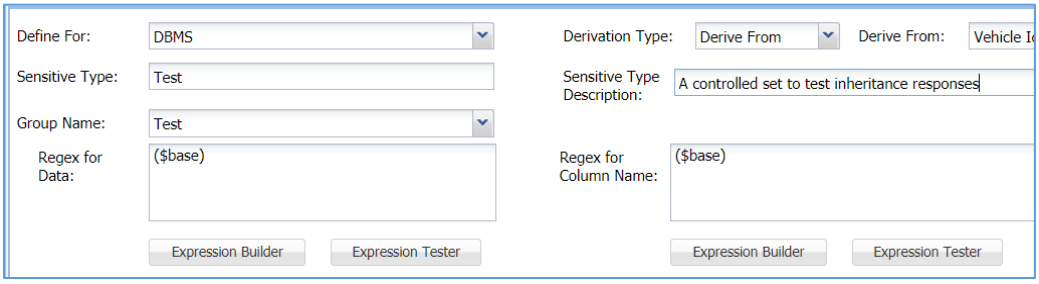


5. Enter a name for the new derived **Sensitive Type** in the **Sensitive Type** text box. Provide a brief **description** and select the **group** for the **Sensitive** Type in the **Sensitive Type Description** and **Group Name** fields respectively.

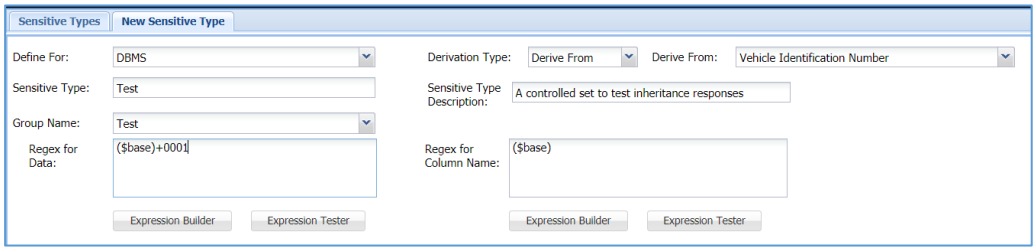


6. There are 3 ways to define the Regex:

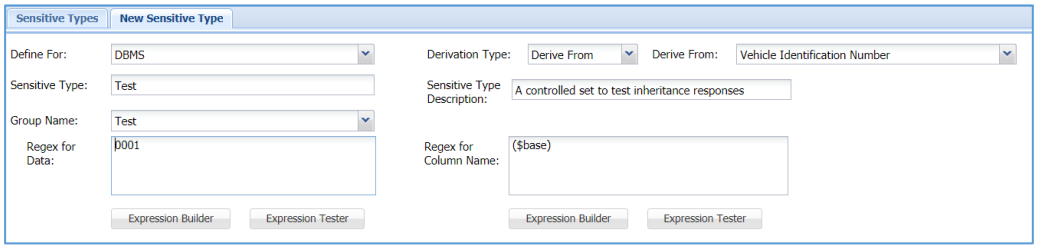
a) To derive the complete Regular Expression (Regex) from the parent **Sensitive Type**, enter ($base) as column and data Regex. This is the default setting.



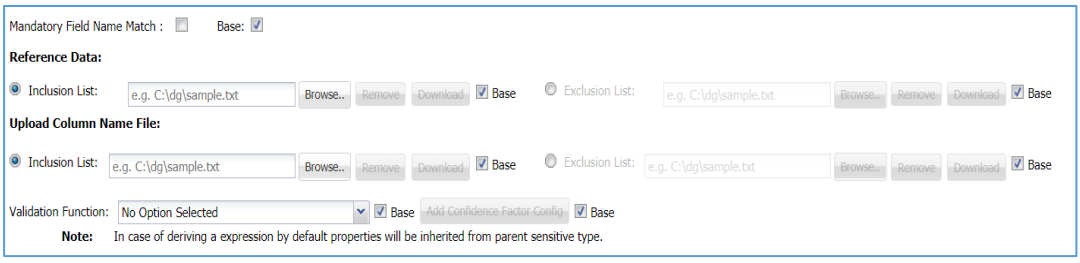
b) To edit or make changes to the inherited Regex, enter ($base) followed by the required addition to the Regex. For example, the Regex ($base) + 0001, will look for sensitive types as per the definition in the parent **Sensitive Type** and the figure 0001.



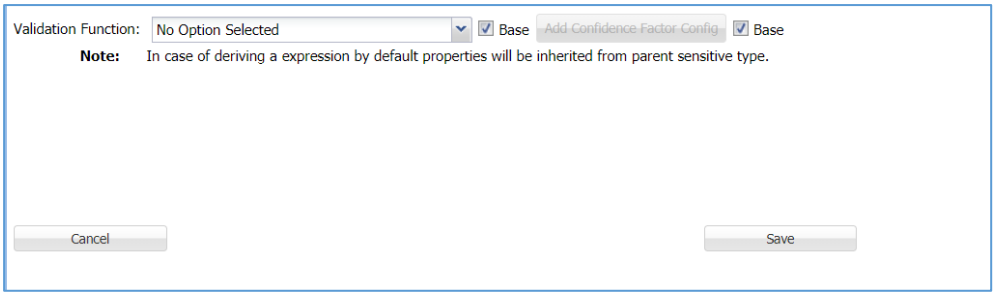
c) To create a new Regex instead of a derived Regex, remove ($base) from the Regex field.



7. For an inherited **Sensitive Type** all additional fields, i.e., **Mandatory Field Name Match, Reference Data, Upload Column Name** will be derived from the parent **Sensitive Type.** To make any additions, uncheck the **Base** checkbox against the field to provide inputs.



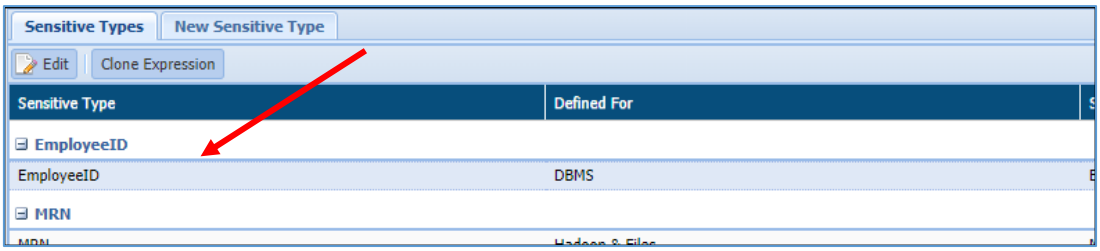
8. Save the Sensitive Type.



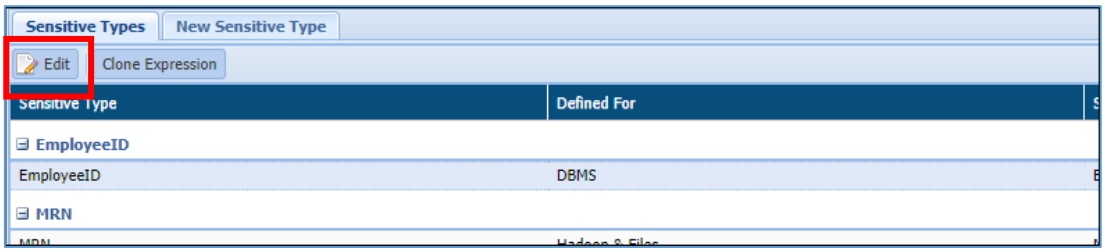
5.4 Edit Sensitive Type

Perform the following steps to **Edit** a **Sensitive Type**:

1. Select the **Sensitive Type** that needs to be edited from the list on the **Sensitive Types** Screen.



2. Click **Edit**.



3. The following options are greyed out and cannot be edited:
    a) Define for
    b) Derivation Type
    c) Derive From

4. All the other fields can be edited. These have been discussed under the New Sensitive Type Section.

5.5 Confidence Factor

Confidence Factor illustrates the accuracy of Detection. Columns with a **Confidence Factor** less than the threshold value for Detection are not displayed.

6 Policy

6.1 Concept

Policy is a set of pre-defined rules and regulations. In DgSecure, policy comprises a set of guidelines which are created to protect the sensitive information. It contains a set of pre-defined and user-defined Sensitive Types and protection options.

DgSecure supports two types of policies:

1. **Pre-Defined Policies:** These policies are the ones that have been already defined within the DgSecure to improve the ease of usage. GDPR, PII, PCI and HIPAA are some of the Pre-Defined policies in the DgSecure.

2. **Customized Policies:** User can define its own policies and can also customize the Pre-Defined Policies by creating a copy.

The Pre-Defined Policies are:

1. **GDPR (General Data Protection Regulations):** GDPR was officially enacted across the EU on 25th May 2018. It is designed to protect the personal data and privacy of EU (European Union) citizens for every transaction that occurs within EU member states.

2. **HIPAA (Health Insurance Portability and Accountability Act):** HIPAA was enacted in the year 1996. HIPAA is designed to provide the security provisions and data privacy to keep the patients' medical information safe.

3. **PII (Personally Identifiable Information):** PII is any data that could potentially be used to identify a particular individual. PII information includes biometric information, medical information, Personally identifiable information (PIFI) and unique identifiers such as social security numbers. In the U.S., multiple federal laws regulate the protection of PII.

4. **PCI (Payment Card Information/Industry):** PCI was enacted in December 2004. It refers to the payment security standards that ensure all sellers safely and securely accept, store, process and transmit cardholder data during credit card transactions.

5. CCPA **(California Consumer Protection Act):** CCPA will come into effect from January 1st, 2020. This regulation is meant to enhance privacy rights and consumer protection for residents of California, US.

A user can perform various functions in DgSecure. These are:

i. Create a policy
ii. Edit a policy
iii. Export a policy
iv. Import a policy

6.2 Create a Policy

A user can create, edit, import and export policies using data sources. There are two type of data sources:

1. **DBMS:** Use DBMS module for creating a policy for structured data. Structured data is stored in well- defined schemas such as database. It is in a tabular form that clearly defines attributes.

2. **Hadoop & Files**: For Unstructured data use Hadoop & Files module. Unstructured data does not have identifiable structure. It lacks in a particular format and sequence.

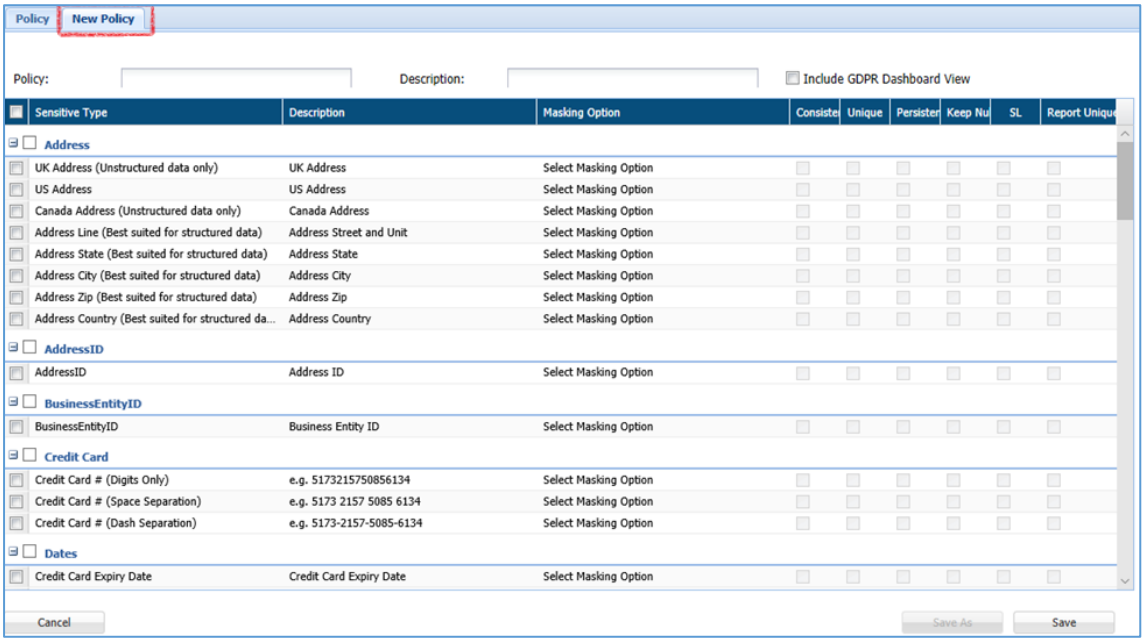
***Note:** Pre-Defined policies are not editable.

The below section defines the process to create a policy.

6.2.1 DBMS

To create a policy, click **Policy > DBMS > Policy > New Policy** tab.

Following screenshot shows the user interface for creating a policy:



1. **Policy:** Enter the name of the policy. The name must be unique to for each policy.

2. **Description:** Describe the policy. This fields accepts letters, numbers, symbols and can hold 256 characters.

3. Include **GDPR Dashboard View:** Check this checkbox to display the policy in the **GDPR View** under the **Reports** section.

4. Sensitive **Type:** Select the Sensitive Type to include in the policy. A user can also define its own Sensitive Type in the **Policy > Sensitive Type Manager > New Sensitive Type** tab. User can select 'n' number of sensitive types while creating a policy. To select an entire group, check the checkbox next to the Sensitive Group.

5. Masking **Option:** Select the Masking option from the drop – down list. You have to select the CUPS options. There are six parameters for CUPs. These are:

    i. **Consistent (C)**
    ii. **Unique (U)**
    iii. **Persistent (P)**
    iv. **Keep Null**
    v. **Stateless (SL)**
    vi. **Report Unique and Total Count**

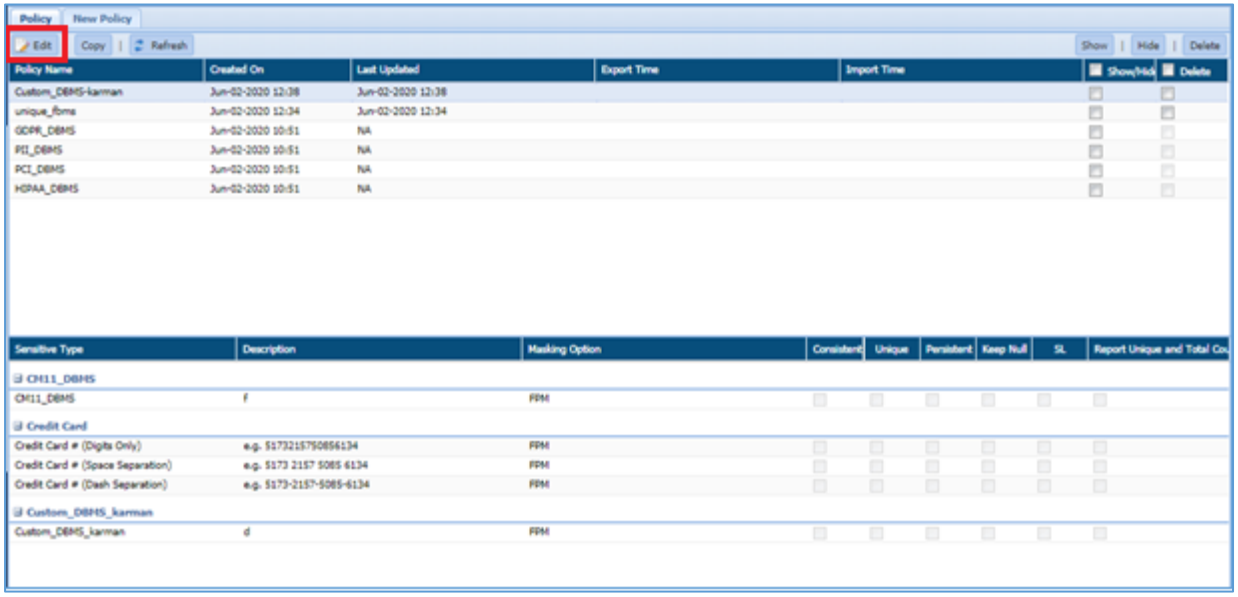
6. **Cancel:** Click the **Cancel** button, if the you do not want to save the changes.

7. **Save As:** Click the **Save As** button to save the policy with new name.

8. **Save:** Click the **Save** button to save the policy.

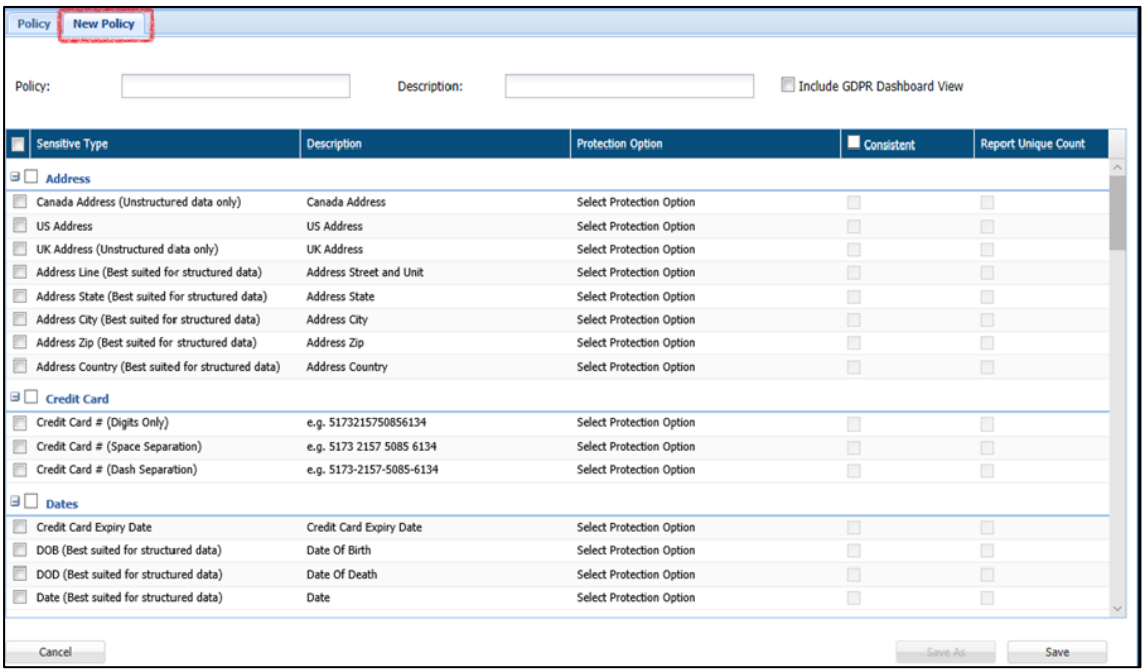
9. To edit a policy, go to **POLICY** tab and click **Edit** button. This functionality will enable you to edit a policy.

    Select the policy in Policy panel and click **EDIT.**



6.2.2 Hadoop & Files

To create a policy in Hadoop & Files. Click **Policy > Hadoop & Files > Policy > New Policy** tab. The following screenshot shows the user interface for creating a policy:



1. **Policy:** Enter the name of the policy. The name must be unique for each policy.

2. **Description:** Describe the policy. This fields accepts letters, numbers, symbols and can hold 256 characters.

3. **Include GDPR Dashboard View:** Check this checkbox to display the policy in the **GDPR View** under the **Reports** section.

4. **Sensitive** Type**:** Select the Sensitive Type to include in the policy. A user can also define its own Sensitive Type in the **Policy > Sensitive Type Manager > New Sensitive Type** Tab. User can select 'n' number of Sensitive Types while creating a policy. To select an entire group, check the checkbox next to the Sensitive Group.

5. **Protection** Option**:** Select the Protection option from the drop-down list. You also need to select the CUPs Option. There are two parameters for CUPs Options. These are:

    i. **Consistent (C)**
    ii. **Report Unique Count**

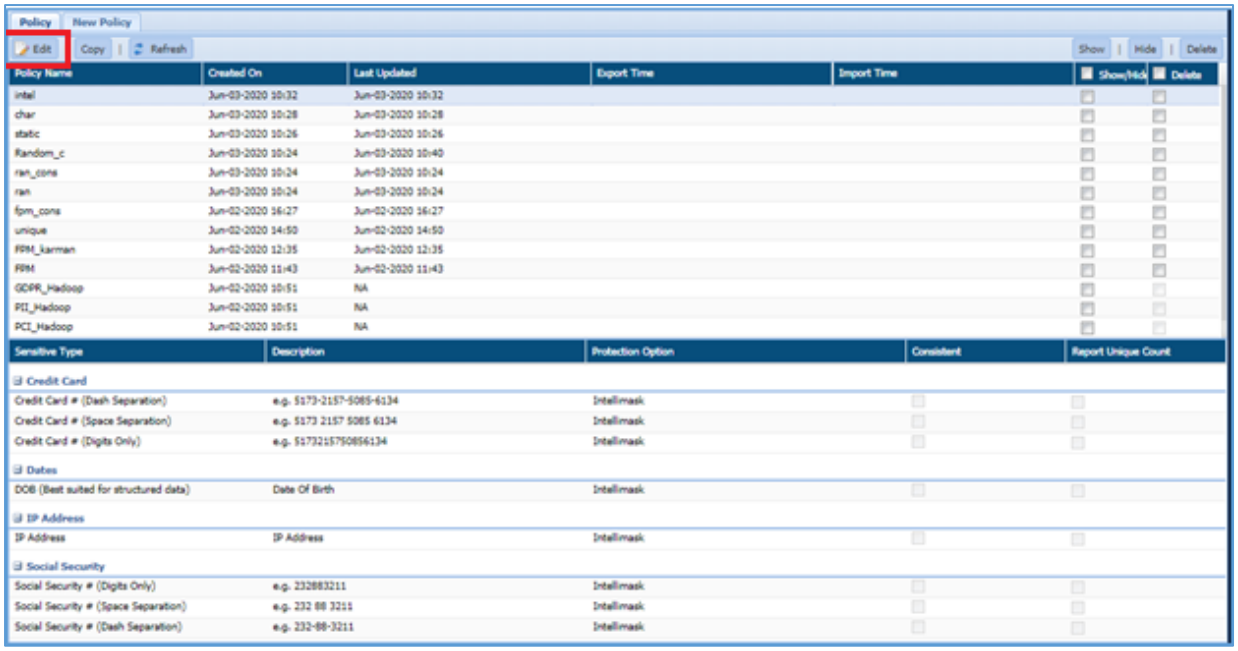
6. **Cancel:** Click the **Cancel** button, if you do not want to save the changes.

7. **Save As:** Click the **Save As** button to save the policy with new a new name.

8. **Save:** Click the **Save** button to save the policy.

9. To edit a policy, go to **POLICY** tab and click **Edit** button. This functionality will allow you to edit the information for the policy.

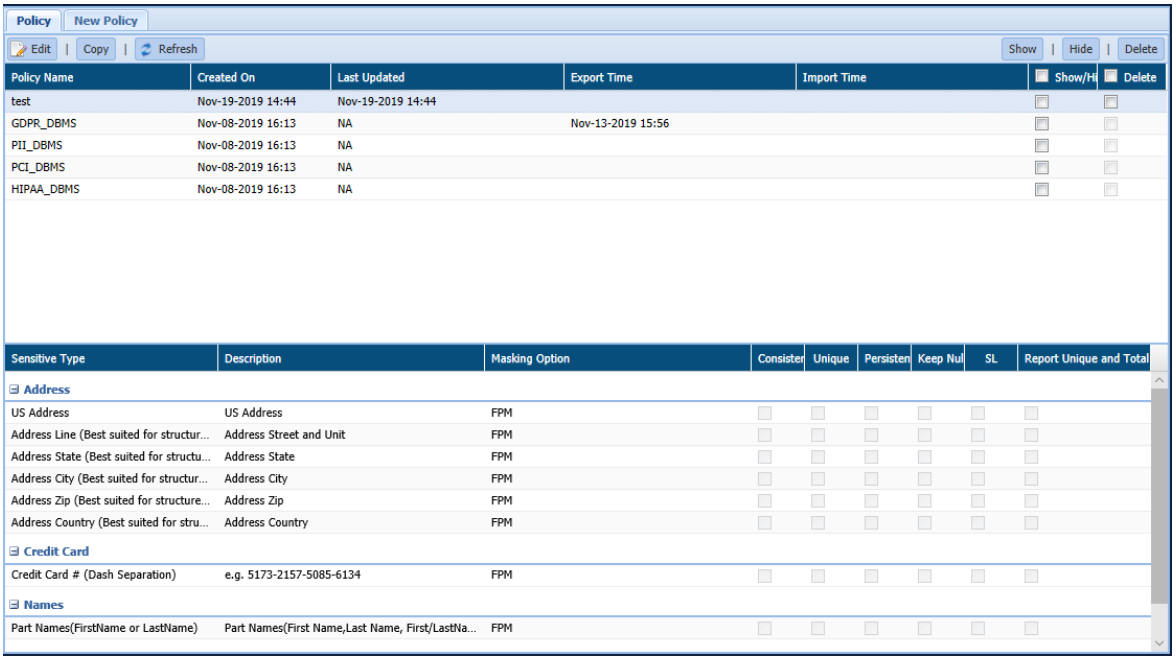
   Select the policy in the Policy panel and click **EDIT.**



6.3 List Policies

6.3.1 DBMS

This screen displays the list of pre-defined policies and the Sensitive Type associated with each policy.



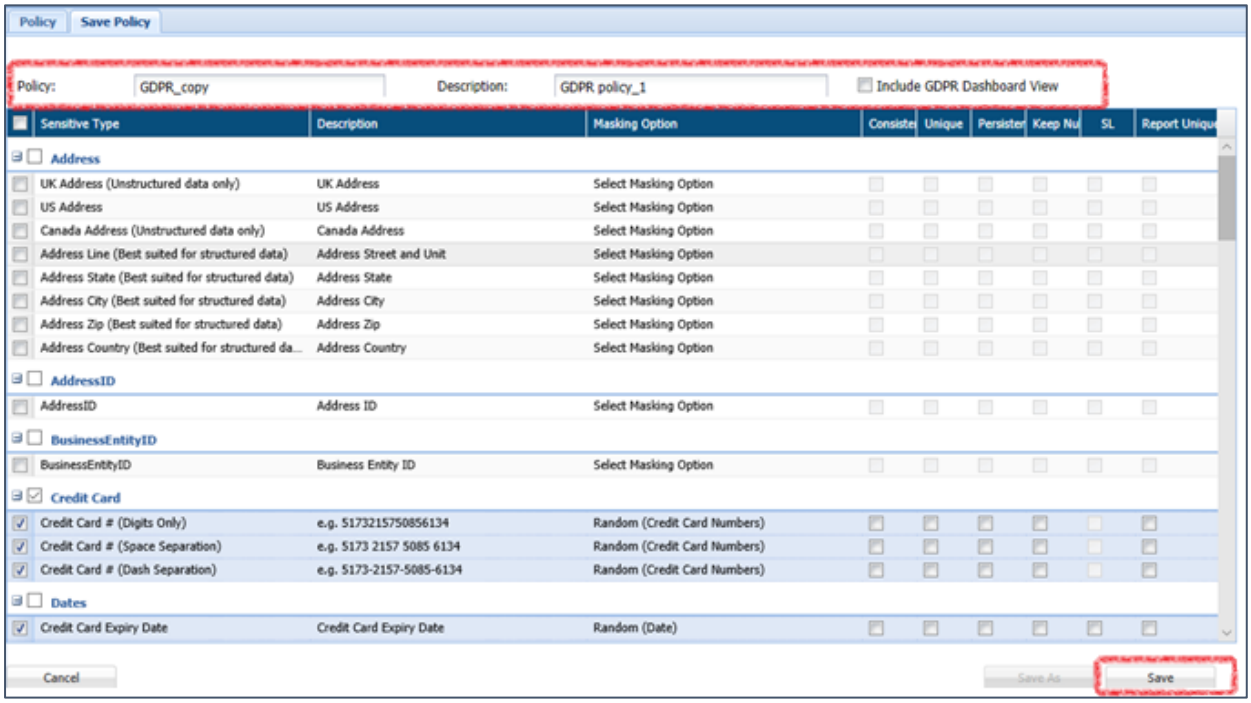
1. **Edit** – This functionality allows user to edit any customized policy. Select a policy in Policy panel and click **Edit**.

   ***Note**: Only Custom Policies are editable.

2. **Copy** – User can create a copy of pre-defined and customized policy. To create a copy of the policy, follow the below steps:

   a) Select the policy that you want to copy.
   b) Click **Copy**.

3. Enter the details such as **Policy**, **Description.** Select the **Sensitive Type** and the **CUPS** option.
4. Click **Save**. This will successfully create a copy of the policy.

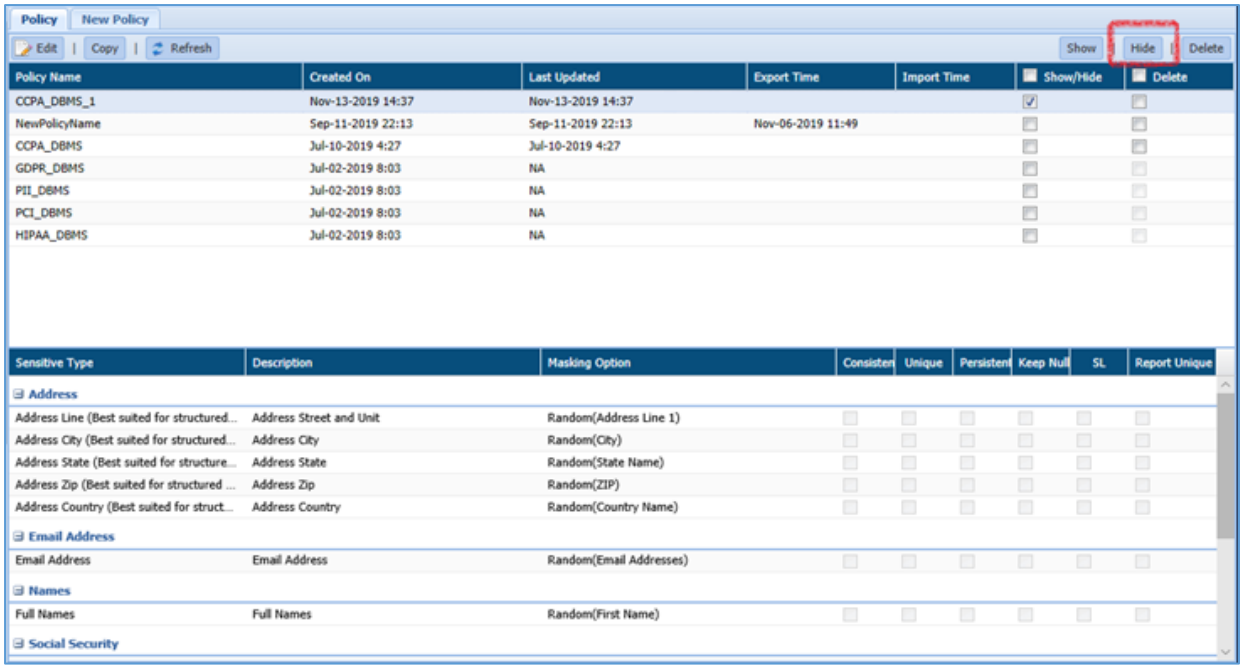


5. **Refresh** – Click this button to refresh the current page with the updated information.

6. **Show** – Click this button to unhide the policy.

7. **Hide** – To hide any policy, follow the below steps to hide any policy:

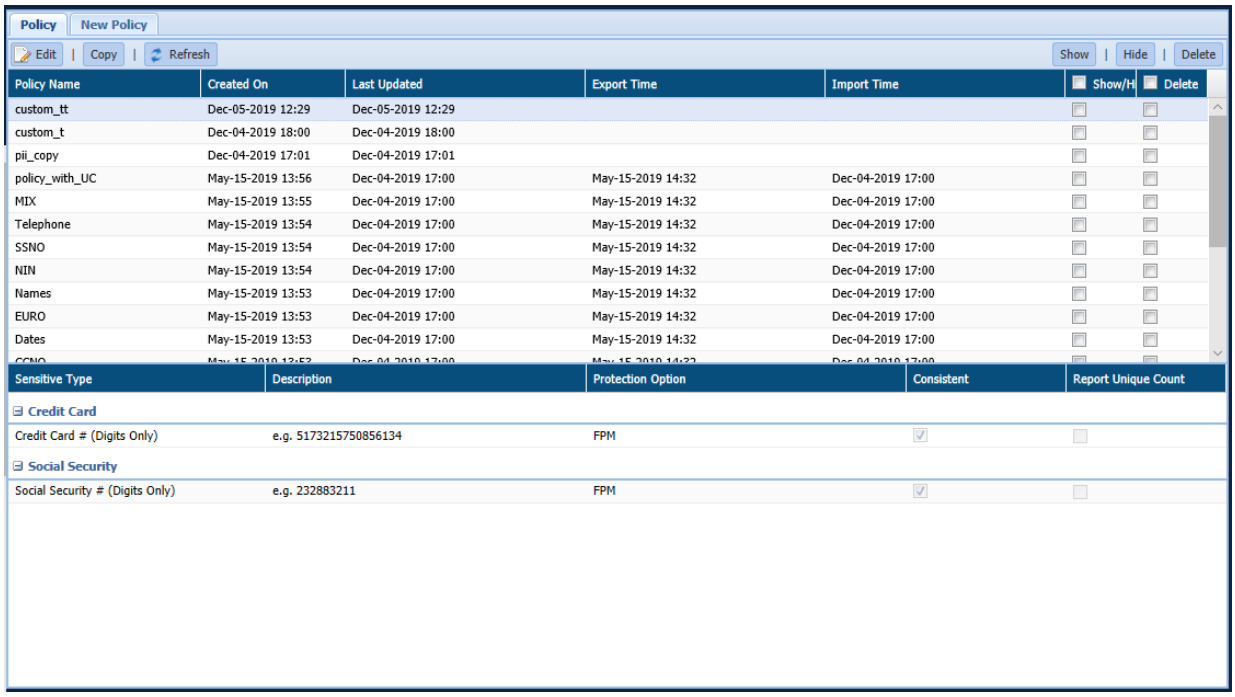
   a) Click the **Show/Hide** checkbox for the selected policy.
   b) Click the **Hide** button. The policy will get greyed out.



8. **Delete** – Check the **Delete** checkbox corresponding to the policy that you want to delete. Click the **Delete** button to delete the selected policies.

6.3.2 Hadoop & Files

This screen displays the list of pre-defined policies and the Sensitive Type associated with each policy.

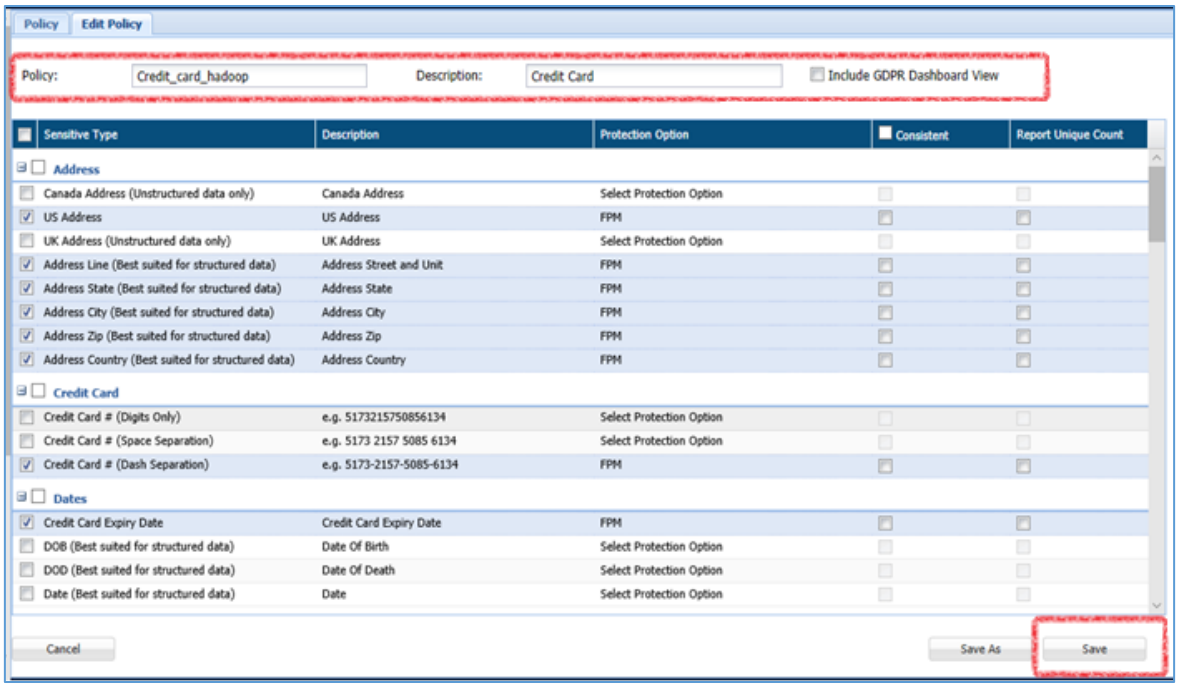


1. **Edit** – This functionality allows user to edit any customized policy. Click **Edit** to edit an existing information for the policy.

2. **Copy** – User can create a copy of pre-defined and customized policy. To create a copy of the policy, follow the below steps:

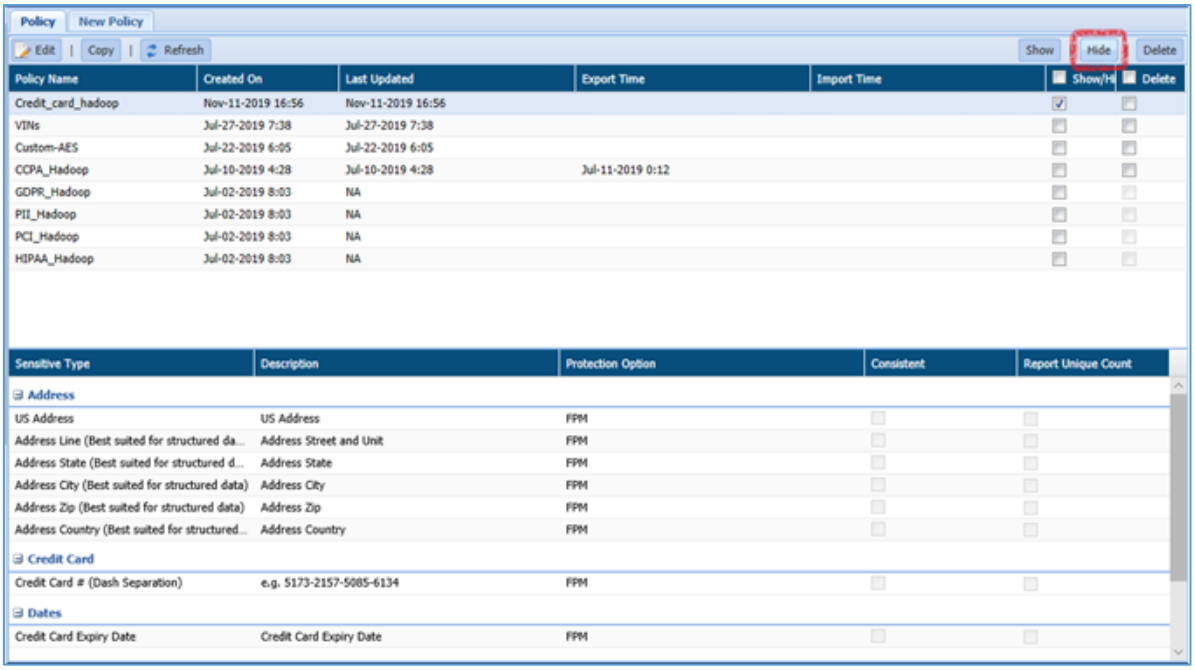
    a) Select the policy that you want to copy.
    b) Click **Copy**.

3. Enter the details such as Policy, Description. Select the Sensitive Type and the CUPS option.
4. Click Save. This will successfully create a copy of the policy.



5. **Refresh** – Click on Refresh button to refresh the current page with the updated information.
6. Show – Click the Show button to unhide the policy.
7. Hide – To hide any policy, follow the below steps to hide any policy:

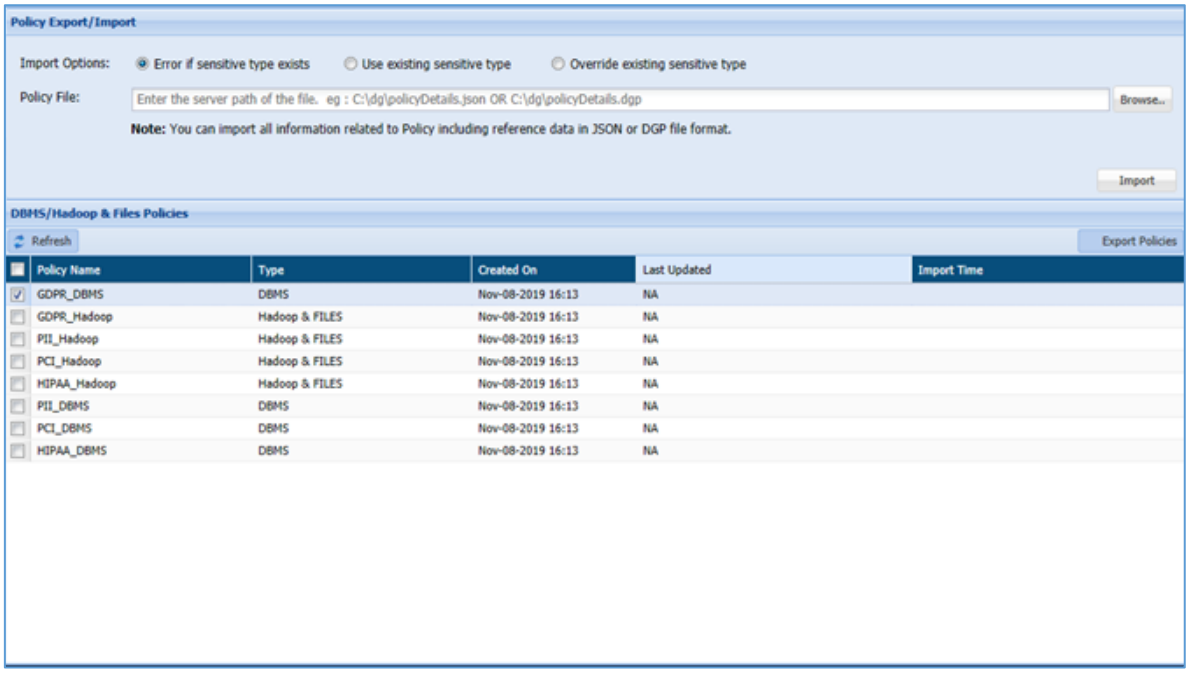
    c) Click the **Show/Hide** checkbox for the selected policy.
    d) Click the **Hide** button. The policy will get greyed out.



8. **Delete** – Check the Delete checkbox corresponding to the policy that you want to delete. Click the Dele**te** button to delete the selected policies.

6.4 Export Policy

DgSecure provides the capability to export and import policies. Follow the below steps to export a policy:



1. Click Policy > Export/Import > Policies.

2. Check the checkbox corresponding to the policy that you want to export. Click the **Export Policies** button.

3. Enter the location to save the file in the pop-up. Click the **Save** option and mention the path where file will be downloaded.

***Note:**

1. While exporting a policy, if any custom Sensitive Type is added to the policy which has reference data or Confidence factor config values then these values will also get exported along with the custom Sensitive Type.

2. When a user is exports a policy, then Pre-Defined Sensitive Types will not get exported. Only their references will get set in the policy. When policy is getting imported, the Pre-Defined Sensitive Types are immutable and already exists on the system.

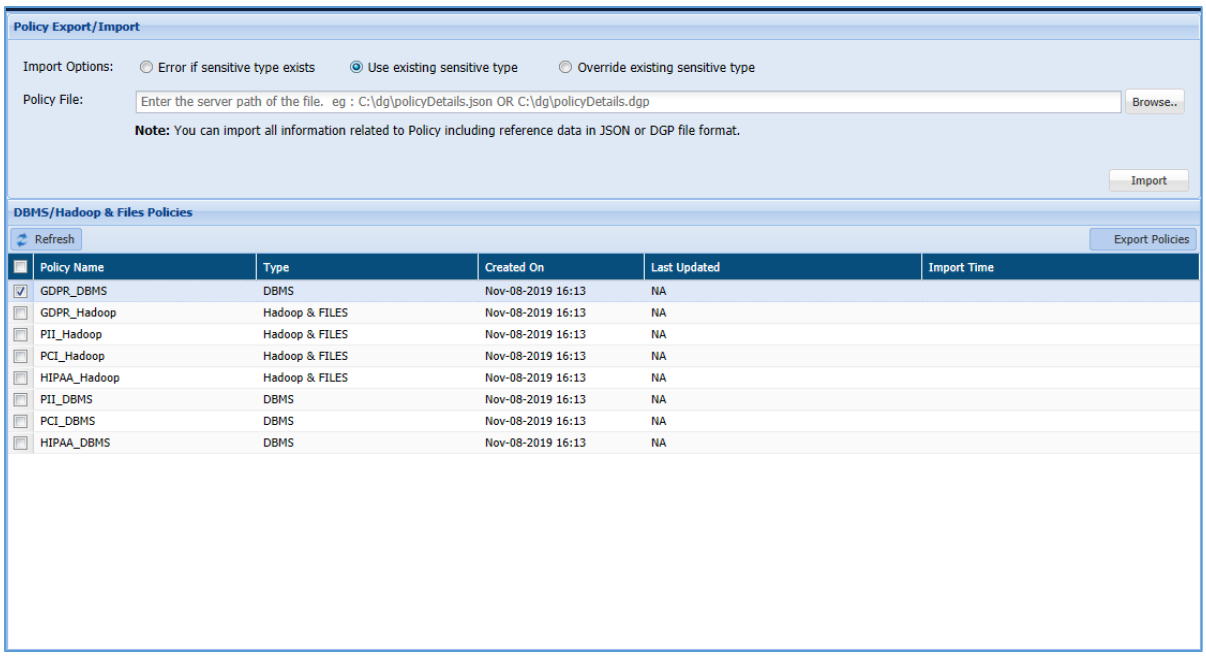
3. If any derived sensitive type is part of a policy, then that derived sensitive type with its derivation definition, reference data, confidence factor config will also get exported.

4. If a customer has done some changes in data regex, column name regex or any other property of that Pre-Defined Sensitive Type; DgSecure will not update that Pre-Defined Sensitive Type on the target system while importing a policy on the other system.

In case the customer wants to port the changes performed in the Pre-Defined Sensitive Type from one machine to another, contact support team to get the scripts.

6.5 Import Policy

DgSecure provides the capability to import policies. Follow the below steps to import a policy:



1. Click **Policy > Export/Import > Policies**.

2. Check the checkbox corresponding to that policy that you want to import. Click the **Browse** button and select the policy file to import.

3. Select the Import options.

***Note**: **These import options are applicable only for custom sensitive type.**

Following are the import options:

a) **Error if sensitive type exists:** If sensitive type with the same name already exists, the system will throw an error and will not let you import the policy.

b) **Use existing sensitive type:** If the sensitive type with the same name already exists, the system will use the existing sensitive type.

c) **Override existing sensitive type:** If the sensitive type with the same name exists, the system will override the properties of the existing sensitive type with the new properties.

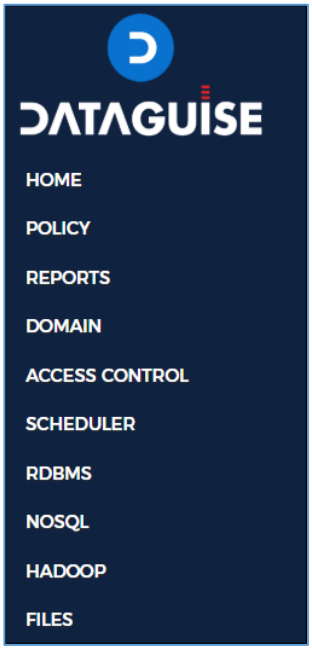
4. Click the **Import** button. This will successfully import a policy in the DgSecure.

7 Task

7.1 Concept

DgSecure offers unique solutions to determine and safeguard sensitive information on all types of source systems, relational and non-relational databases, with structured and unstructured data, stored on the premises and even in the cloud. Detection and protection of sensitive data in

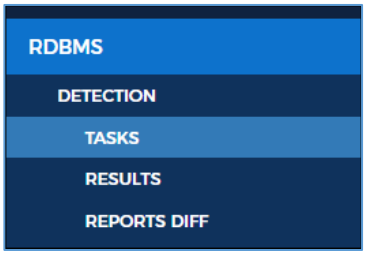
DgSecure is achieved by executing the tasks on the target source systems. This section discusses the steps to create and execute the tasks on each source system. Every licensed source system is available on the main menu of DgSecure, as depicted below:



***Note:** A task can only be executed if the required IDP (Refer to DgSecure Admin Guide section 6.2.1. **Create IDPs**) has been setup and is in "Active" condition, and appropriate connection has been set to the target source system.

To access the tasks screen for a source system, click **<Source System> -> <Task Type> -> TASKS**

For example, to access detection tasks under RDBMS, click RDBMS->DETECTION->TASKS (depicted in the image below).



7.1.1 Source System

The target data store, e.g. RDBMS, HADOOP, NOSQL etc. are termed as source systems.

7.1.2 Task Type

There are two major types of tasks:

a) **Detection:** Detection tasks help in obtaining information about where and what type of sensitive data is stored in a source system. To detect sensitive information, it is crucial to define which data entries are to be considered as sensitive elements, e.g. credit card numbers, social security numbers, addresses etc. These sensitive data elements are categorized as **Sensitive Types**.

There are various out-of-the-box sensitive types for the user to select from as well as options to clone or create custom sensitive types. Different sensitive types can be grouped together under a **Policy** to refine the sensitive data detection. Please refer to the sections Policy and Sensitive Type for more details.

b) **Masking:** Masking tasks are used to protect the sensitive data that has been detected using a detection task in the target source system. Users can perform masking and encryption on their data to ensure that sensitive information is not exposed.

DgSecure provides several masking options for securing sensitive data on an organization's data repositories. The table below shows the masking options available for different data types.

Masking Option Name	Characters (Char)	Variable Characters (Varchar)	Number	Clob
Static mask	X	X	X	X
Character mask	X	X		
Format Preservation Mask (FPM)	X	X	X	
IntelliMask mask	X	X		
Random mask	X	X	X	
NPI mask	X	X	X	
Compose mask	X	X		
Compose Math Expression mask			X	
Date Synch mask		X		
Name Synch mask		X		
Email Policy mask	X	X		
Expression mask			X	
Full Name mask		X		
Regular Expression mask	X	X		
Custom Lookup mask	X	X	X	
Custom mask	X	X	X	

Shuffle mask	X	X	X	
JSON mask		X		X
XML mask		X		X
AES Encryption/Decryption	X	X		
FPE Encryption/Decryption	X	X	X	

For detailed information on each masking option, refer to 7.4 Masking Options.

***Note:** Options for task types differ based on the type of source system.

7.2 Create Task

This section will explain the process of creating and editing a task in different source systems.

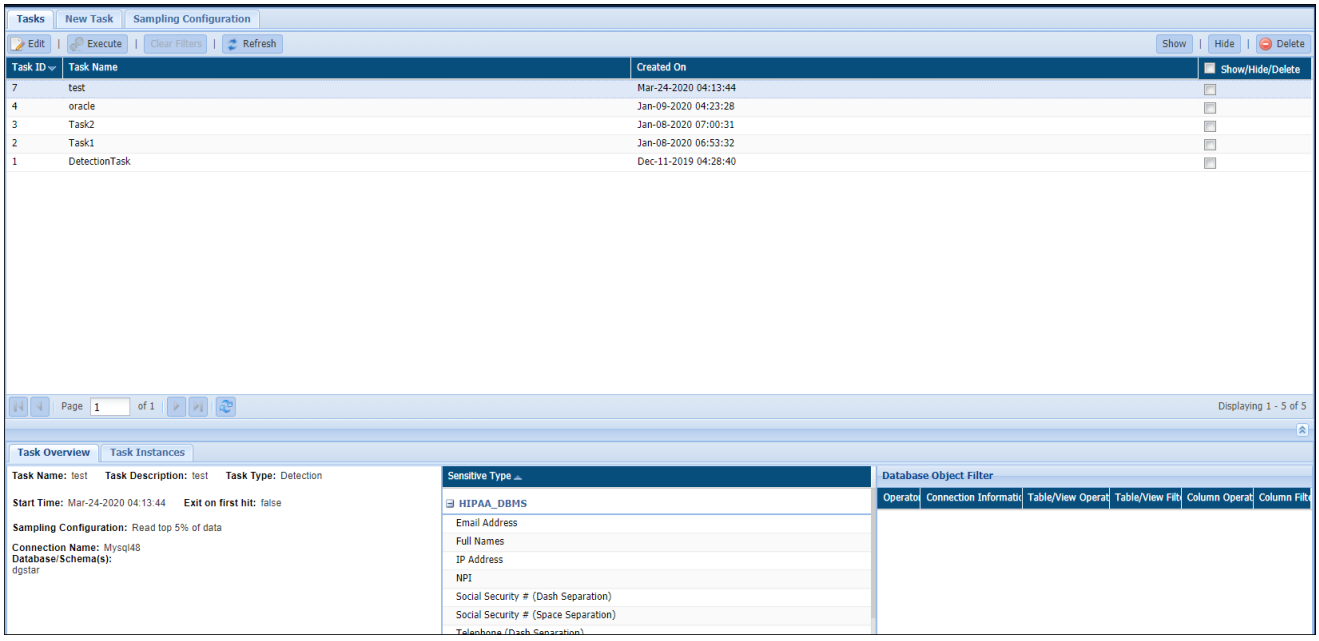
7.2.1 RDBMS

DgSecure supports Detection and Masking in RDBMS databases. Following sections outline the process of creating these tasks.

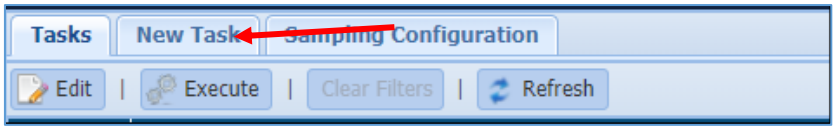
7.2.1.1 Detection Task

Perform the following steps to create a detection task.

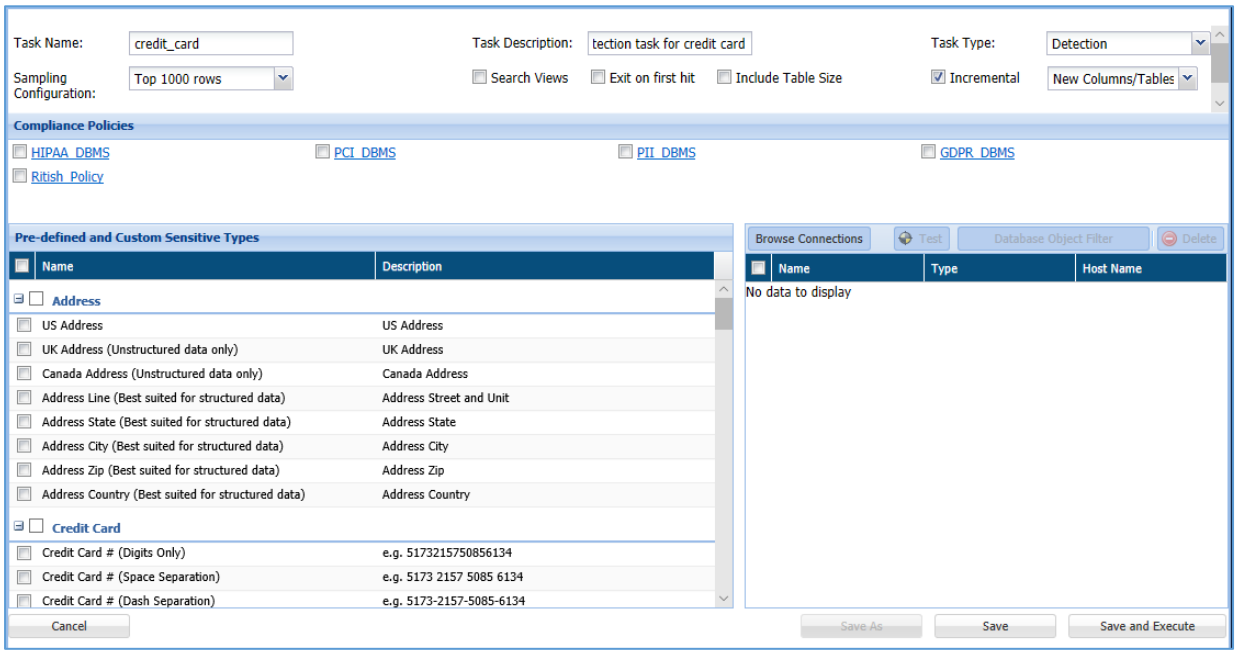
Go to **RDBMS > DETECTION > TASKS**



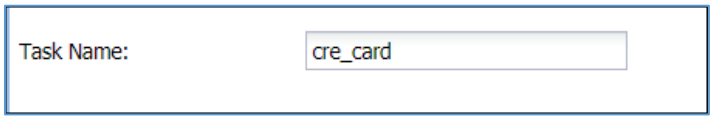
1. To create a new task, click on the **New Task** tab.



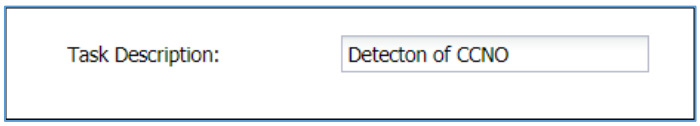
The following image shows the user interface for creating a task.



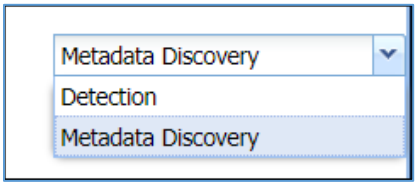
2. Enter a unique **Task Name**. This field supports numeric and character values.



3. Enter a **Task Description** of maximum 254 characters. This field supports numeric and character values.



4. Select the Task Type: **Detection** or **Metadata Discovery**.



Metadata Discovery scans your database to provide information about the type of data available on the database.

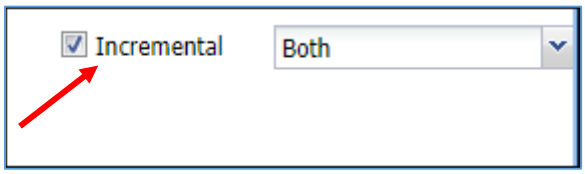
***Note**: Support for Metadata Discovery is now available for Oracle.

5. Check the **Search Views** option to detect the Views tables within the database as well as the tables linked with them. This option is available for the **Detection, Task Type.**

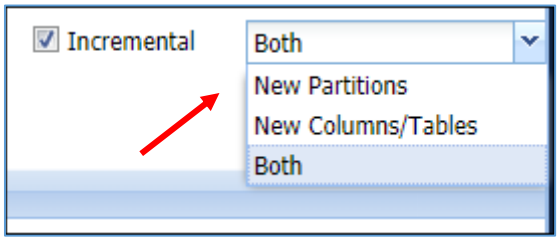
6. Check **Exit on First Hit** option to stop the scanning, when the first Sensitive Type is detected during the scan. This option is available for the **Detection, Task Type.**

7. The **Incremental** option is used to execute sensitive data detection only on the new entries to the database. This option significantly decreases the time taken to scan the database. This option is available for the **Detection, Task Type.** To setup Incremental detection, perform the following steps:

   a) Check the Incremental checkbox.



   b) Select the type of increment to the database that has to be considered for scanning, i.e., addition of new partitions or columns/tables to the database.

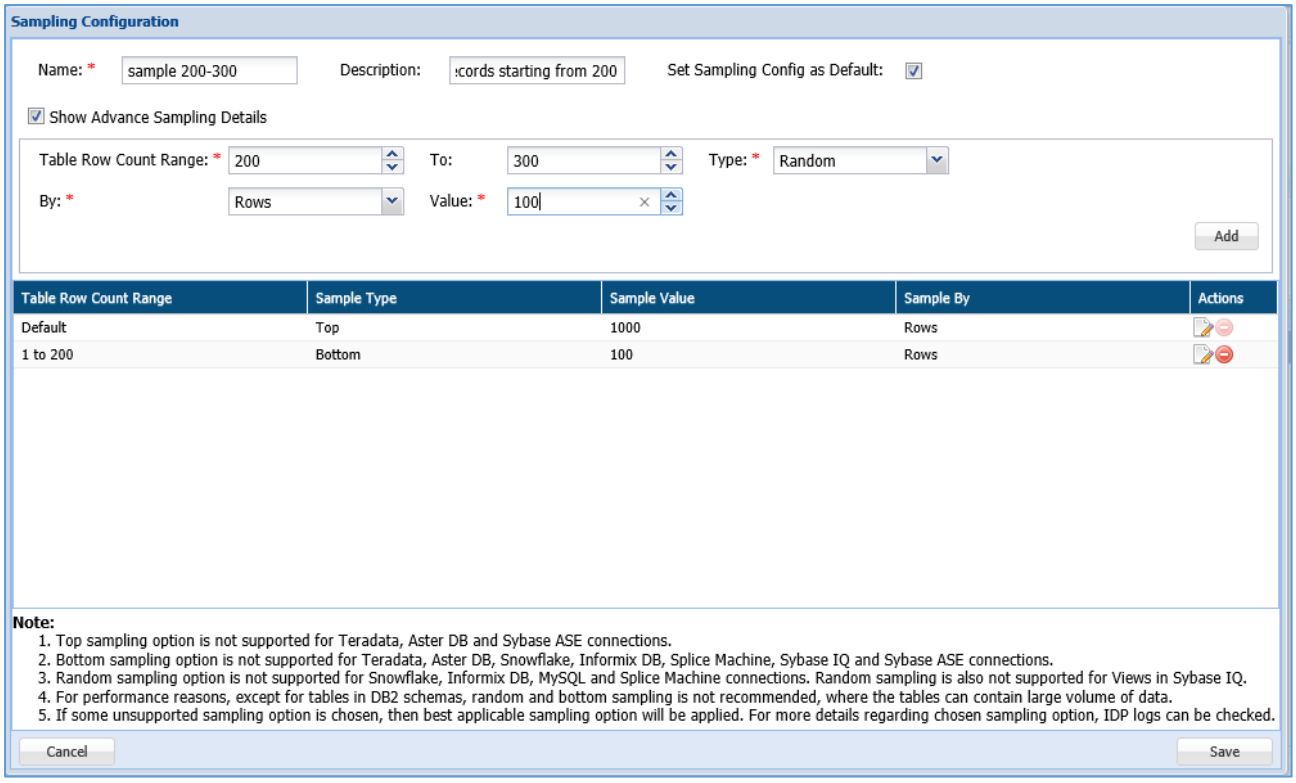


8. DgSecure is equipped with data sampling to limit the area of scan which helps in reducing the time taken for detection. Default options to scan sample data from the database are:

   - Top 1000 Rows
   - Read top 5% of data

   The sampling configuration field is set to sample Top 1000 Rows by default. Check the **Advanced** checkbox to create a new sampling configuration.

   You can also configure sampling through **RDBMS > DETECTION > TASKS > SAMPLING CONFIGURATION** tab.



i. Enter the name of the **Sampling Configuration**.

ii. Enter the description for sampling.

iii. Check the option **Set Sampling Config as Default** to set the Sampling Configuration as the default configuration for all your tasks.

iv. Check the option **Show Advance Sampling Details** to set the advanced settings for sampling. Below are the options for advanced settings:

- **Table row count range**: Enter numeric value. This value states the starting range of the table from which the records will be sampled.

- **To**: Enter the numeric value. The value in this field states the ending range of the table till which the records will be sampled.

- **Type:** Select the sampling configuration type from the **Type** option. There are four options for sampling configuration:

    i. **Top:** If you select the option **Top**, the sample data for the scan will be selected from the entries at the top of the table, based on the specified range.

    ii. **Bottom:** If you select the option **Bottom**, the sample data for the scan will be selected from the entries at the bottom of the table. This does not mean the entries will be selected bottom up, instead

depending on the range the last entries in the table will be taken to create a sample data for detection.

iii. **Random:** Entries from the table that correspond to the specified range, will be selected at random to create a sample set of data for detection.

iv. **Complete:** If all the entries in the selected tables of the database have to be scanned for sensitive types, select this option.

- **By:** To Specify how to pick data for sampling from the table, there are two ways:

  i. **By Rows:** Select **Rows** from the drop-down, to sample data based on the number of rows.

  ii. **By Percent:** Select **Percent** from the drop-down, to sample a percentage of the data

- **Value:** Enter the numeric value. It will specify the total number of records to be processed if sampling By-Rows is selected and denotes the percentage of sampling By-Percent is selected.

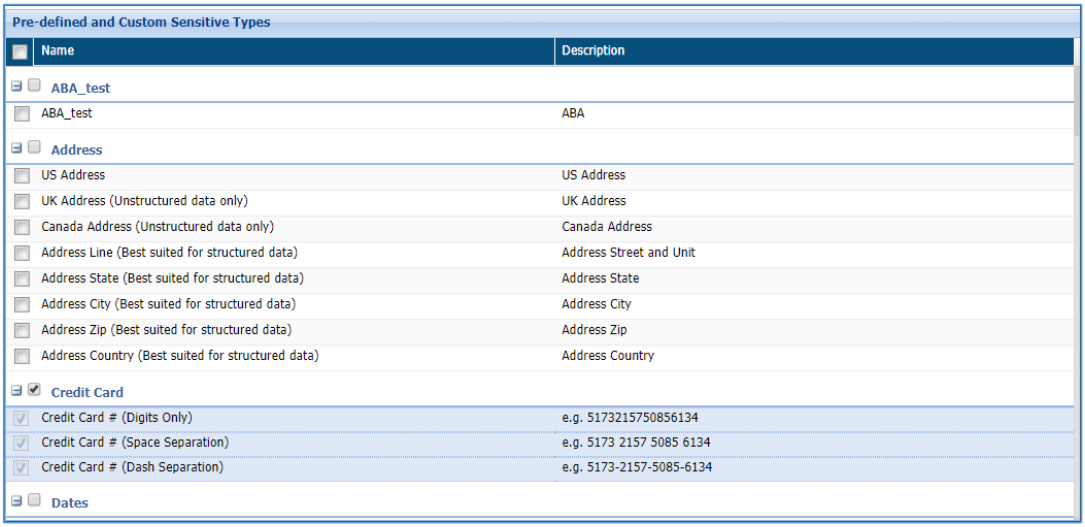
v. After setting up the required configuration, click **Add** to add the user-defined sampling configuration to the list.

vi. Click the **Save** button to save the changes.

9. Select the required policy under the **Compliance Policies** section. The Compliance Policy panel displays all the Pre-Defined and Customized Policies. Users can select any number of policies while creating or editing a task.

   Sensitive types associated with the selected policy can be viewed in the panel below this panel **Pre-Defined and Custom Sensitive Types**. Selecting a policy is not a mandatory step, users can also proceed to select individual sensitive types. For more information, refer to section Policy.

10. Select the required sensitive types for the scan from the **Pre-defined and Custom Sensitive Types** section. Refer to the following screenshot:

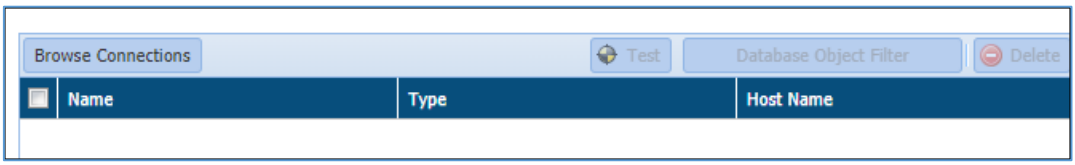


The **Pre-Defined and Custom Sensitive Types** panel lists down all the Sensitive Types. The Sensitive Type associated with the policy gets selected in the Pre-Defined and Custom Sensitive panel and cannot be removed from the scan, however any number of sensitive types can be added to the scan.

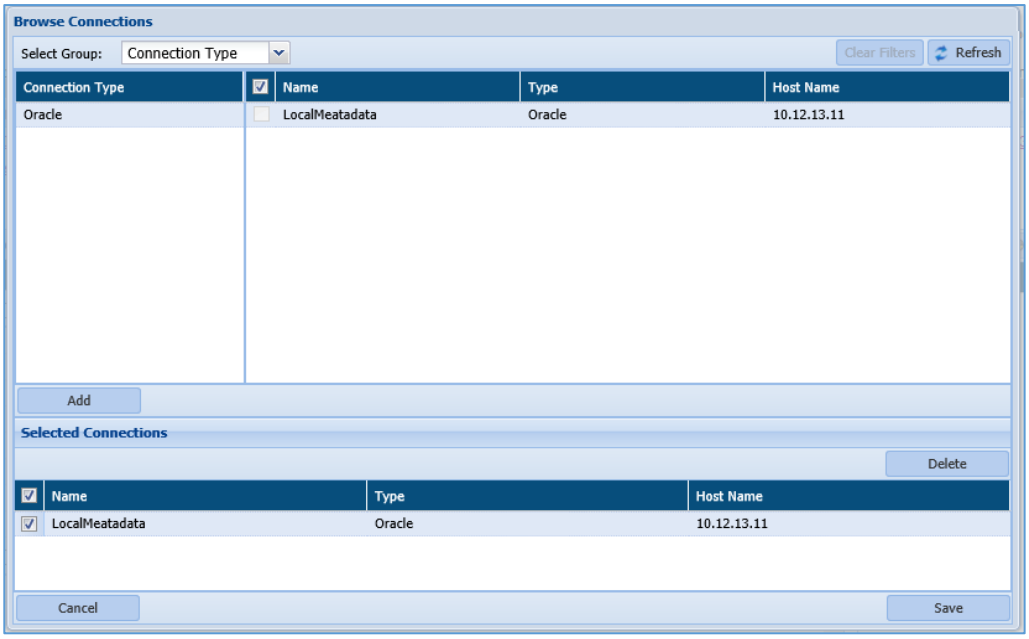
***NOTE:** If a policy is selected, user can still add more sensitive types to the scan but the sensitive types under the selected policies cannot be excluded from the scan.

11. The **Database Connection** panel lists down all the available RDBMS connections. Any number of connections can be selected for a task. This panel list down all the available connections. For details on how to create and manage connections refer Connection Manager. Perform the following steps to choose a connection:

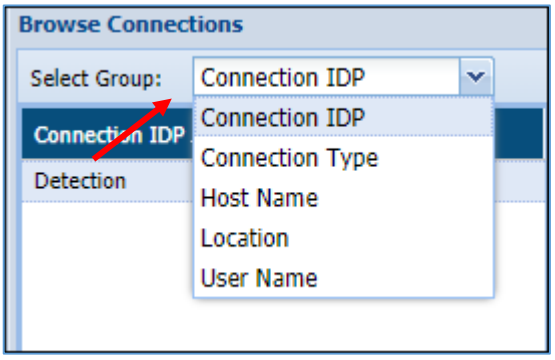
vii. Click Browse Connections.



viii. The **Browse Connections** dialog box will be displayed. This screen categorizes connections based on user preferences.



ix. Click on the **Select Group** dropdown and select the required option from the sub groups displayed on the left panel to sort the available connections.



The **Select Group** drop-down has five options:

1. **Connection IDP**: Categorizes the available connections based on the types of IDPs available, i.e., Detection and Masking.

2. **Connection Type**: Categorizes the available connections based on the type of server connected to, i.e., Oracle, Teradata, SQL server etc.

3. **Host Name**: Categorizes the list of available connections based on Host Names.

4. **Location**: Categorizes the available connections based on the location of the target source system server, i.e., On-Premises and Cloud.

5. **User Name**: Categorizes the list of available connections based on the Usernames.

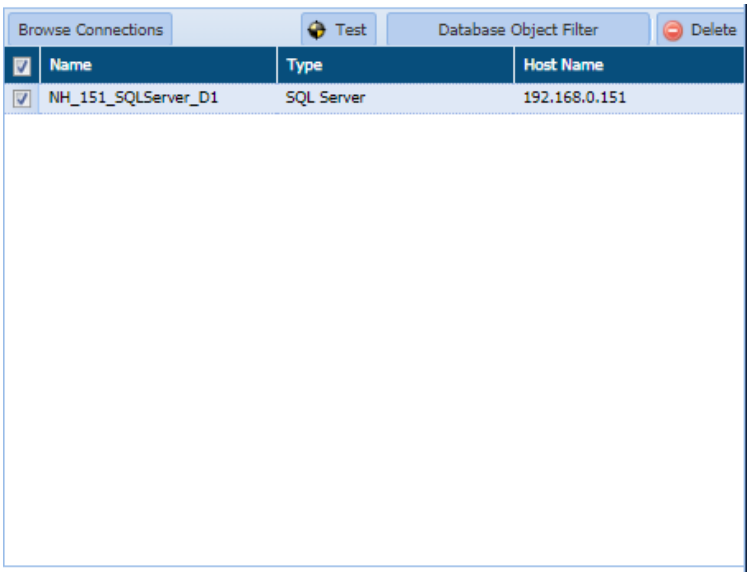
x. Click **Add** to include the selected database connection in the **Selected Connection** panel.

xi. Check the Selected connection. Click the **Save** button to include connections.

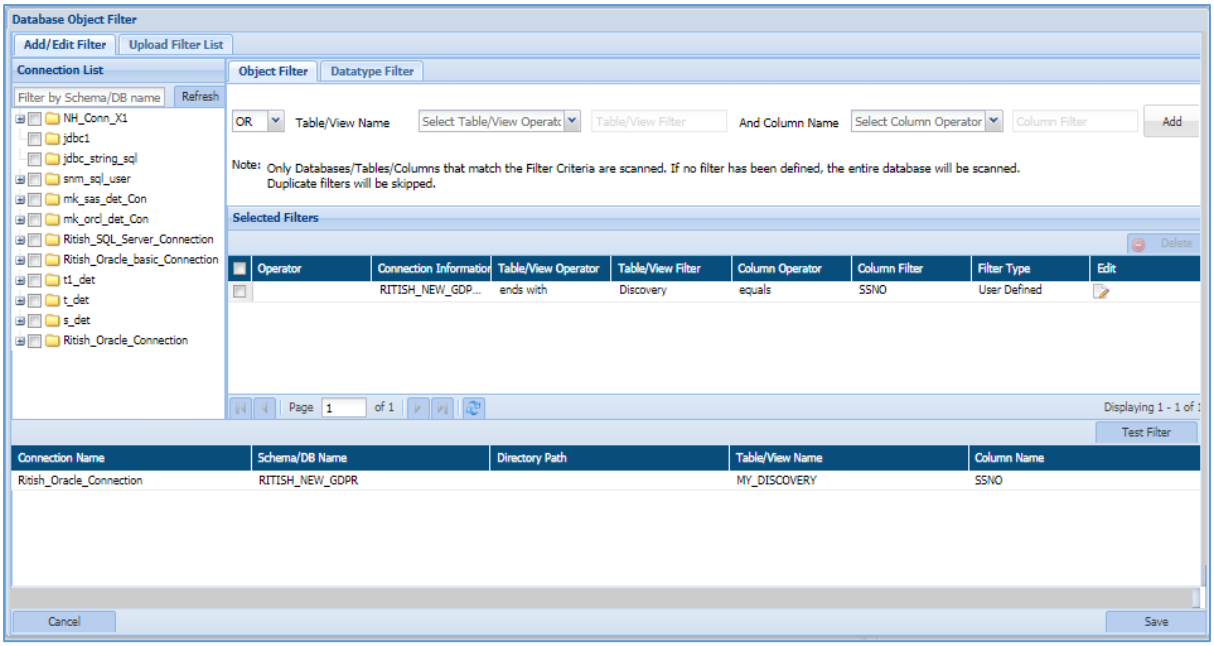
xii. Click the **Test** button to test the listed RDBMS connection.

xiii. Click the **Database Object Filter** button to filter tables and/or columns. Once filters are defined, then only those databases/tables/columns that match the filter are scanned.

Check the checkbox next to the connection to enable the Database Object Filter.



You can **Add/Edit Filter** in two ways i.e. either by specifying in manually it manually or by uploading the filter list in the **Upload Filter List** tab.

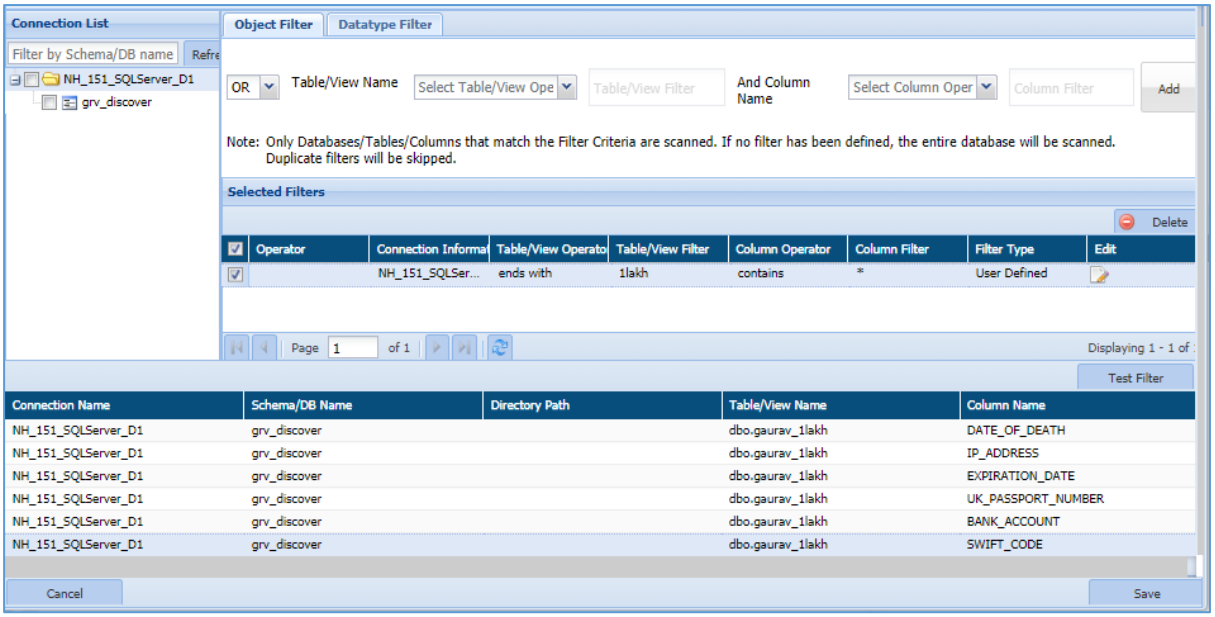


- **Add/Edit Filter**: This tab allows you to apply the filter for the selected connection. Once the filter has been applied then only those databases/tables/columns and datatypes that matched the criteria will be scanned.

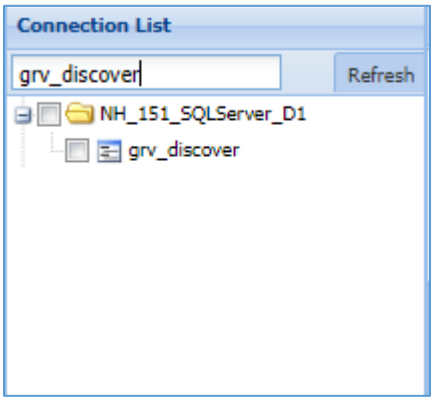
  There are two types of filter which can be applied.

  1. Object Filter
  2. Datatype Filter

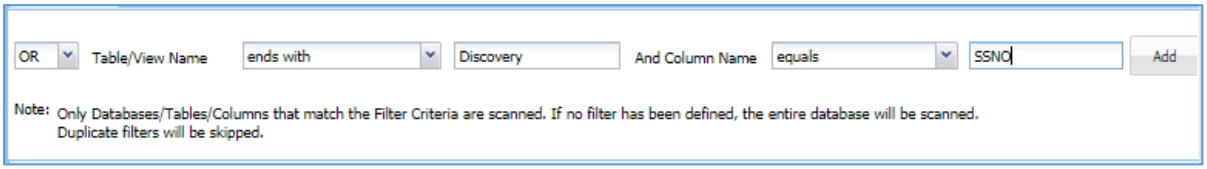
  1. **Object Filter**
     The Object Filter allows you to scan the database/tables/columns based on the defined filter. To apply an Object Filter, perform the following steps:



a) Select the connection from the Connection List panel or enter the DB/Schema name in the Filter by Schema/DB Name textbox.



b) Apply the **Object Filter** in the top panel by specifying the **Operator, Table/View** and **Column** name.



For example, in the above image the object filter specifies the table name should end with 'Discovery' and the selected table should contain SSNO column.

There are eight types of Operators based on which you can select the Table and Column name.

1. **Equals**: This operator will check whether the given table/column name exist in the selected database/table. It will return the matched records if the condition is fulfilled.

2. **Not Equal to**: This operator will return all the records except the given table/column name.

3. **Contains**: This operator will return only those tables/columns which matched the given criteria.

4. **Does not contain**: The functionality of this operator is similar to the **Not Equal to** operator, since it returns all the records except the given table/column name.

5. **Starts with**: This operator will return all the tables/column whose name starts with the given criteria.

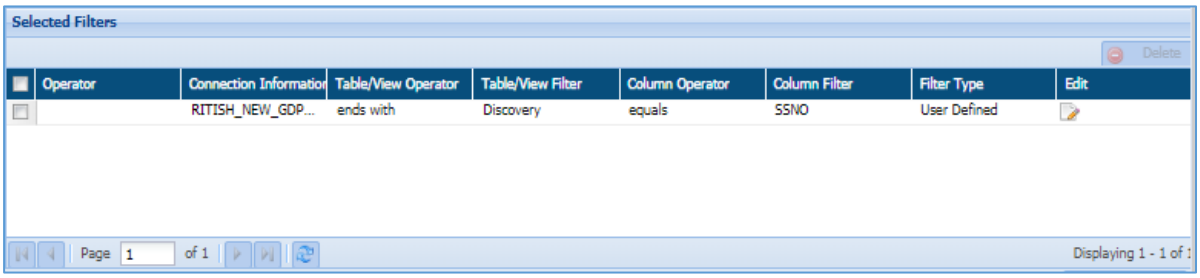
6. **Does not start with:** The functionality of this operator is similar to the **Does not contain** and **Not Equal to**, since it will return all the tables/column name except the one which has been entered.

7. **Ends with**: This operator will return all the tables/column name whose name ends with the given input.

8. **Does not ends with**: The functionality of this operator is similar to the Does not contain and Not Equal to, since it will return all the tables/column name except the one which has been entered.

c) Click the **Add** button to add the filter in the **Selected Filters** panel.

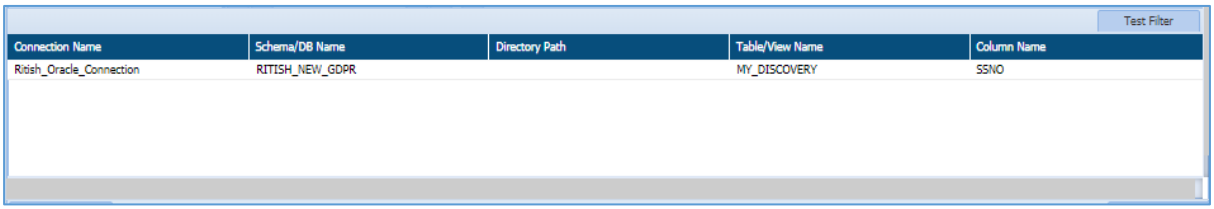
d) The **Selected Filters** panel will list down all the user defined filters. It displays information about the filters such as Connection Name, Table/View Operator, Table/View Filter, Column name, etc.



- To edit a filter, click the  button in the **Edit** column. This functionality allows you to re-select the Operator, Table/View and Column name.

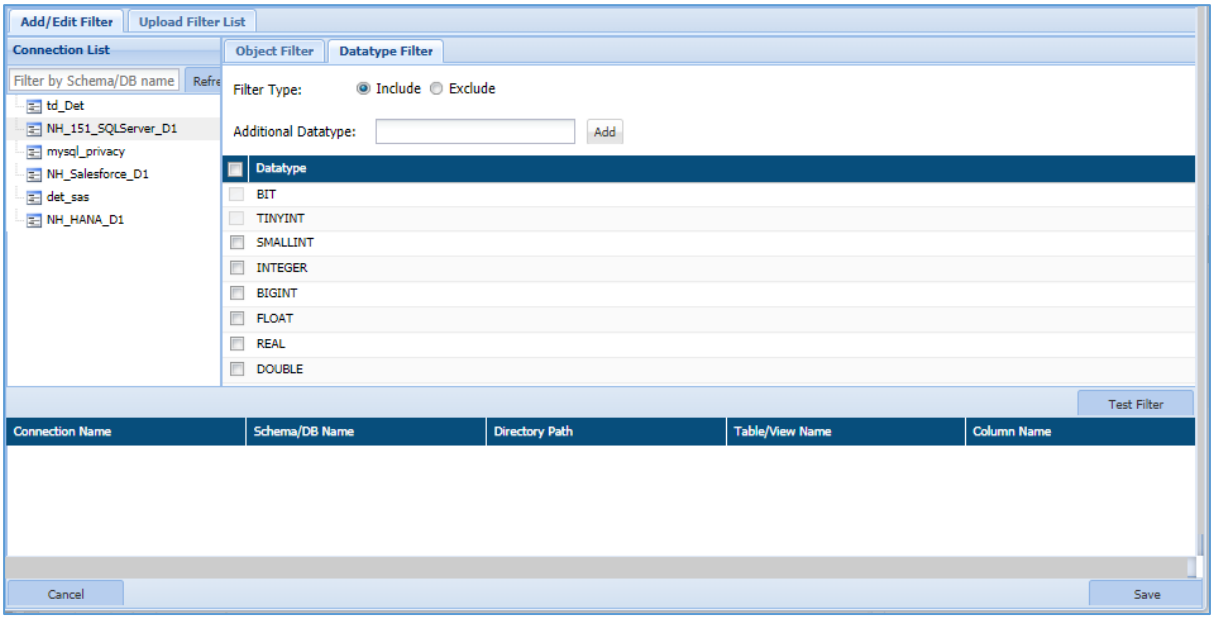
- To delete a filter, check the checkbox for that filter and click the **Delete** button. This button will get enabled when you check the checkbox for any filter.

9. Click **Test** button to test the filter. It lists down the result matching the filter criteria.



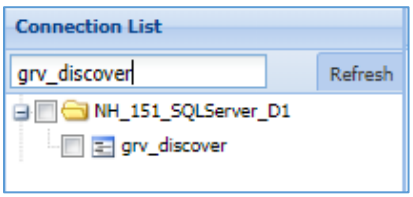
10. Click **Save** button to make the changes effective.
11. Click **Cancel** button, if you do not want to save the changes.

1. **Datatype Filter**
   This tab allows you to specify the datatypes to be included or excluded while scanning based on the selection.



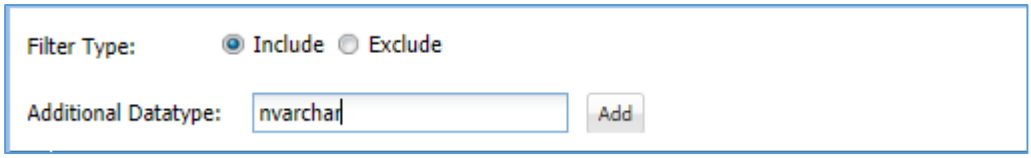
To apply Datatype Filter, perform the following steps:

a) Select the connection from the **Connection List** panel or enter the Database/Schema name in the **Filter by Schema/DB Name** textbox.

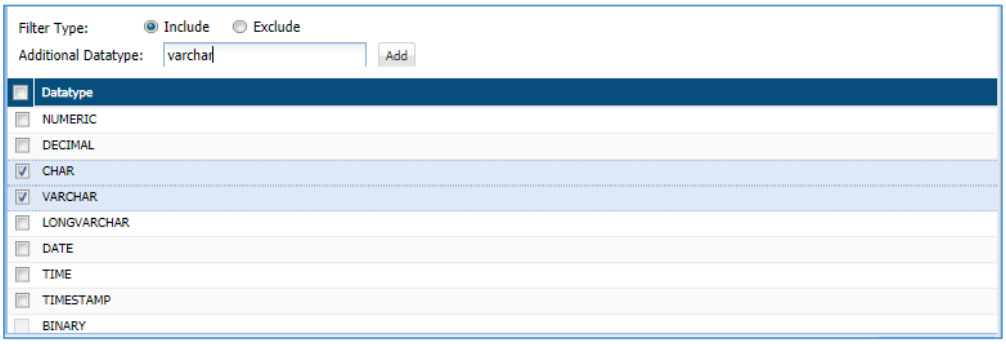


b) Select the **Filter Type** from the given option. By default, **Include** filter type is selected.

- **Include**: This option allows to select the datatype that need to be included while scanning.
- **Exclude**: This option allows to select the datatype that need to be excluded while scanning.
- **Additional Datatype**: This field allows you to add a datatype if it's not present in the DataType panel. Once that datatype is entered, click **Add** button to specify it in the DataType panel.

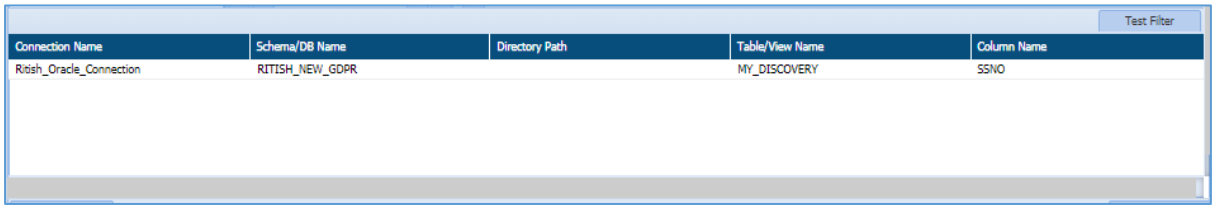


c) Check the checkbox for the datatype which you want to include or exclude based on the selection of **Filter Type** in above panel.



For example, in the above image the CHAR and VARCHAR datatypes are included in the scanning process since Filter Type specify the option as 'Include'. If 'Exclude' is selected as Filter Type then selected CHAR and VARCHAR datatype will be excluded from the scanning process.

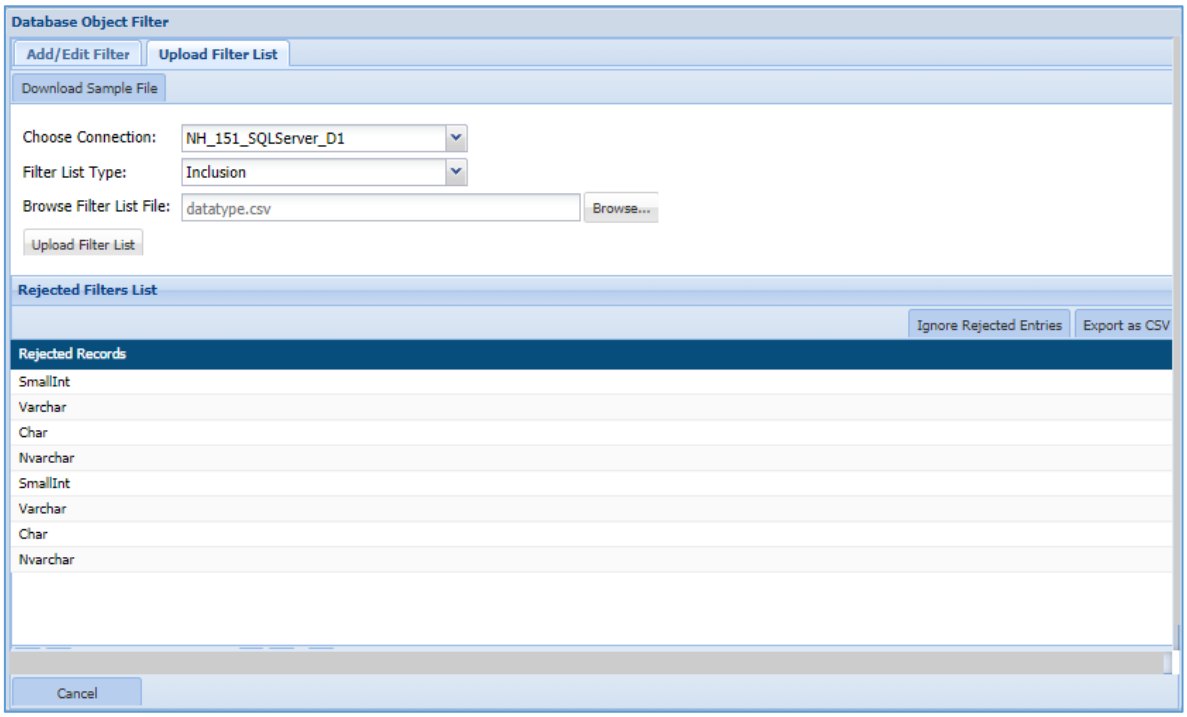
d) Click **Test** button to test the whether any column in the database contains the selected datatype. This functionality will list down all the columns that contain the selected datatype.



e) Click **Save** button to make the changes effective.

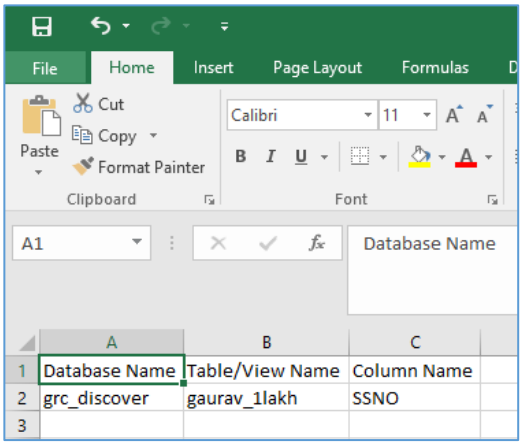
f) Click **Cancel** button if you do not want to save the changes.

- **Upload Filter List**: This tab allows you to upload a file containing the list of all columns.

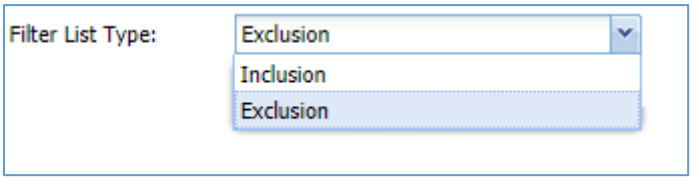


To upload the filter list, perform the following steps.

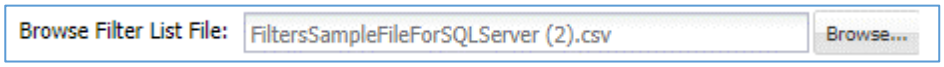
a) Select the connection from the **Choose Connection** drop-down.
b) The **Download Sample File** button will be enabled once a connection has been chosen. Enter the Database, Table/View and Column Name in the sample file.



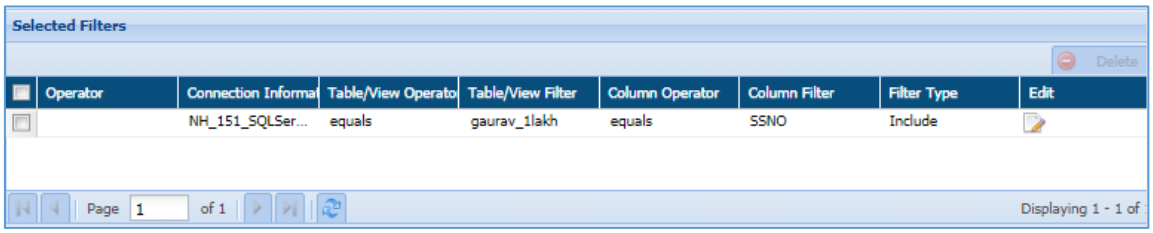
c) Select the **Filter List Type** from either ‘Inclusion’ or ‘Exclusion’. This functionality allows you to specify whether to include or exclude the Database, Table/View and Column name.



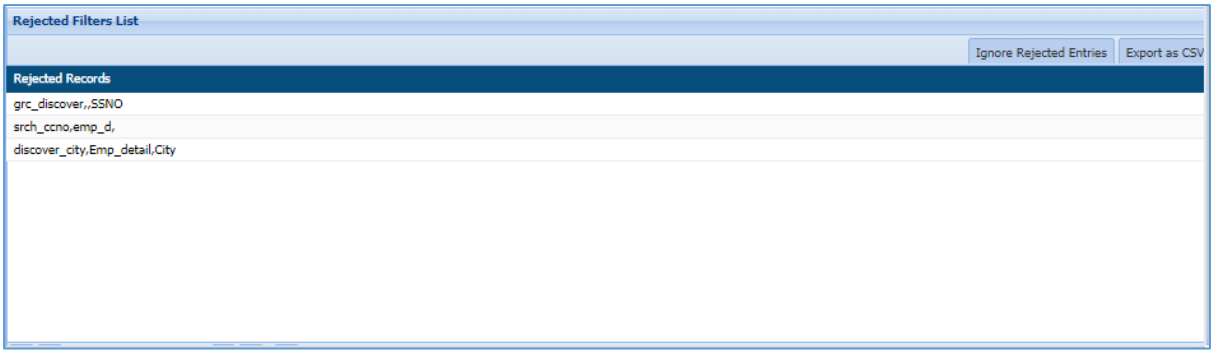
d) Click the **Browse** button to search and upload the saved sample file containing the list of Database, Table/View and Column name which will be either excluded or included.



e) Click **Upload Filter List** button to add the defined filters in the **Selected Filters** panel under **Add/Edit Filter** tab.



f) The **Rejected Filters List** will display all the entries from the uploaded list which are not in a proper format as specified in the sample file.



- To download the list of rejected entries, click **Export as CSV** button. A downloaded file will contain the list of rejected entries which were not formatted as per specified format.

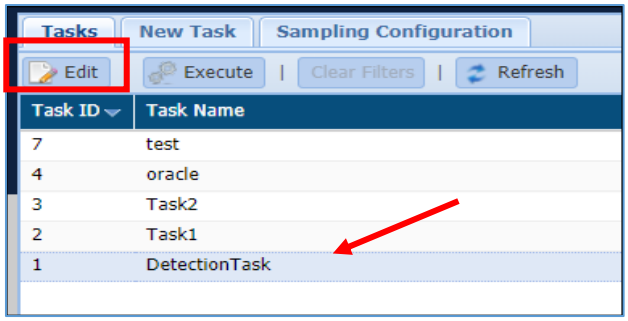
- To remove the rejected entries from the **Rejected Filters List** panel, click the **Ignore Rejected Entries.** This functionality will remove all the rejected entries from the panel.

g) Click **Save** button to make the changes effective.

h) Click **Cancel** button if you do not want to save the changes.

9. Click **Save**, if you want to execute the task later else click **Save and Execute**. The results of the task and its status can be viewed under **RDBMS>DETECTION>RESULTS** (Refer to Result section).

10. To edit an existing task, select the required task from the list of tasks on the Tasks screen and click edit. A task can be edited using the same steps for task creation.



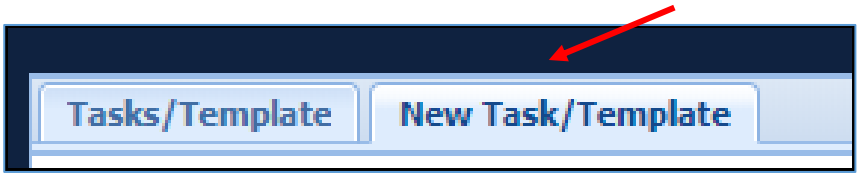
***Note**: Task defining features such as Incremental, Exit on First Hit, Search View and the Task Type cannot be edited. Some of the originally selected options can be modified but new options cannot be added.

7.2.1.2 Masking Task

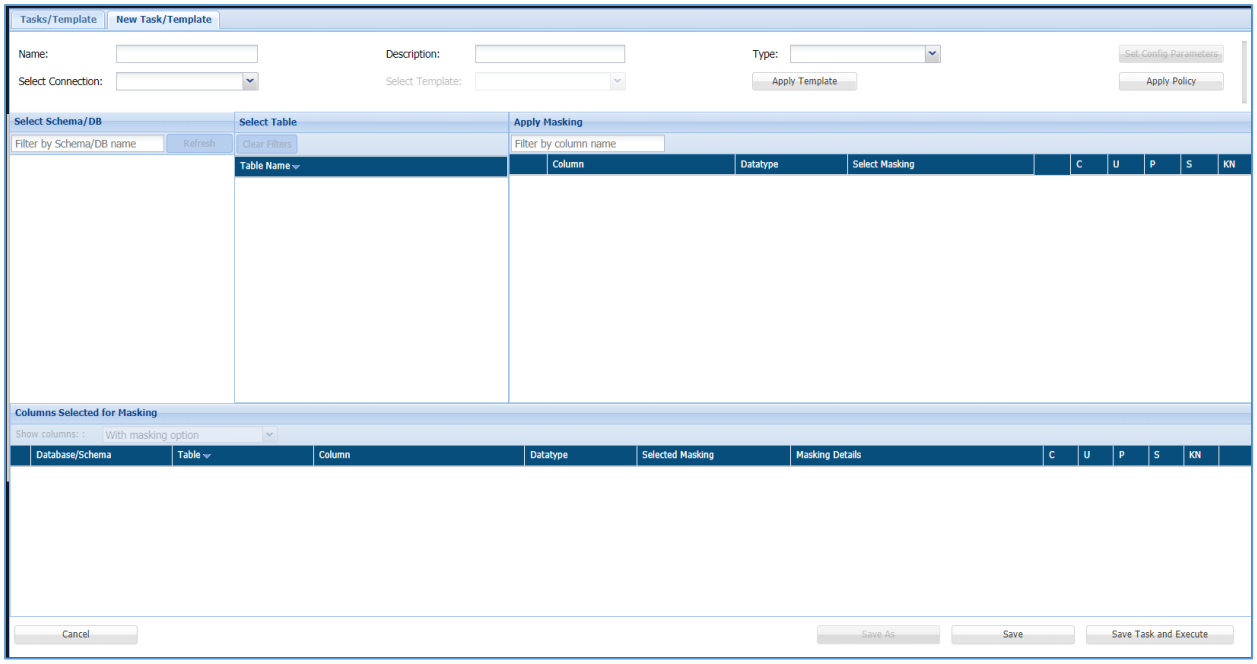
Perform the following steps to create a masking task:

Access the TASKS/TEMPLATE screen, click **RDBMS > MASKING > TASKS/TEMPLATES**

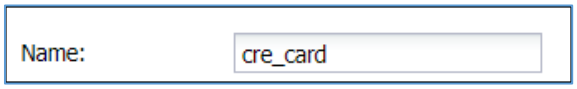
1. To create a new task or template for masking tasks, click on the **New Task/Template** tab.



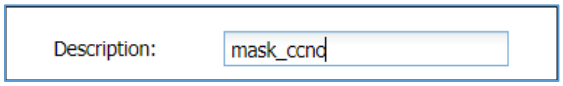
The following image shows the user interface for creating a task.



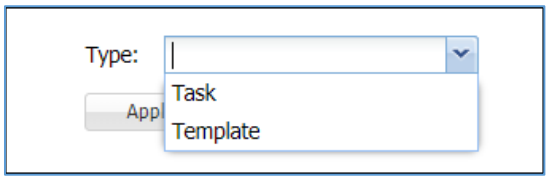
2. Enter a unique **Task Name**. This field supports numeric and character values.



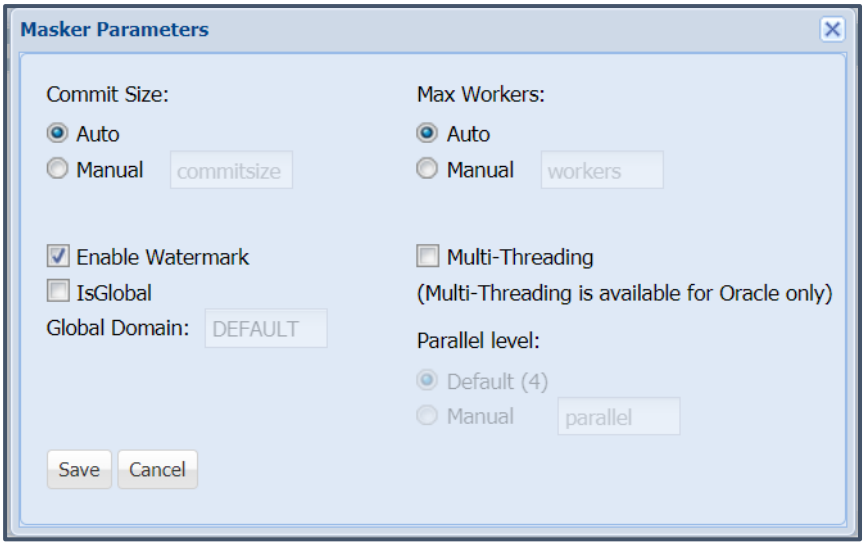
3. Enter a **Task Description** of maximum 254 characters. This field supports numeric and character values.



4. Click on the **Type** dropdown. Select **Task** to create a masking task or **Template** to create a template for masking tasks.



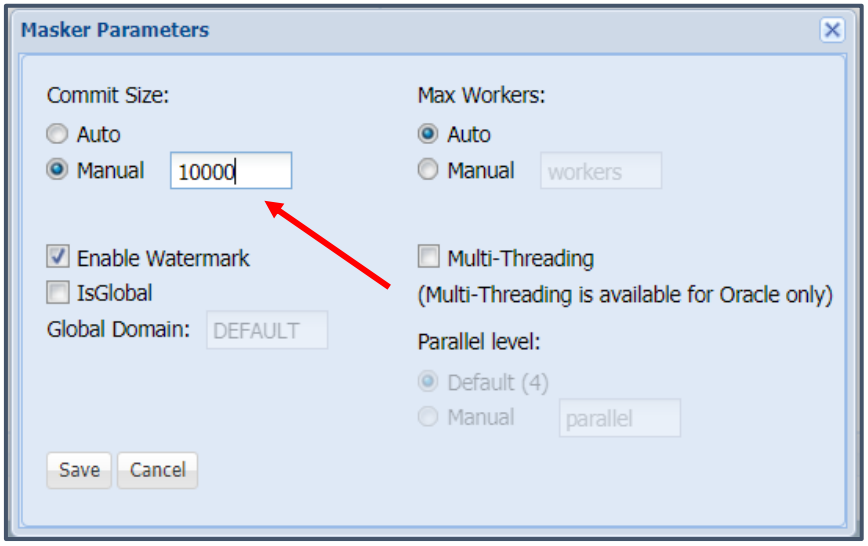
5. To setup additional settings to improve masking abilities click the **Set Config Parameters** button. The following popup, **Masker Parameters** will appear.



The following environment settings for the masking operations can be configured:

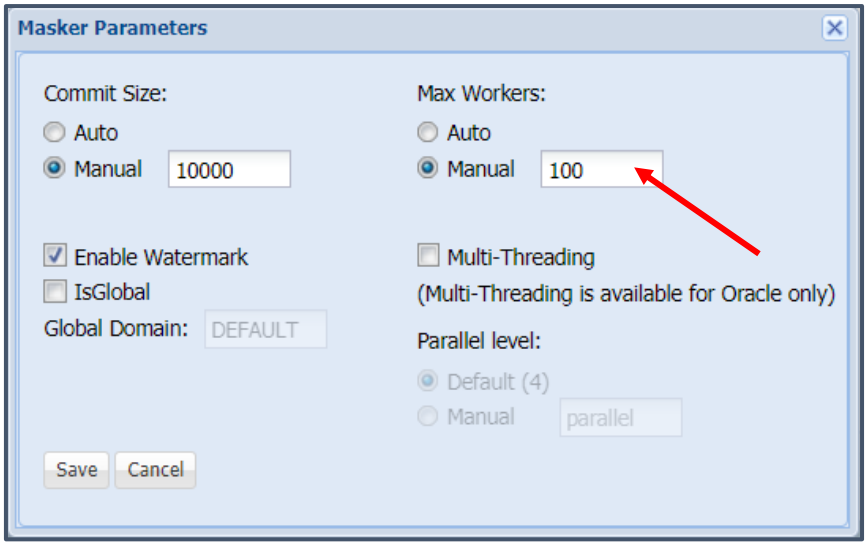
7.2.1.2.1 Commit Size

DgSecure executes masking on large files in batches for better performance and quicker turnaround. Select the option **Manual**, under **Commit Size** and enter the number of rows to be masked within each batch, or select **Auto** to continue with default batch size. For example, in the following screenshot DgSecure has been configured to mask the data in batches of 10000 rows each.



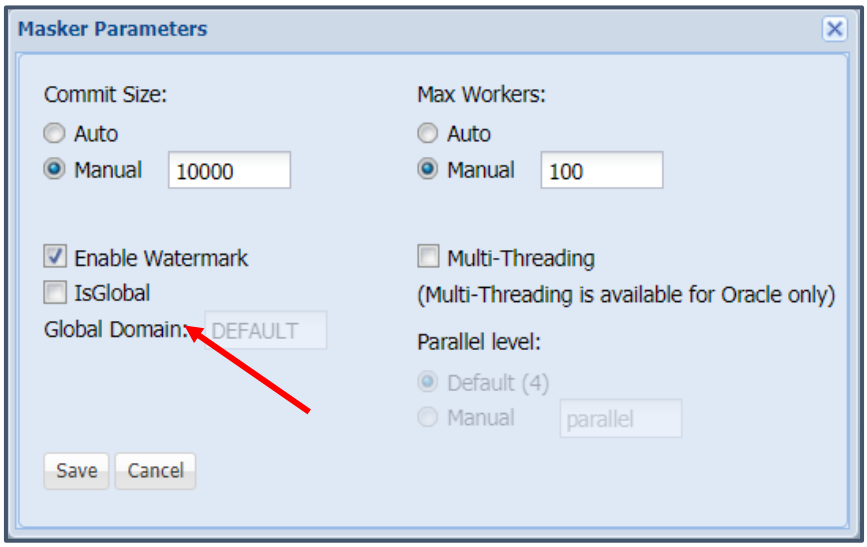
7.2.1.2.2 Max Workers

Select the option **Manual** under the heading **Max Workers**, and enter the number of tables to be masked simultaneously. To continue with DgSecure's default setting for defining the maximum tables to be masked at one go, select the option **Auto**. For example, in the following screenshot DgSecure has been configured to mask the data in batches of 100 tables each. This feature is particularly useful when there are multiple small tables on the database.

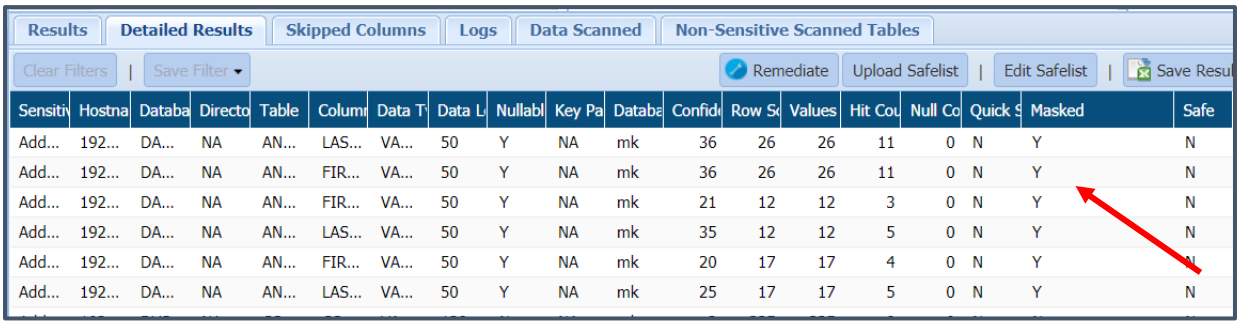


7.2.1.2.3 Enable watermark

The feature to enable watermark for masked values provides a report of masked tables after detection. To setup this feature, simply check the **Enable Watermark** option and **Save** the configuration.



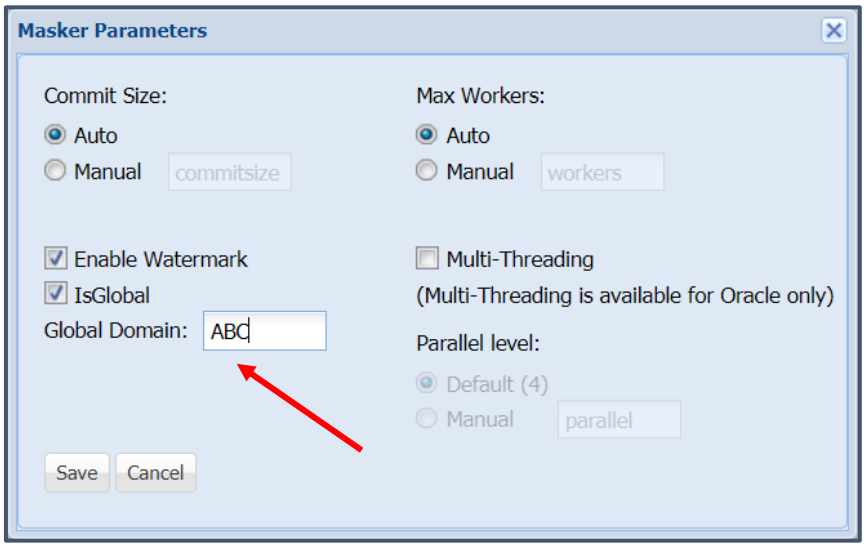
Executing a masking task with the Enable Watermark option checked, will ensure that all the masked tables be marked with **Y** under the column **Masked** in the **Detailed Results** tab in **Detection Results**.



7.2.1.2.4 IsGlobal

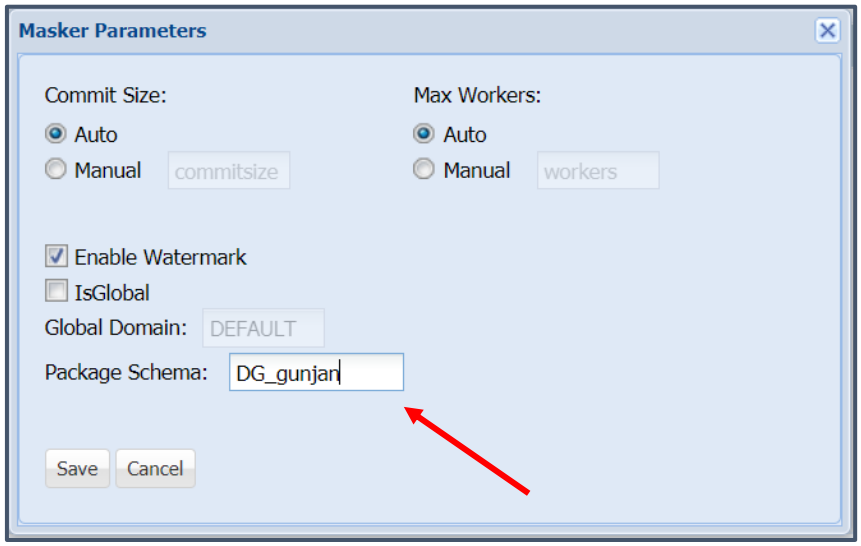
The feature **IsGlobal** is used to consistently mask data across different databases using **SL masking**. Check the **IsGlobal** option, enter the key value to be used to mask the data and **Save**. All masking tasks where this unique key is set will mask the data consistently when SL masking is executed. SL masking is an algorithm based masking, thus, using a unique key for masking across different databases ensures consistent results.

This feature is not supported in PostgreSQL and MySQL.

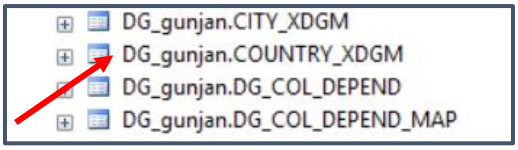


7.2.1.2.5 Package Schema

The option Package Schema is used to name the DgSecure masking objects created by the Makser IDP on the target database. Enter the value for naming the schemas in the **Package Schema** field and **Save** the configuration.



For example, the following screenshot displays how all the new schemas have been named using the provided **Package Schema** string.

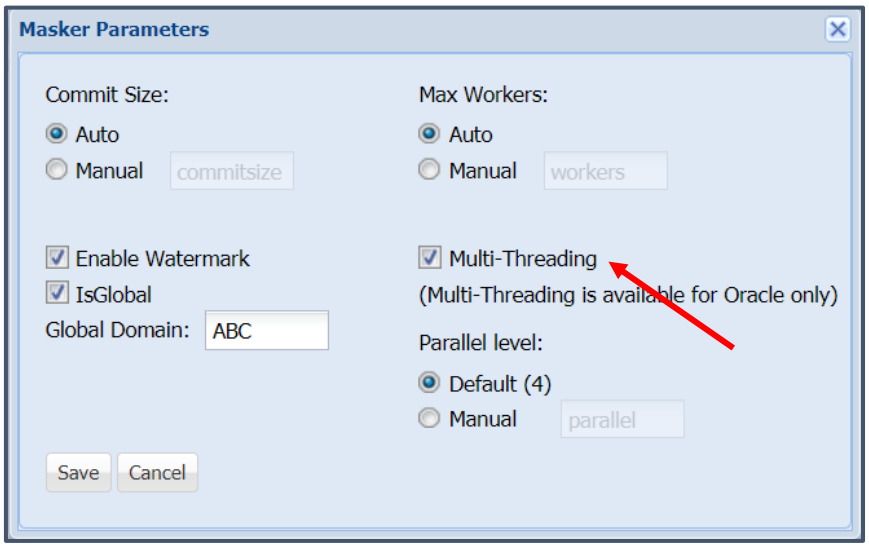


This feature is not supported in Oracle.

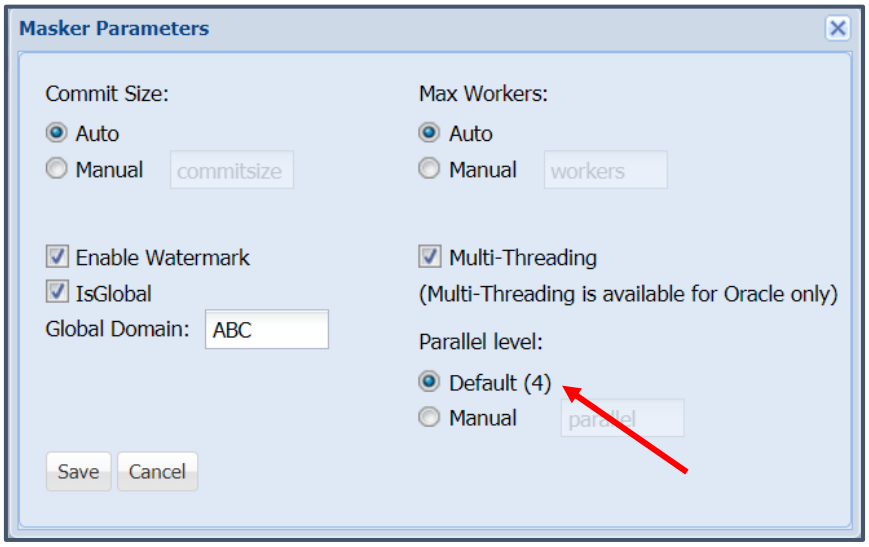
7.2.1.2.6 Multithreading

Multithreading can be applied in Oracle to reduce the time taken to execute masking tasks and improve performance. Perform the following steps to setup multithreading.

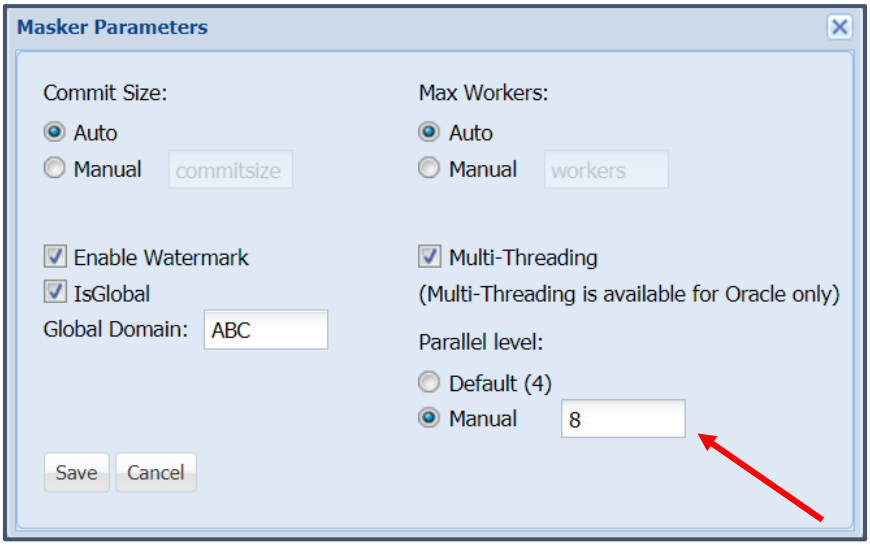
a) Check the option multithreading.



b) Provide the number of parallel levels of the table to be masked simultaneously. The default Parallel Level for multithreading is 4.



c) Depending upon the controller machine configurations this number can be adjusted under the option Manual.



NOTE: Ensure that the necessary grants have been provided to the Masker User on oracle to use Multithreading. The script to provide these grants is available at the following location:

[Installed Directory]\Dataguise\DgSecure\Agents\DgMaskerAgent\expandedArchive\WEB-INF\classes\PrerequisiteFiles\Scripts\Oracle\create_user

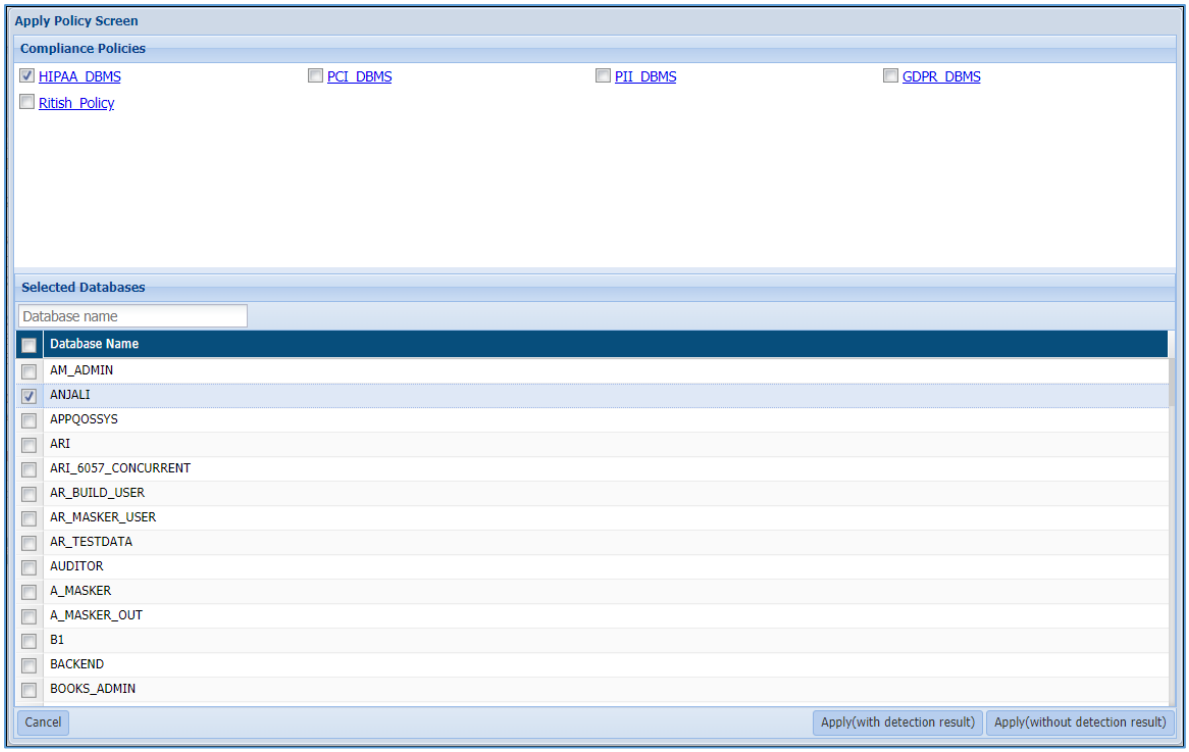
6. Click **Select Connection** to view the list of the available database connections for masking. For details on how to create a connection for masking refer to Connection Manager.

7. The **Select Template** option provides a list of user created templates for masking**.** This option will be greyed out if no templates have been created. To create a new template select the Type as Template in step 6 and follow the next steps for creating a task and save the template. Once created, the new template will appear in the select template dropdown on the new task screen.

***Note:** Templates are connections specific and only one template can be selected at a time.

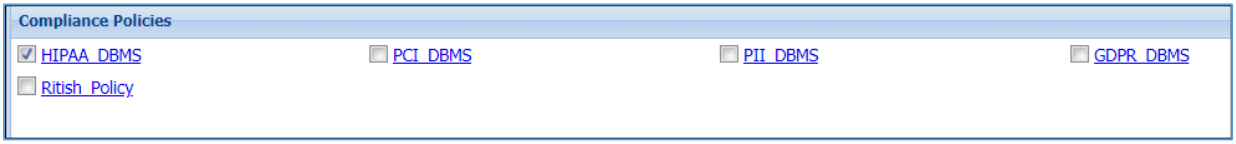
8. Click the **Apply Template** button to apply the selected template in **Select Template** drop-down.

9. Click the **Apply Policy** button to choose the available Compliance Policies.

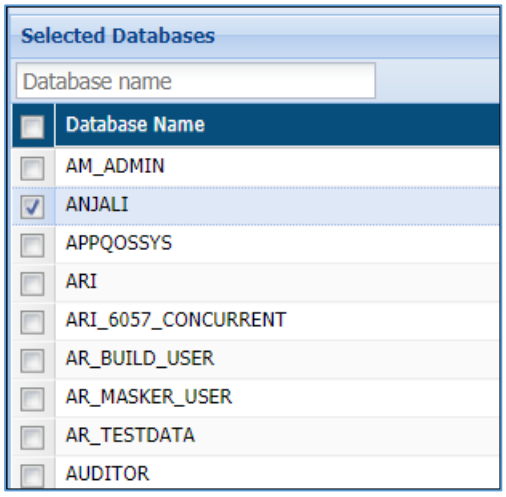


Perform the following steps to apply a policy to the task or template:

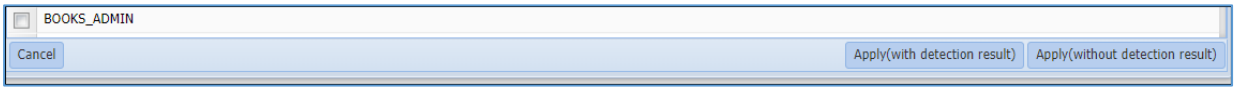
a) Select the required policy/policies under the **Compliance Policies** panel.



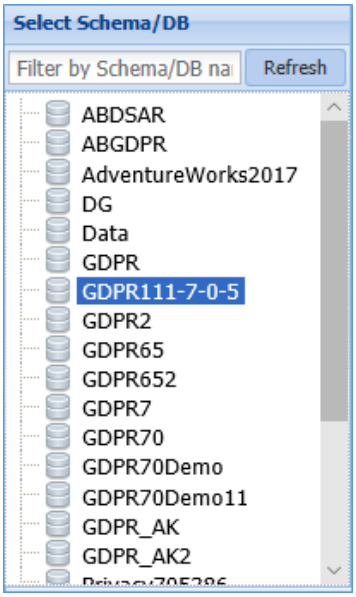
b) Select the databases you need to mask by checking the checkbox next to the Database Name.



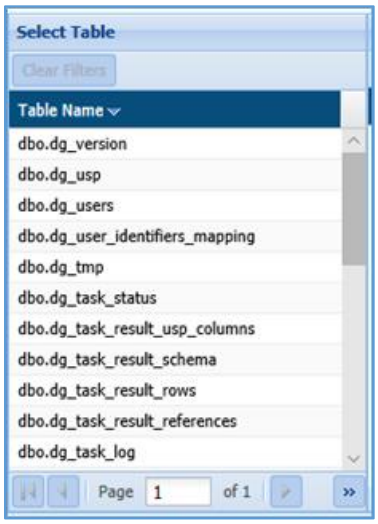
c) Click the **Apply** (with detection result) button to apply the selected policy with detection results or click the Apply (without detection result) button to apply the selected policy without results. Click Cancel to redo your selection.



10. The **Select Schema/DB** panel will display the list of databases or schemas for a selected connection in **Select Connection** drop-down.



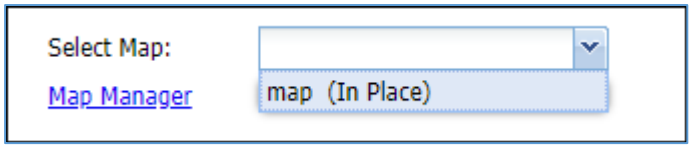
11. Select the table from the **Select Table** panel. This panel lists all the tables for the selected database or schema.



12. Check the **Incremental** checkbox to apply incremental masking to the database. This feature is useful to mask new values added in a database after masking has been executed on it. Only the new entries will be masked, thus, the time taken for masking would be reduced. Perform the following steps to make your masking task incremental:

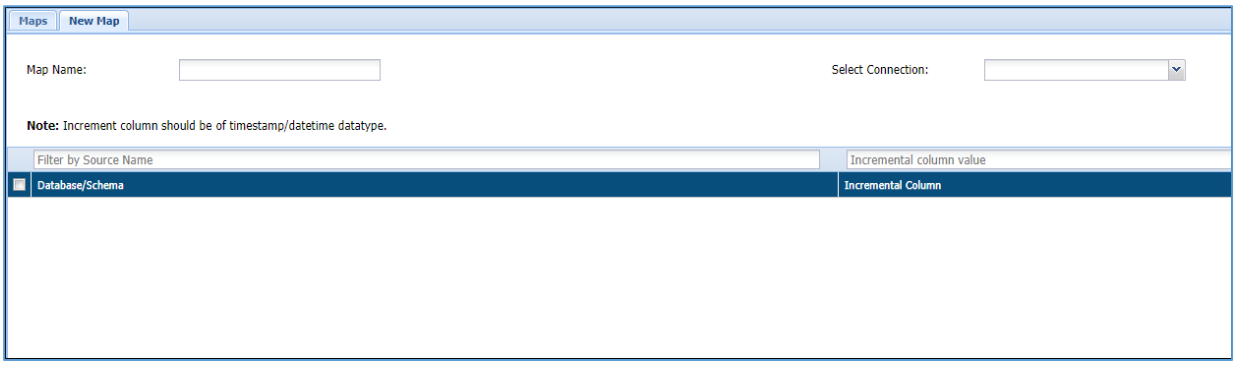
i. Check **Incremental** checkbox.

ii. The **Select Map** dropdown will appear. Select the required map. Maps define incremental columns within a database which are considered for indexing the data in order to mask the new rows added to the database.

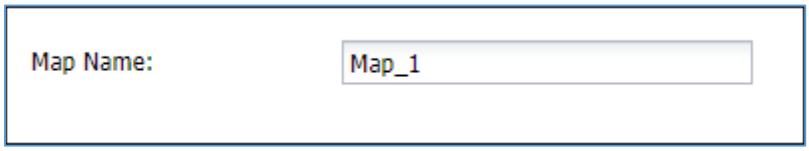


iii. To add a map, click on the **Map Manager** link.

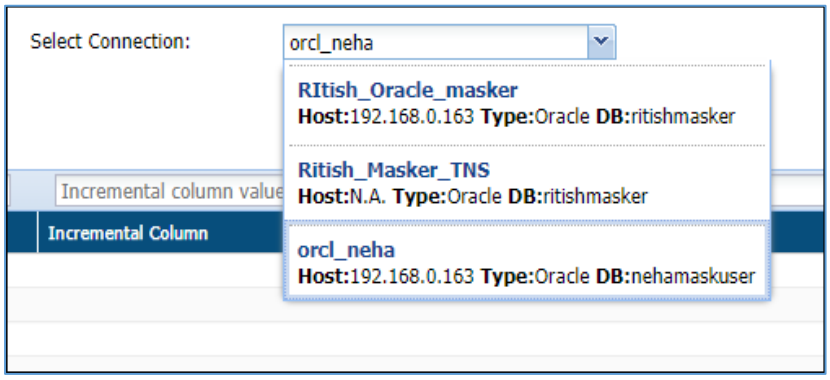
iv. The **Map Manager** screen can also be accessed from **RDBMS->Masking-> MAP MANAGER** menu bar. The following image displays the **Map Manager** interface:



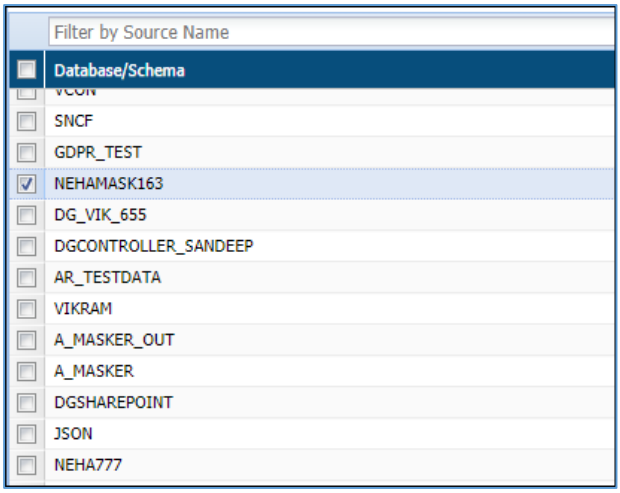
v. Enter a **Map Name**.



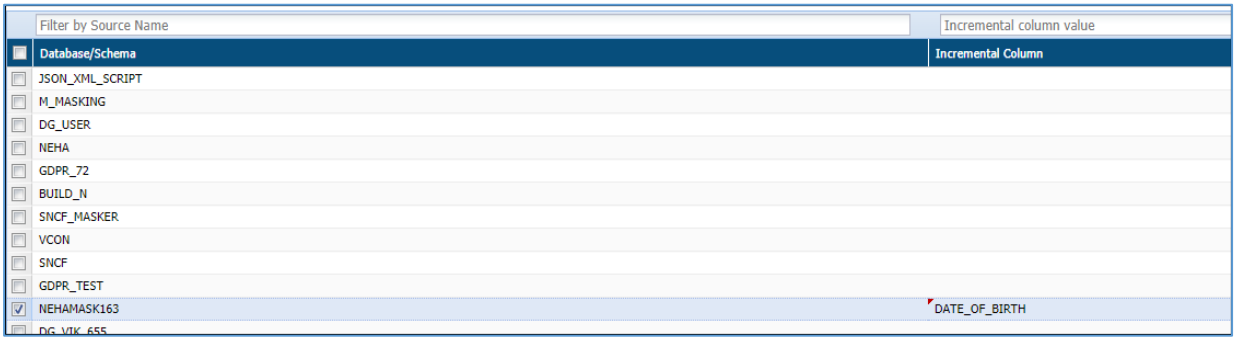
vi. Select a connection that contains the database on which incremental masking has to be applied.



vii. Select the required Database/Schema.



viii. Enter the name of the incremental Column to the corresponding database and ensure that it is a timestamp or date-time datatype.



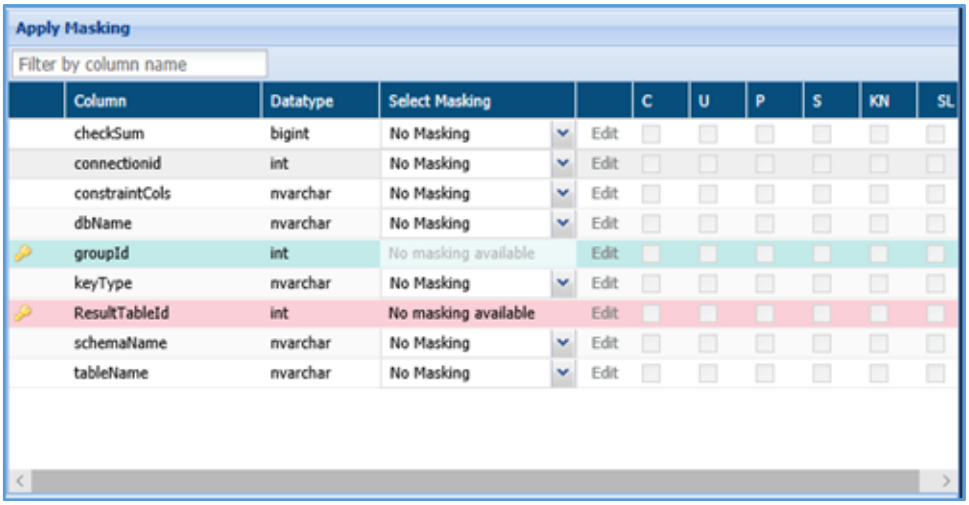
ix. Save the map. It will be available in the **Select Map** dropdown on the new task/template screen.

NOTE: To apply incremental masking the following criteria must be met:

- Create a map to execute incremental masking and apply it to the task.
- Relational tables cannot be included.
- Column holding date, time stamp or a numeric incremental value should be added as incremental column
- The incremental column cannot be masked.

13. The **Apply Masking** panel display the list of all the columns for the selected table in Select Table pane. For detailed information on all the available masking options in DgSecure refer section 7.4 Masking Options. Perform the following steps to apply masking option to the columns in the database:

    a) Select the masking option from the drop-down against the column entry. You can apply the masking to the selected column by checking on the checkbox corresponding to the column name.



To further enhance the results of masking following options can be combines with the masking options:

i. **Consistent**: Masks the data of the selected table with consistent values. E.g. If the name John is masked as FVGB, throughout the table it will be masked the same way.

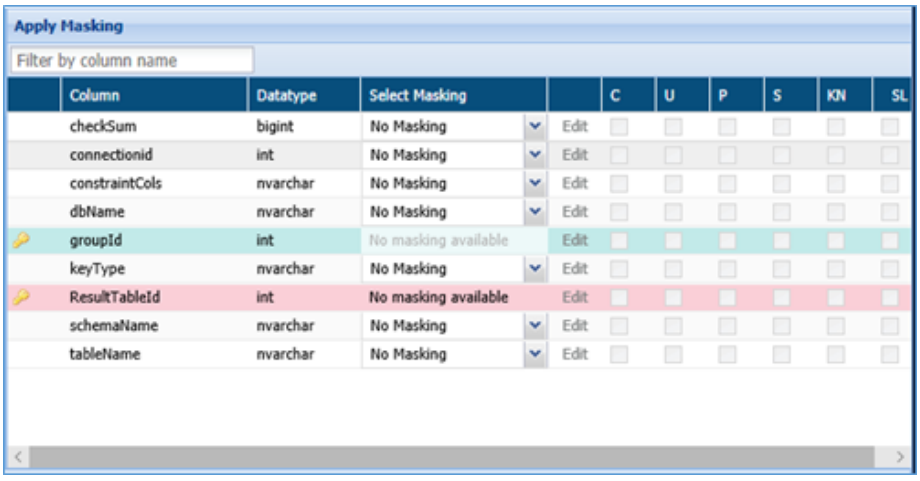
ii. **Unique**: Masks each entry with a unique value.

iii. **Persistent**: Similar to Consistent, however in this case the same values will be masked consistently across all the tables of the database.

iv. **Sync**: This options allows tracking of masked entries in different tables if any of the same entries are found in other tables they will also be masked.

v. **Keep Null**: The cells containing null values are kept null even after masking.

vi. **Stateless**: Persistently masks the data without creating any metadata. No extra space is required to create masking tables.

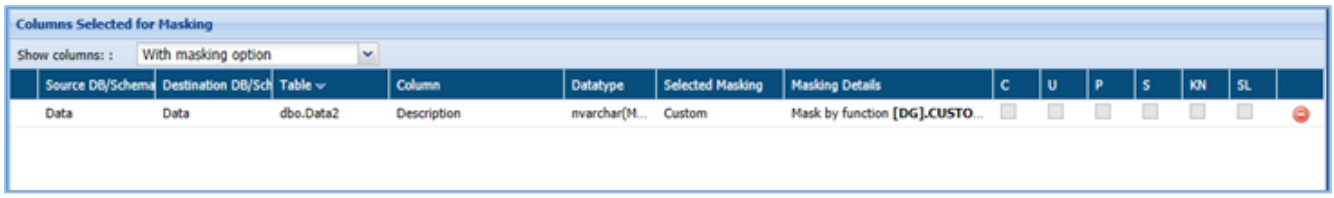


***NOTE:**
Stateless Masking cannot be performed on the following databases:

- Postgres
- MySQL
- Snowflake
- Maria DB

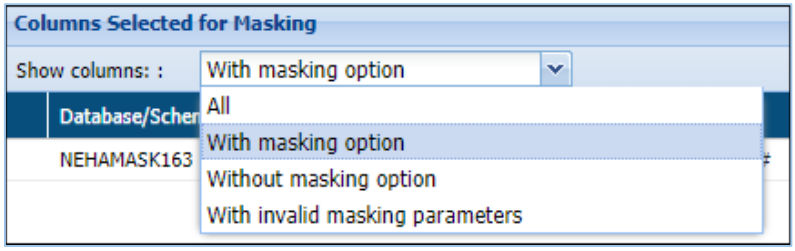
Stateless support on redshift is limited to FPM and Names Masking.

14. View the selection under the **Columns Selected for Masking** panel.



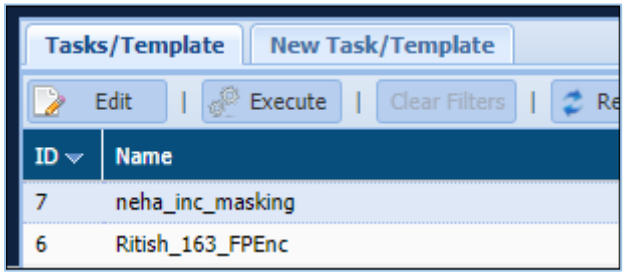
15. Select the option from the **Show Columns** drop-down. There are four options:

    b) All
    c) With masking option
    d) Without masking option
    e) With invalid masking parameters



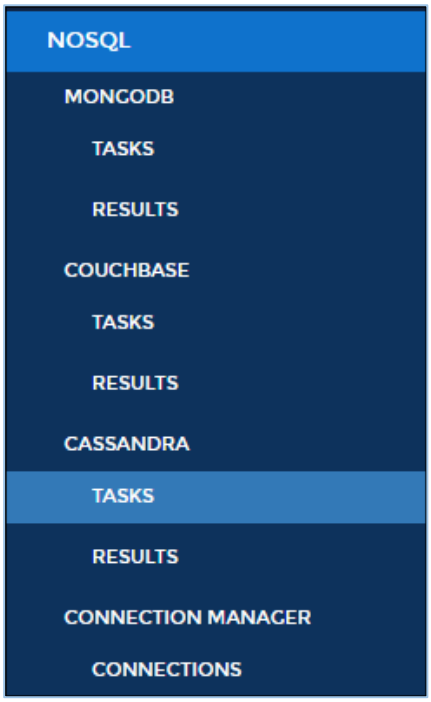
16. Click **Save** to save the task or template or save and execute to execute the masking task.

17. To edit a task, select the task from the **Tasks/Template** tab and click edit. A task can be edited using the same steps for creating a new task.



7.2.2 NoSQL

DgSecure Supports Detection on the NoSQL databases: MongoDB, Couchbase and Cassandra. Each of these databases is available under the NoSQL in the menu.

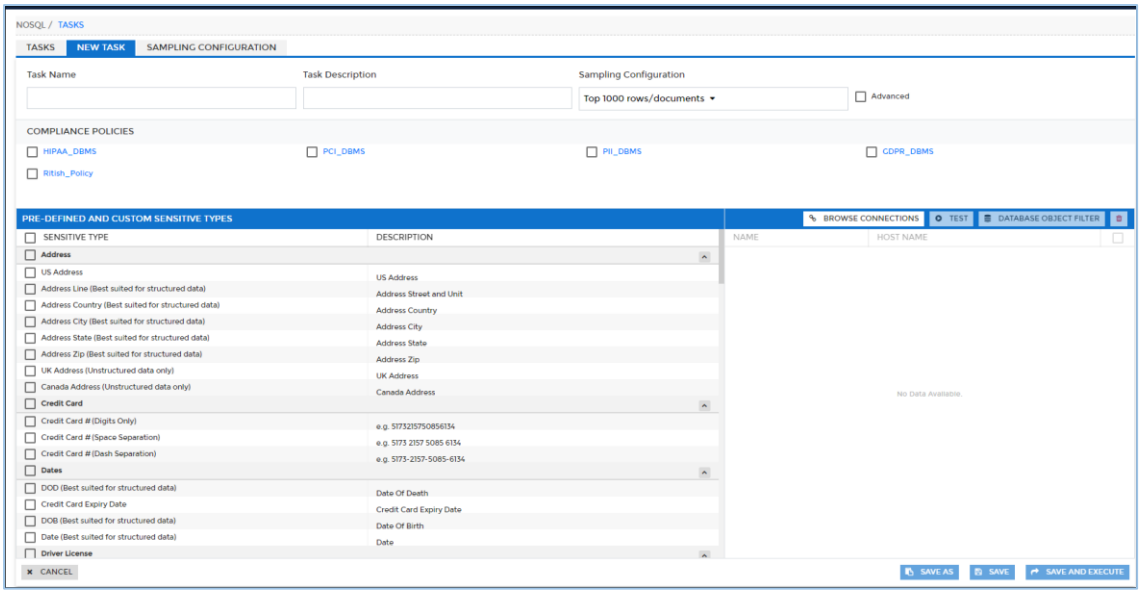


To create task for a NoSQL database, go to

NOSQL > <NOSQL Database > TASKS

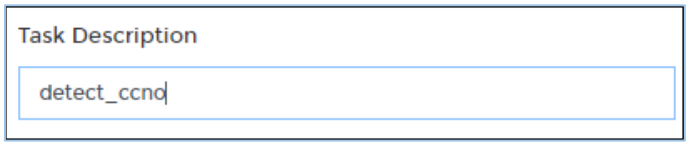
The steps for creating tasks for detection on NoSQL databases perform the following steps, these steps are common for all the databases:

1. Go to **NOSQL > <NOSQL Database > TASKS > New Task** tab.



2. Enter a unique **Task Name**. This field supports numeric and character values.

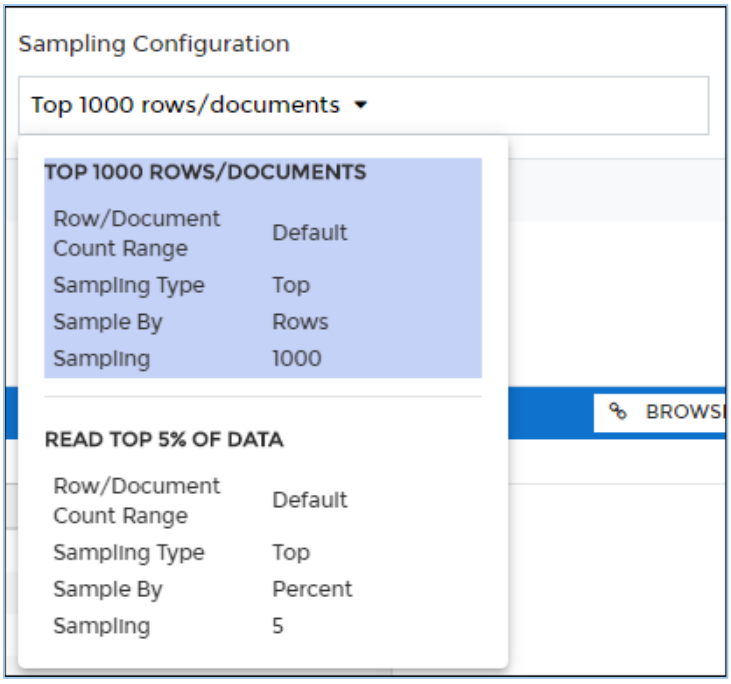
3. Enter a **Task Description** of maximum 254 characters. This field supports numeric and character values.



4. DgSecure is equipped with data sampling to limit the area of scan which helps in reducing the time taken for detection. Default options to scan sample data from the database are:

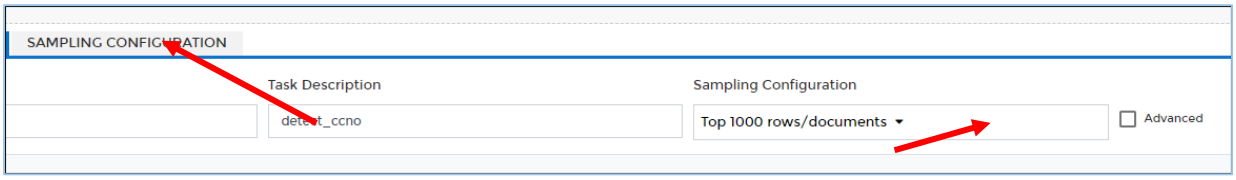
    - Top 1000 Rows
    - Read top 5% of data

    Select the Sampling Configuration from the dropdown.



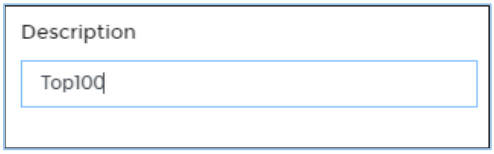
Perform the following steps to create a new sampling configuration:

i. Go to **NOSQL -> TASKS -> SAMPLING CONFIGURATION** tab or check the Advanced checkbox.

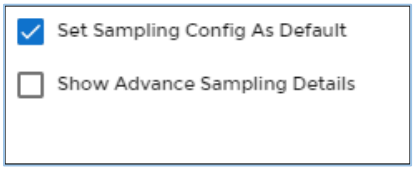


ii. Enter the name of the Sampling Configuration.

iii. Enter the description.

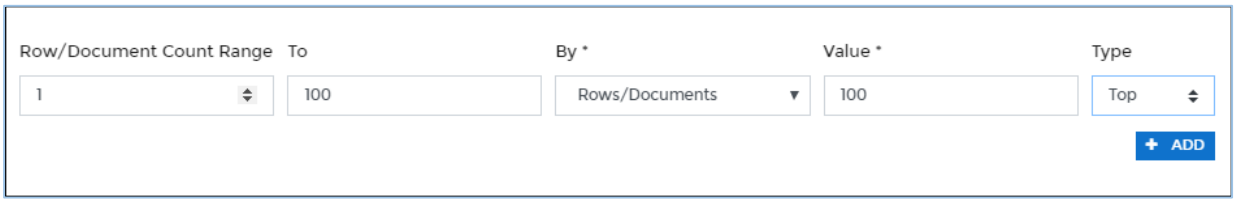


iv. Check the option **Set Sampling Config as Default** to set the Sampling Configuration as the default configuration for all your tasks.



v. Check the option **Show Advance Sampling Details** to set the advanced settings for sampling.

Below are the options for advanced settings:

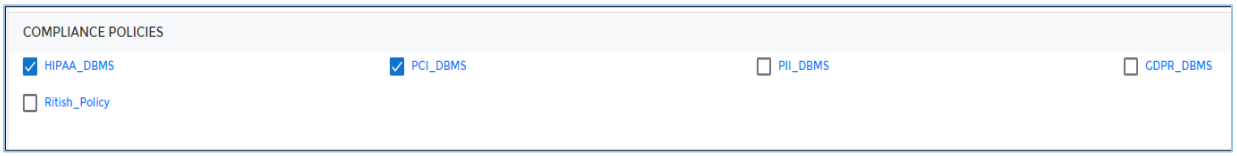


- **Table row count range:** Enter starting range for the database.
- **To:** Enter the ending range for the database.
- **Type:** Select the sampling configuration type from the **Type** option. Only sampling from the top of the database is available for NoSQL. The option **Top**, creates a sample data for the scan from the entries at the top of the database, based on the specified range.
- **By:** To Specify how to pick data for sampling from the database, there are two ways:
    i. **By Rows:** Select **Rows** from the drop-down, to sample data based on the number of rows.
    ii. **By Percent:** Select **Percent** from the drop-down, to sample a percentage of the data
- **Value:** Enter the numeric value. It will specify the total number of records to be processed if sampling By-Rows is selected and denotes the percentage of sampling By-Percent is selected.

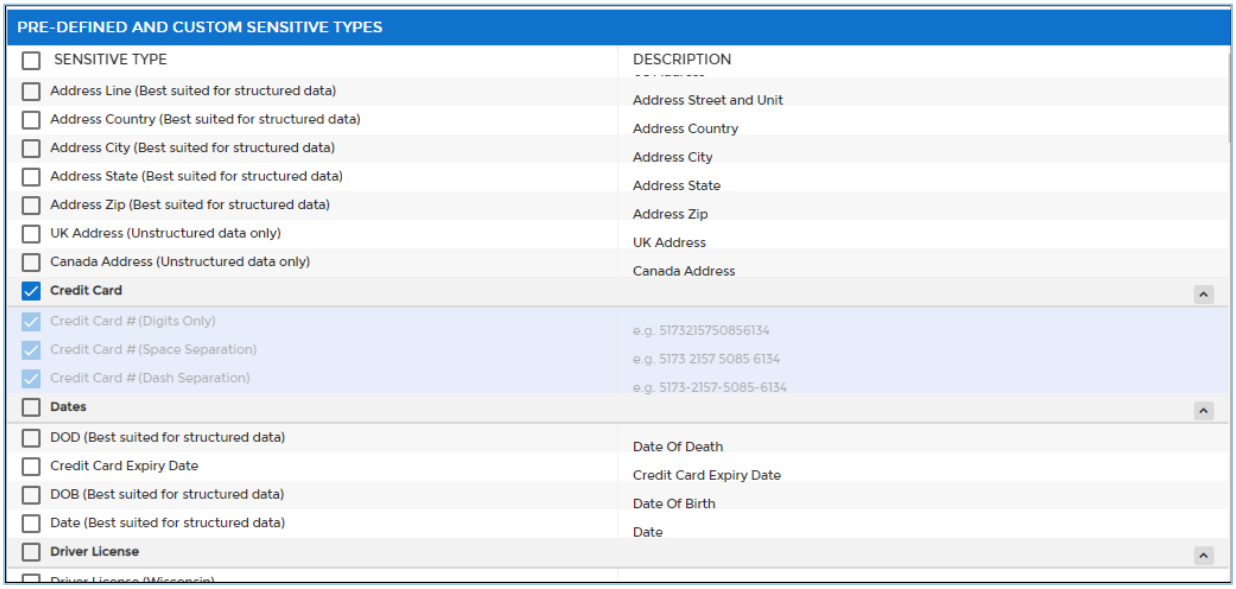
vi. After setting up the required configuration, click **Add** to add the user-defined sampling configuration to the list.

vii. Click the **Save** button to save the changes.

5. The **Compliance Policy** panel displays all the Pre-Defined and Customized Policies. Users can select any number of policies while creating or editing a task. Sensitive types associated with the selected policy can be viewed in the panel below this panel **Pre-Defined and Custom Sensitive Types**. Selecting a policy is not a mandatory step, users can also proceed to select individual sensitive types. For more information, refer to Policy section.

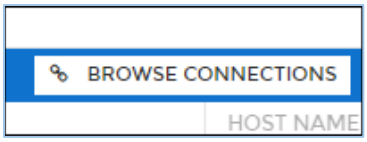


6. The **Pre-Defined and Custom Sensitive Types** panel lists down all the Sensitive Types. The Sensitive Type associated with the policy gets selected in the Pre-Defined and Custom Sensitive panel and cannot be removed from the scan, however any number of sensitive types can be added to the scan.

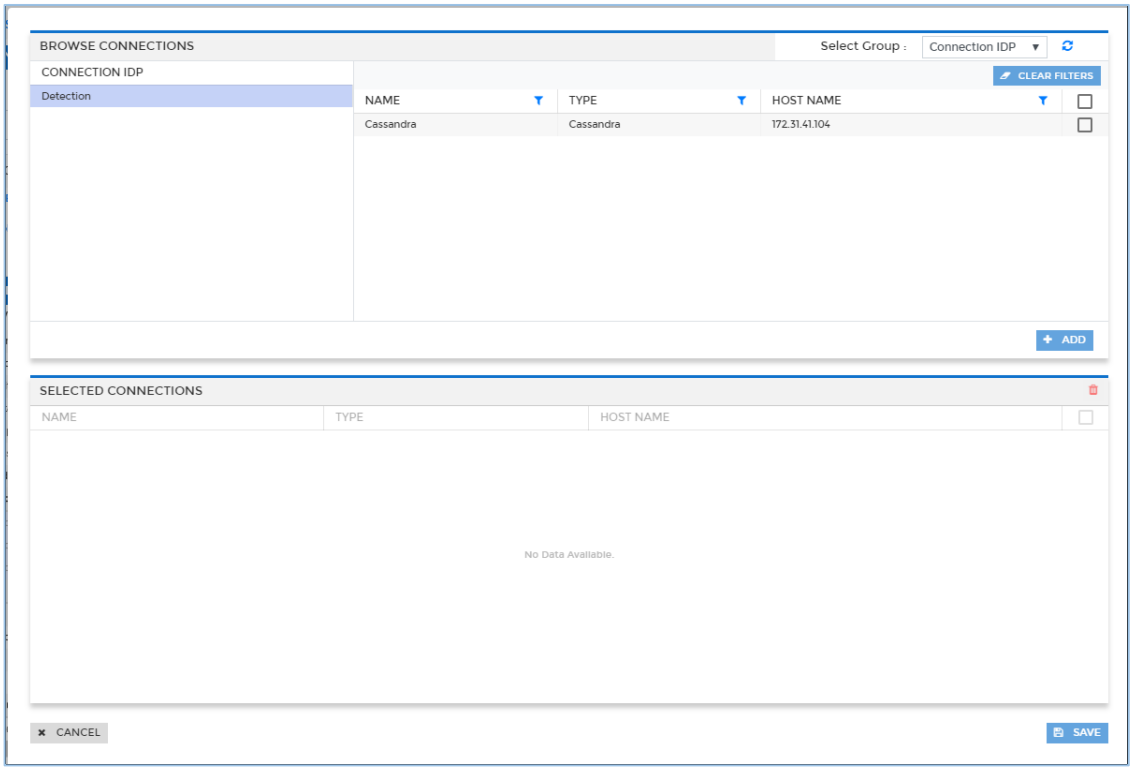


7. The right hand panel lists down all the available NoSQL connections**.** Any number of connections can be selected for a task. This panel list down all the available connections. For details on how to create and manage connections refer Connection Manager. Perform the following steps to choose a connection:

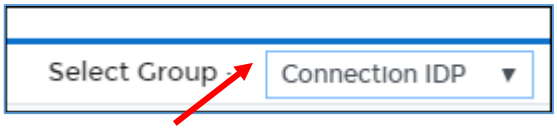
a) Click **Browse Connections**.



b) The **Browse Connections** dialog box will be displayed. This screen categorizes connections based on user preferences.



i. Click on the Select Group dropdown and select the required option from the sub groups displayed on the left panel to sort the available connections.



The **Select Group** drop-down has five options:

1. **Connection IDP**: Categorizes the available connections based on the types of IDPs available, i.e., Detection.

2. **Connection Type**: Categorizes the available connections based on the type of server connected to, i.e., MongoDB, Couchbase and Cassandra.

3. **Host Name**: Categorizes the list of available connections based on Host Names.

4. **Location**: Categorizes the available connections based on the location of the target source system server, i.e., On-Premises and Cloud.

5. **User Name**: Categorizes the list of available connections based on the Usernames.

ii. Check the checkbox next to the connection name and click **Add** to include the selected database connection in the **Selected Connection** panel.

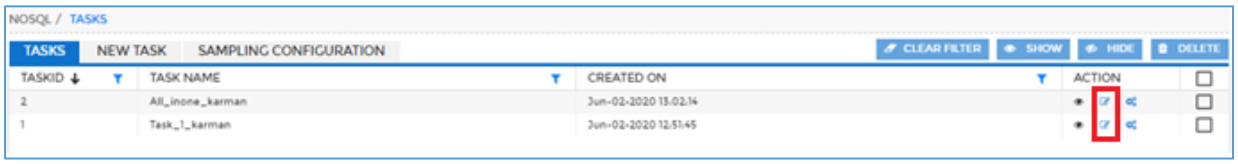
iii. Click the **Save** button to include connections in **Connection** panel.

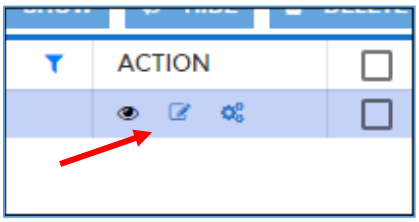
8. Click the **Test** button to test the listed NoSQL connection.

9. Click the **Database Object Filter** button to filter tables and/or columns. Once filters are defined, then only those databases/tables/columns that match the filter are scanned.

10. Click **Save** to save the task or to execute the task click save and execute.

11. To edit an existing task, select the required task from the list of tasks on the **Tasks** screen and click the edit icon  . A task can be edited using the same steps for task creation.





7.2.3 Hadoop

DgSecure supports Detection and Protection on different Hadoop distribution systems like HDFS, Hive and HBASE. Various protection options are available for these distributions based on the type of data-structure or unstructured.

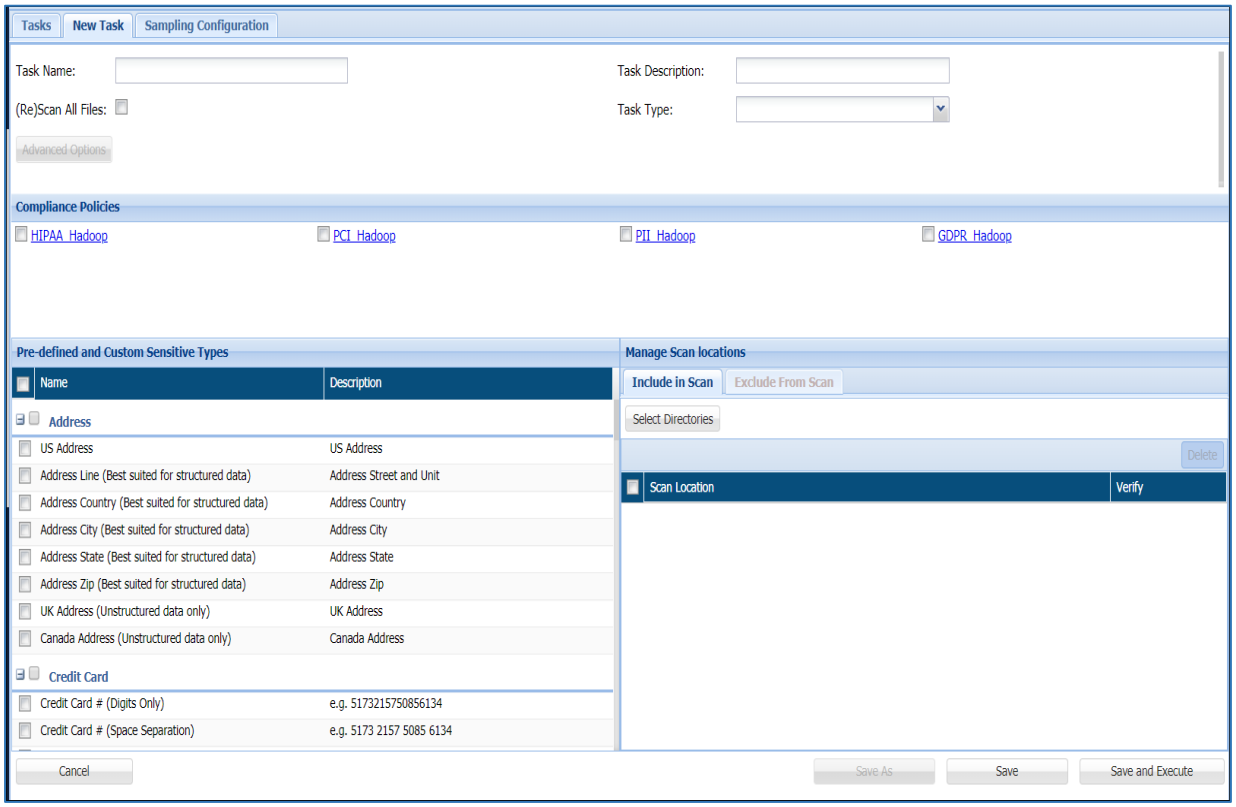
7.2.3.1 HDFS

Detection, Metadata discovery, Masking, Encryption and Decryption operations can be performed on HDFS systems. To create a task to for these operations perform the following

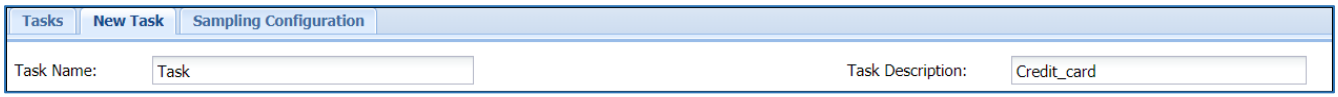
steps

7.2.3.1.1 Create an HDFS task

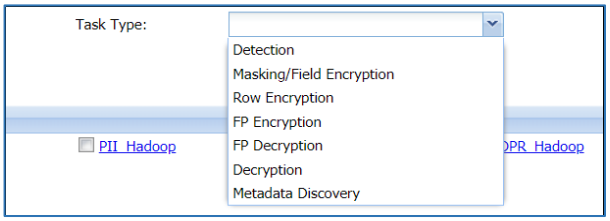
1. Go to **HADOOP > HDFS > TASKS**. Select the **New Task** tab.



2. Enter a meaningful **Task Name** and **Task Description**. The task name must be unique to the task. It can be up to 256 characters and consist of letters, numbers, certain symbols (! @ # $ _), without any spaces. The definition can be as long as the task name and contain any combination of numbers, letters, and symbols.



3. Choose a Task Type.

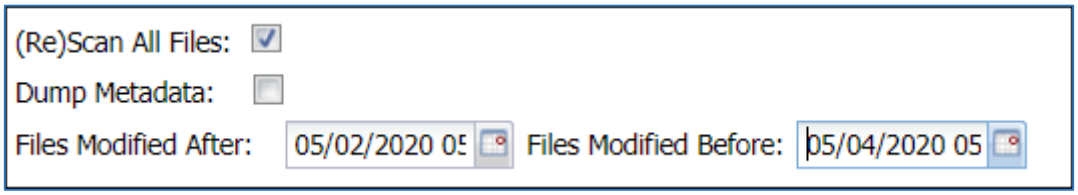


The list of available task types and the options specific to that task type are explained below:

Detection

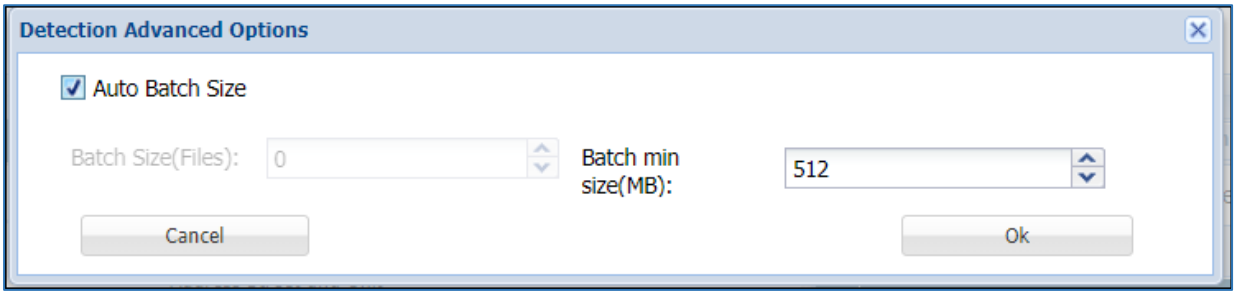
Detection tasks scan the target source system for sensitive data elements. The following options are specific to the detection tasks:

a) **Scan All Files**: Check this checkbox to scan all the available files for a given connection between the dates specified in **Files Modified After** and **Files Modified Before** drop down.



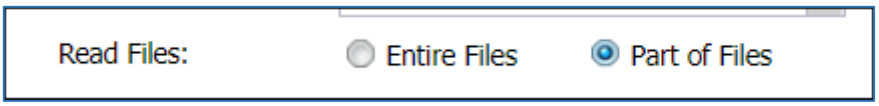
b) **Dump Metadata**: Check **Dump Metadata** option to remove the metadata files after scanning.

c) **Advanced Options**: Define a batch size for scanning the source system in batches. Click on the **Advanced Options** button to define the batch size of the data.

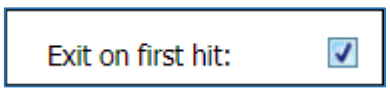


Define the number of files per batch in the **Batch Size(Files)** option or check the **Auto Batch Size** option to enter the minimum batch size in **Batch min size(MB)** option.

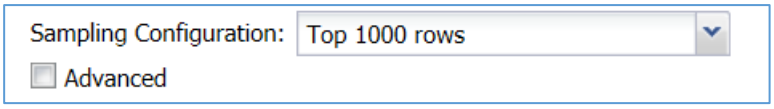
d) **Read Files**: Choose to read the entire file or a part of the file at random.



e) **Exit on first hit**: Check this checkbox to report the table or database as sensitive, at the first event of detection of a sensitive type.



f) Sampling Configuration

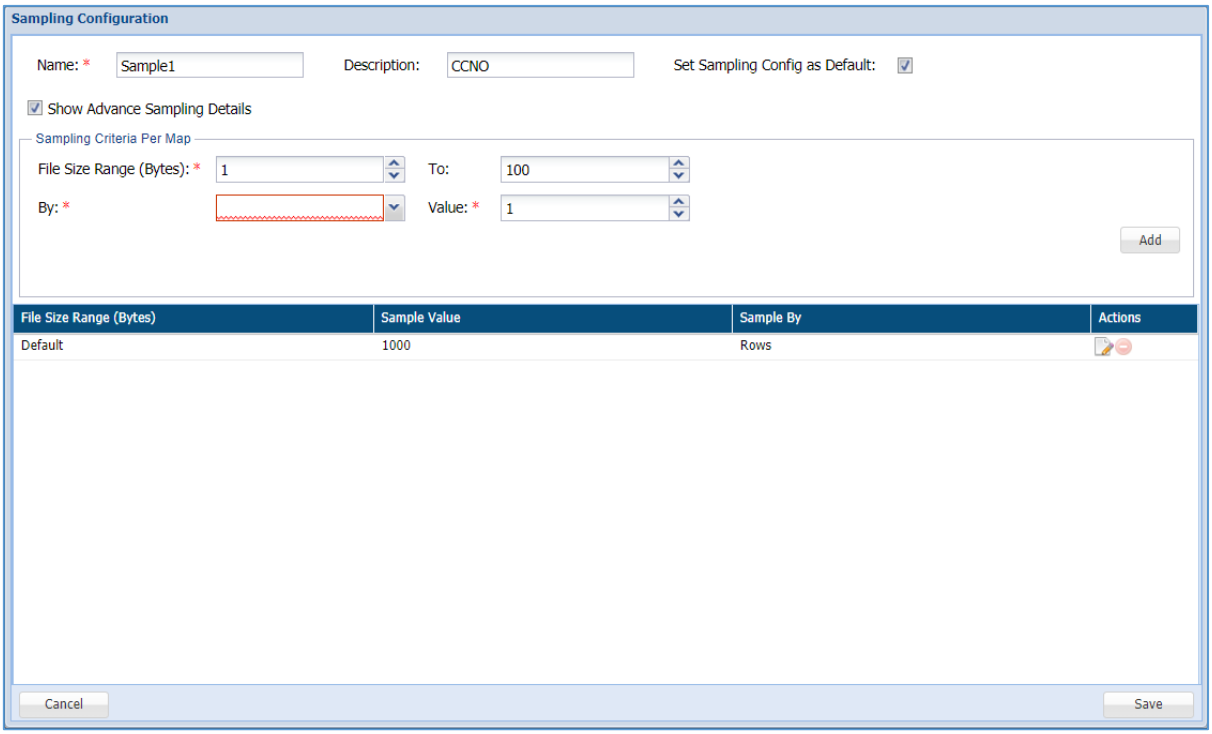


DgSecure is equipped with data sampling to limit the area of scan which helps in reducing the time taken for detection. Default options to scan sample data from the database are:

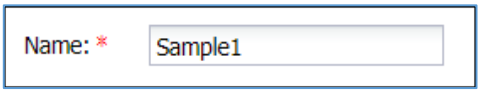
i. Top 1000 Rows
ii. Read top 5% of data

The sampling configuration field is set to sample Top 1000 Rows by default. To create a new sampling configuration perform the following steps:

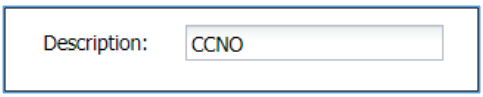
i. Go to **HDFS -> TASKS -> SAMPLING CONFIGURATION** tab or check the Advanced checkbox.



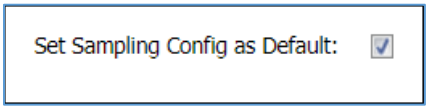
ii. Enter the name of the Sampling Configuration.



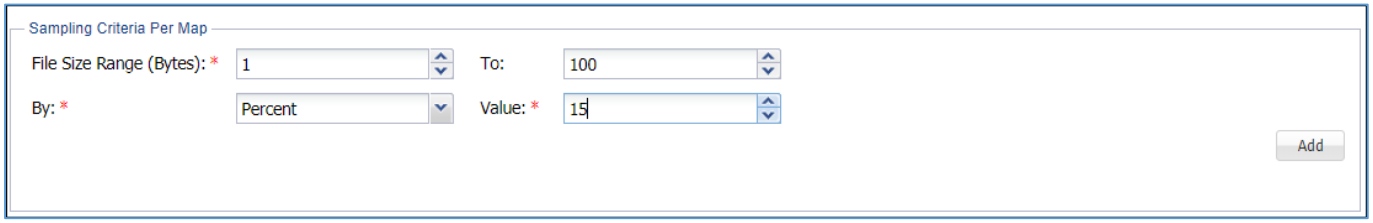
iii. Enter the description.



iv. Check the option **Set Sampling Config as Default** to set the Sampling Configuration as the default configuration for all your tasks.



v. Check the option **Show Advance Sampling Details** to set the advanced settings for sampling.



Below are the options for advanced settings:

- **File Size Range:** Enter the range for the sample in Bytes.
- **To:** Enter the ending range for the sample.
- **By:** To Specify how to pick data for sampling from the source system, there are two ways:

  i. **By Rows:** Select **Rows** from the drop-down, to sample data based on the number of rows.

  ii. **By Percent:** Select **Percent** from the drop-down, to sample a percentage of the data

- **Value:** Enter the numeric value. It will specify the total number of records to be processed if sampling By-Rows is selected and denotes the percentage of sampling By-Percent is selected.

vi. After setting up the required configuration, click **Add** to add the user-defined sampling configuration to the list.

vii. Click the **Save** button to save the changes.

To proceed for remaining steps, go to step 4 Compliance Policy.

Masking/Field Encryption

Masking or Field Encryption hides sensitive data in the target source system by replacing it with a system generated value. DgSecure provides various masking options to ensure the usability of data after it has been protected. Masking/Field Encryption can be applied on structured as well as unstructured data. For more details refer to section 7.4 Masking Options. Following options are available to customize a Masking/Field Encryption task:

a) **(RE)Scan All Files**: Scan all available files for a given connection.

2. **Structured**: Check the structured option if the data that needs to be masked is structured. For details about how to create a structure refer to the section Structure Management

To proceed for remaining steps, go to step 4 Compliance Policy.

Row Encryption

Row encryption is ideal for unstructured data. Following additional option is available:

a) **Scan All Files**: Scan all available files for a given connection.

To proceed for remaining steps, go to step 4 Compliance Policy.

FP Encryption

FP or Format Preserving encryption can only be executed on structured files. Following additional options are available:

a) **Scan All Files**: Scan all available files for a given connection.

b) **Structured**: This option is checked by default. For details about how to create a structure refer to the section Structure Management.

To proceed for remaining steps, go to step 4 Compliance Policy.

FP Decryption

FP or Format Preserving Decryption is used to decrypt the data encrypted by an FP Encryption task. Following additional options are available

a) **Scan All Files**: Scan all available files for a given connection.

3. **Structured**: This option is checked by default. For details about how to create a structure refer to the section Structure Management.

To proceed for remaining steps, go to step 4 Compliance Policy.

Decryption

Decryption tasks are used to decrypt data on which Encryption has been performed.

a) **Scan All Files**: Scan all available files for a given connection.

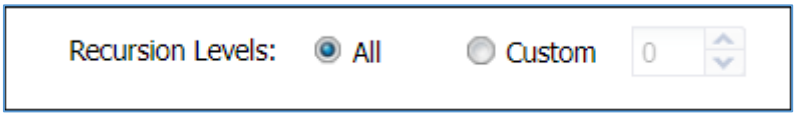
4. **Structured**: Check the structured if the data that needs to be masked is structured. For details about how to create a structure refer to the section Structure Management.

To proceed for remaining steps, go to step 4 Compliance Policy.

Metadata Discovery

Metadata Discovery scans the source system to provide information about the type of data available on the source system. Following additional option can be set for Metadata Discovery:

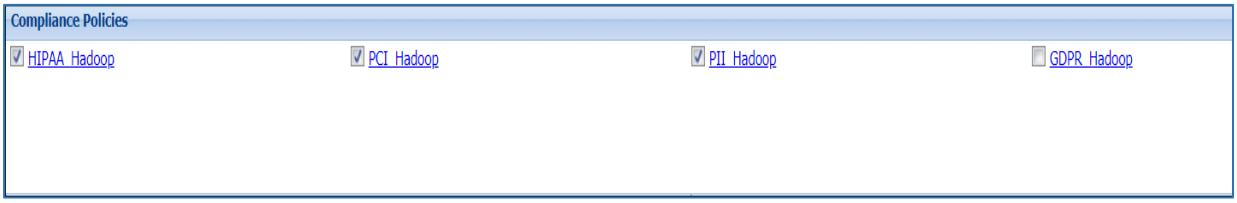
a) **Recursion Levels:** Select number of recursions levels to be scanned. This option is available only for Metadata Discovery.



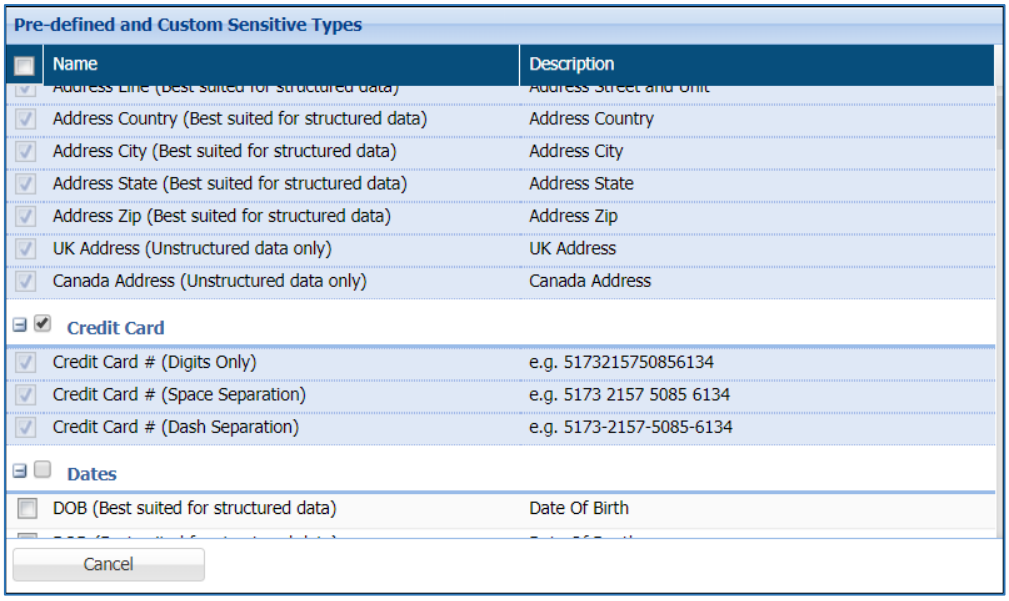
To proceed for remaining steps, go to step 4 Compliance Policy.

5. **Compliance Policy** can be set with all the task types in HDFS except Metadata Discovery. For more details about compliance policies, refer to section Policy. After selecting the required options, perform the following steps:

a) Select the required policies.



6. **Pre-defined and Custom Sensitive Types** are available for all task types in HDFS except Metadata Discovery. Select the required sensitive types.



***Note:**

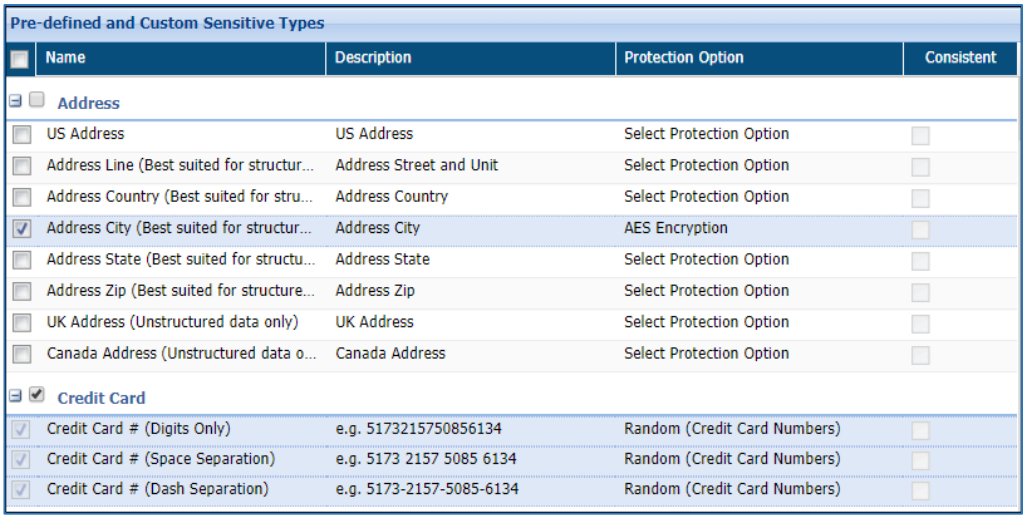
1. Row Encryption uses default row encryption configuration for masking. This will mask all the entries of the row and is best suited to unstructured datatypes such as text files.

2. FP Encryption uses default encryption configuration to protect the original data format. This option is best suited to structured datatypes.

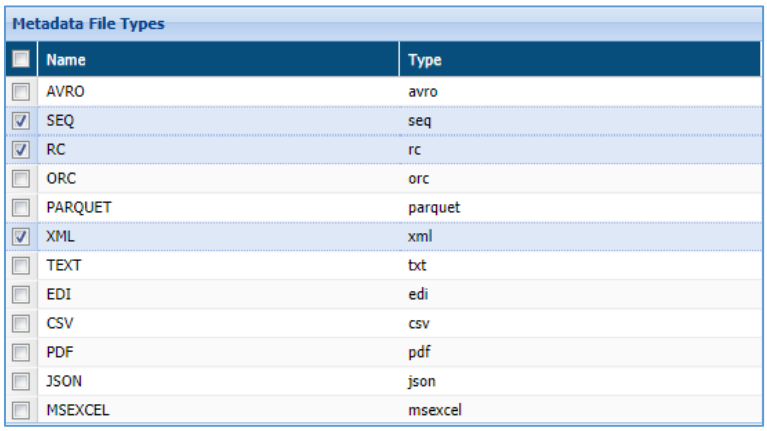
3. FP Decryption can only be executed on data that has been encrypted using FP Encryption.

4. Decryption can be executed on data that has been encrypted using FP Encryption or Field Encryption.

7. If you select Masking/Encryption as the Task Type, Protection Option and Consistent fields are also available. Select the required Protection Option for the selected sensitive types. For details about all the masking options available in HDFS refer to 7.4 Masking Options.

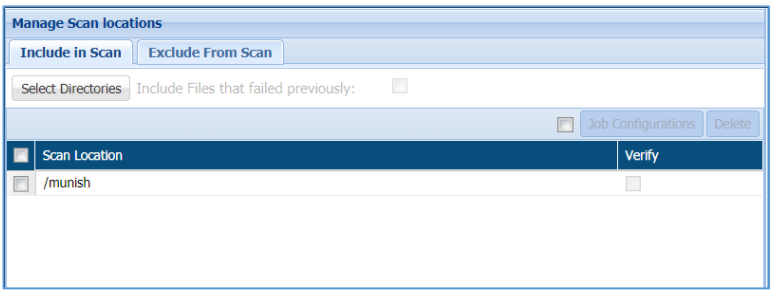


8. If you select **Metadata Discovery** as the task type, the panel **Metadata File Types** will be displayed. Check the required file types for the scan by checking the checkbox against the Name of the required file type.



9. **Manage Scan Locations**: Specify which directories to scan.

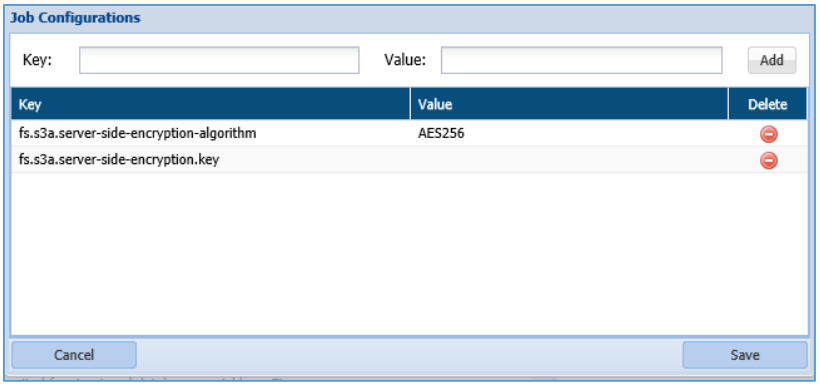
a) **Include in Scan**: Click **Select Directories** to choose the directory to perform the task.



viii. **Include Files that Failed Previously:** check this option to include all those files which were previously not scanned due to some exception. This option will appear when **Detection** is selected in **Task Type** field.

ix. **Delete Input Files on Job Completion:** check this option to delete all the original input files, which were included, post masking. This option will appear when **Masking/Field Encryption**, **Row Encryption**, **FP Encryption** is selected in **Task Type** field.

x. **Job Configuration:** check the checkbox to setup the parameters list. The value for job configuration will contain the pre-defined key and the value. If you have not specified any **Job Configuration**, then default parameter list will be executed.

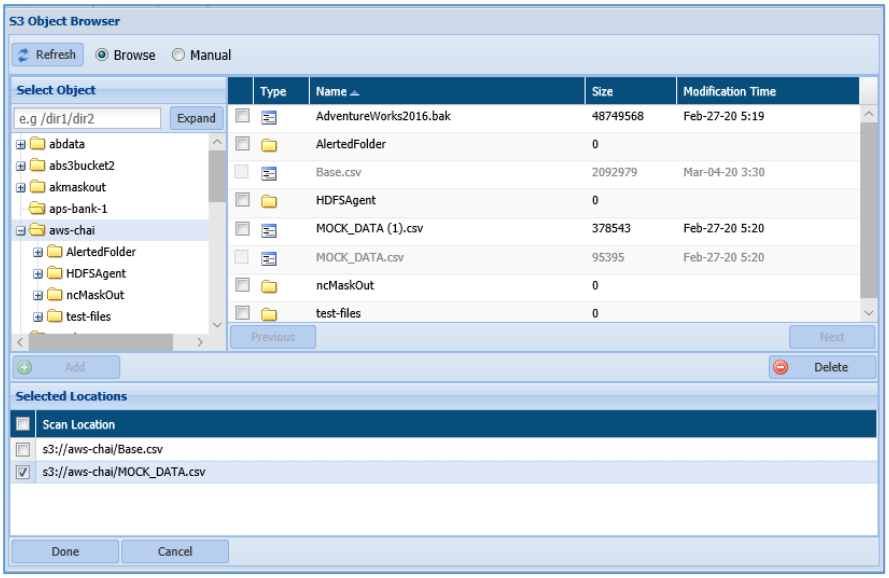


There are two ways in which buckets can be selected in **S3 Object Browser**:

- Browse
- Manual

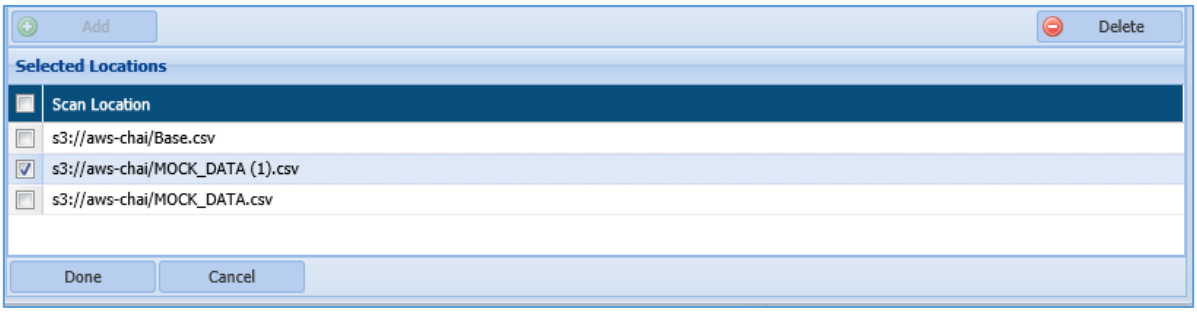
To include buckets for scanning, click **Select Bucket** button, perform the following steps:

Browse: This option lets you browse the objects from **Select Object** panel. To select the objects, perform the below steps:



i. Select the folder from the directory to view the objects for that folder. All the objects will be displayed in the right panel.

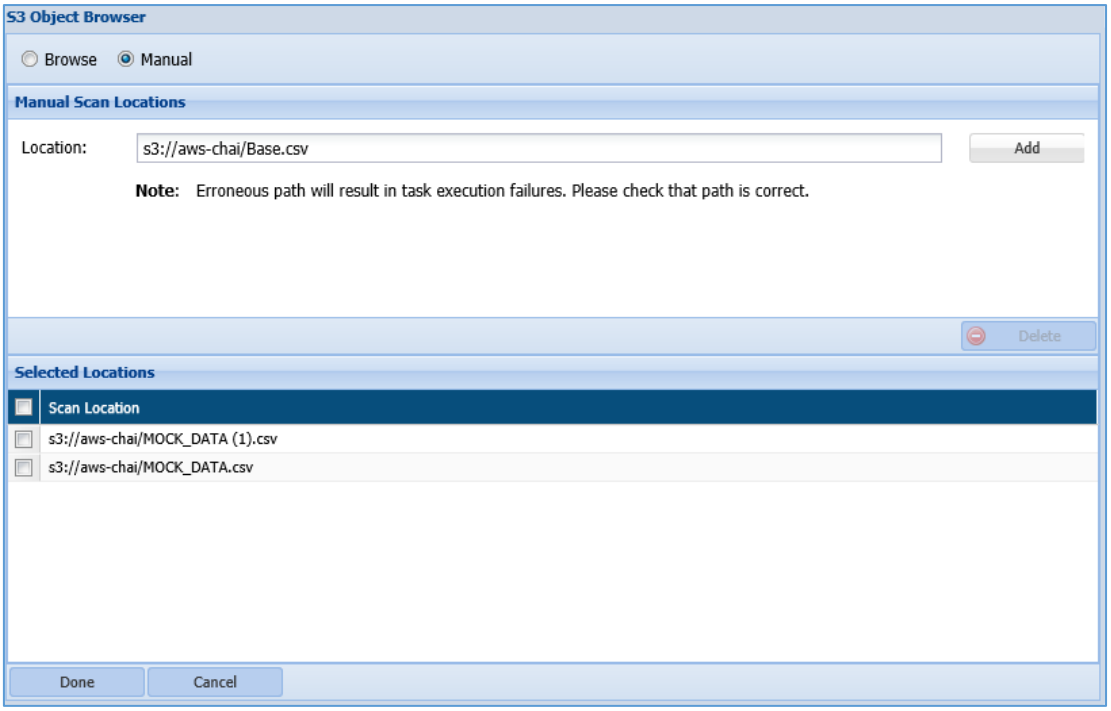
ii. Select the object in the right panel by checking the checkbox and click **Add** button. This functionality will include the objects in the **Selected Locations** panel.



To delete the objects from the **Selected Location** panel, check the checkbox next to the **Scan Location** name and click **Delete** button. The **Delete** button will be enabled, once the **Scan Location** checkbox is checked.

iii. Click **Done** button to include the objects in **Manage Scan Location**.

Manual: This option allows you to select the object from the bucket manually. Perform the below steps:



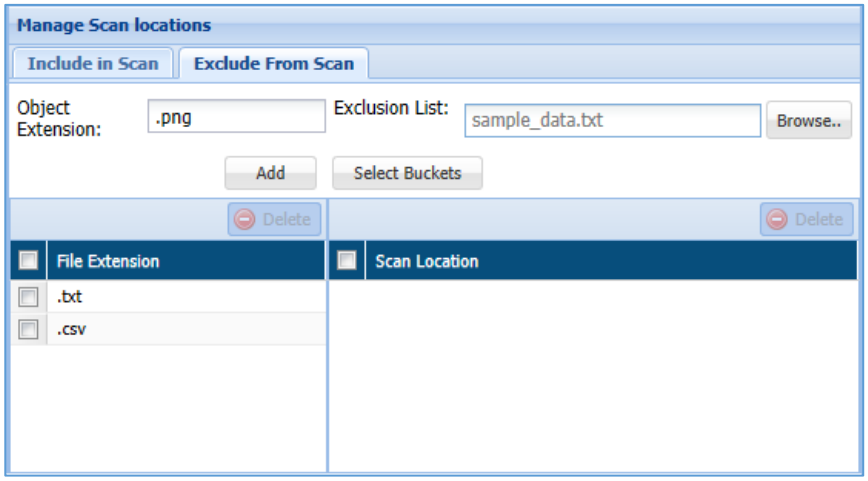
i. Enter the path for the scan location that you want to include.

ii. Click **Add** button to include the path for the object in Selected Location panel.

iii. Click **Done** to include the selected objects in the Manage Scan Location.

iv. To delete the object from the **Selected Location** panel, check the checkbox next to the scan location name and click **Delete**.

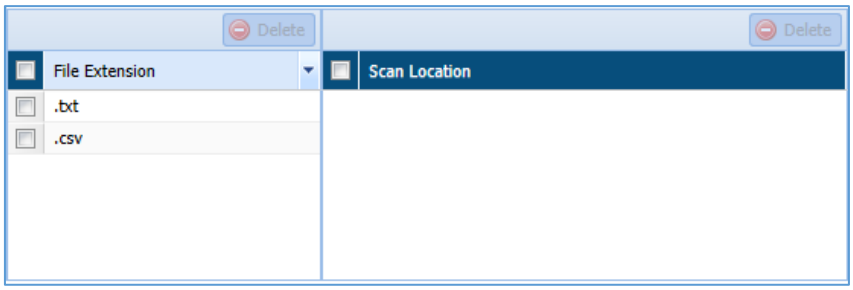
10. **Exclude from Scan**: Select objects to be excluded at the time of task execution or browse the path to an exclusion list. The **Exclude From Scan** tab will be enabled when **Detection** and **Masking/Field Encryption** are selected in Task Type field.



i. The **Object Extension** field allow you to specify the objects extension (.txt, .csv, etc) that need to be excluded.

ii. The **Extension List** field allow you either to **Browse** the path for the object or to select the object using the **Select Buckets** button. This functionality lets you specify the exclusion list of all objects that need not be included in the scanning.

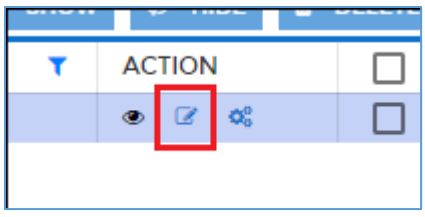
iii. The below panel list down information for both excluded **File Extension** and the **Scan Location** selected above.



***Note**: To decrypt tasks, ensure that appropriate roles have been assigned before executing the encryption task. For more details, refer to section Role Management.

11. After creating the required task, i.e., detection, masking, encryption, decryption or metadata discovery, click save to save the task to schedule later, or save and execute to execute it right away.

To edit an existing task, select the required task from the list of tasks on the **HBASE Tasks** screen and click **Edit**. A task can be edited using the same steps for task creation.

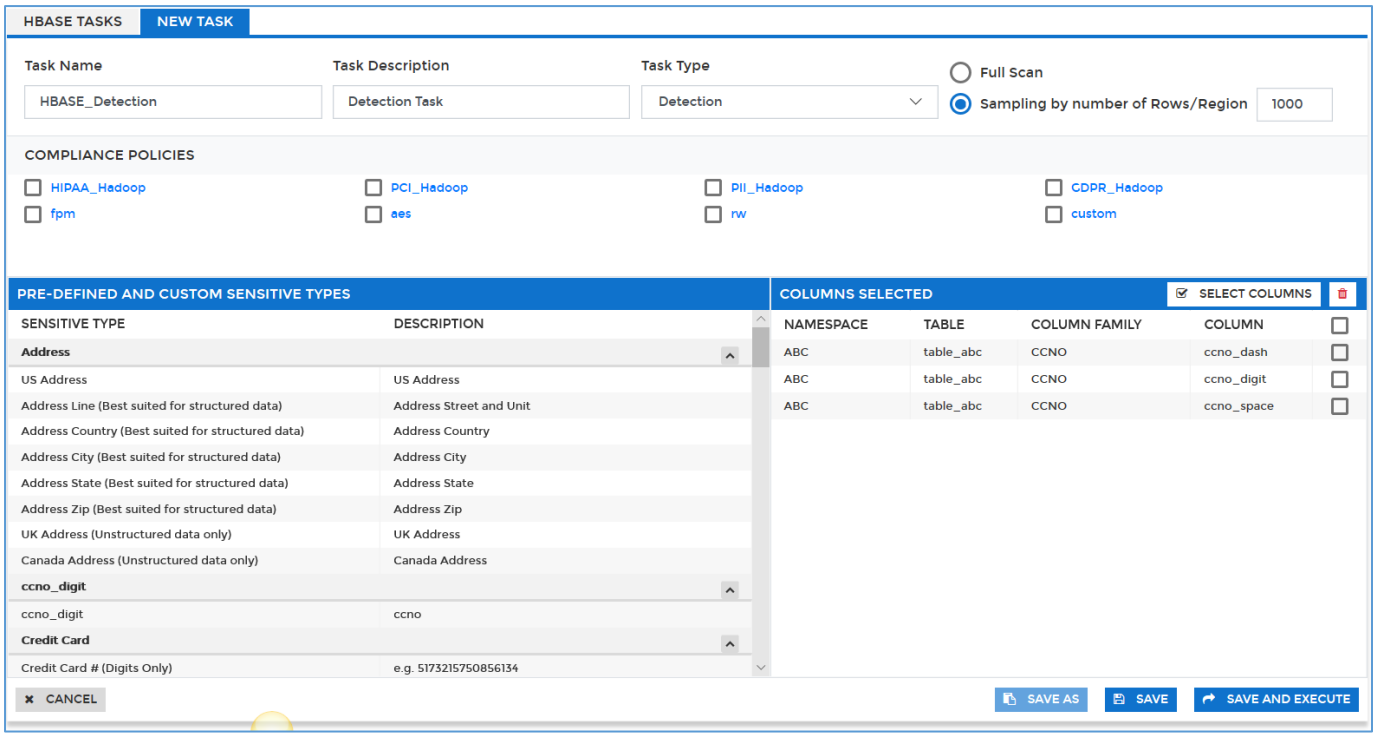


7.2.3.2 HBase

DgSecure supports Detection and Protection on HBASE systems. To create a task to for these operations perform the following steps:

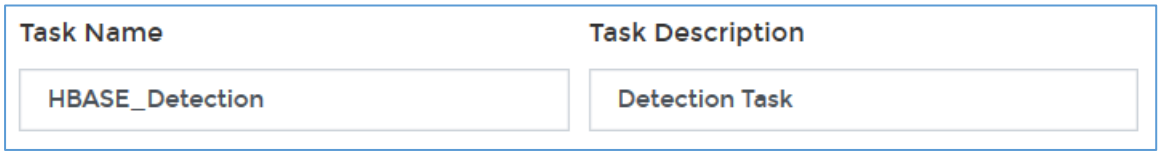
7.2.3.2.1 Create a task

1. Go to HADOOP>HBASE>TASKS. Select the New Task tab.

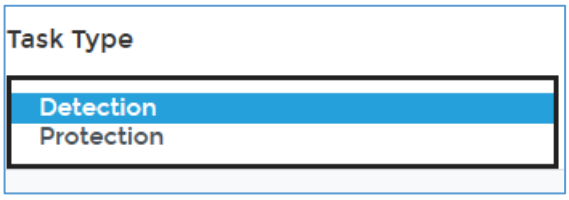


12. Select cluster from the **Select Cluster** drop-down.

13. Enter a meaningful **Task Name** and **Task Description**. The task name must be unique to the task. It can be up to 256 characters and consist of letters, numbers, certain symbols (! @ # $ _), without any spaces. The definition can be as long as the task name and contain any combination of numbers, letters, and symbols.



14. Choose a **Task Type.**

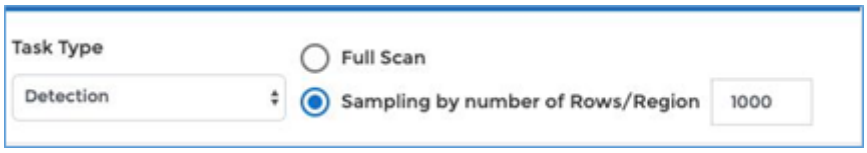


15. The available task types and the options specific to that task type are explained below:

Detection

Detection tasks scan the target source system for sensitive data elements. The following

options are specific to the detection tasks:



a) **Full Scan**: Select this option to scan all the records in the table.

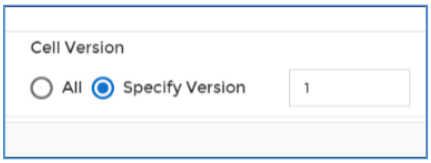
16. **Sampling by Number of Rows/Region**: Upon choosing this option, only specified number of rows (from Top) would be scanned from each region of the table storage.

    For e.g., if value entered is 1000 and the table is spread across 5 regions, then top 1000 rows in lexicographical order from each region would be scanned, making the task to scan total of 5000 rows from table of detection.

To proceed for remaining steps, go to step 6 Compliance Policy.

Protection

Protection hides sensitive data in the target source system by replacing it with a system generated value.

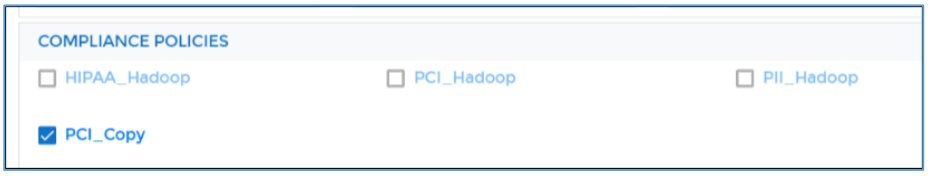


a) **Cell Versions**: Click **Specify Version** to select a specific version of cells to mask and enter the version number. Alternatively, to mask all versions, select the option **All.**

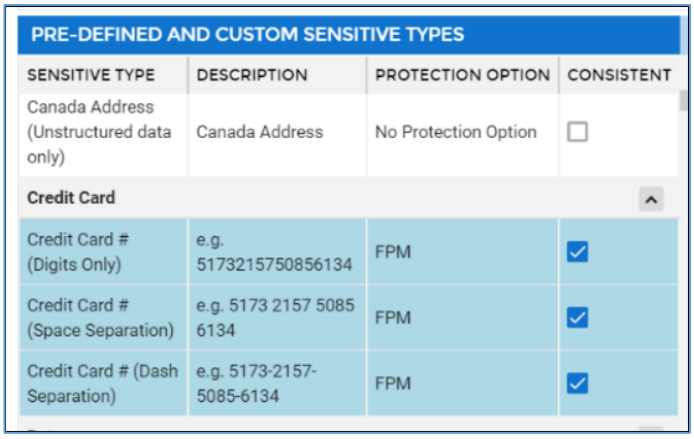
To proceed for remaining steps, go to step 6 Compliance Policy.

17. **Compliance Policy** can be set with all the task types. For more details about compliance policies, refer to section Policy. After selecting the required options, perform the following steps:

a) Select the required policies.

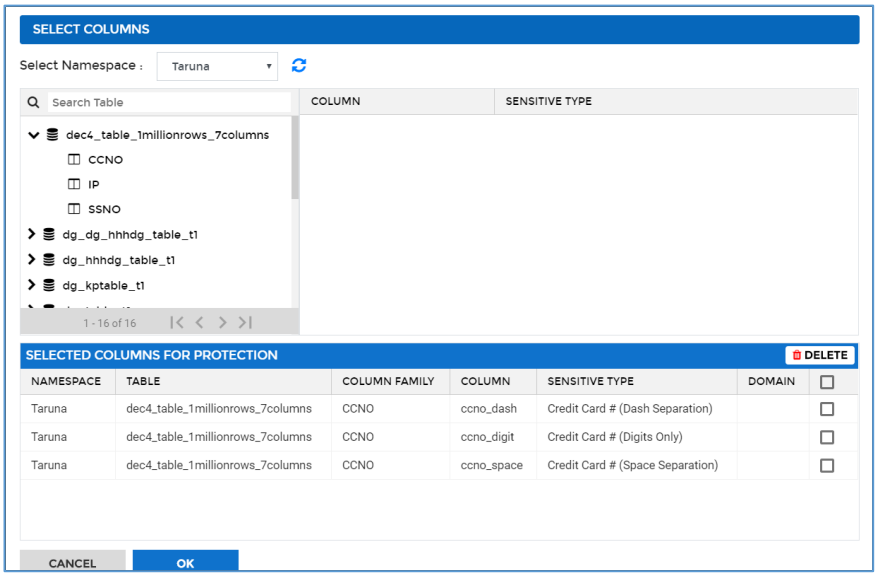


18. Pre-defined and Custom Sensitive Types are available for all task types. Select the required sensitive types.

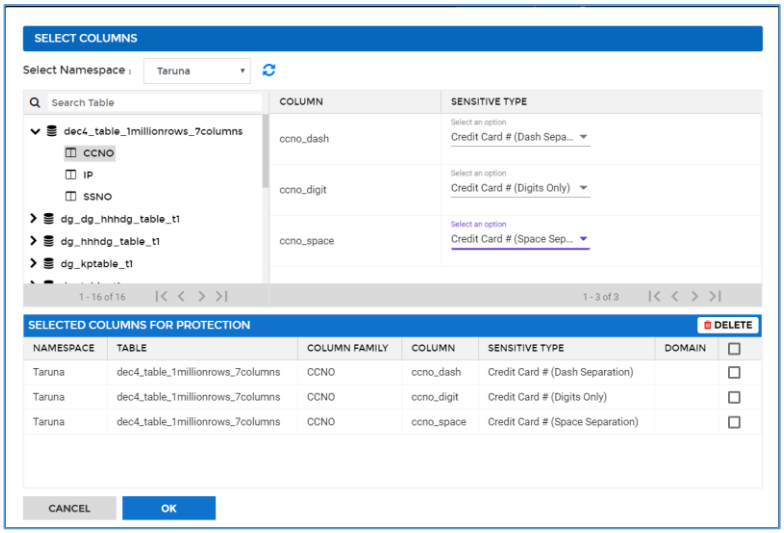


19. To specify columns for masking, click **Select Columns**.

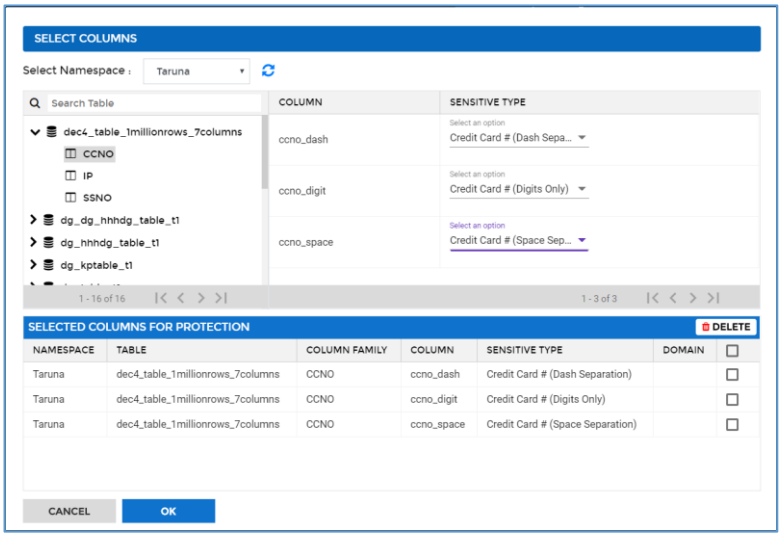
a) Select the required **Namespace** and **Table**.



20. Select the column.

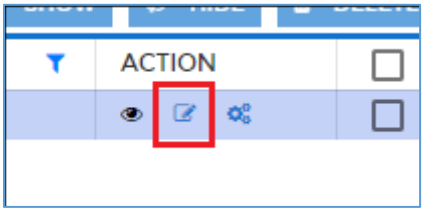


21. Select the required **Sensitive Type** for the selected columns.



22. Click **OK** to save the selection.
23. After creating the required task, click **Save** to save the task to schedule later, or **Save and Execute** to execute it right away.

To edit an existing task, select the required task from the list of tasks on the **HBASE Tasks** screen and click **Edit**. A task can be edited using the same steps for task creation.



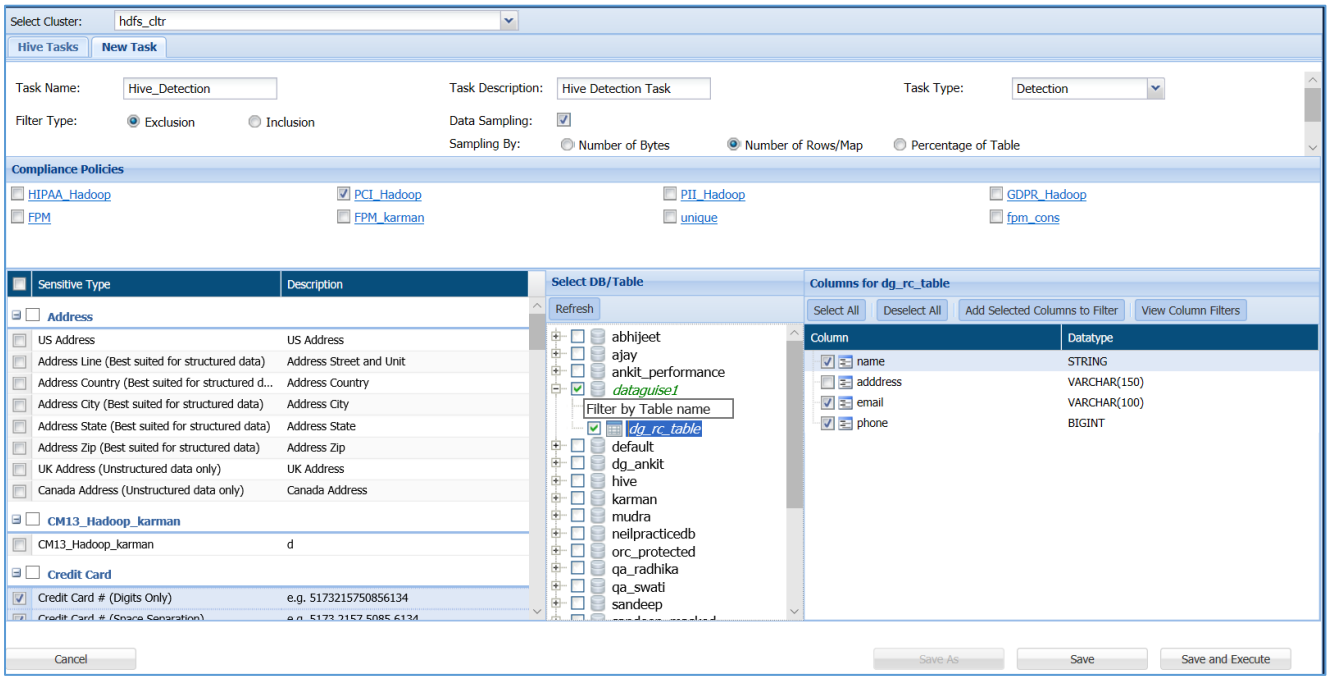
7.2.3.3 Hive

DgSecure supports Detection and Protection on Hive systems. To create a task to for these

operations perform the following steps:

7.2.3.3.1 Create a task

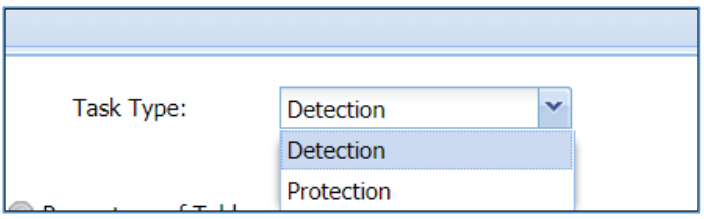
1. Go to **HADOOP > HIVE > TASKS**. Select the New Task tab.



2. Select cluster from the **Select Cluster** drop-down.

24. Enter a meaningful **Task Name** and **Task Description**. The task name must be unique to the task. It can be up to 256 characters and consist of letters, numbers, certain symbols (! @ # $ _), without any spaces. The definition can be as long as the task name and contain any combination of numbers, letters, and symbols.

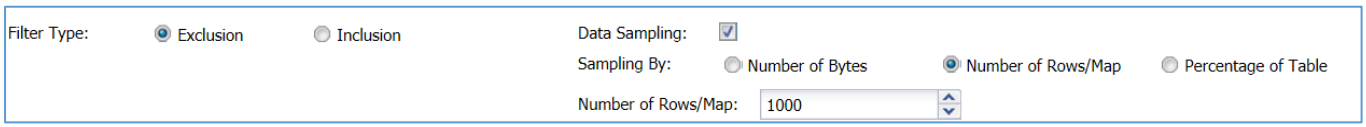
25. Choose a **Task Type.**



26. The available task types and the options specific to that task type are explained below:

Detection

Detection tasks scan the target source system for sensitive data elements.



The following options are specific to the detection tasks:

a) **Filter Type:** Select **Exclusion** to exclude the selected tables while performing the detection task or **Inclusion** to include the selected tables while performing the detection task.

27. **Sampling By:** DgSecure is equipped with the data sampling to limit the area of scan which helps in reducing the time taken for detection. Check this checkbox to run detection on part of the data. Following are the available options:

i. **Number of Bytes -** Select this option to define the sample size in bytes/KB/MB/GB. Enter the size in the **Number of Bytes** text box.

ii. **Number of Rows/Map -** Select this option to define the sample size in number of rows or map. Enter the size in the **Number of Rows/Map** text box.

iii. **Percentage of Table –** Select this option to define the sample size in percentage of total tables. Enter the percentage in the **Percentage of Table** text box.

To proceed for remaining steps, go to step 6 Compliance Policy.

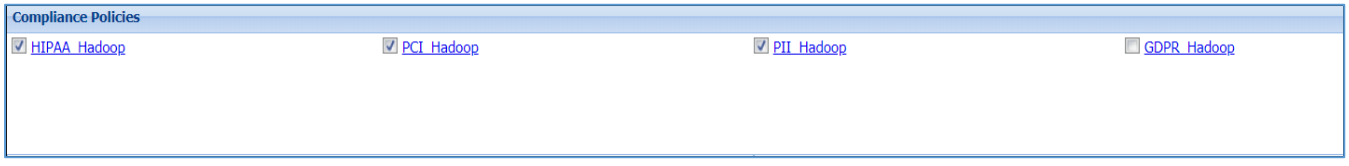
Protection

Protection hides sensitive data in the target source system by replacing it with a system generated value.

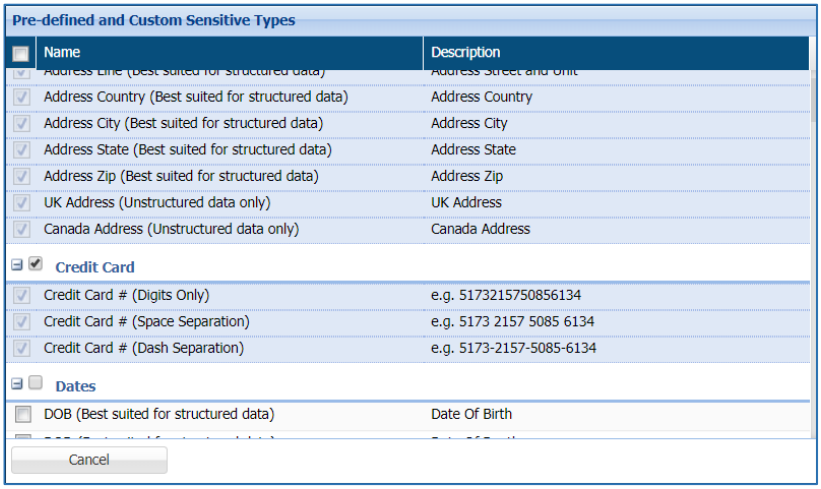
To proceed for remaining steps, go to step 6 Compliance Policy.

28. **Compliance Policy** can be set with all the task types. For more details about compliance policies, refer to section Policy. After selecting the required options, perform the following steps:

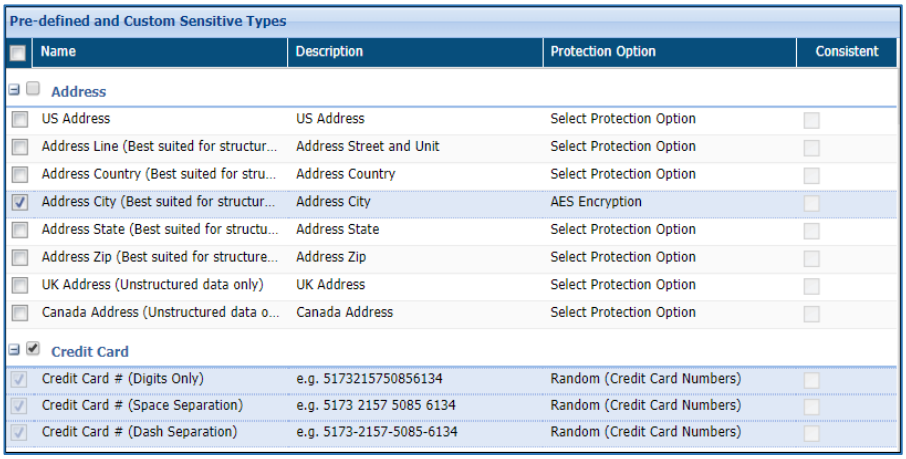
a) Select the required policies.



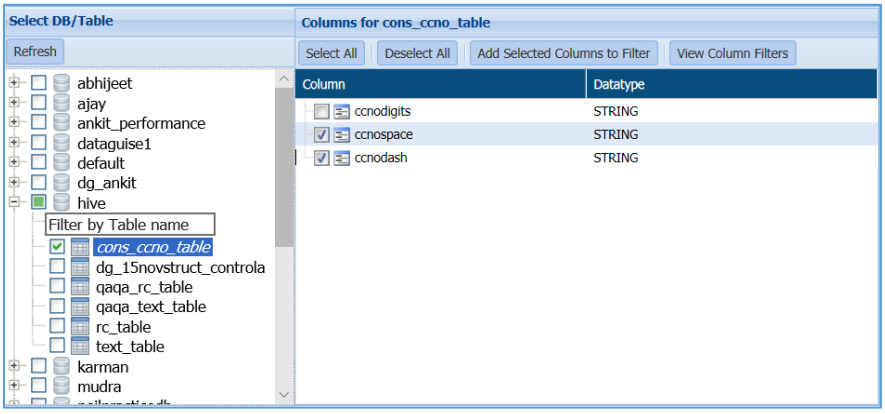
29. Pre-defined and Custom Sensitive Types are available for all task types. Select the required sensitive types.



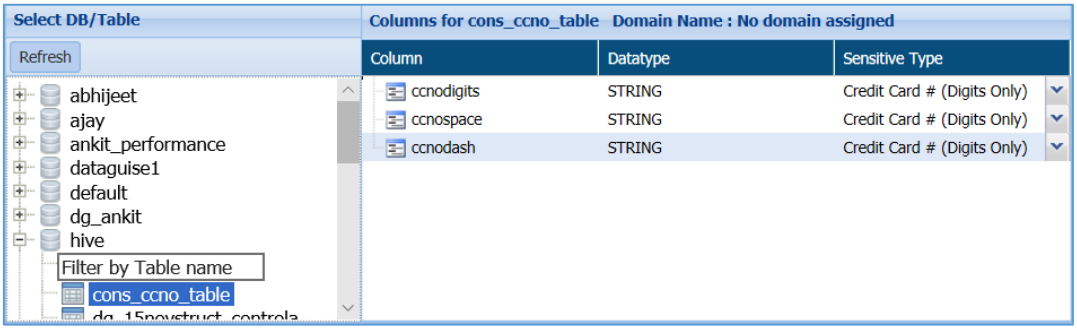
If you select **Protection** as the **Task Type, Protection Option** and **Consistent** fields are also available. Select the required **Protection Option** for the selected sensitive types. For details about all the masking options available refer to Masking Options.



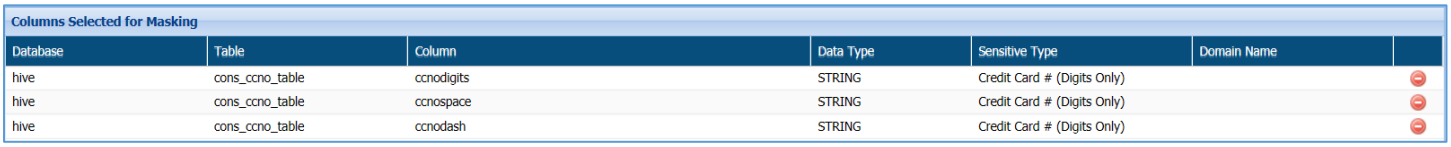
30. Select the database or table in the **Select DB/Table** panel.



a) Select the table and columns to scan. If you select **Protection** as the **Task Type**, there are some extra fields:



31. Select the table and columns to scan. Select the sensitive type of the columns.
32. If you select **Protection** as the task type, the panel **Columns Selected For Masking** will be displayed.



33. After creating the required task, click **Save** to save the task to schedule later, or **Save and Execute** to execute it right away.

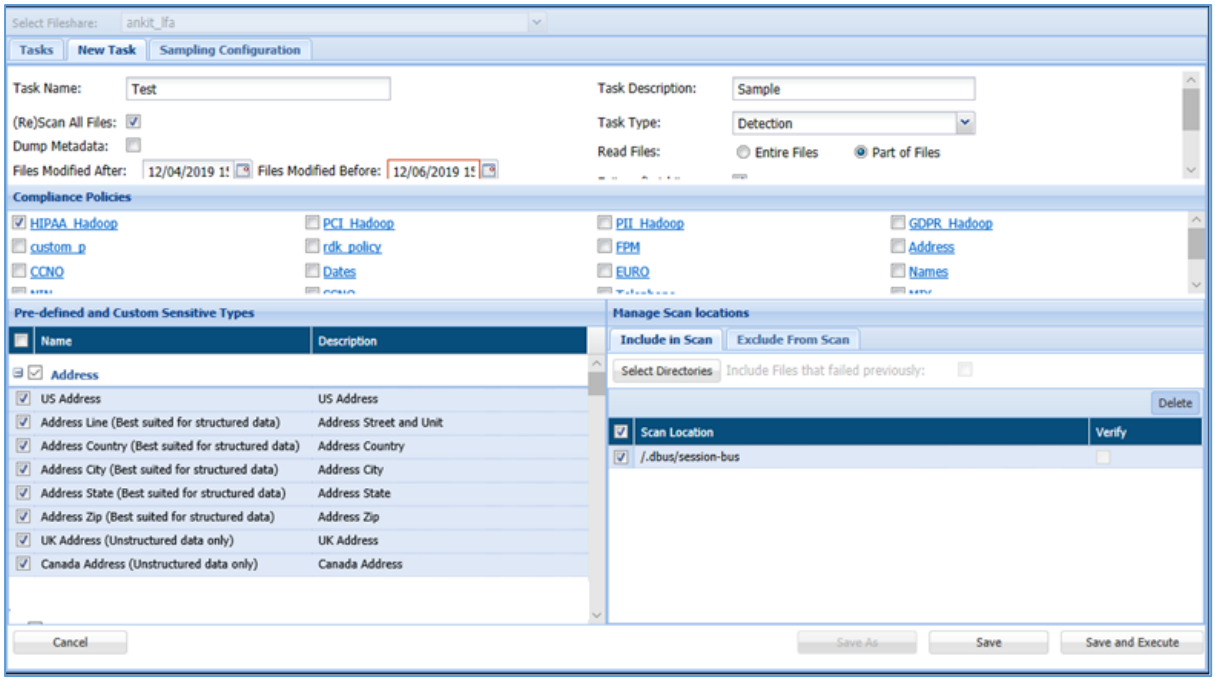
To edit an existing task, select the required task from the list of tasks on the **Hive Tasks** screen and click **Edit**. A task can be edited using the same steps for task creation.

7.2.4 Files

DgSecure supports Detection and Protection on different files. Detection, Masking, Encryption and Decryption operations can be performed on Files systems. To create a task to for these operations perform the following steps:

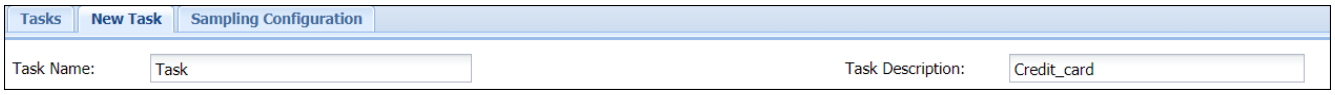
7.2.4.1.1 Create a task

1. Go to **FILES>TASKS**. Select the **New Task** tab.

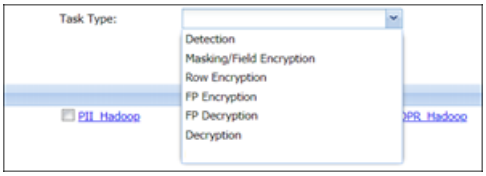


34. Select files from the **Select Fileshare** drop-down.

35. Enter a meaningful **Task Name** and **Task Description**. The task name must be unique to the task. It can be up to 256 characters and consist of letters, numbers, certain symbols (! @ # $ _), without any spaces. The definition can be as long as the task name and contain any combination of numbers, letters, and symbols.



36. Choose a **Task Type.**

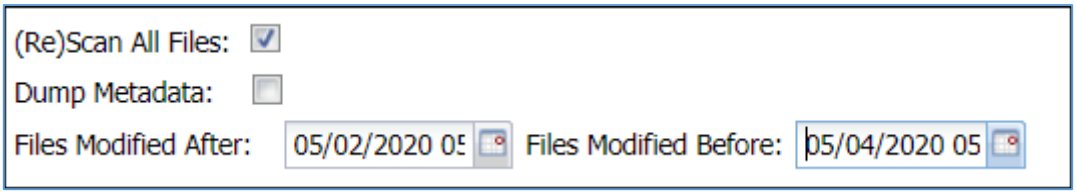


37. The list of available task types and the options specific to that task type are explained below:

Detection

Detection tasks scan the target source system for sensitive data elements. The following options are specific to the detection tasks:

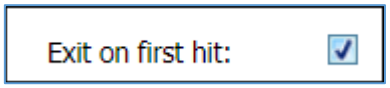
a) **Scan All Files**: Check this checkbox to scan all the available files for a given connection between the dates specified in **Files Modified After** and **Files Modified Before** drop down.



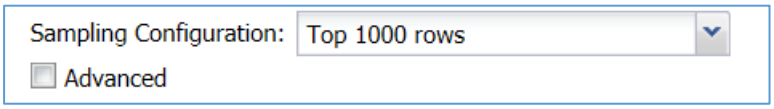
38. **Dump Metadata**: Check **Dump Metadata** option to remove the metadata files after scanning.

39. **Read Files**: Choose to read the entire file or a part of the file at random.

40. **Exit on first hit**: Check this checkbox to report the table or database as sensitive, at the first event of detection of a sensitive type.



41. **Sampling Configuration:**

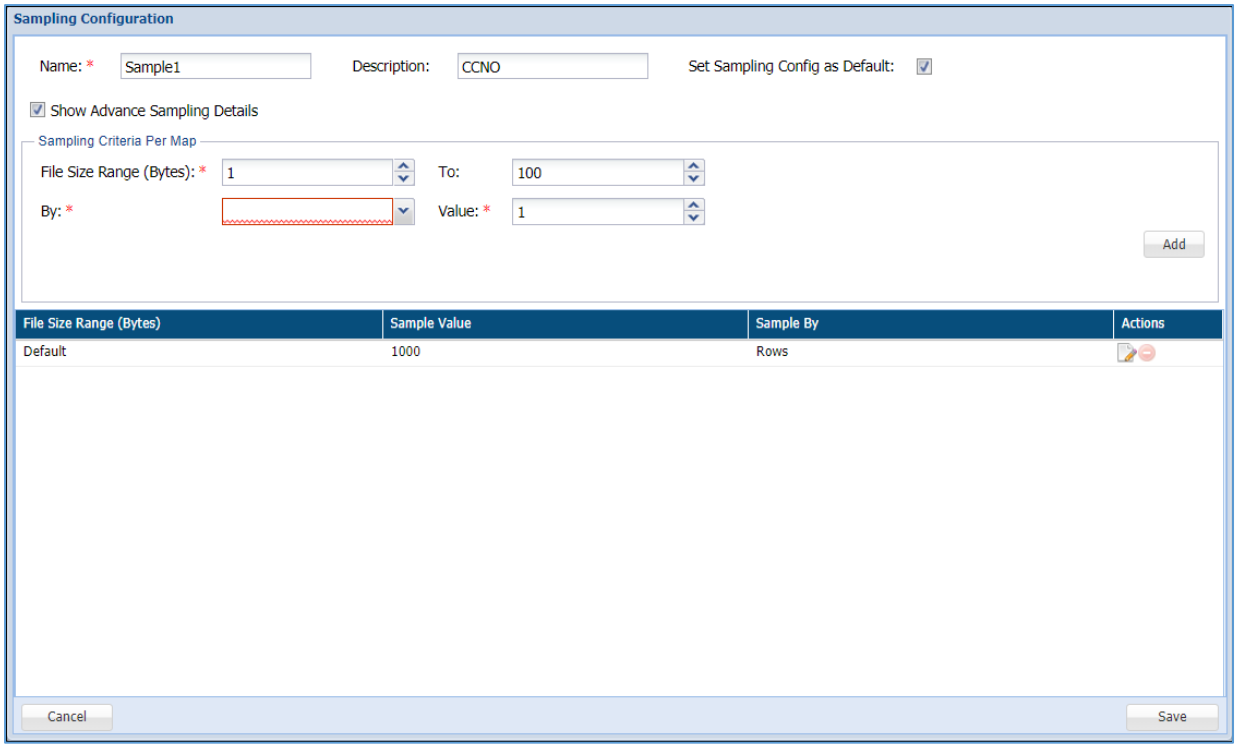


DgSecure is equipped with data sampling to limit the area of scan which helps in reducing the time taken for detection. Default options to scan sample data from the database are:

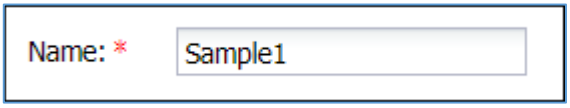
- Top 1000 Rows
- Read top 5% of data

The sampling configuration field is set to sample Top 1000 Rows by default. To create a new sampling configuration, perform the following steps:

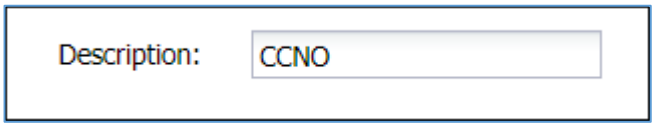
i. Go to **HDFS > TASKS > SAMPLING CONFIGURATION** tab or check the Advanced checkbox.



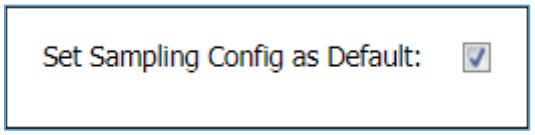
ii. Enter the name of the Sampling Configuration.



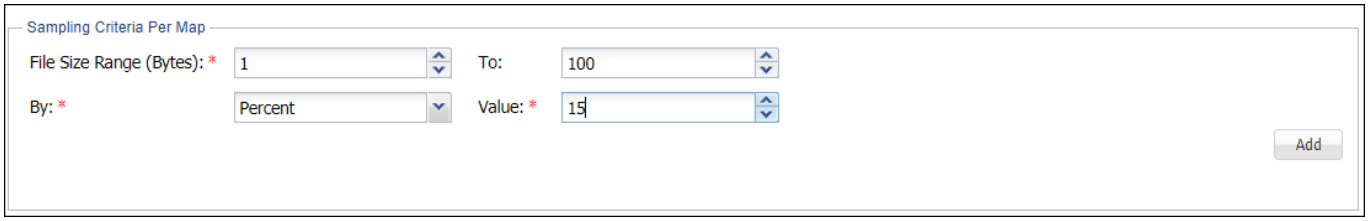
iii. Enter the description.



iv. Check the option **Set Sampling Config as Default** to set the Sampling Configuration as the default configuration for all your tasks.



v. Check the option **Show Advance Sampling Details** to set the advanced settings for sampling.



Below are the options for advanced settings:

- **File Size Range:** Enter the range for the sample in Bytes.
- **To:** Enter the ending range for the sample. `
- **By:** To Specify how to pick data for sampling from the source system, there are two ways:

    i. **By Rows:** Select '**Rows'** from the drop-down, to sample data based on the number of rows.

    ii. **By Percent:** Select '**Percent**" from the drop-down, to sample a percentage of the data

- **Value:** Enter the numeric value. It will specify the total number of records to be processed if sampling By-Rows is selected and denotes the percentage of sampling By-Percent is selected.

vi. After setting up the required configuration, click **Add** to add the user-defined sampling configuration to the list.

vii. Click the **Save** button to save the changes.

To proceed for remaining steps, go to step 6 Compliance Policy.

Masking/Field Encryption:

Masking or Field Encryption hides sensitive data in the target source system by replacing it with a system generated value. DgSecure provides various masking options to ensure the usability of data after it has been protected. Masking/Field Encryption can be applied on structured as well as unstructured data. For more details, refer to Masking Option. Following options are available to customize a Masking/Field Encryption task:

a) **(Re)Scan All Files**: Scan all available files for a given connection.

42. **Structured**: Check the structured option if the data that needs to be masked is structured. For details about how to create a structure refer to the section Structure Management.

Row Encryption

Row encryption is ideal for unstructured data. Following additional option is available:

a) **(Re)Scan All Files**: Scan all available files for a given connection.

To proceed for remaining steps, go to step 6 Compliance Policy.

FP Encryption

FP or Format Preserving encryption can only be executed on structured files. Following additional options are available:

a) **(Re)Scan All Files**: Scan all available files for a given connection.

43. **Structured**: This option is checked by default. For details about how to create a structure refer to the section Structure Management.

To proceed for remaining steps, go to step 6 Compliance Policy.

FP Decryption

FP or Format Preserving Decryption is used to decrypt the data encrypted by an FP Encryption task. Following additional options are available

a) **(Re)Scan All Files**: Scan all available files for a given connection.

44. **Structured**: This option is checked by default. For details about how to create a structure refer to the section Structure Management.

To proceed for remaining steps, go to step 6 Compliance Policy.

Decryption

Decryption tasks are used to decrypt data on which Encryption has been performed.

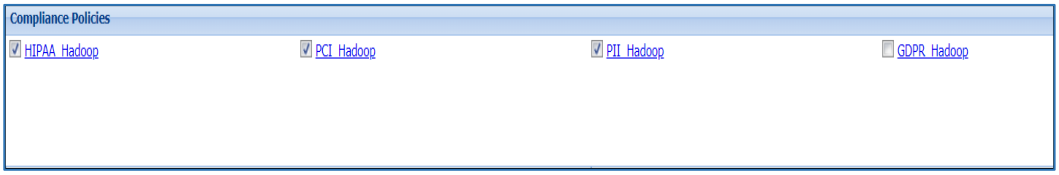
a) **(Re)Scan All Files**: Scan all available files for a given connection.

45. **Structured**: Check the structured if the data that needs to be masked is structured. For details about how to create a structure refer to the section Structure Management.

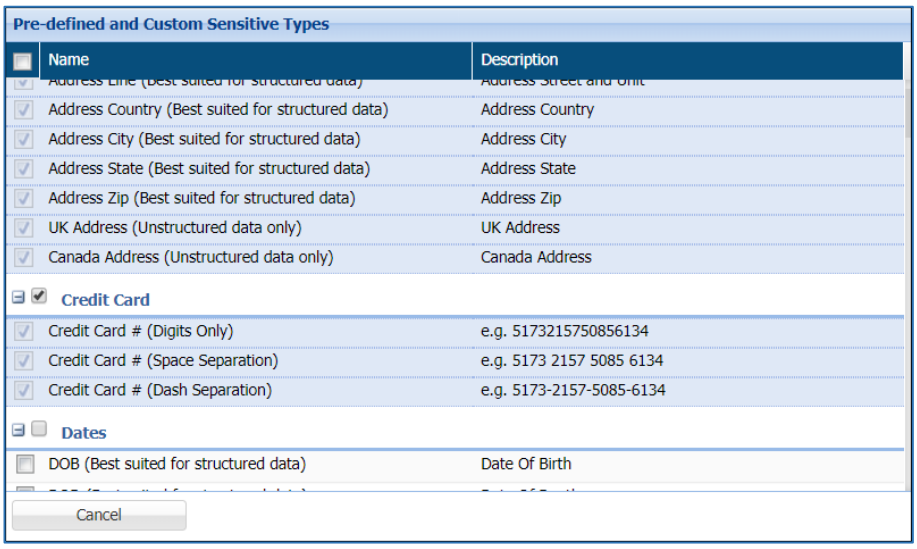
To proceed for remaining steps, go to step 6 Compliance Policy.

46. **Compliance Policy** can be set with all the task types. For more details about compliance policies, refer to section Policy. After selecting the required options, perform the following steps:

a) Select the required policies.



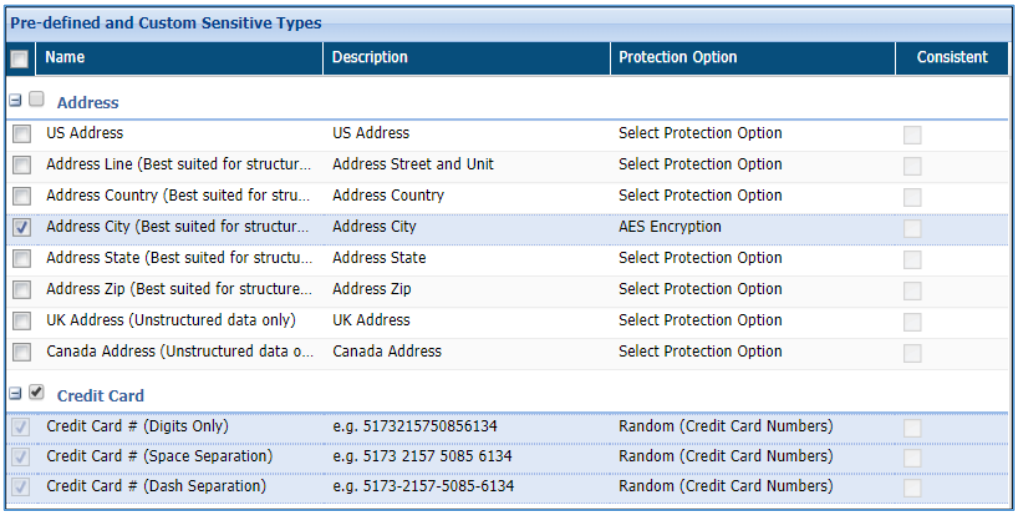
47. **Pre-defined and Custom Sensitive Types** are available for all task types. Select the required sensitive types.



***NOTE:**

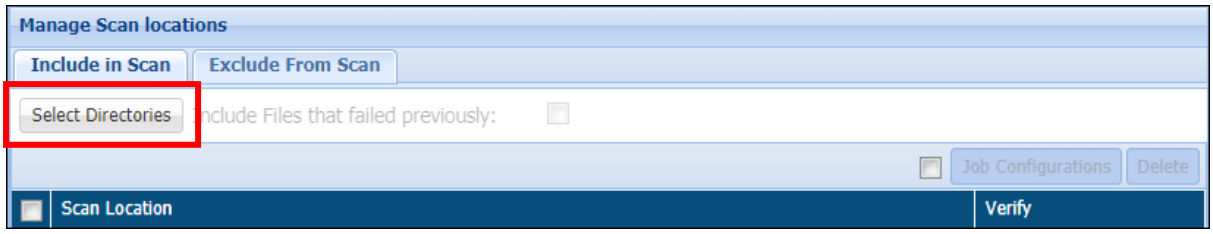
- Row Encryption uses default row encryption configuration for masking. This will mask all the entries of the row and is best suited to unstructured datatypes such as text files.
- FP Encryption uses default encryption configuration to protect the original data format. This option is best suited to structured datatypes.
- FP Decryption can only be executed on data that has been encrypted using FP Encryption.
- Decryption can be executed on data that has been encrypted using FP Encryption or Field Encryption.

48. If you select **Masking/Encryption** as the **Task Type, Protection Option** and **Consistent** fields are also available. Select the required **Protection Option** for the selected sensitive types. For details about all the masking options available in Files refer to Masking Options.

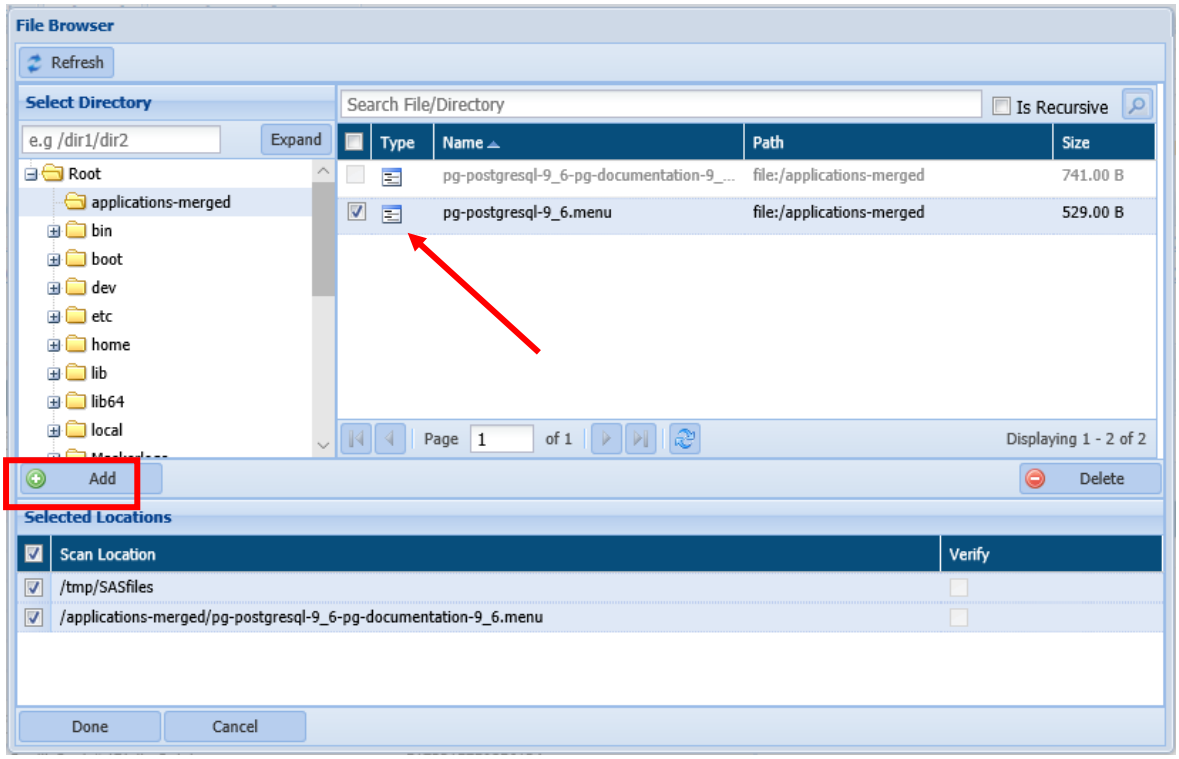


49. **Manage Scan Locations**: Specify which directories to scan.

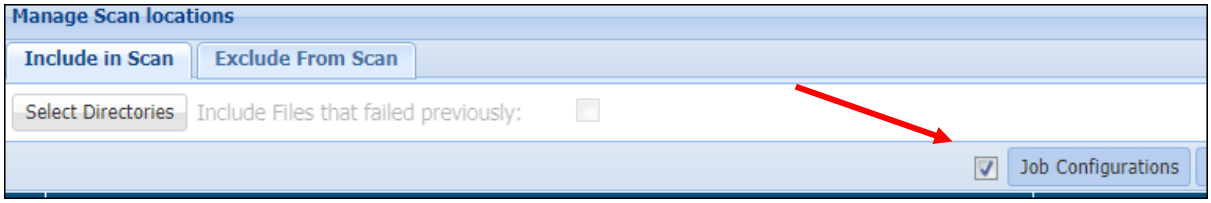
- **Include in Scan**: Perform the following steps to select directories to include in the scan.
  i. Click **Select Directories** to choose the directory to perform the task.



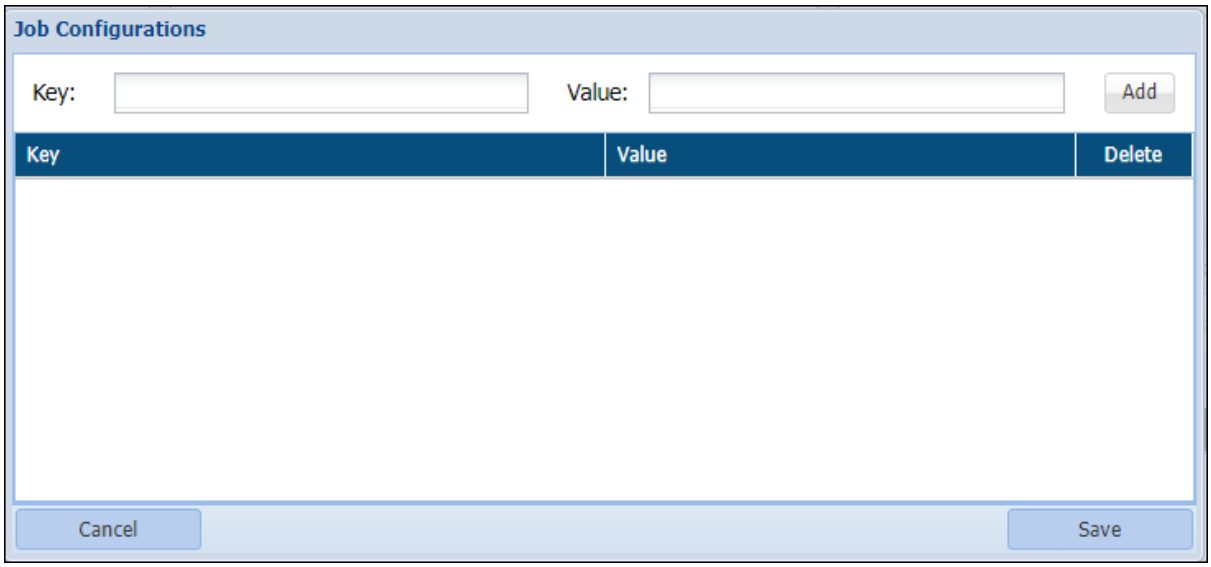
  ii. Select the required directories and click **Add.**



  iii. Check the **Is Recursive** checkbox for recurring data.
  iv. Click the **Add** button. It will add the file in **Selected Locations** Pane.
  v. Click **Done** to save your selection.
  vi. To provide keys for the search check the checkbox against **Job Configuration**.



vii. Add the key and value and save.

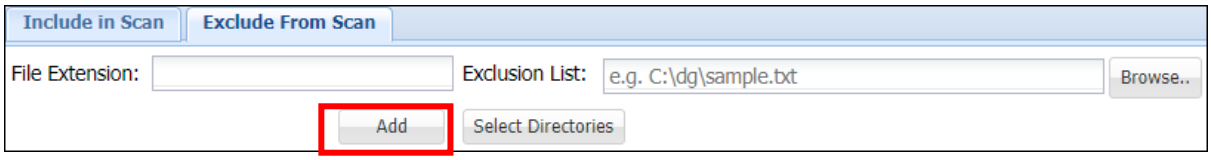


viii. **Include Files that Failed Previously** check box will be greyed out for a fresh scan. Check this option if some elements of a previously executed task got skipped or the task was completed with errors. This option is available only for detection tasks.

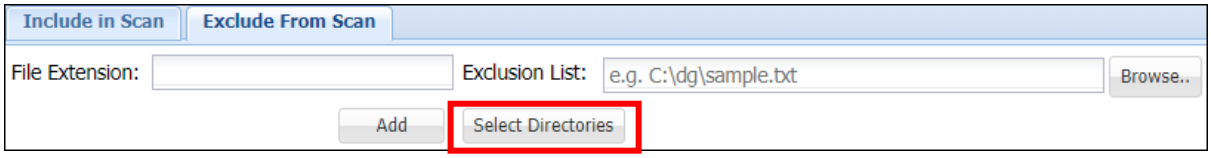
ix. **Delete Input Files on Job Completion** option is available for masking and encryption tasks. Check this check box to delete the input data after task execution.

x. To delete a scan location from the list select it and click **Delete**.

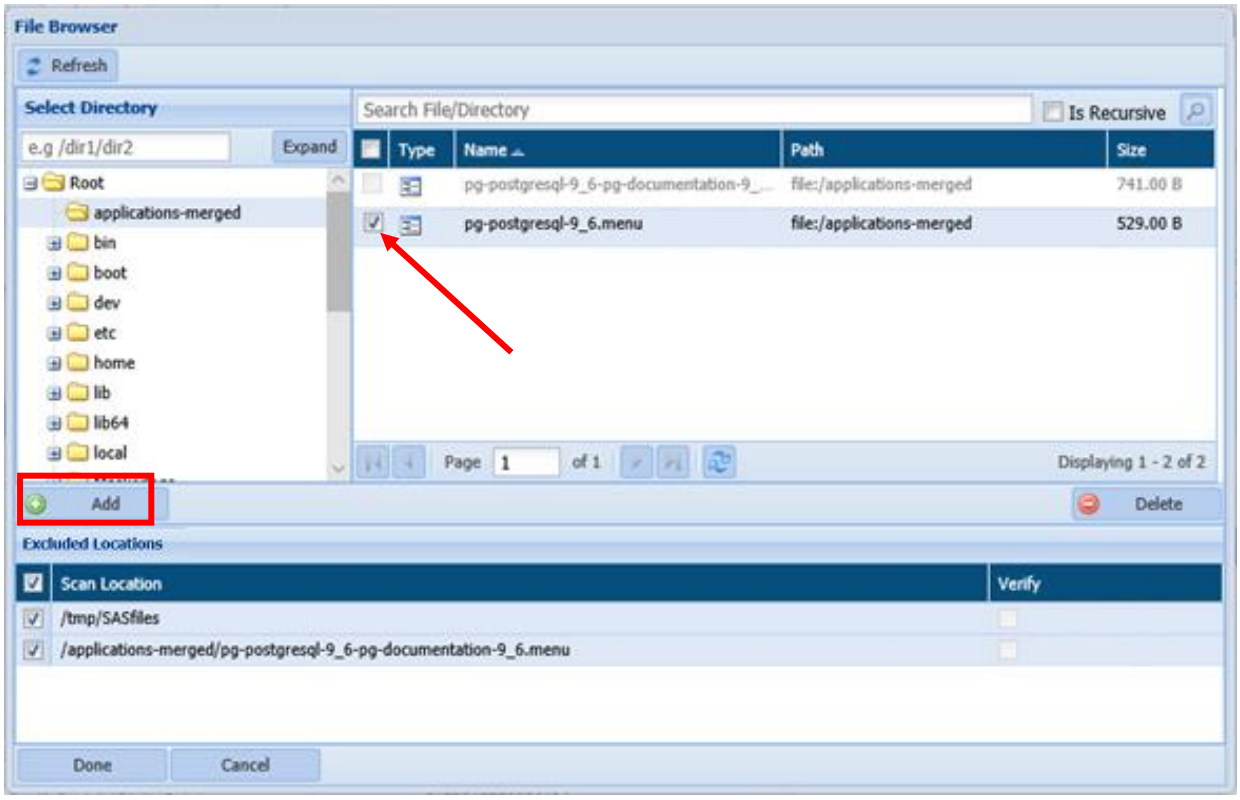
- **Exclude from Scan**: Select directories to be excluded at the time of task execution or browse the path to an exclusion list. Perform the following steps:
  i. Enter the file extension and browse location to the exclusion list if you have prepared an exclusion list. Click add.



ii. Click **Select Directories** to manually select the directories to be excluded from the task.



iii. Select the required directories and click **Add.**



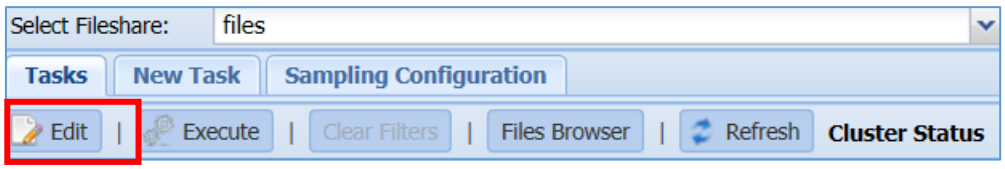
iv. Check the **Is Recursive** checkbox for recurring data.

v. Click **Done** to save your selection.

***NOTE:** To decrypt tasks, ensure that appropriate roles have been assigned before executing the encryption task. For more details refer to section Role Management.

50. After creating the required task, i.e., detection, masking, encryption, decryption or metadata discovery, click save to save the task to schedule later, or save and execute to execute it right away.

To edit an existing task, select the required task from the list of tasks on the Tasks screen and click **Edit**. A task can be edited using the same steps for task creation.



7.2.5 AWS

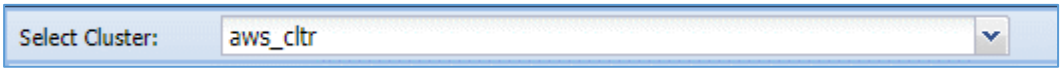
DgSecure supports Detection and Protection on different Hadoop distribution systems like S3, RDS/RedShift. Various protection options are available for these distributions based on the type of data-structure or unstructured.

7.2.5.1 S3

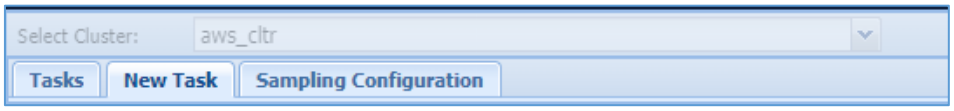
Detection, Metadata discovery, Masking, Encryption and Decryption operations can be performed on S3 systems. To create a task to for these operations, perform the following steps.

7.2.5.1.1 Create an S3 task

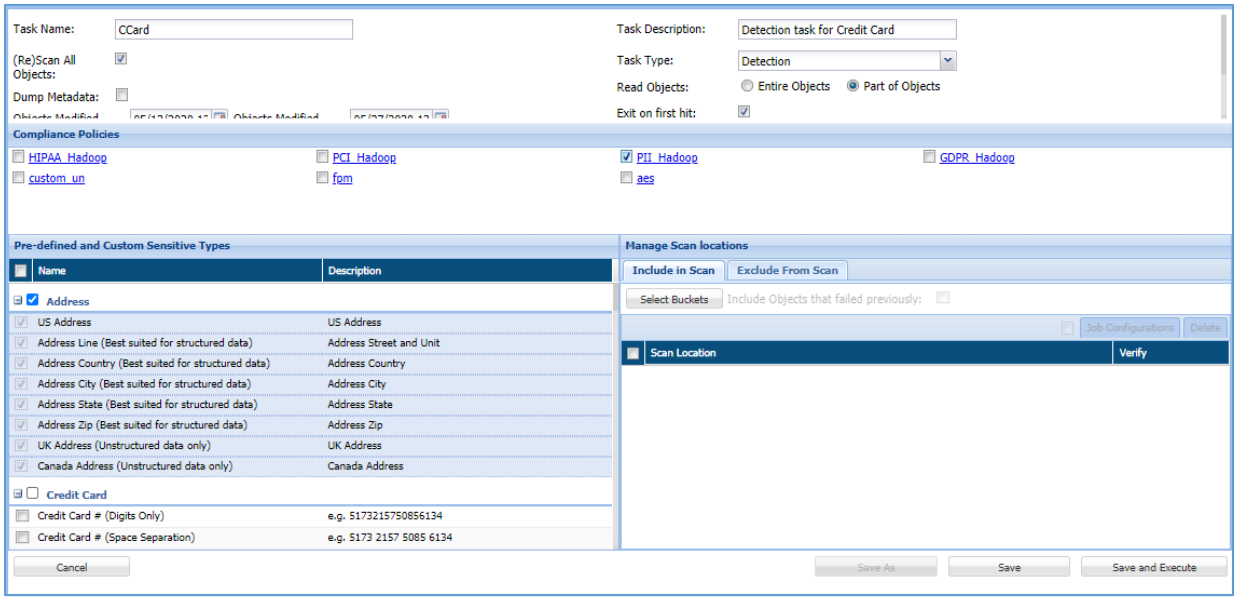
1. Go to **AWS > S3 > TASKS** and select the cluster from the **Select Cluster** drop-down.



2. To create a new task, click on the **New Task** tab.

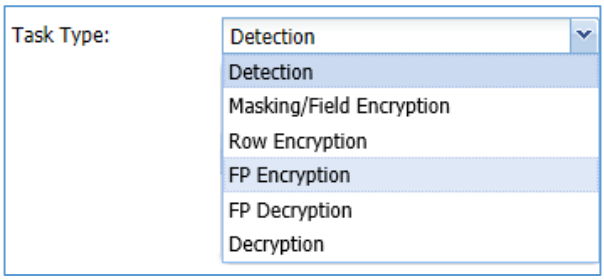


The following image shows the user interface for creating a task.



51. Enter a meaningful **Task Name** and **Task Description**. The task name must be unique to the task. It can be up to 256 characters and consist of letters, numbers, certain symbols (! @ # $ _), without any spaces. The definition can be as long as the task name and contain any combination of numbers, letters, and symbols.

52. Choose a **Task Type** from given options.



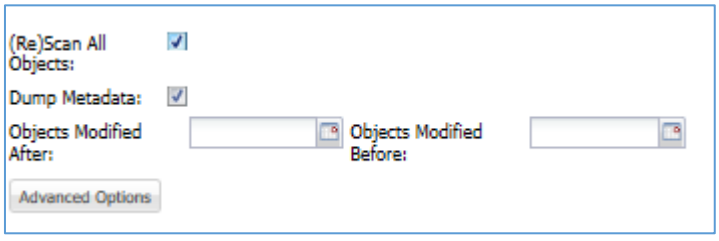
The list of available task types and the options specific to that task type are explained below:

Detection

Detection tasks scan the target source system for sensitive data elements. The following options are specific to the detection tasks:

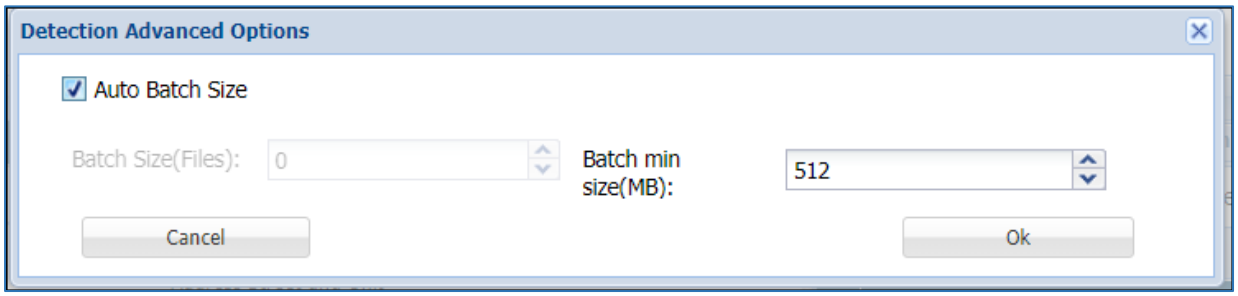
a) **(Re)Scan All Files**: Check this checkbox to scan all the available objects for a given connection between the dates specified in **Objects Modified After** and **Objects Modified Before** drop down.

The **Objects Modified After** and **Objects Modified Before** drop down will be visible when **(Re)Scan All Objects** checkbox is checked.



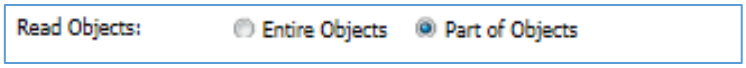
53. **Dump Metadata**: Check **Dump Metadata** option to remove the metadata files after scanning.

54. **Advanced Options**: Define a batch size for scanning the source system in batches. Click on the **Advanced Options** button to define the batch size of the data.



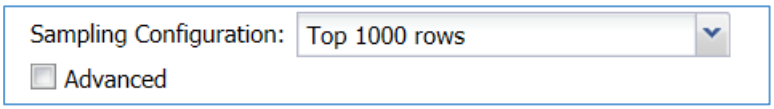
Define the number of files per batch in the **Batch Size(Files)** option or check the **Auto Batch Size** option to enter the minimum batch size in **Batch min size(MB)** option.

55. **Read Objects**: Choose to read the **Entire Objects** or a **Part of Objects** at random.



56. **Exit on first hit**: Check this checkbox to report the table or database as sensitive, at the first event of detection of a sensitive type.

57. **Sampling Configuration**

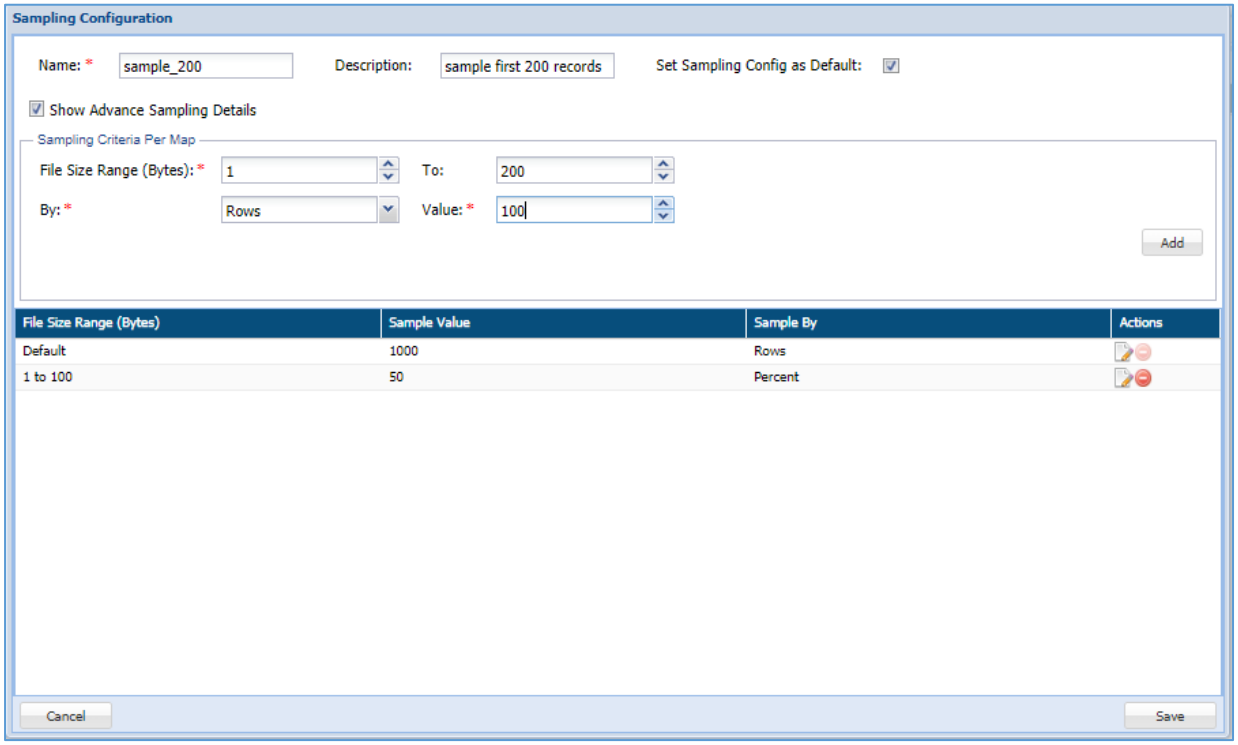


DgSecure is equipped with data sampling to limit the area of scan which helps in reducing the time taken for detection. Default options to scan sample data from the database are:

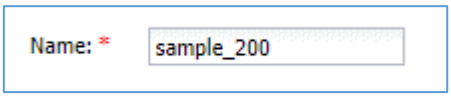
- Top 1000 Rows
- Read top 5% of data

The sampling configuration field is set to sample Top 1000 Rows by default. To create a new sampling configuration perform the following steps:

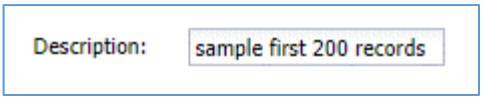
i. Go to **AWS > S3 > TASKS > SAMPLING CONFIGURATION** tab or check the Advanced checkbox.



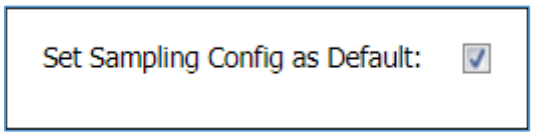
ii. Enter the name of the Sampling Configuration.



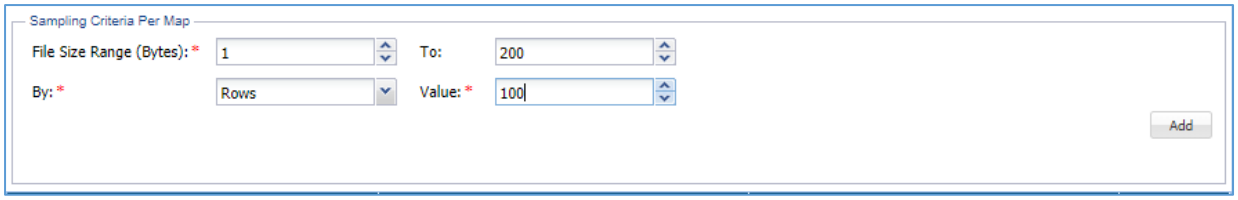
iii. Enter the description for the sample.



iv. Check the option **Set Sampling Config as Default** to set the Sampling Configuration as the default configuration for all your tasks.



v. Check the option **Show Advance Sampling Details** to set the advanced settings for sampling.



Below are the options for advanced settings:

- **File Size Range (Bytes):** Enter the starting range for the sample in bytes.
- **To:** Enter the ending range for the sample. `
- **By:** To Specify how to pick data for sampling from the source system, there are two ways:

  i. **By Rows:** Select **Rows** from the drop-down, to sample data based on the number of rows.

  ii. **By Percent:** Select **Percent** from the drop-down, to sample a percentage of the data

- **Value:** Enter the numeric value. It will specify the total number of records to be processed if sampling **By-Rows** is selected and denotes the percentage of sampling **By-Percent** is selected.

vi. After setting up the required details for configuration, click **Add** to add the user-defined sampling configuration to the list.

vii. Click the **Save** button to save the changes.

To proceed for remaining steps, go to step Compliance Policy.

Masking/Field Encryption

Masking or Field Encryption hides sensitive data in the target source system by replacing it with a system generated value. DgSecure provides various masking options to ensure the usability of data after it has been protected. Masking/Field Encryption can be applied on structured as well as unstructured data. For more details refer to Structure Management. Following options are available to customize a Masking/Field Encryption task:

a) **(Re)Scan All Files**: Scan all available files for a given connection.

58. **Structured**: Check the structured option if the data that needs to be masked is structured. For details about how to create a structure refer to the section Structure Management.

To proceed for remaining steps, go to step Compliance Policy.

Row Encryption

Row encryption is ideal for unstructured data. Following additional option is available:

a) **(Re)Scan All Files**: Scan all available files for a given connection.

To proceed for remaining steps, go to step Compliance Policy.

FP Encryption

FP or Format Preserving encryption can only be executed on structured files. Following additional options are available:

a) **(Re)Scan All Files**: Scan all available files for a given connection.

b) **Structured**: This option is checked by default. For details about how to create a structure refer to the section Structure Management.

To proceed for remaining steps, go to step Compliance Policy.

FP Decryption

FP or Format Preserving Decryption is used to decrypt the data encrypted by an FP Encryption task. Following additional options are available

a) **(Re)Scan All Files**: Scan all available files for a given connection.

b) **Structured**: This option is checked by default. For details about how to create a structure refer to the section Structure Management.

To proceed for remaining steps, go to step Compliance Policy.

Decryption

Decryption tasks are used to decrypt data on which Encryption has been performed.

a) **(Re)Scan All Files**: Scan all available files for a given connection.

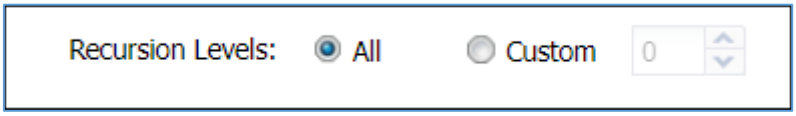
59. **Structured**: Check the structured if the data that needs to be masked is structured. For details about how to create a structure refer to the section Structure Management.

To proceed for remaining steps, go to step Compliance Policy.

Metadata Discovery

Metadata Discovery scans the source system to provide information about the type of data available on the source system. Following additional option can be set for Metadata Discovery:

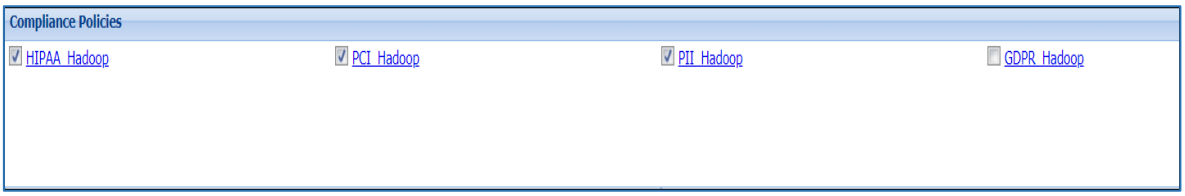
a) **Recursion Levels:** Select number of recursions levels to be scanned. This option is available only for Metadata Discovery.



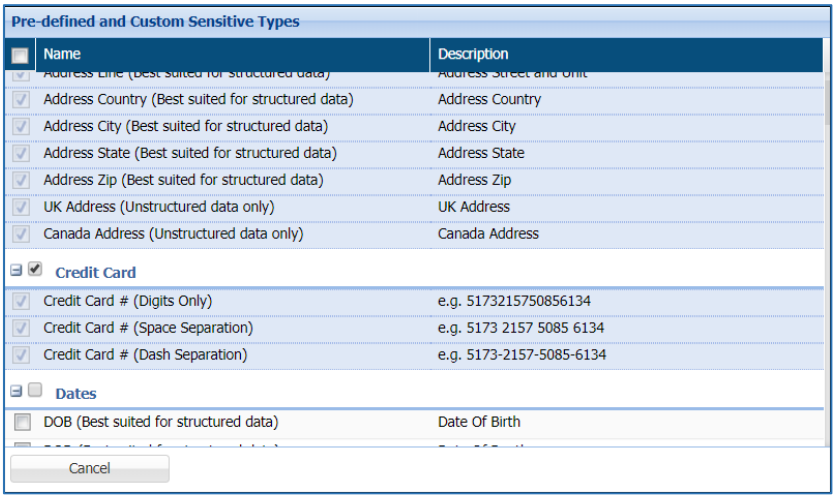
To proceed for remaining steps, go to step Compliance Policy.

60. **Compliance Policy** can be set with all the task types in HDFS except Metadata Discovery. For more details about compliance policies, refer to section Policy . After selecting the required options, perform the following steps:

a) Select the required policies.



61. **Pre-defined and Custom Sensitive Types** are available for all task types in HDFS except Metadata Discovery. Select the required sensitive types.



***Note:**

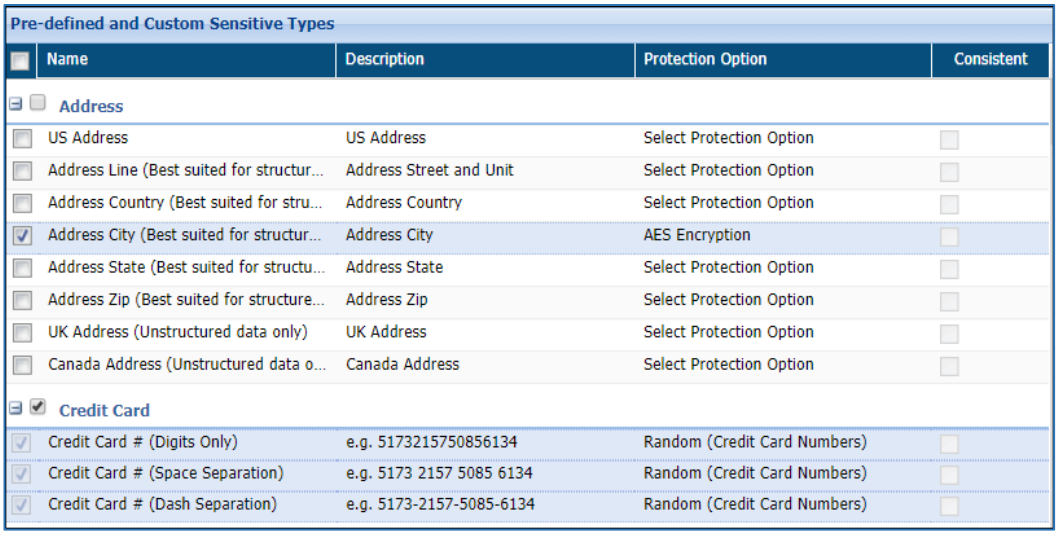
1. Row Encryption uses default row encryption configuration for masking. This will mask all the entries of the row and is best suited to unstructured datatypes such as text files.

2. FP Encryption uses default encryption configuration to protect the original data format. This option is best suited to structured datatypes.

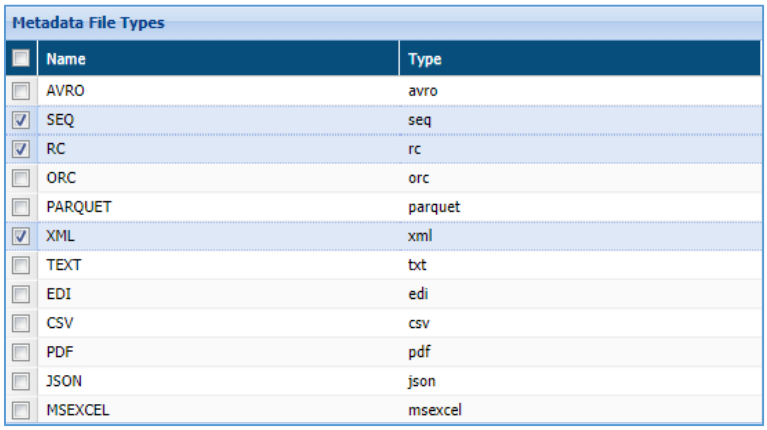
3. FP Decryption can only be executed on data that has been encrypted using FP Encryption.

4. Decryption can be executed on data that has been encrypted using FP Encryption or Field Encryption.

62. If you select Masking/Encryption as the Task Type, Protection Option and Consistent fields are also available. Select the required Protection Option for the selected sensitive types. For details about all the masking options available in HDFS refer to Masking Options.

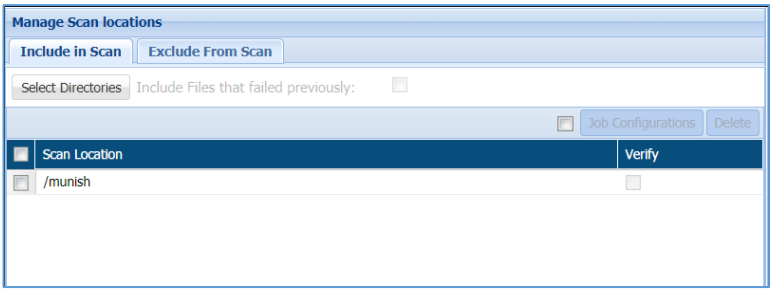


63. If you select **Metadata Discovery** as the task type, the panel **Metadata File Types** will be displayed. Check the required file types for the scan by checking the checkbox against the Name of the required file type.



64. **Manage Scan Locations**: This panel specify which directories to scan.

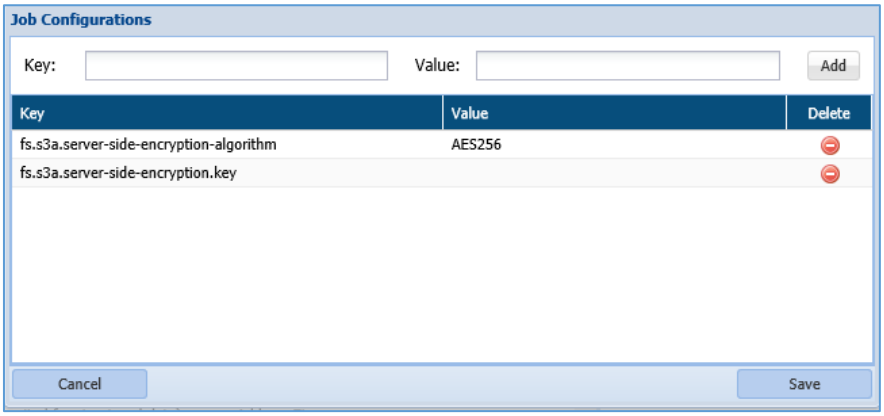
a) **Include in Scan**: Click **Select Directories** to choose the directory to perform the task.



viii. **Include Files that Failed Previously:** check this option to include all those files which were previously not scanned due to some exception. This option will appear when **Detection** is selected in **Task Type** field.

ix. **Delete Input Files on Job Completion:** check this option to delete all the original input files, which were included, post masking. This option will appear when **Masking/Field Encryption**, **Row Encryption**, **FP Encryption** is selected in **Task Type** field.

x. **Job Configuration:** check the checkbox to setup the parameters list. The value for job configuration will contain the pre-defined key and the value. If you have not specified any **Job Configuration**, then default parameter list will be executed.

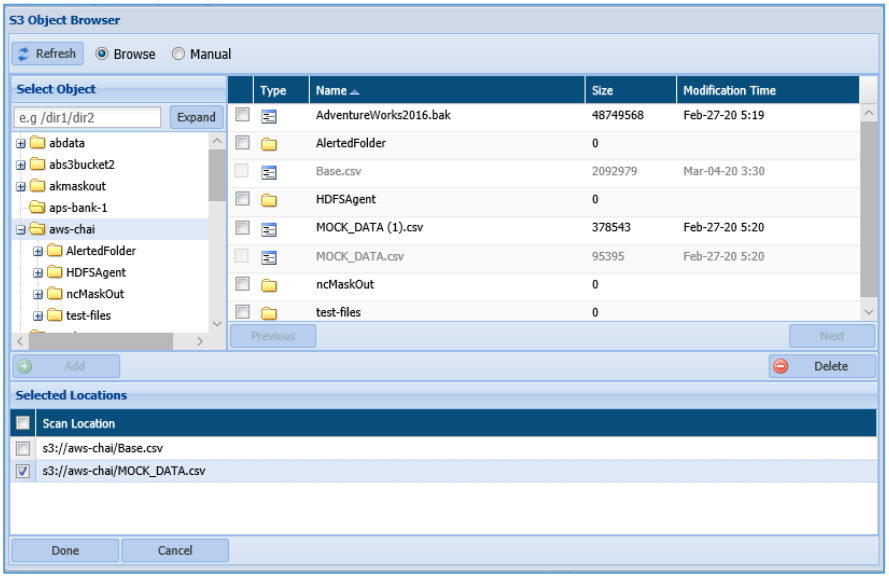


There are two ways in which buckets can be selected in **S3 Object Browser**:

- Browse
- Manual

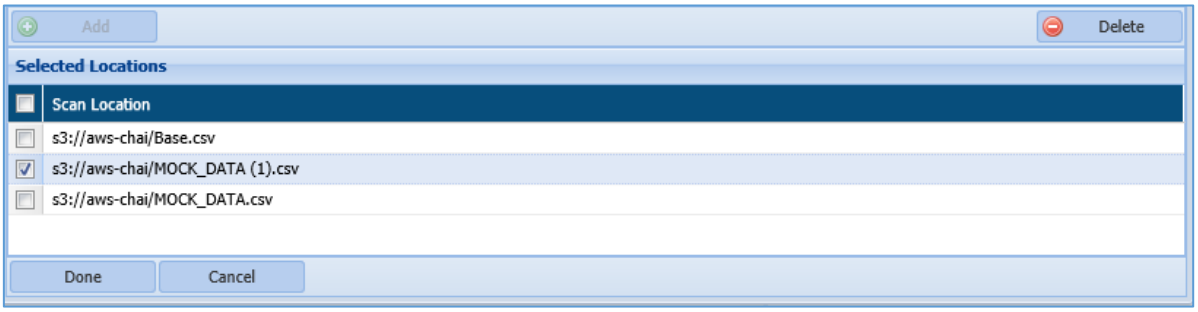
To include buckets for scanning, click **Select Bucket** button, perform the following steps:

Browse: This option lets you browse the objects from **Select Object** panel. To select the objects, perform the below steps:



i. Select the folder from the directory to view the objects for that folder. All the objects will be displayed in the right panel.

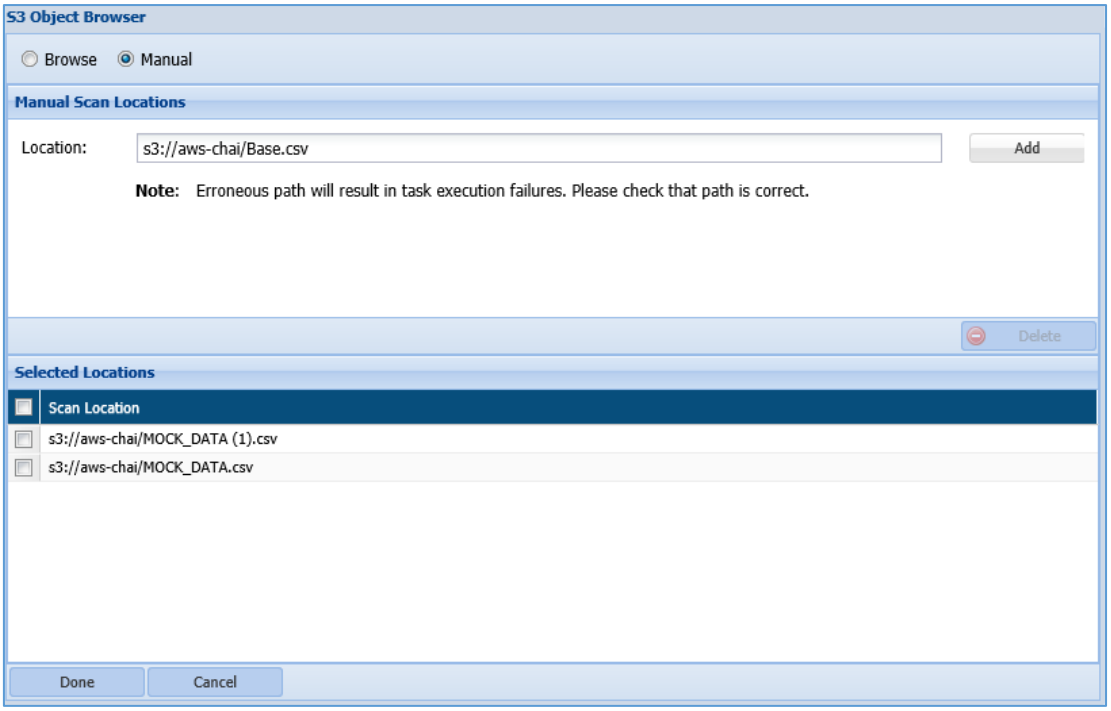
ii. Select the object in the right panel by checking the checkbox and click **Add** button. This functionality will include the objects in the **Selected Locations** panel.



To delete the objects from the **Selected Location** panel, check the checkbox next to the **Scan Location** name and click **Delete** button. The **Delete** button will be enabled, once the **Scan Location** checkbox is checked.

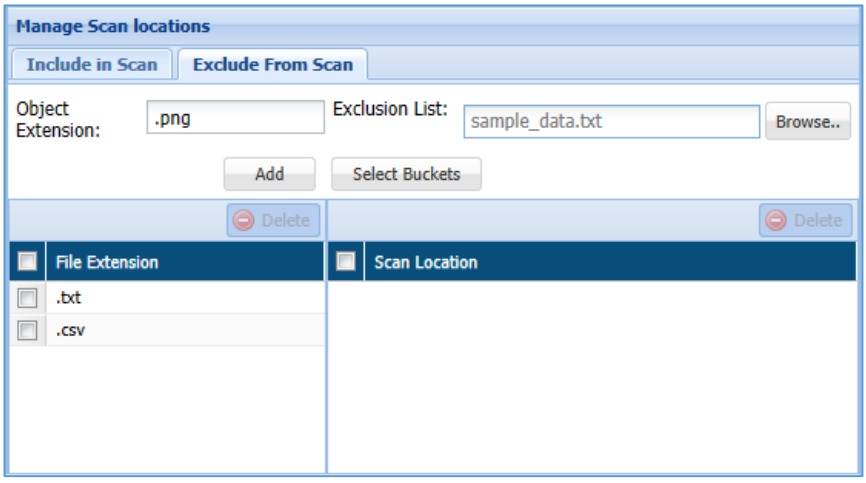
iii. Click **Done** button to include the objects in **Manage Scan Location**.

Manual: This option allows you to select the object from the bucket manually. Perform the below steps:



i. Enter the path for the scan location that you want to include.
ii. Click **Add** button to include the path for the object in Selected Location panel.
iii. Click **Done** to include the selected objects in the Manage Scan Location
iv. To delete the object from the **Selected Location** panel, check the checkbox next to the scan location name and click **Delete**.

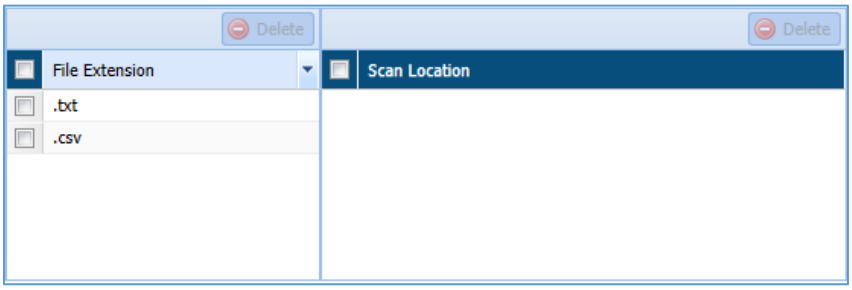
65. **Exclude from Scan**: Select objects to be excluded at the time of task execution or browse the path to an exclusion list. The **Exclude From Scan** tab will be enabled when **Detection** and **Masking/Field Encryption** are selected in Task Type field.



i. The **Object Extension** field allow you to specify the objects extension (.txt, .csv, etc) that need to be excluded.

ii. The **Extension List** field allow you either to **Browse** the path for the object or to select the object using the **Select Buckets** button. This functionality lets you specify the exclusion list of all objects that need not be included in the scanning.

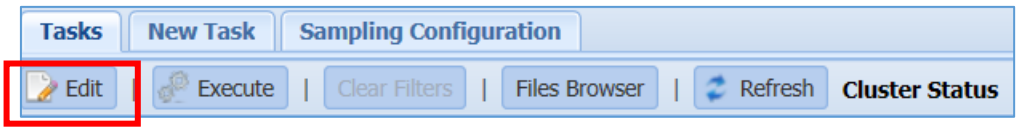
iii. The below panel list down information for both excluded **File Extension** and the **Scan Location** selected above.



***Note**: To decrypt tasks, ensure that appropriate roles have been assigned before executing the encryption task. For more details, refer to Role Management

66. After creating the required task, i.e., detection, masking, encryption, decryption or metadata discovery, click save to save the task to schedule later, or save and execute to execute it right away.

To edit an existing task, select the required task from the list of tasks on the Tasks screen and click **Edit**. A task can be edited using the same steps for task creation.



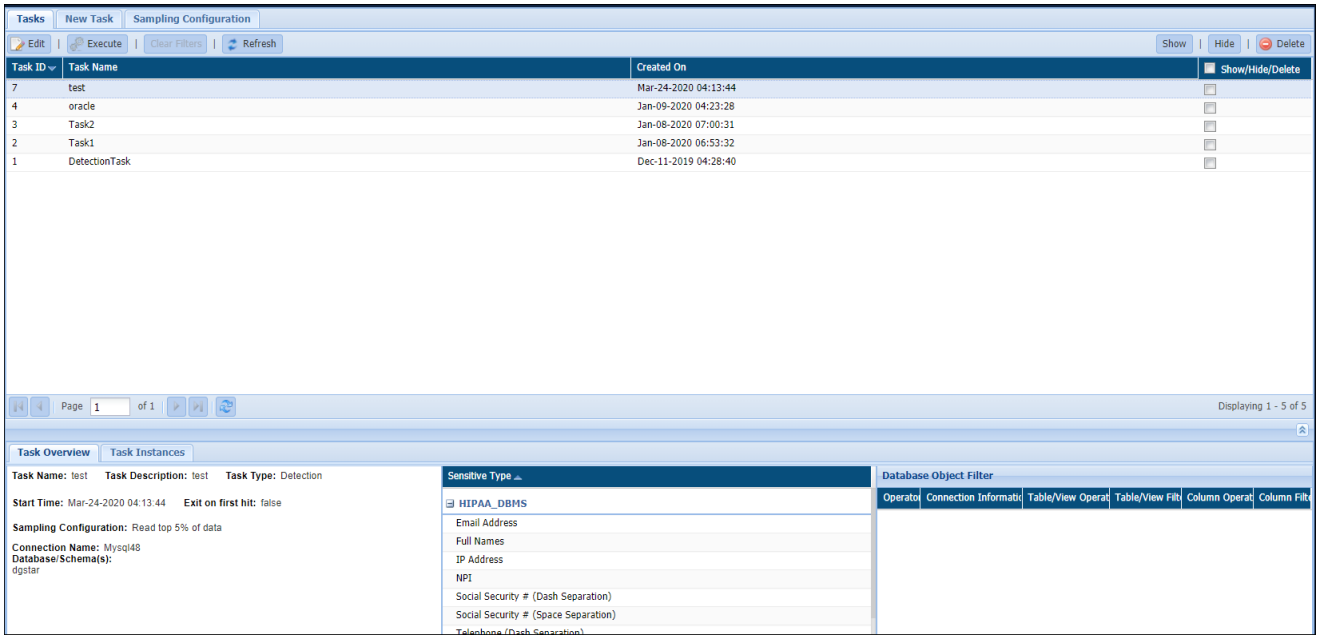
7.2.5.2 RDS/RedShift

DgSecure supports Detection and Masking in RDS/RedShift databases. Following sections outline the process of creating these tasks.

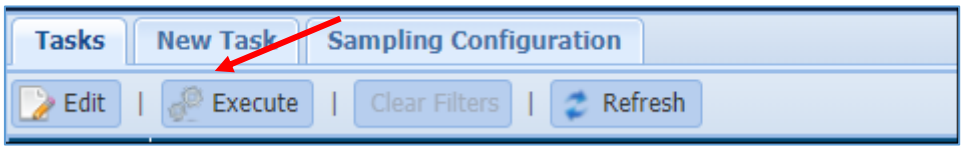
Detection

Perform the following steps to create a detection task.

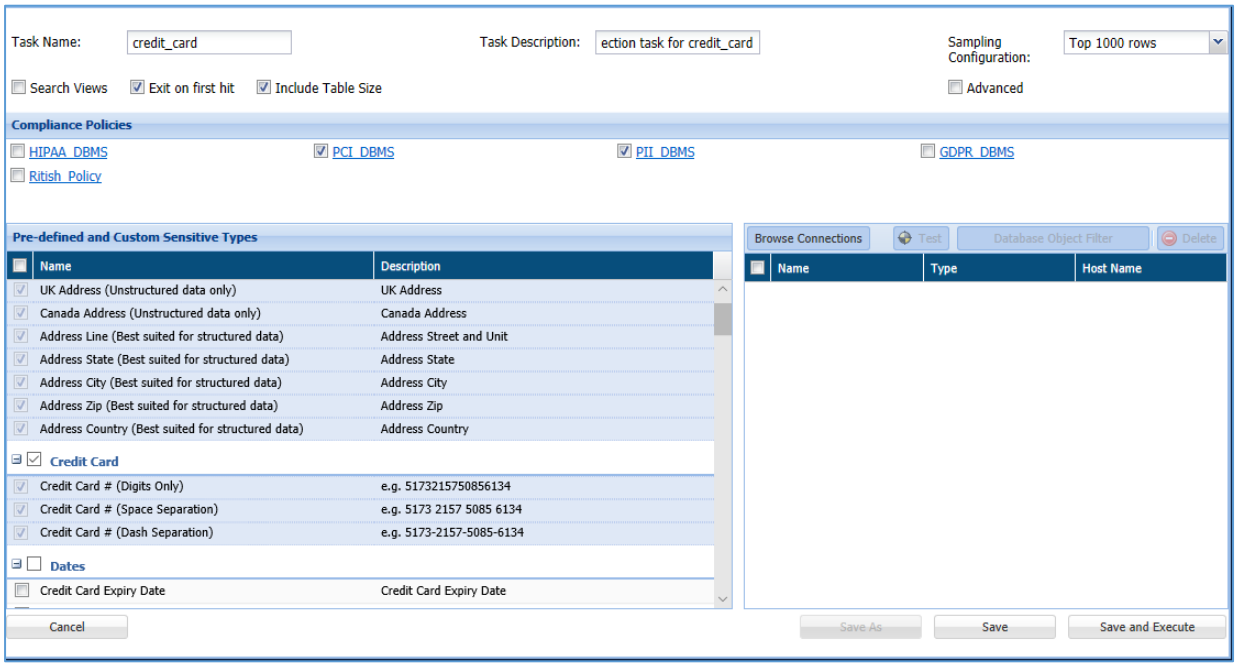
Go to **AWS > RDS/REDSHIFT > DETECTION > TASKS.**



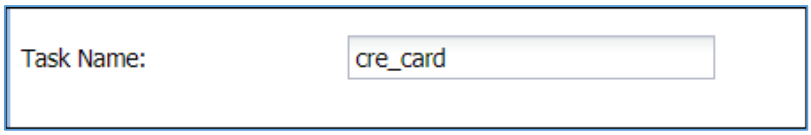
1. To create a new task, click on the **New Task** tab.



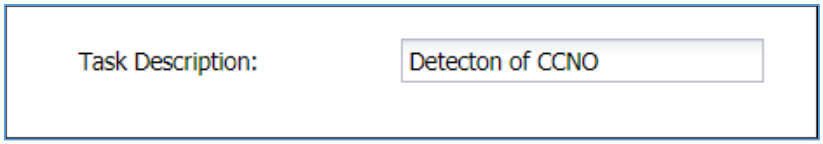
The following image shows the user interface for creating a task.



2. Enter a unique **Task Name**. This field supports numeric and character values.



3. Enter a **Task Description** of maximum 254 characters. This field supports numeric and character values.



4. Check the **Search Views** option to detect the Views tables within the database as well as the tables linked with them. This option is available for the **Detection, Task Type.**

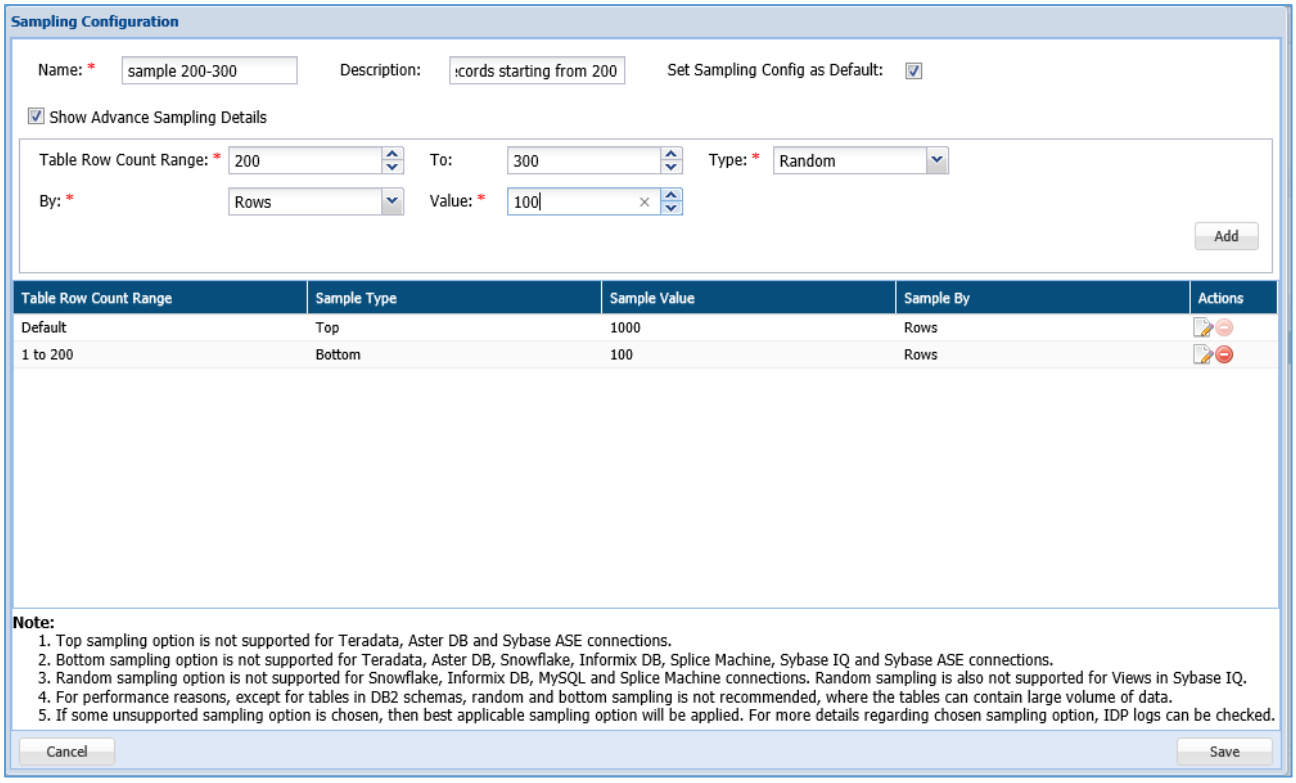
5. Check **Exit on First Hit** option to stop the scanning, when the first Sensitive Type is detected during the scan. This option is available for the **Detection, Task Type.**

67. DgSecure is equipped with data sampling to limit the area of scan which helps in reducing the time taken for detection. Default options to scan sample data from the database are:

i. Top 1000 Rows
ii. Read top 5% of data

The sampling configuration field is set to sample Top 1000 Rows by default. Check the **Advanced** checkbox to create a new sampling configuration.

You can also configure sampling through **AWS > RDS/REDSHIFT > DETECTION > TASKS > SAMPLING CONFIGURATION** tab.



a) Enter the name of the Sampling Configuration.

68. Enter the description for sampling.

69. Check the option **Set Sampling Config as Default** to set the Sampling Configuration as the default configuration for all your tasks.

70. Check the option **Show Advance Sampling Details** to set the advanced settings for sampling. Below are the options for advanced settings:

- **Table row count range**: Enter numeric value. This value states the starting range of the table from which the records will be sampled.
- **To**: Enter the numeric value. The value in this field states the ending range of the table till which the records will be sampled.
- **Type:** Select the sampling configuration type from the **Type** option. There are four options for sampling configuration:
    i. **Top:** If you select the option **Top**, the sample data for the scan will be selected from the entries at the top of the table, based on the specified range.

ii. **Bottom:** If you select the option **Bottom**, the sample data for the scan will be selected from the entries at the bottom of the table. This does not mean the entries will be selected bottom up, instead depending on the range the last entries in the table will be taken to create a sample data for detection.

iii. **Random:** Entries from the table that correspond to the specified range, will be selected at random to create a sample set of data for detection.

iv. **Complete:** If all the entries in the selected tables of the database have to be scanned for sensitive types, select this option.

- **By:** To Specify how to pick data for sampling from the table, there are two ways:

  i. **By Rows:** Select '**Rows'** from the drop-down, to sample data based on the number of rows.

  ii. **By Percent:** Select '**Percent**" from the drop-down, to sample a percentage of the data

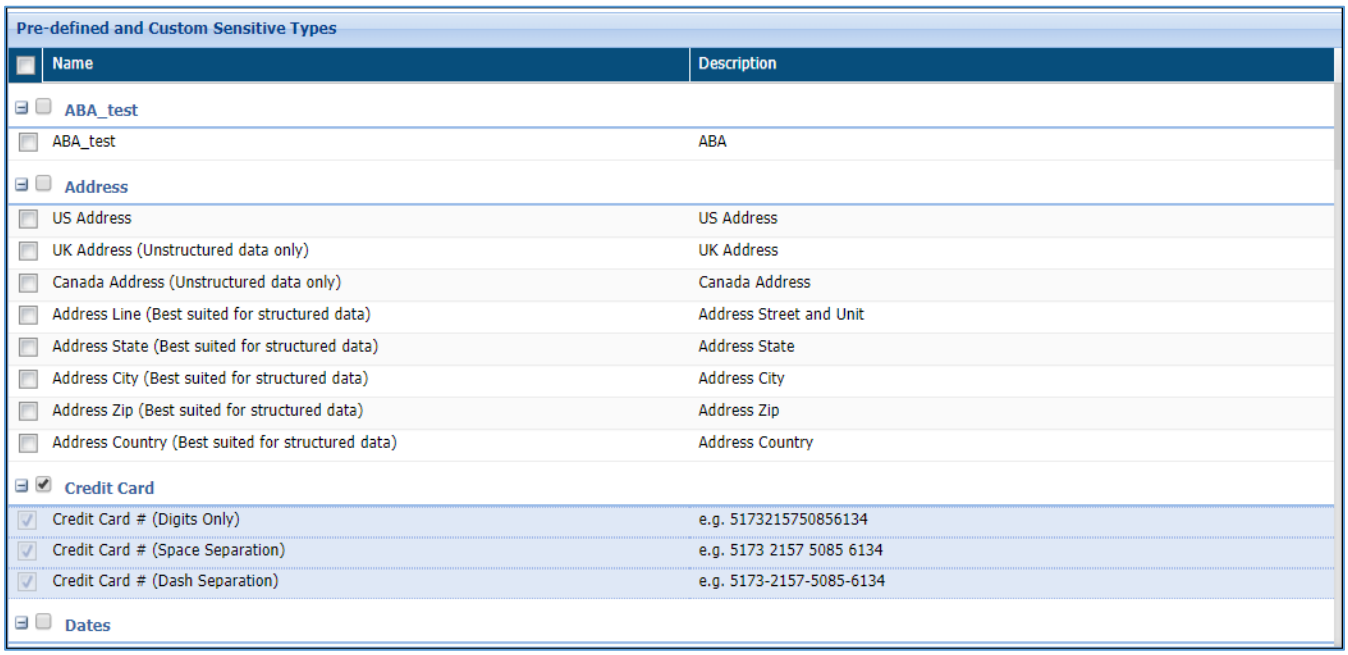
- **Value:** Enter the numeric value. It will specify the total number of records to be processed if sampling By-Rows is selected and denotes the percentage of sampling By-Percent is selected.

71. After setting up the required configuration, click **Add** to add the user-defined sampling configuration to the list.

72. Click the **Save** button to save the changes.
73. Select the required policy under the **Compliance Policies** section. The Compliance Policy panel displays all the Pre-Defined and Customized Policies. Users can select any number of policies while creating or editing a task. Sensitive types associated with the selected policy can be viewed in the panel below this panel **Pre-Defined and Custom Sensitive Types**.

Selecting a policy is not a mandatory step, users can also proceed to select individual sensitive types. For more information, refer to section Policy.

74. Select the required sensitive types for the scan from the **Pre-defined and Custom Sensitive Types** section. Refer to the following screenshot:

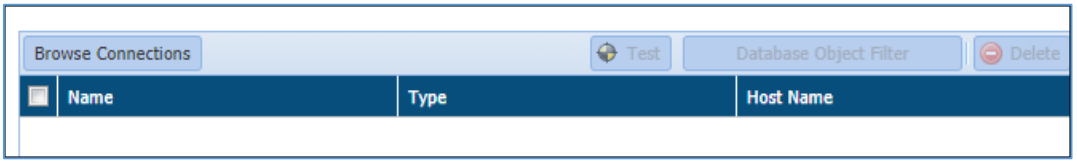


The **Pre-Defined and Custom Sensitive Types** panel lists down all the Sensitive Types. The Sensitive Type associated with the policy gets selected in the Pre-Defined and Custom Sensitive panel and cannot be removed from the scan, however any number of sensitive types can be added to the scan.

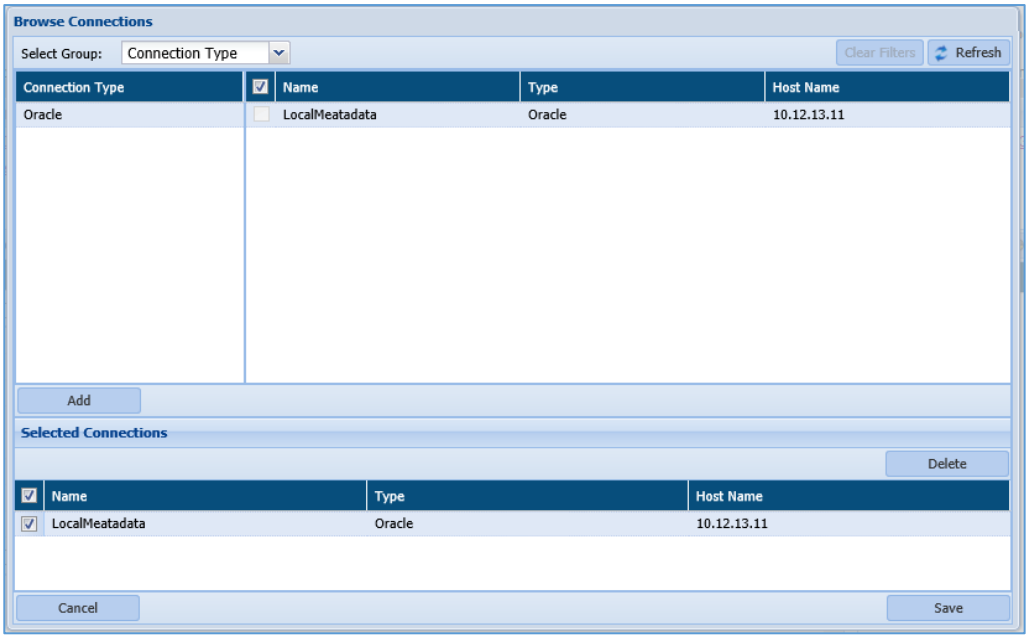
***NOTE:** If a policy is selected, user can still add more sensitive types to the scan but the sensitive types under the selected policies cannot be excluded from the scan.

75. The Database Connection panel lists down all the available RDBMS connections. Any number of connections can be selected for a task. This panel list down all the available connections. For details on how to create and manage connections refer Connection Manager. Perform the following steps to choose a connection:

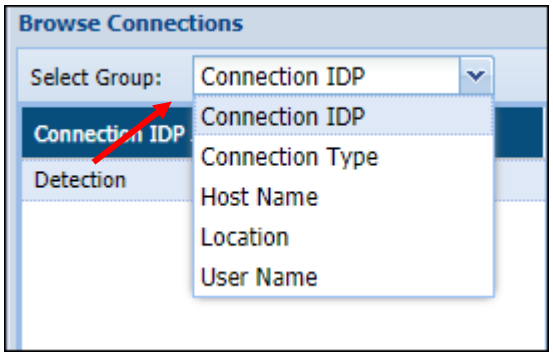
a) Click Browse connections.



76. The **Browse Connections** dialog box will be displayed. This screen categorizes connections based on user preferences.



iii. Click on the Select Group dropdown and select the required option from the sub groups displayed on the left panel to sort the available connections.



The **Select Group** drop-down has five options:

1. **Connection IDP**: Categorizes the available connections based on the types of IDPs available, i.e., Detection and Masking.

2. **Connection Type**: Categorizes the available connections based on the type of server connected to, i.e., Oracle, Teradata, SQL server etc.

3. **Host Name**: Categorizes the list of available connections based on Host Names.

4. **Location**: Categorizes the available connections based on the location of the target source system server, i.e., On-Premises and Cloud.

5. **User Name**: Categorizes the list of available connections based on the Usernames.

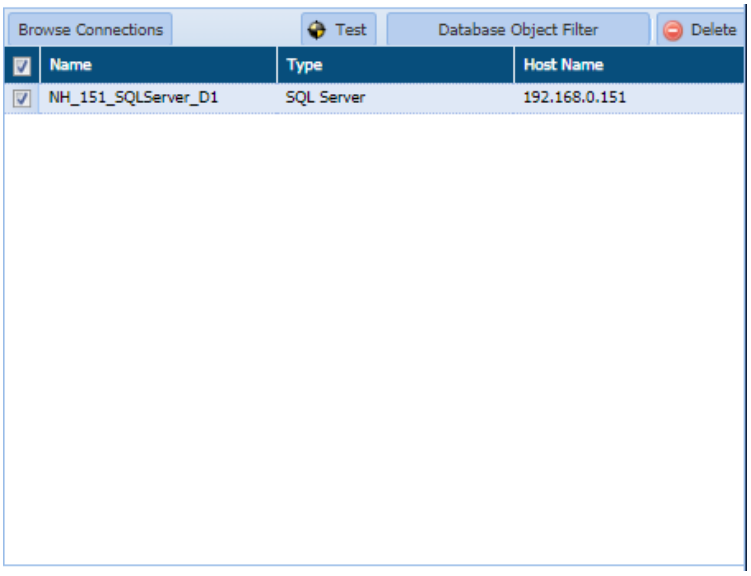
iv. Click **Add** to include the selected database connection in the **Selected Connection** panel.

v. Check the Selected connection. Click the **Save** button to include connections.

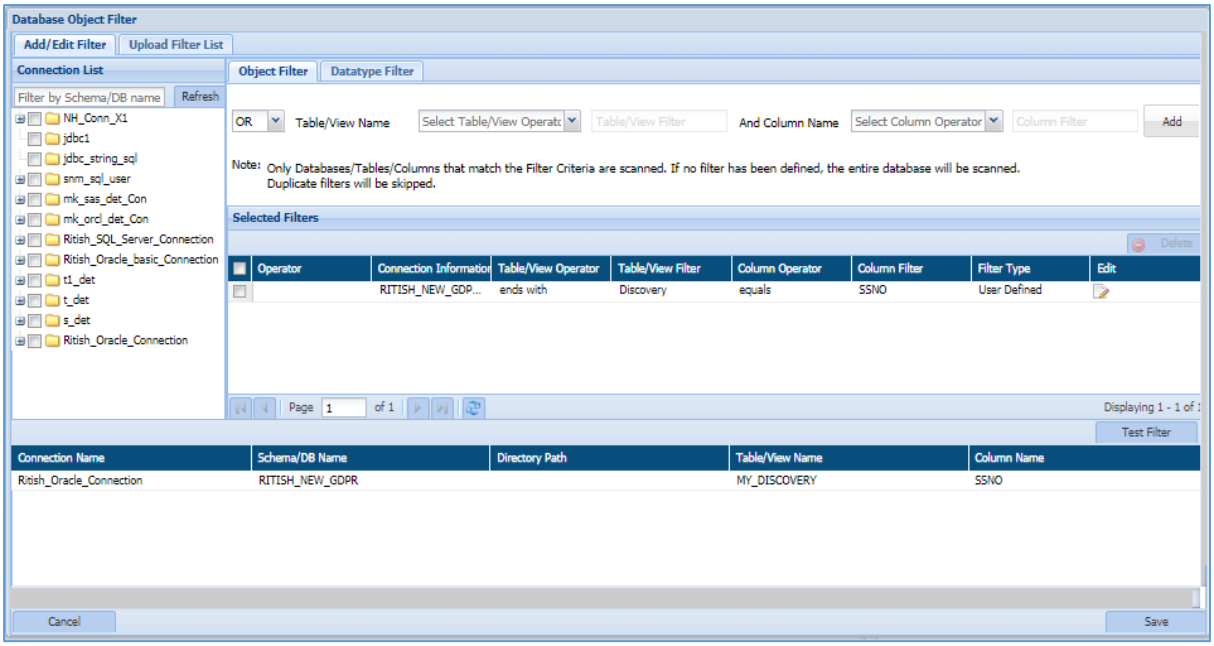
77. Click the **Test** button to test the listed RDBMS connection.

78. Click the **Database Object Filter** button to filter tables and/or columns. Once filters are defined, then only those databases/tables/columns that match the filter are scanned.

Check the checkbox next to the connection to enable the Database Object Filter.



You can **Add/Edit Filter** in two ways i.e. either by specifying in manually it manually or by uploading the filter list in the **Upload Filter List** tab.



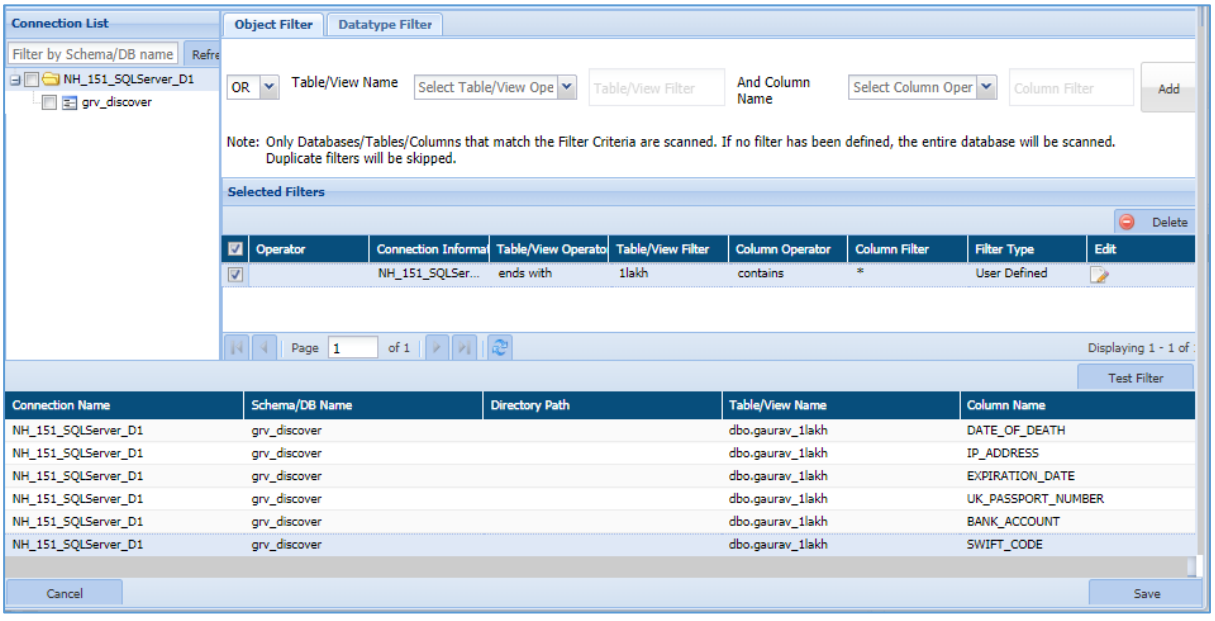
- **Add/Edit Filter**: This tab allows you to apply the filter for the selected connection. Once the filter has been applied then only those databases/tables/columns and datatypes that matched the criteria will be scanned.

  There are two types of filter which can be applied.

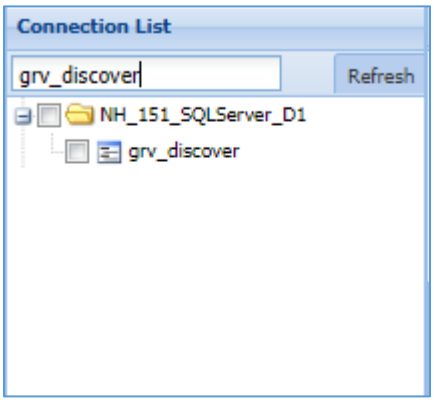
1. Object Filter
2. Datatype Filter

Object Filter

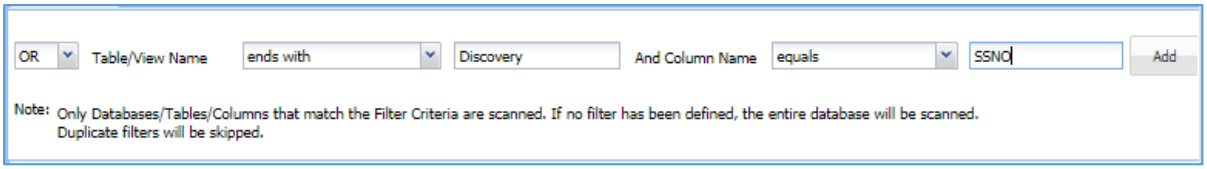
The Object Filter allows you to scan the database/tables/columns based on the defined filter. To apply an Object Filter, perform the following steps:



a) Select the connection from the Connection List panel or enter the DB/Schema name in the Filter by Schema/DB Name textbox.



b) Apply the **Object Filter** in the top panel by specifying the **Operator, Table/View** and **Column** name.



For example, in the above image the object filter specifies the table name should end with 'Discovery' and the selected table should contain SSNO column.

There are eight types of Operators based on which you can select the Table and Column name.

1. **Equals**: This operator will check whether the given table/column name exist in the selected database/table. It will return the matched records if the condition is fulfilled.

2. **Not Equal to**: This operator will return all the records except the given table/column name.

3. **Contains**: This operator will return only those tables/columns which matched the given criteria.

4. **Does not contain**: The functionality of this operator is similar to the **Not Equal to** operator, since it returns all the records except the given table/column name.

5. **Starts with**: This operator will return all the tables/column whose name starts with the given criteria.

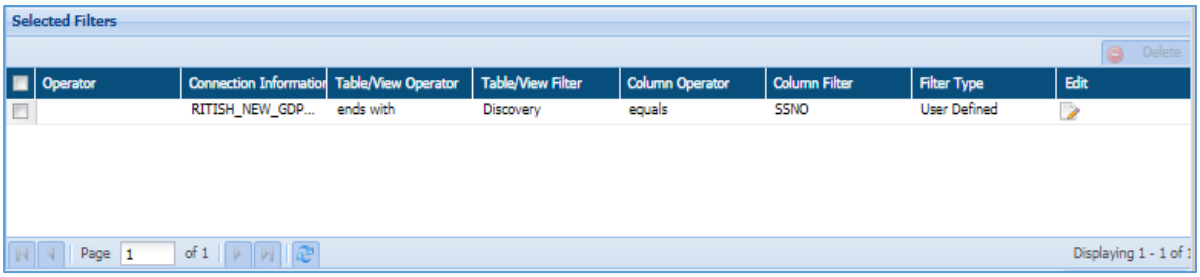
6. **Does not start with:** The functionality of this operator is similar to the **Does not contain** and **Not Equal to**, since it will return all the tables/column name except the one which has been entered.

7. **Ends with**: This operator will return all the tables/column name whose name ends with the given input.

8. **Does not ends with**: The functionality of this operator is similar to the Does not contain and Not Equal to, since it will return all the tables/column name except the one which has been entered.

c) Click the **Add** button to add the filter in the **Selected Filters** panel.

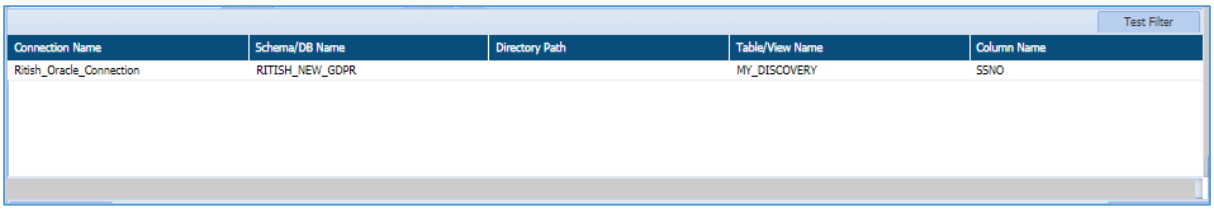
9. The **Selected Filters** panel will list down all the user defined filters. It displays information about the filters such as Connection Name, Table/View Operator, Table/View Filter, Column name, etc.



- To edit a filter, click the  button in the **Edit** column. This functionality allows you to re-select the Operator, Table/View and Column name.

- To delete a filter, check the checkbox for that filter and click the **Delete** button. This button will get enabled when you check the checkbox for any filter.

10. Click **Test** button to test the filter. It lists down the result matching the filter criteria.

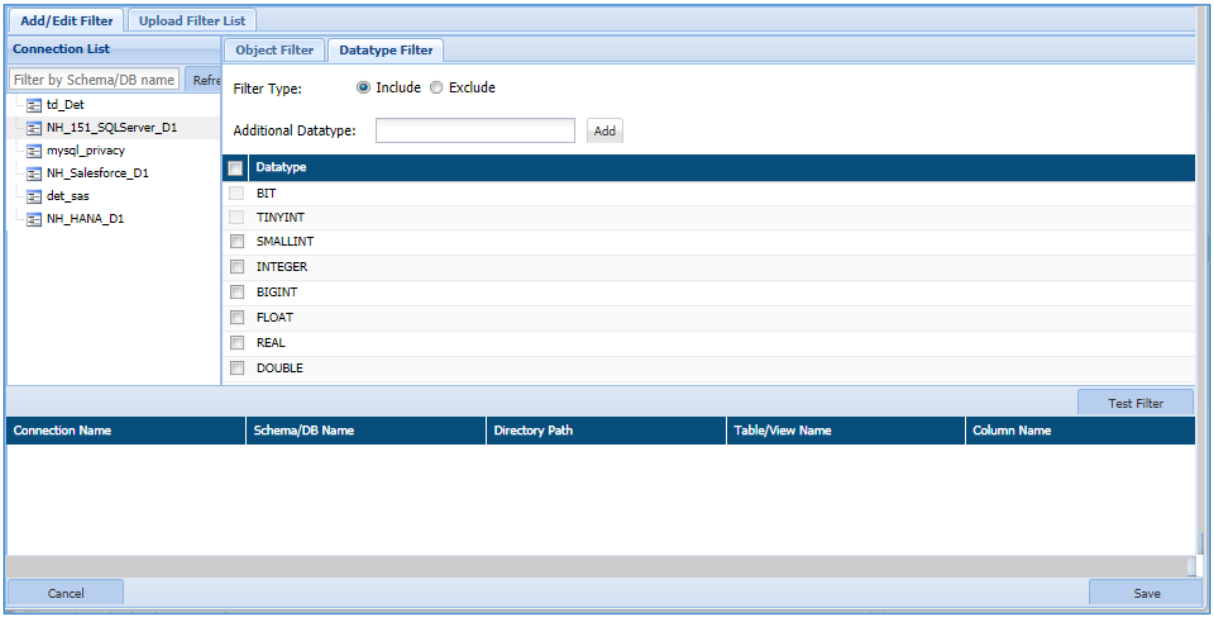


11. Click **Save** button to make the changes effective.

12. Click **Cancel** button, if you do not want to save the changes.

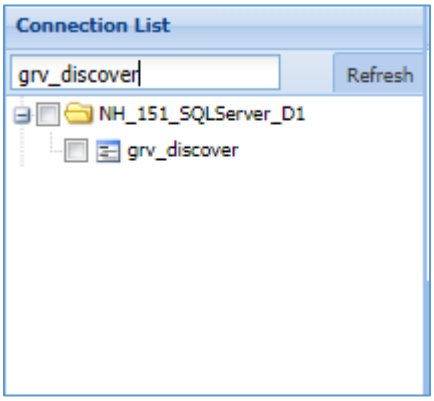
Datatype Filter

This tab allows you to specify the datatypes to be included or excluded while scanning based on the selection.



To apply Datatype Filter, perform the following steps:

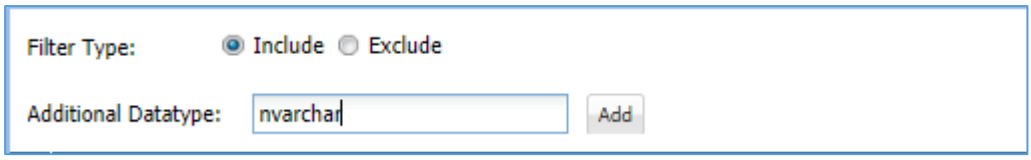
a) Select the connection from the **Connection List** panel or enter the Database/Schema name in the **Filter by Schema/DB Name** textbox.



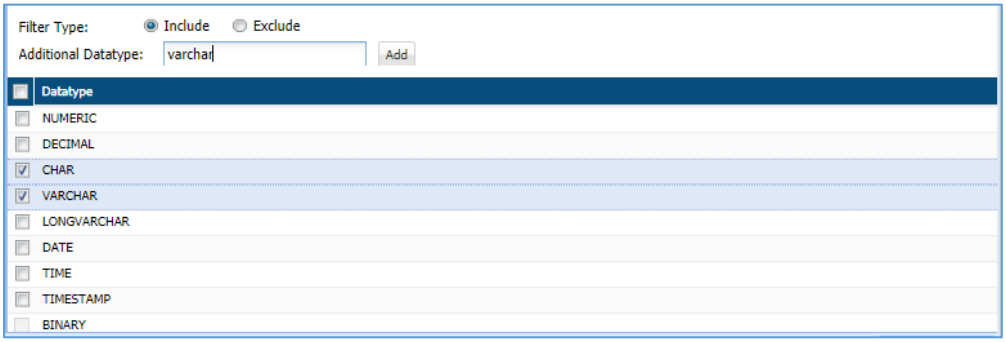
b) Select the **Filter Type** from the given option. By default, **Include** filter type is selected.

- **Include**: This option allows to select the datatype that need to be included while scanning.
- **Exclude**: This option allows to select the datatype that need to be excluded while scanning.
- **Additional Datatype**: This field allows you to add a datatype if it's not present in the DataType panel. Once that datatype is entered, click **Add**

button to specify it in the DataType panel.

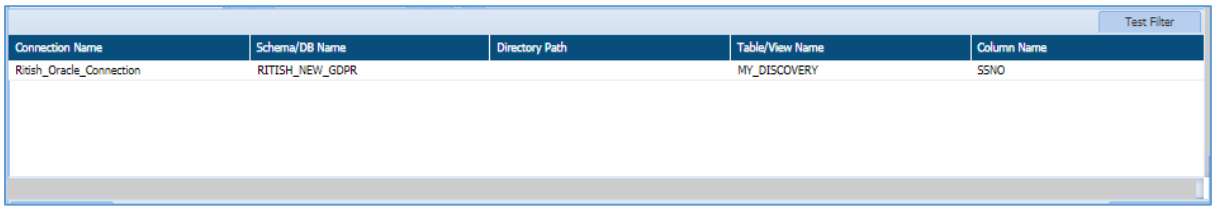


13. Check the checkbox for the datatype which you want to include or exclude based on the selection of **Filter Type** in above panel.



For example, in the above image the CHAR and VARCHAR datatypes are included in the scanning process since Filter Type specify the option as 'Include'. If 'Exclude' is selected as Filter Type then selected CHAR and VARCHAR datatype will be excluded from the scanning process.

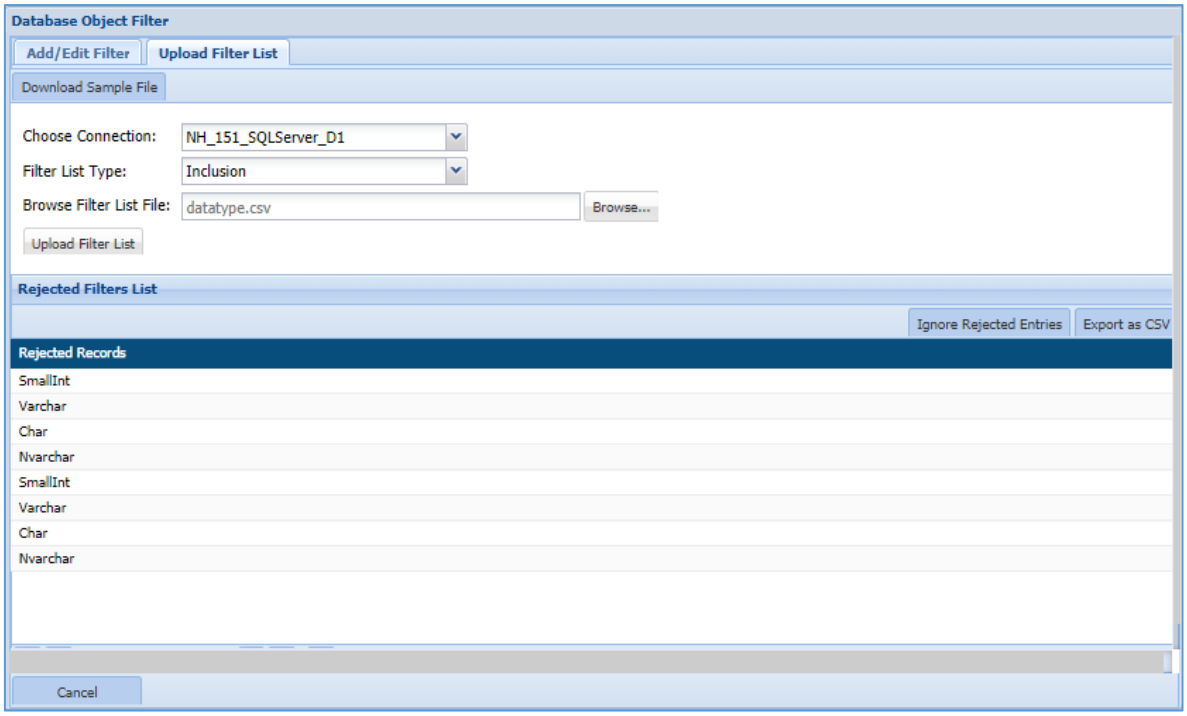
14. Click **Test** button to test the whether any column in the database contains the selected datatype. This functionality will list down all the columns that contain the selected datatype.



15. Click **Save** button to make the changes effective.

16. Click **Cancel** button if you do not want to save the changes.

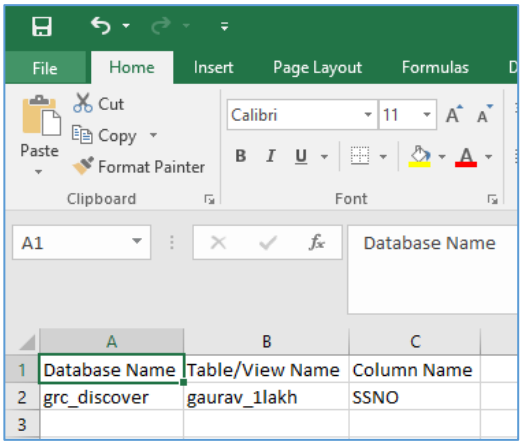
- **Upload Filter List**: This tab allows you to upload a file containing the list of all columns.



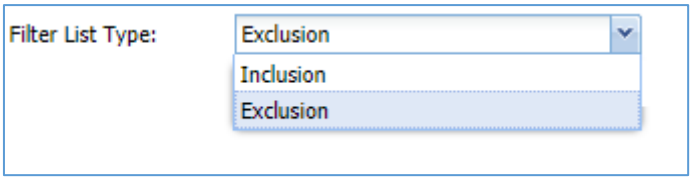
To upload the filter list, perform the following steps.

a) Select the connection from the **Choose Connection** drop-down.

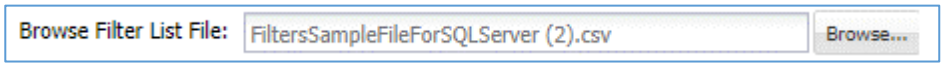
17. The **Download Sample File** button will be enabled once a connection has been chosen. Enter the Database, Table/View and Column Name in the sample file.



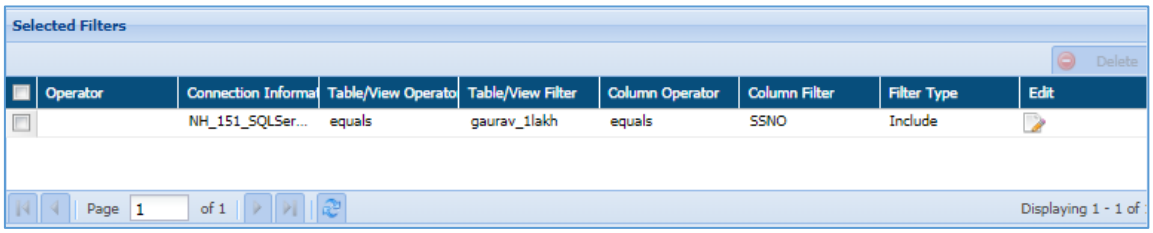
18. Select the **Filter List Type** from either ‘Inclusion’ or ‘Exclusion’. This functionality allows you to specify whether to include or exclude the Database, Table/View and Column name.



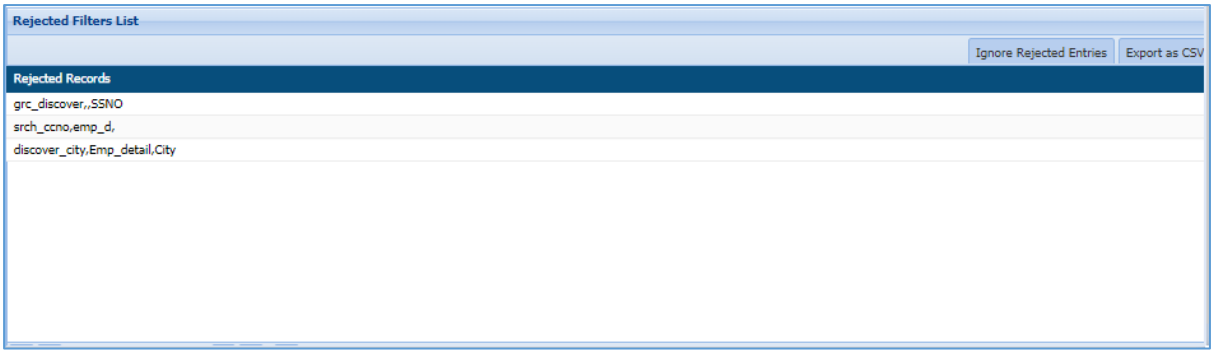
19. Click the **Browse** button to search and upload the saved sample file containing the list of Database, Table/View and Column name which will be either excluded or included.



20. Click **Upload Filter List** button to add the defined filters in the **Selected Filters** panel under **Add/Edit Filter** tab.



21. The **Rejected Filters List** will display all the entries from the uploaded list which are not in a proper format as specified in the sample file.



- To download the list of rejected entries, click **Export as CSV** button. A downloaded file will contain the list of rejected entries which were not formatted as per specified format.

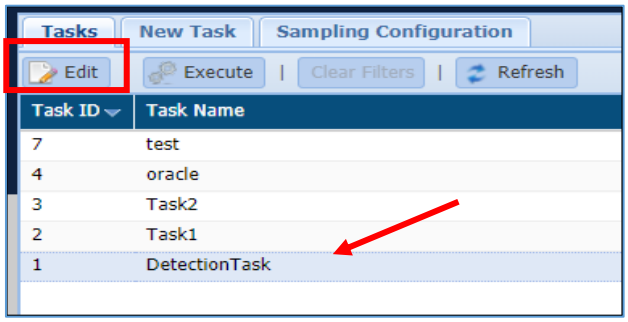
- To remove the rejected entries from the **Rejected Filters List** panel, click the **Ignore Rejected Entries.** This functionality will remove all the rejected entries from the panel.

22. Click **Save** button to make the changes effective.

23. Click **Cancel** button if you do not want to save the changes.

24. Click **Save**, if you want to execute the task later else click **Save and Execute**. The results of the task and its status can be viewed under **RDBMS>DETECTION>RESULTS** (Refer to Section Results).

To edit an existing task, select the required task from the list of tasks on the Tasks screen and click edit. A task can be edited using the same steps for task creation.



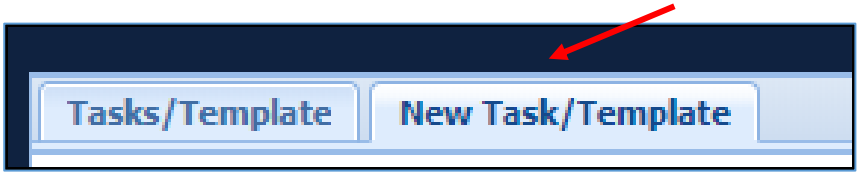
***Note**: Task defining features such as Incremental, Exit on First Hit, Search View and the Task Type cannot be edited. Some of the originally selected options can be modified but new options cannot be added.

Masking Task

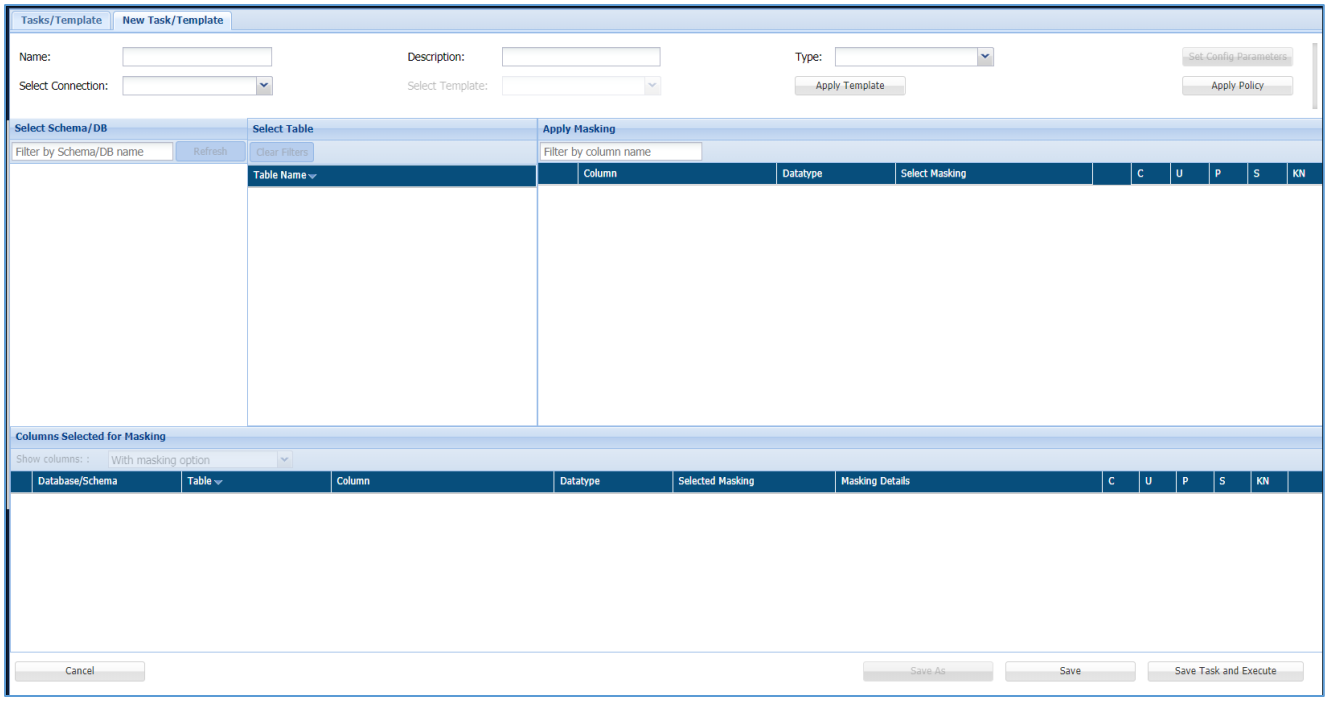
Perform the following steps to create a masking task:

Access the NEW TASKS/TEMPLATE screen, click **AWS > RDS/REDSHIFT > MASKING > TASKS/TEMPLATES > NEW Task/Template** tab.

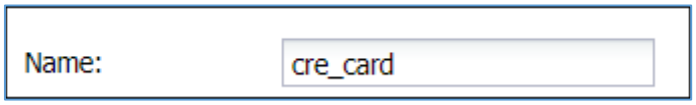
1. To create a new task or template for masking tasks, click on the **New Task/Template** tab.



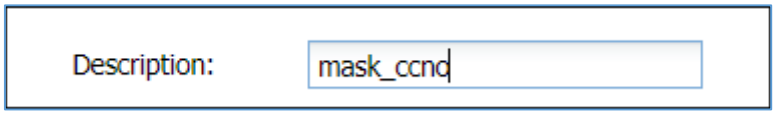
25. The following image shows the user interface for creating a task.



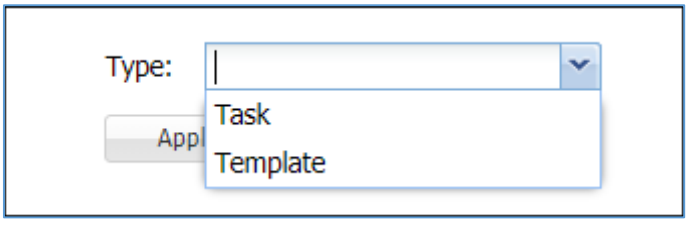
26. Enter a unique **Task Name**. This field supports numeric and character values.



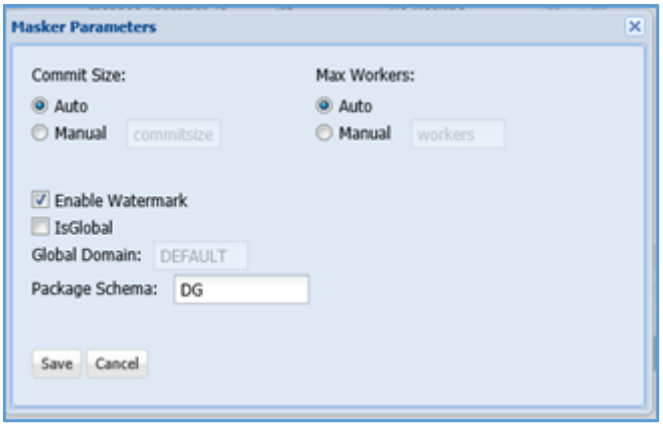
27. Enter a **Task Description** of maximum 254 characters. This field supports numeric and character values.



28. Click on the **Type** dropdown. Select **Task** to create a masking task or **Template** to create a template for masking tasks.



29. Click the **Set Config Parameters** button. It will display the environment settings for the masking operations such as **Commit Size**, **Max Workers**, **Package Schema, IsGlobal** and **Enable Watermark**.



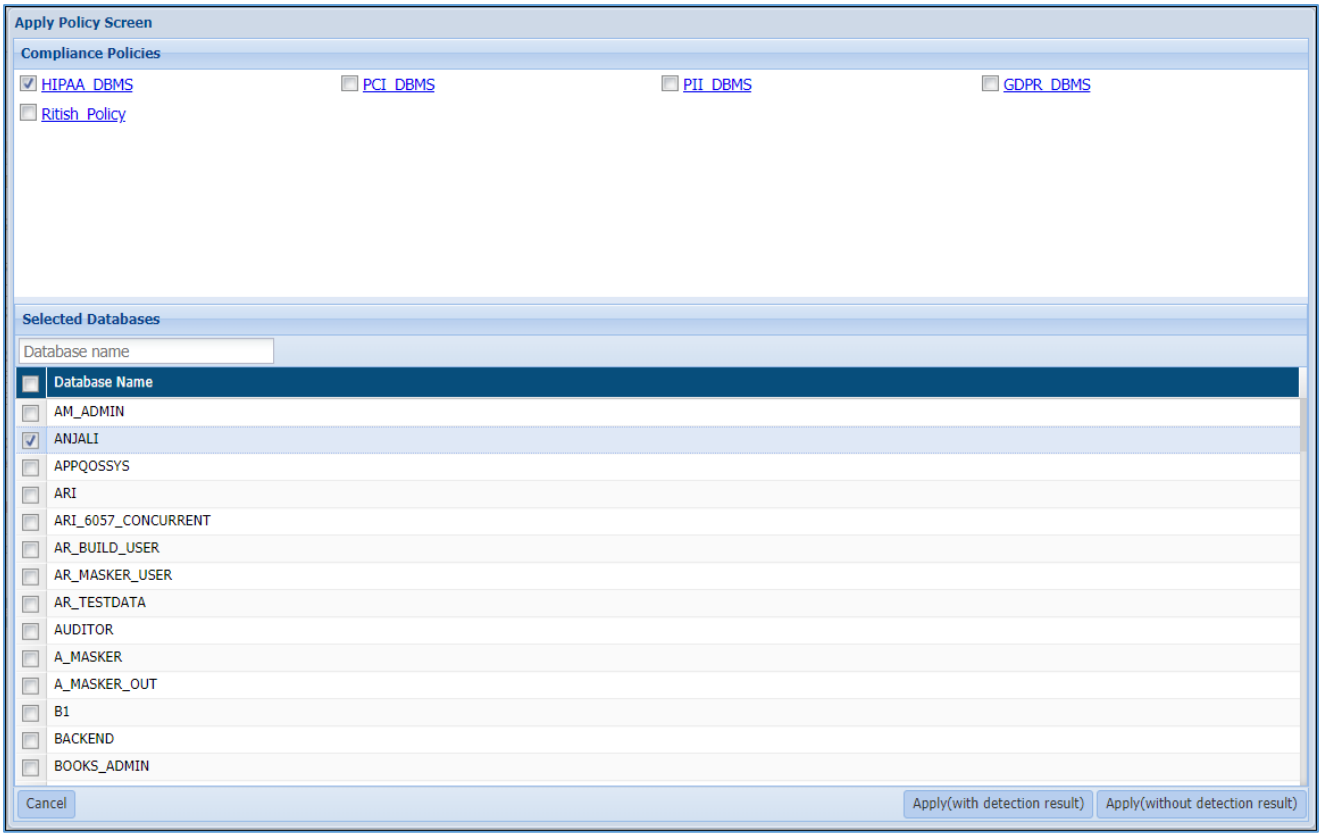
30. Click **Select Connection** to view the list of the available database connections for masking. For details on how to create a connection for masking refer to Connection Manager

31. The **Select Template** option provides a list of user created templates for masking**.** This option will be greyed out if no templates have been created. To create a new template select the Type as Template in step 6 and follow the next steps for creating a task and save the template. Once created, the new template will appear in the select template dropdown on the new task screen.

***Note:** Templates are connections specific and only one template can be selected at a time.

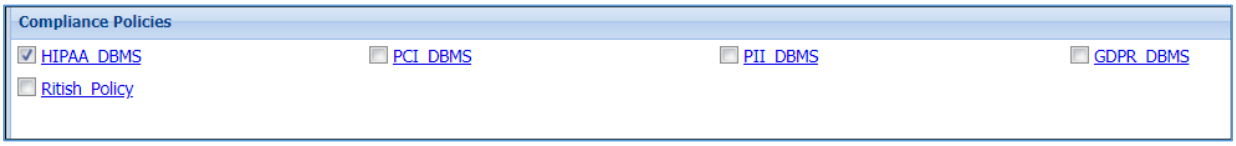
32. Click the **Apply Template** button to apply the selected template in **Select Template** drop-down.

33. Click the **Apply Policy** button to choose the available Compliance Policies.

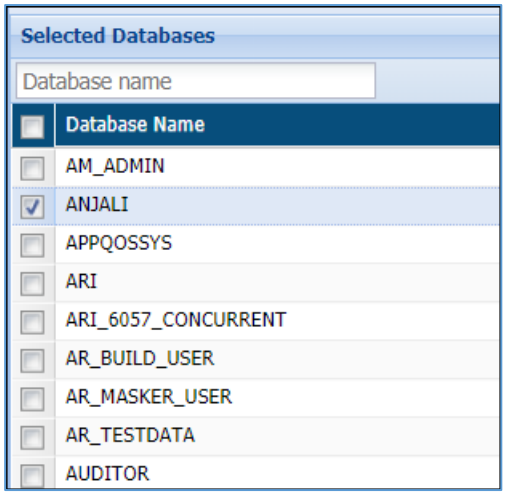


Perform the following steps to apply a policy to the task or template:

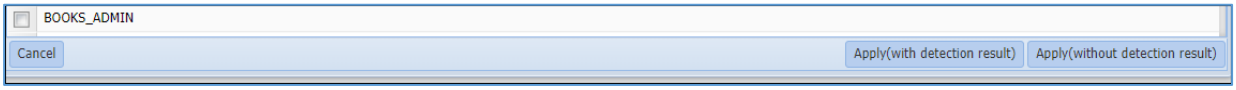
a) Select the required policy/policies under the **Compliance Policies** panel.



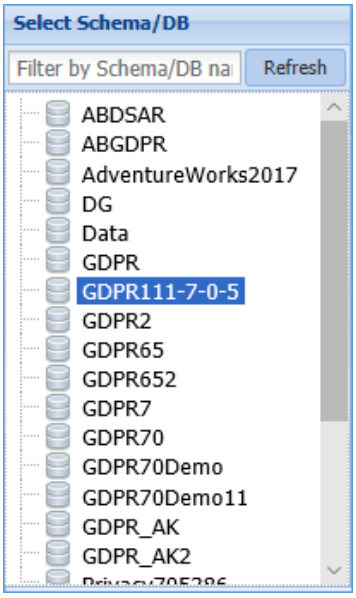
34. Select the databases you need to mask by checking the checkbox next to the Database Name.



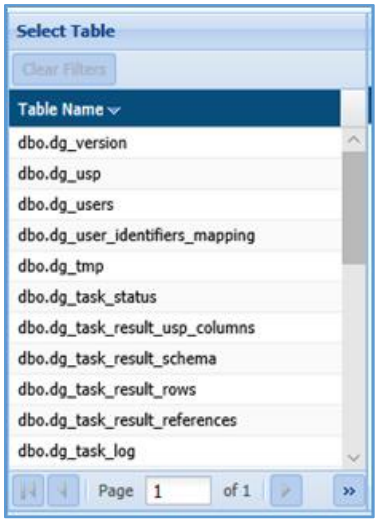
35. Click the **Apply** (with detection result) button to apply the selected policy with detection results or click the Apply (without detection result) button to apply the selected policy without results. Click Cancel to redo your selection.



36. The Select Schema/DB pane will display the list of databases or schemas for a selected connection in **Select Connection** drop-down.

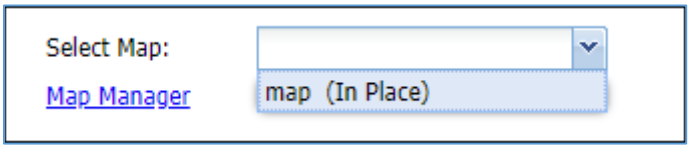


37. Select the table from the Select Table pane. This pane lists all the tables for the selected database or schema.

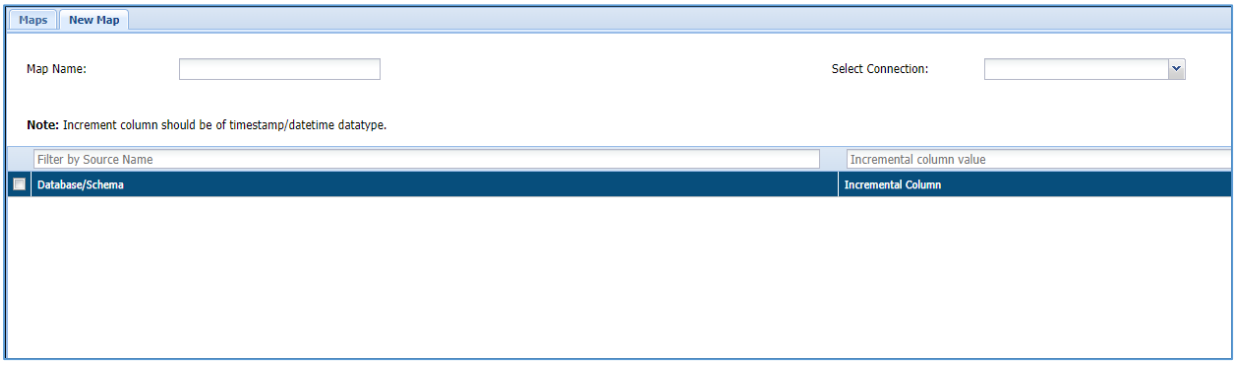


38. Check the Incremental checkbox to apply incremental masking to the database. This feature is useful to mask new values added in a database after masking has been executed on it. Only the new entries will be masked, thus, the time taken for masking would be reduced. Perform the following steps to make your masking task incremental:

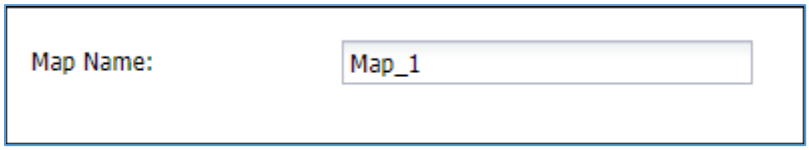
    i. Check incremental checkbox.
    ii. The Select map Dropdown will appear. Select the required map. Maps define incremental columns within a database which are considered for indexing the data in order to mask the new rows added to the database.



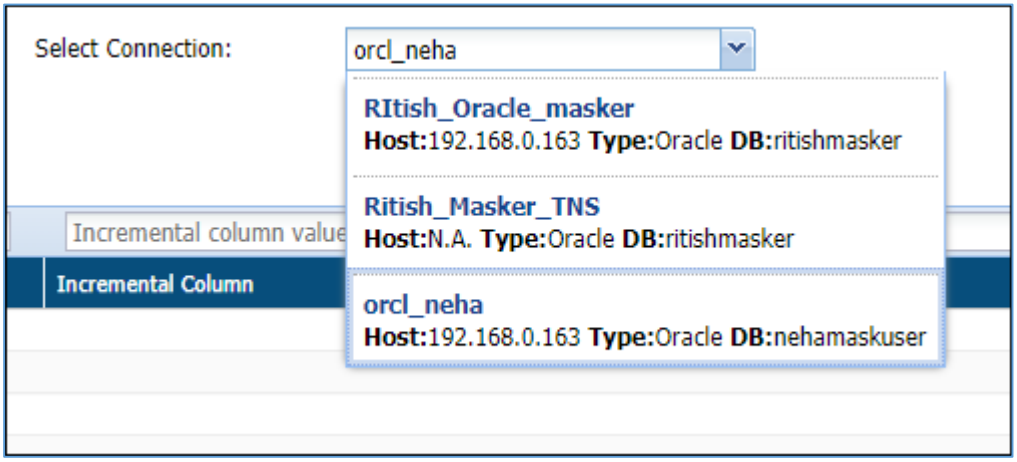
    iii. To add a map click on the Map Manager link
    iv. The Map Manager Screen can also be accessed from the menu bar. The following image displays the Map Manager interface:



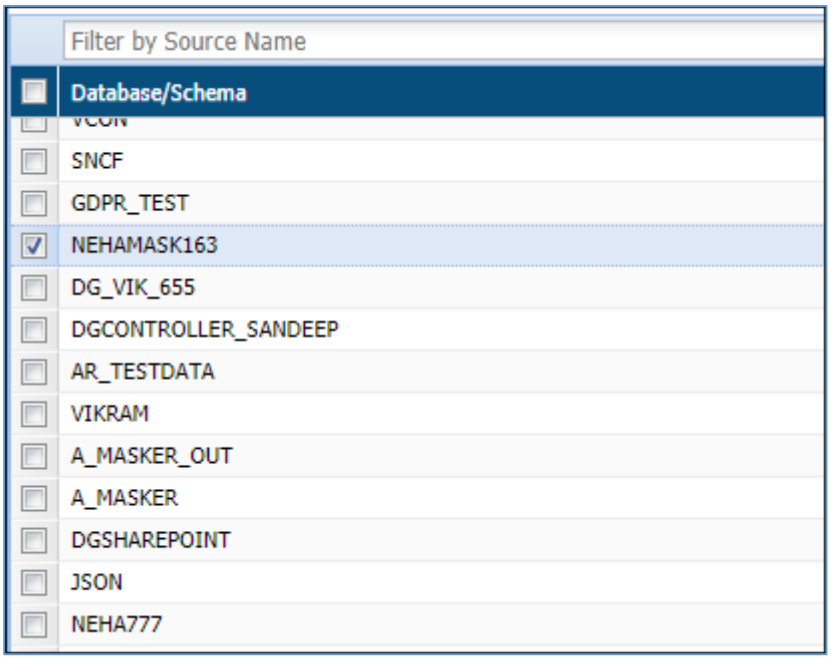
    v. Enter a Map Name.



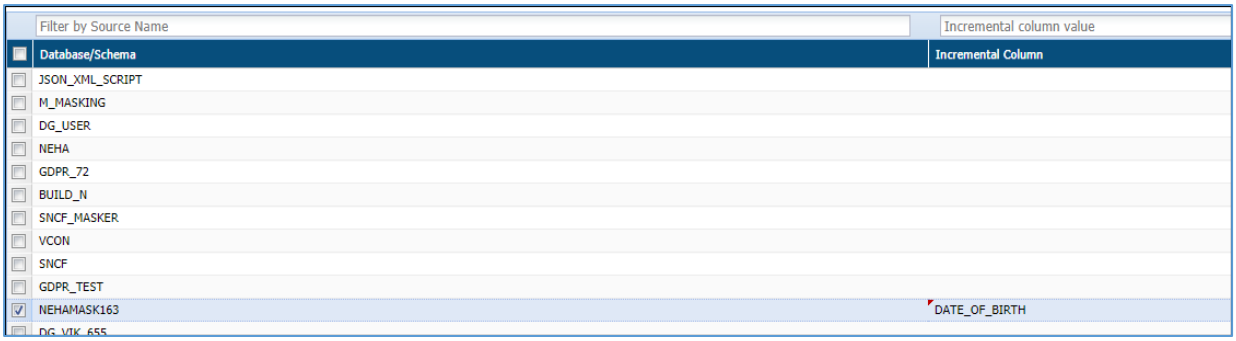
vi. Select a connection that contains the database on which incremental masking has to be applied.



vii. Select the required Database/Schema.



viii. Enter the name of the incremental Column to the corresponding database and ensure that it is a timestamp or date-time datatype.

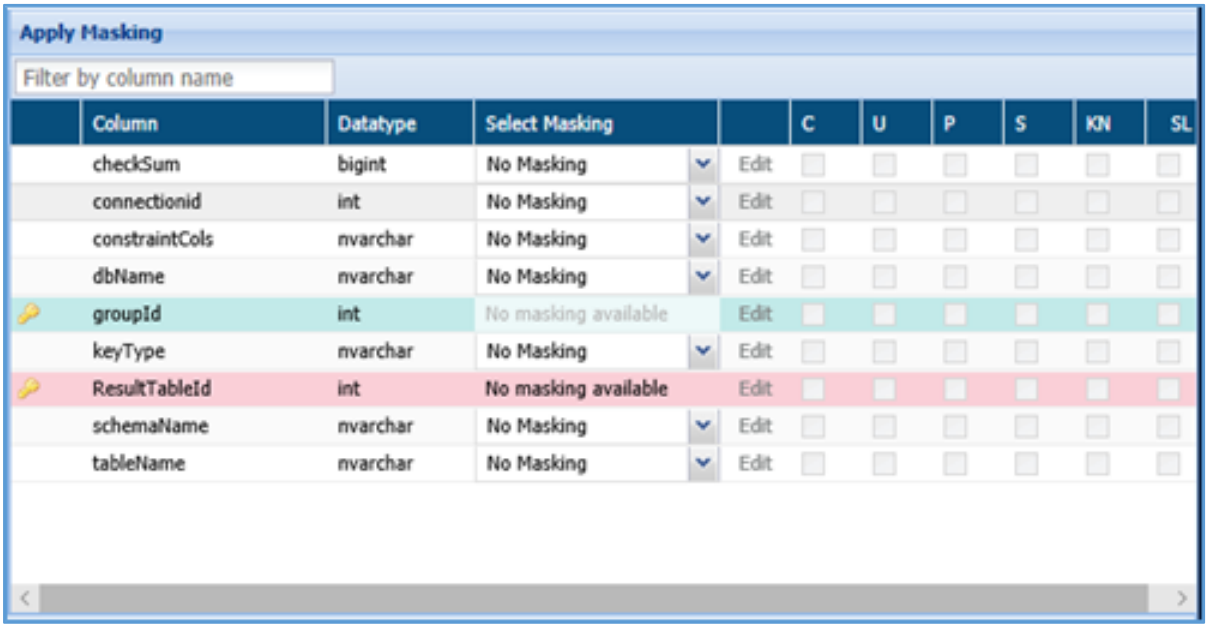


ix. Save the map. It will be available in the Select Map dropdown on the new task/template screen.

NOTE: To apply incremental masking the following criteria must be met:
1. Create a map to execute incremental masking and apply it to the task.
2. Relational tables cannot be included.
3. Column holding date, time stamp or a numeric incremental value should be added as incremental column
4.The incremental column cannot be masked.

39. The Apply Masking pane display the list of all the columns for the selected table in Select Table pane. For detailed information on all the available masking options in DgSecure refer to Masking Options. Perform the following steps to apply masking option to the columns in the database:

a) Select the masking option from the drop-down against the column entry. You can apply the masking to the selected column by checking on the checkbox corresponding to the column name.



40. To further enhance the results of masking following options can be combines with the masking options:

i. **Consistent**: Masks the data of the selected table with consistent values. E.g. If the name John is masked as FVGB, throughout the table it will be masked the same way.

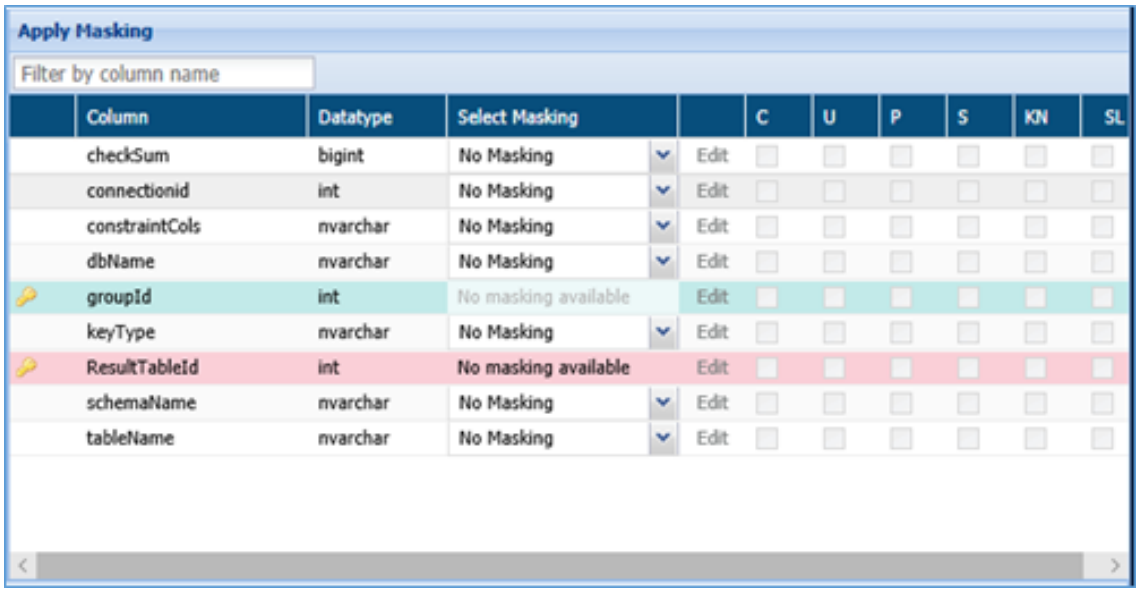
ii. **Unique**: Masks each entry with a unique value.

iii. **Persistent**: Similar to Consistent, however in this case the same values will be masked consistently across all the tables of the database.

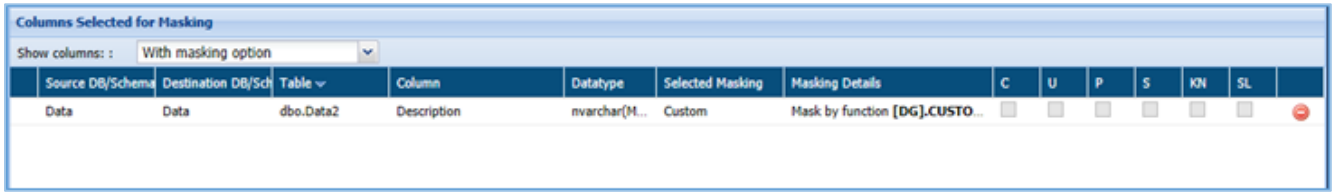
iv. **Sync**: This options allows tracking of masked entries in different tables if any of the same entries are found in other tables they will also be masked.

v. **Keep Null**: The cells containing null values are kept null even after masking.

vi. **Stateless**: Persistently masks the data without creating any metadata. No extra space is required to create masking tables.

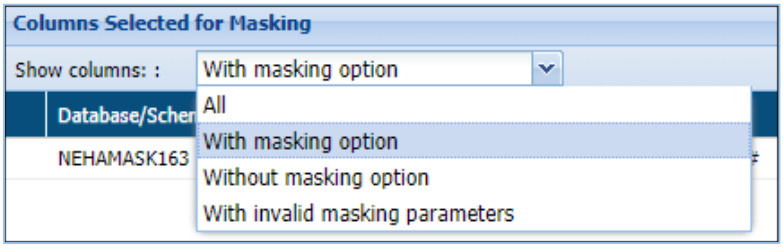


41. View the selection under the **Columns Selected for Masking** panel.



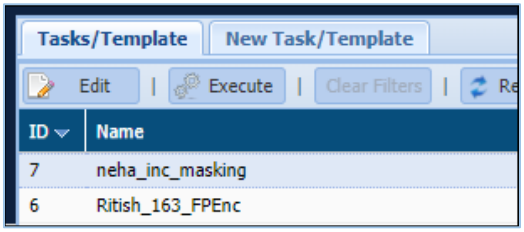
42. Select the option from the Show Column drop-down. There are four options:

a) All
b) With masking option
c) Without masking option
d) With invalid masking parameters



43. Click save to save the task or template or save and execute to execute the masking task.

44. To edit a task, select the task from the Tasks/Template tab and click edit. A task can be edited using the same steps for creating a new task.



7.2.6 Azure

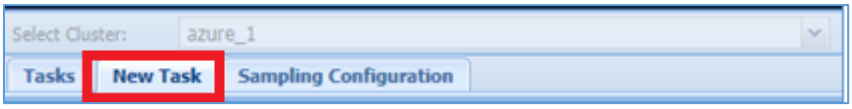
7.2.6.1 Azure Blob/Data Lake

Detection, Metadata discovery, Masking, Encryption and Decryption operations can be performed on Azure Blob/Data Lake systems. To create a task to for these operations, perform the following steps.

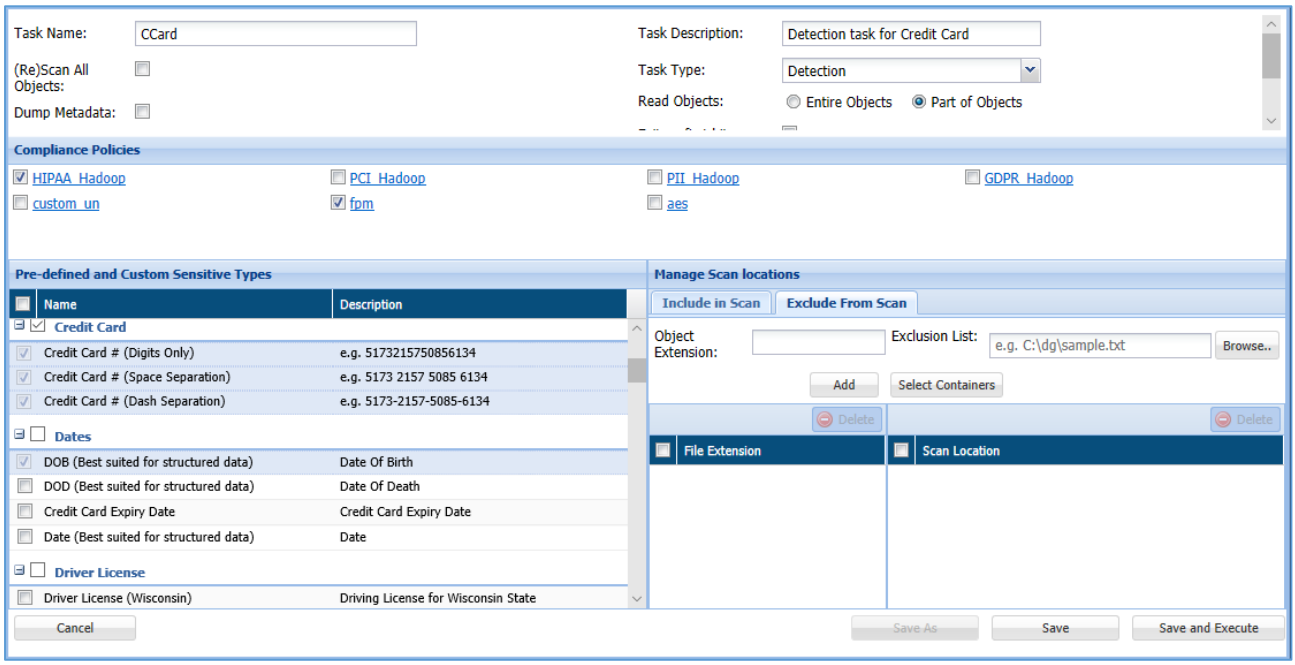
7.2.6.1.1 Create an Azure Blob/Data Lake task

1. Go to **AZURE > AZURE BLOB/DATA LAKE > TASKS**. Select the cluster.

2. To create a new task, click on the **New Task** tab.

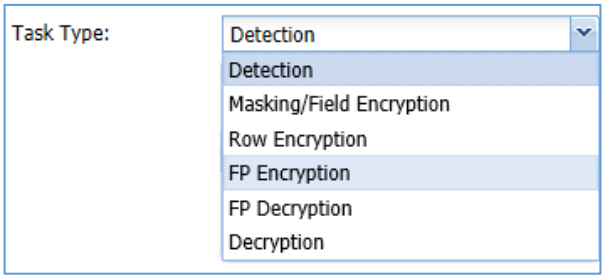


The following image shows the user interface for creating a task.



45. Enter a meaningful **Task Name** and **Task Description**. The task name must be unique to the task. It can be up to 256 characters and consist of letters, numbers, certain symbols (! @ # $ _), without any spaces. The definition can be as long as the task name and contain any combination of numbers, letters, and symbols.

46. Choose a **Task Type** from given options.



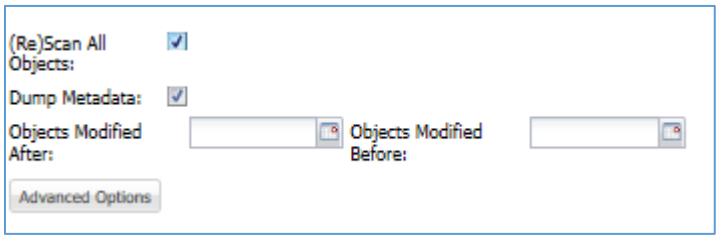
The list of available task types and the options specific to that task type are explained below:

Detection

Detection tasks scan the target source system for sensitive data elements. The following options are specific to the detection tasks:

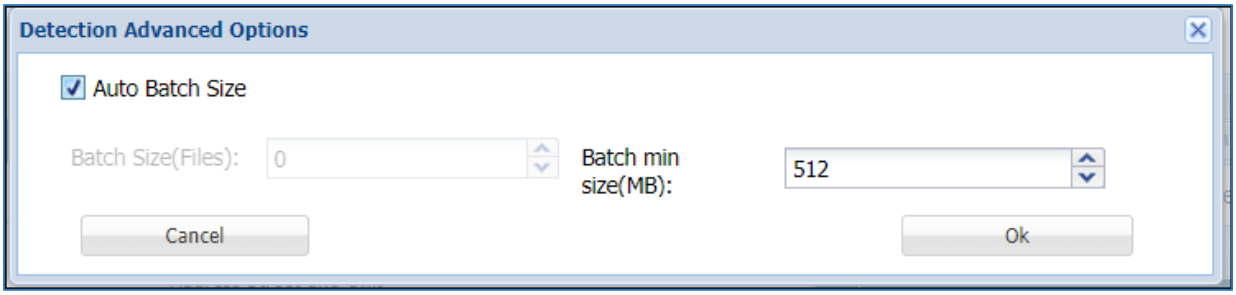
a) **Scan All Files**: Check this checkbox to scan all the available objects for a given connection between the dates specified in **Objects Modified After** and **Objects Modified Before** drop down.

The **Objects Modified After** and **Objects Modified Before** drop down will be visible when **(Re)Scan All Objects** checkbox is checked.



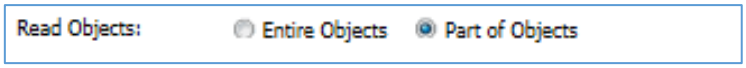
47. **Dump Metadata**: Check **Dump Metadata** option to remove the metadata files after scanning.

48. **Advanced Options**: Define a batch size for scanning the source system in batches. Click on the **Advanced Options** button to define the batch size of the data.



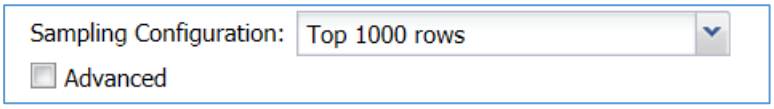
Define the number of files per batch in the **Batch Size(Files)** option or check the **Auto Batch Size** option to enter the minimum batch size in **Batch min size(MB)** option.

49. Read Objects: Choose to read the Entire Objects or a Part of Objects at random.



50. **Exit on first hit**: Check this checkbox to report the table or database as sensitive, at the first event of detection of a sensitive type.

51. Sampling Configuration

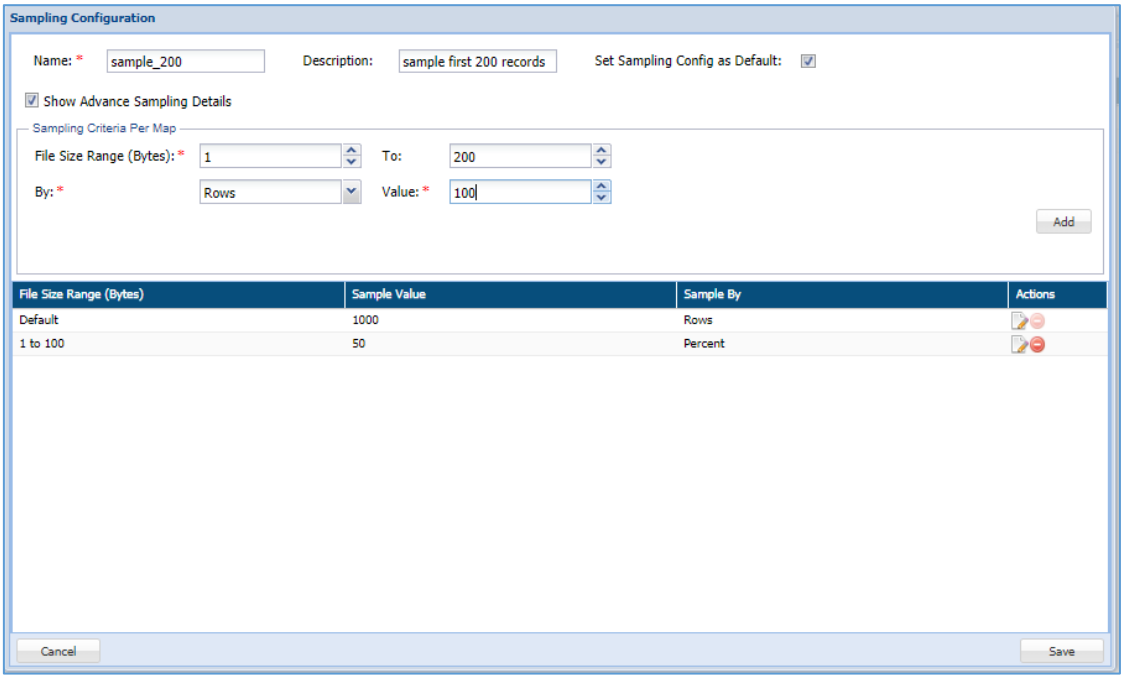


DgSecure is equipped with data sampling to limit the area of scan which helps in reducing the time taken for detection. Default options to scan sample data from the database are:

- Top 1000 Rows
- Read top 5% of data

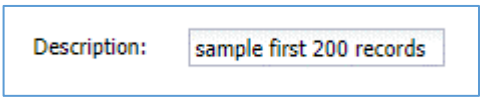
The sampling configuration field is set to sample Top 1000 Rows by default. To create a new sampling configuration perform the following steps:

i. Go to **AZURE > AZURE BLOB/DATA LAKE > TASKS > SAMPLING CONFIGURATION** tab or check the Advanced checkbox.

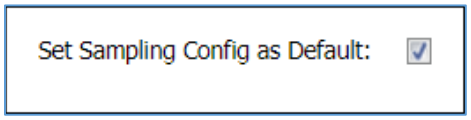


ii. Enter the name of the Sampling Configuration.

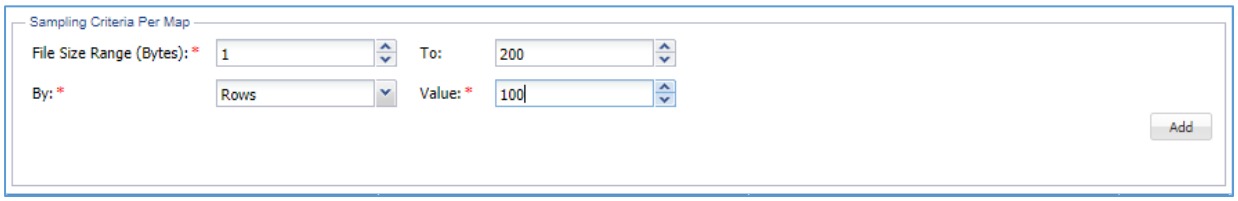
iii. Enter the description for the sample.



iv. Check the option **Set Sampling Config as Default** to set the Sampling Configuration as the default configuration for all your tasks.



v. Check the option **Show Advance Sampling Details** to set the advanced settings for sampling.



Below are the options for advanced settings:

- **File Size Range (Bytes):** Enter the starting range for the sample in bytes.
- **To:** Enter the ending range for the sample. `
- **By:** To Specify how to pick data for sampling from the source system, there are two ways:

    i. **By Rows:** Select **Rows** from the drop-down, to sample data based on the number of rows.

    ii. **By Percent:** Select **Percent** from the drop-down, to sample a percentage of the data

- **Value:** Enter the numeric value. It will specify the total number of records to be processed if sampling **By-Rows** is selected and denotes the percentage of sampling **By-Percent** is selected.

vi. After setting up the required details for configuration, click **Add** to add the user-defined sampling configuration to the list.

vii. Click the **Save** button to save the changes.

To proceed for remaining steps, go to step Compliance Policy.

Masking/Field Encryption

Masking or Field Encryption hides sensitive data in the target source system by replacing it with a system generated value. DgSecure provides various masking options to ensure the usability of data after it has been protected. Masking/Field Encryption can be applied on structured as well as unstructured data. For more details refer to Masking Options . Following options are available to customize a Masking/Field Encryption task:

a) **(RE)Scan All Files**: Scan all available files for a given connection.

b) **Structured**: Check the structured option if the data that needs to be masked is structured. For details about how to create a structure refer to the section Structure Management

To proceed for remaining steps, go to step Compliance Policy.

Row Encryption

Row encryption is ideal for unstructured data. Following additional option is available:

a) **Scan All Files**: Scan all available files for a given connection.

To proceed for remaining steps, go to step Compliance Policy.

FP Encryption

FP or Format Preserving encryption can only be executed on structured files. Following additional options are available:

a) **Scan All Files**: Scan all available files for a given connection.

b) **Structured**: This option is checked by default. For details about how to create a structure refer to the section Structure Management.

To proceed for remaining steps, go to step Compliance Policy.

FP Decryption

FP or Format Preserving Decryption is used to decrypt the data encrypted by an FP Encryption task. Following additional options are available

a) **Scan All Files**: Scan all available files for a given connection.

52. **Structured**: This option is checked by default. For details about how to create a structure refer to the section Structure Management.

To proceed for remaining steps, go to step Compliance Policy.

Decryption

Decryption tasks are used to decrypt data on which Encryption has been performed.

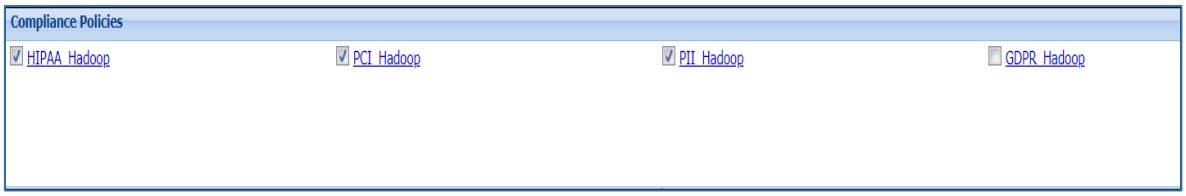
a) **Scan All Files**: Scan all available files for a given connection.

53. **Structured**: Check the structured if the data that needs to be masked is structured. For details about how to create a structure refer to the section Structure Management

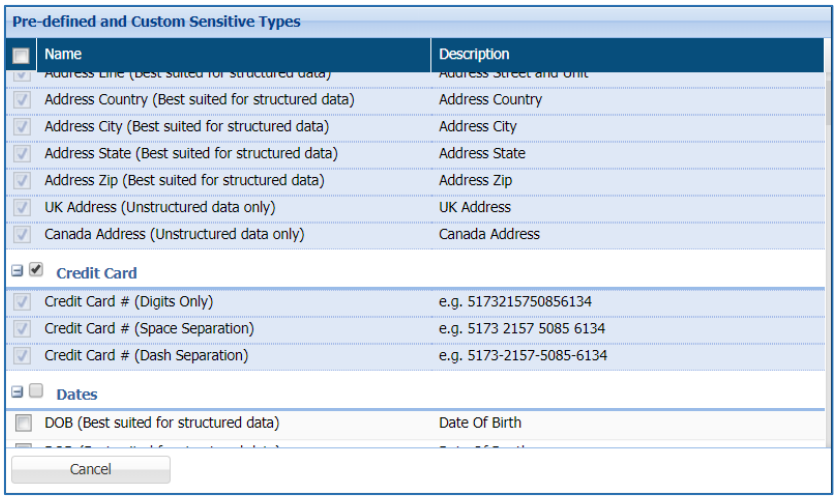
To proceed for remaining steps, go to step Compliance Policy.

54. **Compliance Policy** can be set with all the task types in HDFS except Metadata Discovery. For more details about compliance policies, refer to section Policy . After selecting the required options, perform the following steps:

a) Select the required policies.



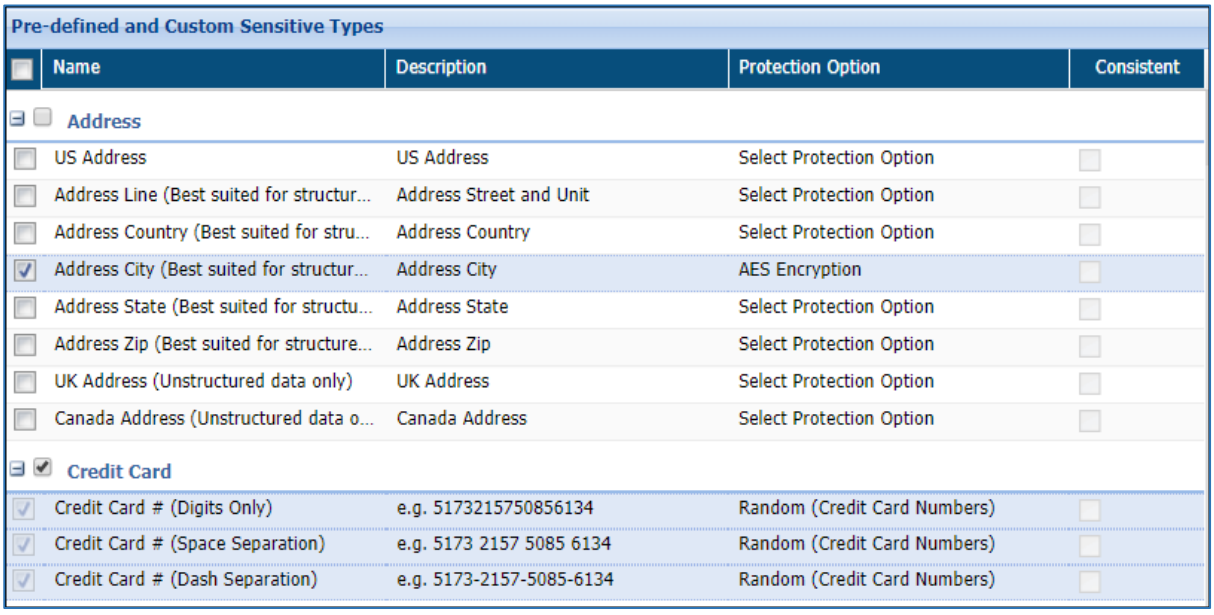
55. **Pre-defined and Custom Sensitive Types** are available for all task types in HDFS except Metadata Discovery. Select the required sensitive types.



***NOTE:**

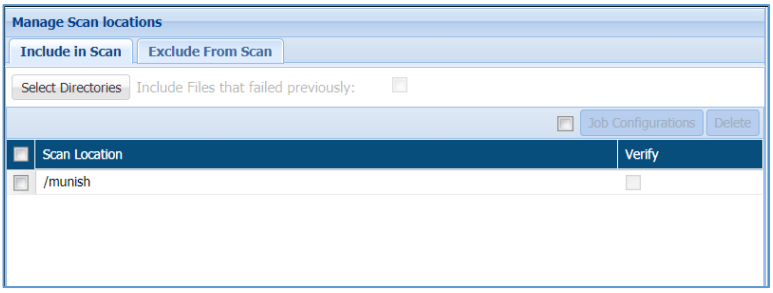
- Row Encryption uses default row encryption configuration for masking. This will mask all the entries of the row and is best suited to unstructured datatypes such as text files.
- FP Encryption uses default encryption configuration to protect the original data format. This option is best suited to structured datatypes.
- FP Decryption can only be executed on data that has been encrypted using FP Encryption.
- Decryption can be executed on data that has been encrypted using FP Encryption or Field Encryption.

56. If you select Masking/Encryption as the Task Type, Protection Option and Consistent fields are also available. Select the required Protection Option for the selected sensitive types. For details about all the masking options available in HDFS refer to Masking Options



57. **Manage Scan Locations**: Specify which directories to scan.

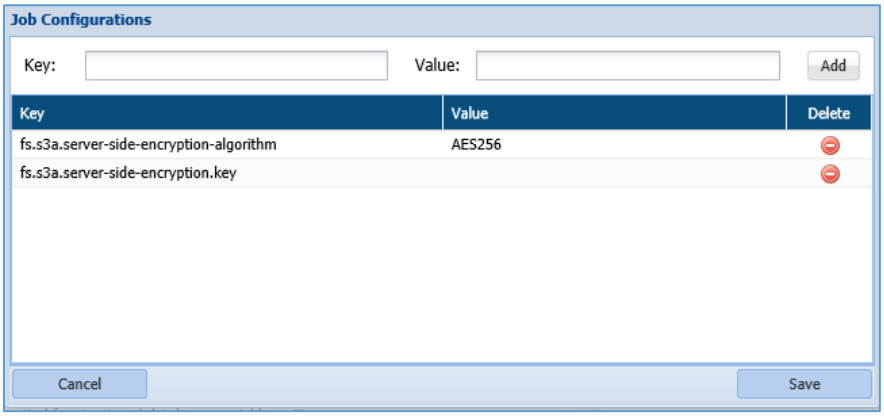
a) **Include in Scan**: Click **Select Directories** to choose the directory to perform the task.



viii. **Include Files that Failed Previously:** check this option to include all those files which were previously not scanned due to some exception. This option will appear when **Detection** is selected in **Task Type** field.

ix. **Delete Input Files on Job Completion:** check this option to delete all the original input files, which were included, post masking. This option will appear when **Masking/Field Encryption**, **Row Encryption**, **FP Encryption** is selected in **Task Type** field.

x. **Job Configuration:** check the checkbox to setup the parameters list. The value for job configuration will contain the pre-defined key and the value. If you have not specified any **Job Configuration**, then default parameter list will be executed.

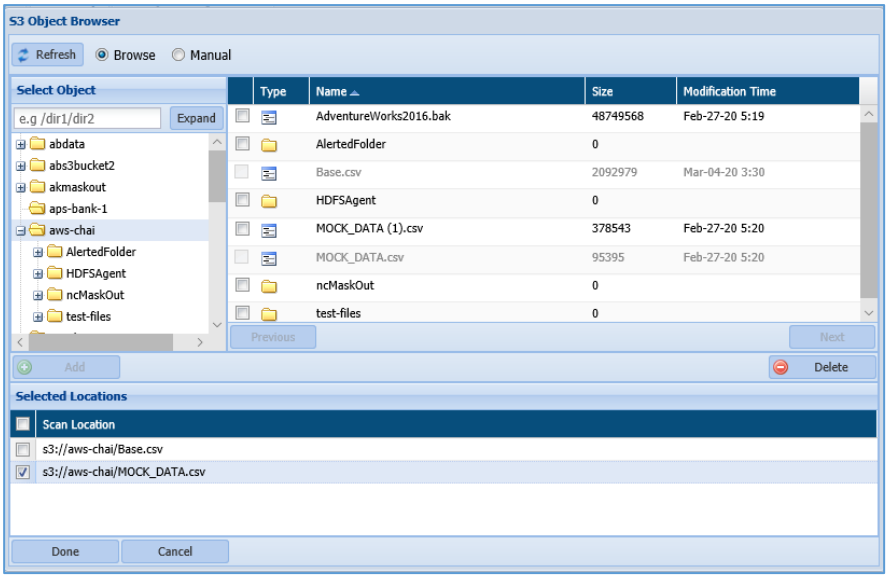


There are two ways in which buckets can be selected in **S3 Object Browser**:

- Browse
- Manual

To include buckets for scanning, click **Select Bucket** button, perform the following steps:

Browse: This option lets you browse the objects from **Select Object** panel. To select the objects, perform the below steps:



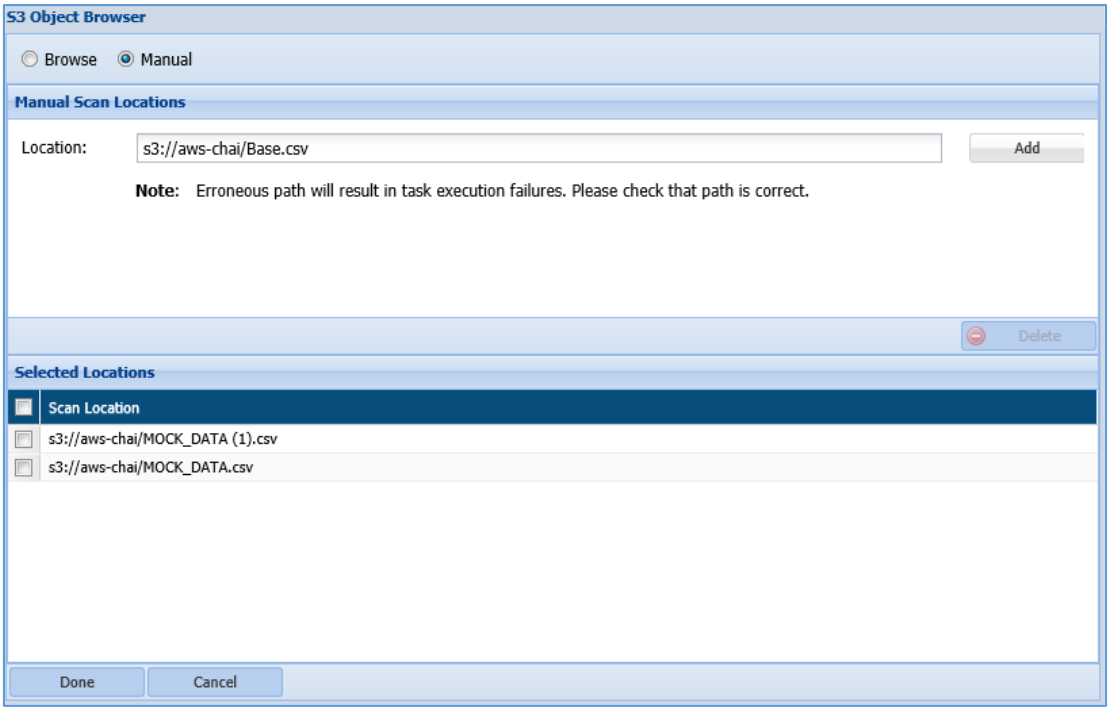
i. Select the folder from the directory to view the objects for that folder. All the objects will be displayed in the right panel.

ii. Select the object in the right panel by checking the checkbox and click **Add** button. This functionality will include the objects in the **Selected Locations** panel.

To delete the objects from the **Selected Location** panel, check the checkbox next to the **Scan Location** name and click **Delete** button. The **Delete** button will be enabled, once the **Scan Location** checkbox is checked.

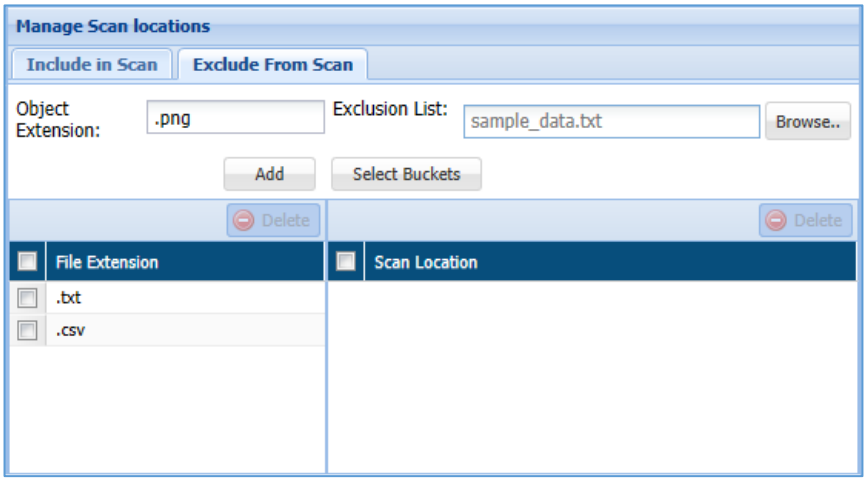
iii. Click **Done** button to include the objects in **Manage Scan Location**.

Manual: This option allows you to select the object from the bucket manually. Perform the below steps:



i. Enter the path for the scan location that you want to include.
ii. Click **Add** button to include the path for the object in Selected Location panel.
iii. Click **Done** to include the selected objects in the Manage Scan Location
iv. To delete the object from the **Selected Location** panel, check the checkbox next to the scan location name and click **Delete**.

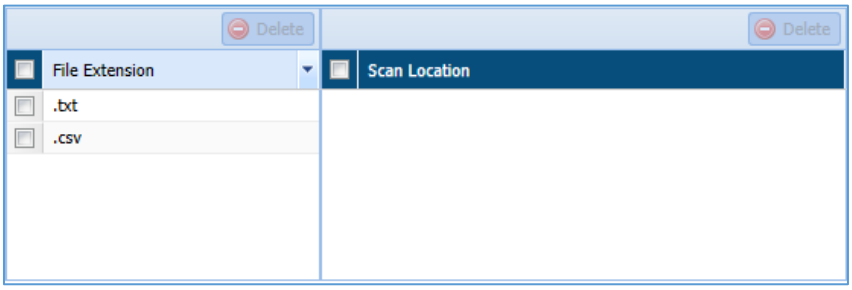
58. **Exclude from Scan**: Select objects to be excluded at the time of task execution or browse the path to an exclusion list. The **Exclude From Scan** tab will be enabled when **Detection** and **Masking/Field Encryption** are selected in Task Type field.



i. The **Object Extension** field allow you to specify the objects extension (.txt, .csv, etc) that need to be excluded.

ii. The **Extension List** field allow you either to **Browse** the path for the object or to select the object using the **Select Buckets** button. This functionality lets you specify the exclusion list of all objects that need not be included in the scanning.

iii. The below panel list down information for both excluded **File Extension** and the **Scan Location** selected above.



***Note**: To decrypt tasks, ensure that appropriate roles have been assigned before executing the encryption task. For more details, refer to section Role Management

59. After creating the required task, i.e., detection, masking, encryption, decryption or metadata discovery, click save to save the task to schedule later, or save and execute to execute it right away.

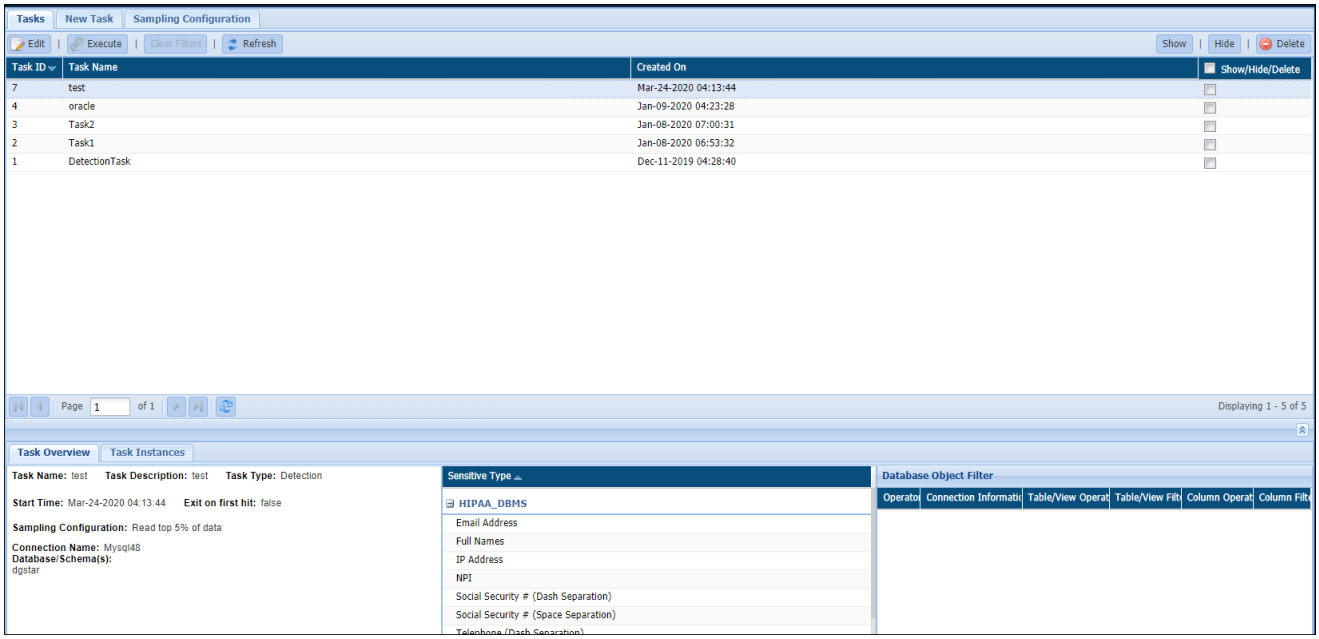
7.2.6.2 Databases

DgSecure supports Detection and Masking in RDS/RedShift databases. Following sections outline the process of creating these tasks.

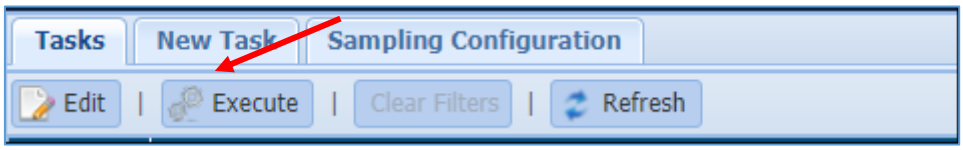
7.2.6.2.1 Detection

Perform the following steps to create a detection task.

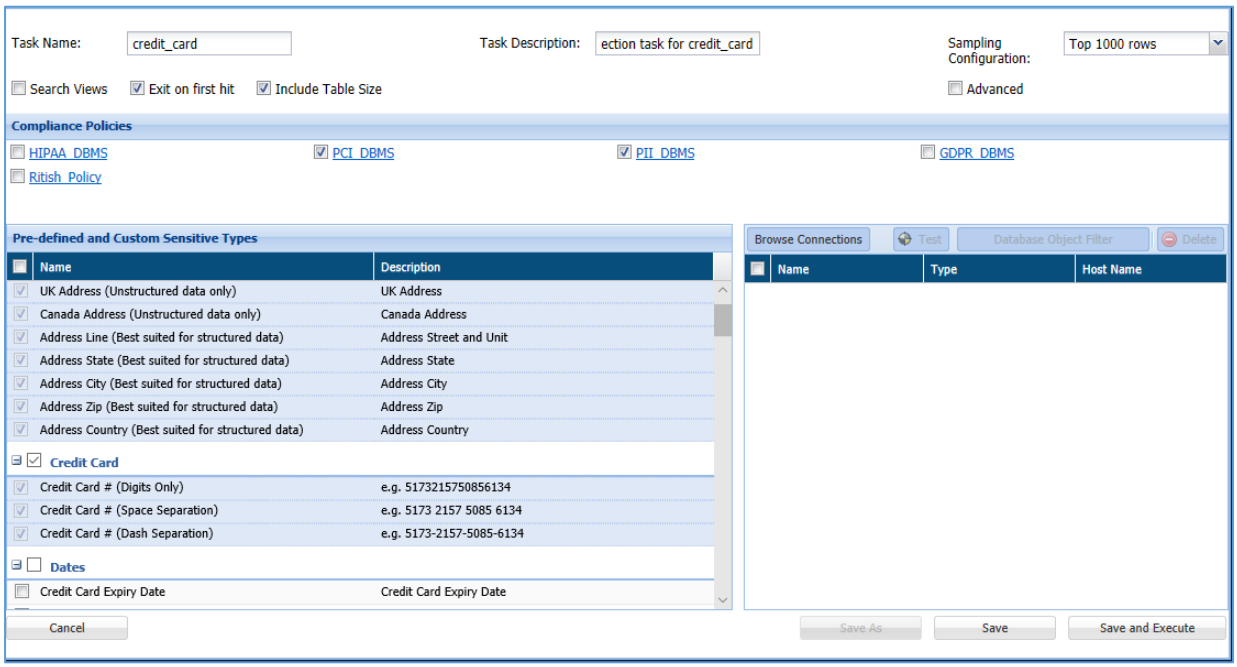
Go to **AZURE > DATABASES > DETECTION > TASKS.**



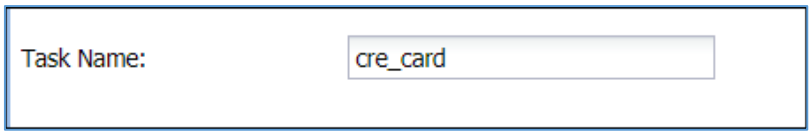
1. To create a new task, click on the **New Task** tab.



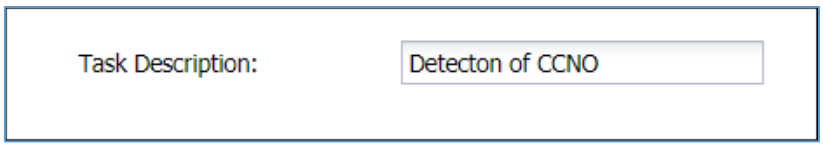
The following image shows the user interface for creating a task.



2. Enter a unique **Task Name**. This field supports numeric and character values.



3. Enter a **Task Description** of maximum 254 characters. This field supports numeric and character values.



4. Check the **Search Views** option to detect the Views tables within the database as well as the tables linked with them. This option is available for the **Detection, Task Type.**

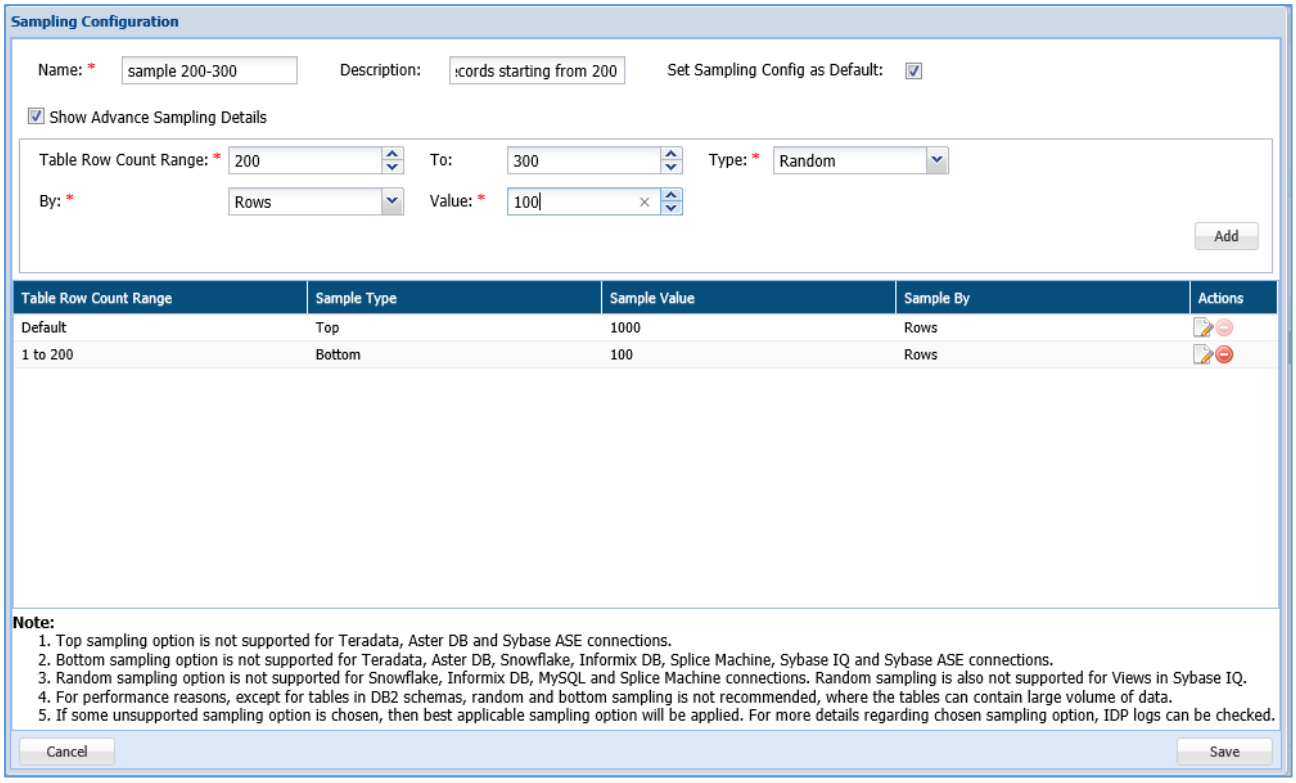
5. Check **Exit on First Hit** option to stop the scanning, when the first Sensitive Type is detected during the scan. This option is available for the **Detection, Task Type.**

60. DgSecure is equipped with data sampling to limit the area of scan which helps in reducing the time taken for detection. Default options to scan sample data from the database are:

    - Top 1000 Rows
    - Read top 5% of data

The sampling configuration field is set to sample Top 1000 Rows by default. Check the **Advanced** checkbox to create a new sampling configuration.

You can also configure sampling through **AWS > RDS/REDSHIFT > DETECTION > TASKS > SAMPLING CONFIGURATION** tab.



a) Enter the name of the Sampling Configuration.

b) Enter the description for sampling.

c) Check the option **Set Sampling Config as Default** to set the Sampling Configuration as the default configuration for all your tasks.

d) Check the option **Show Advance Sampling Details** to set the advanced settings for sampling. Below are the options for advanced settings:

- **Table row count range**: Enter numeric value. This value states the starting range of the table from which the records will be sampled.

- **To**: Enter the numeric value. The value in this field states the ending range of the table till which the records will be sampled.

- **Type:** Select the sampling configuration type from the **Type** option. There are four options for sampling configuration:

    i. **Top:** If you select the option **Top**, the sample data for the scan will be selected from the entries at the top of the table, based on the specified range.

    ii. **Bottom:** If you select the option **Bottom**, the sample data for the scan will be selected from the entries at the bottom of the table. This does not mean the entries will be selected bottom up, instead

depending on the range the last entries in the table will be taken to create a sample data for detection.

iii. **Random:** Entries from the table that correspond to the specified range, will be selected at random to create a sample set of data for detection.

iv. **Complete:** If all the entries in the selected tables of the database have to be scanned for sensitive types, select this option.

- **By:** To Specify how to pick data for sampling from the table, there are two ways:

  i. **By Rows:** Select **Rows** from the drop-down, to sample data based on the number of rows.

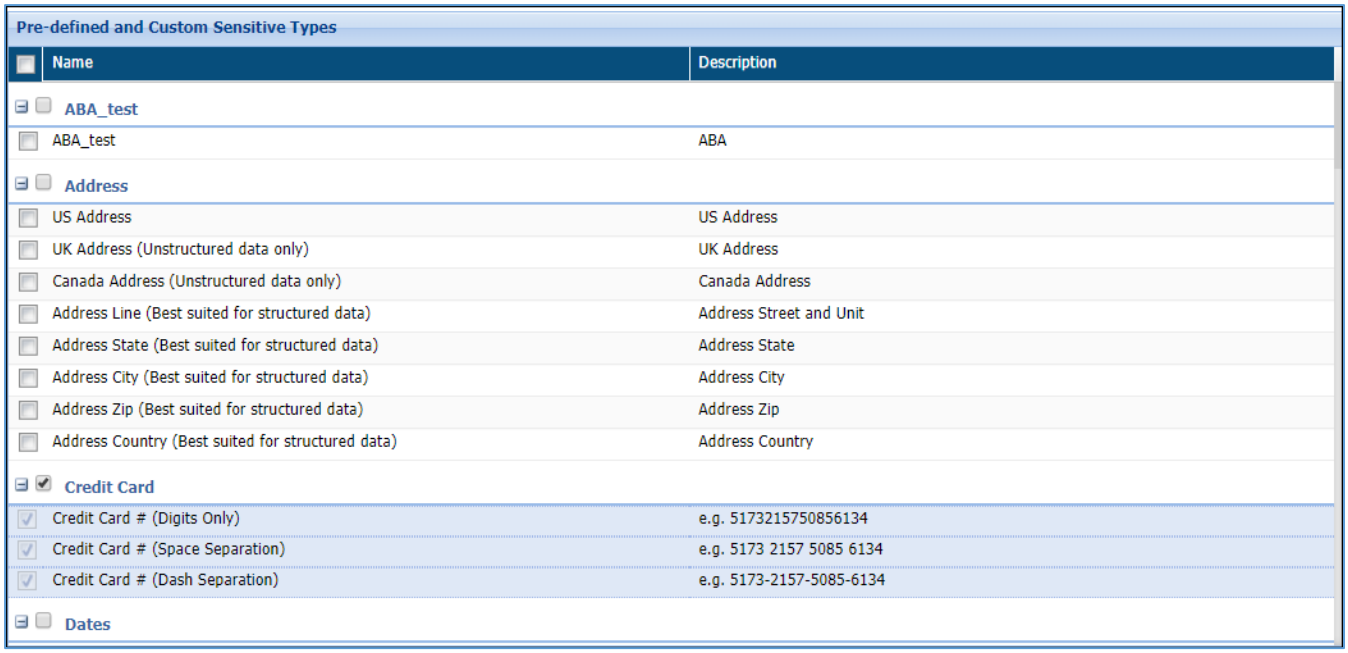
  ii. **By Percent:** Select **Percent** from the drop-down, to sample a percentage of the data

- **Value:** Enter the numeric value. It will specify the total number of records to be processed if sampling By-Rows is selected and denotes the percentage of sampling By-Percent is selected.

61. After setting up the required configuration, click **Add** to add the user-defined sampling configuration to the list.

62. Click the **Save** button to save the changes.
63. Select the required policy under the **Compliance Policies** section. The Compliance Policy panel displays all the Pre-Defined and Customized Policies. Users can select any number of policies while creating or editing a task. Sensitive types associated with the selected policy can be viewed in the panel below this panel **Pre-Defined and Custom Sensitive Types**. Selecting a policy is not a mandatory step, users can also proceed to select individual sensitive types. For more information, refer to section Policy .

64. Select the required sensitive types for the scan from the **Pre-defined and Custom Sensitive Types** section. Refer to the following screenshot:

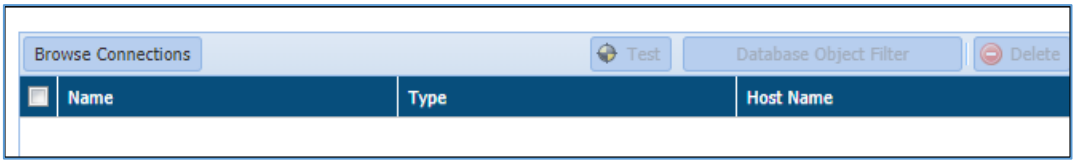


The **Pre-Defined and Custom Sensitive Types** panel lists down all the Sensitive Types. The Sensitive Type associated with the policy gets selected in the Pre-Defined and Custom Sensitive panel and cannot be removed from the scan, however any number of sensitive types can be added to the scan.

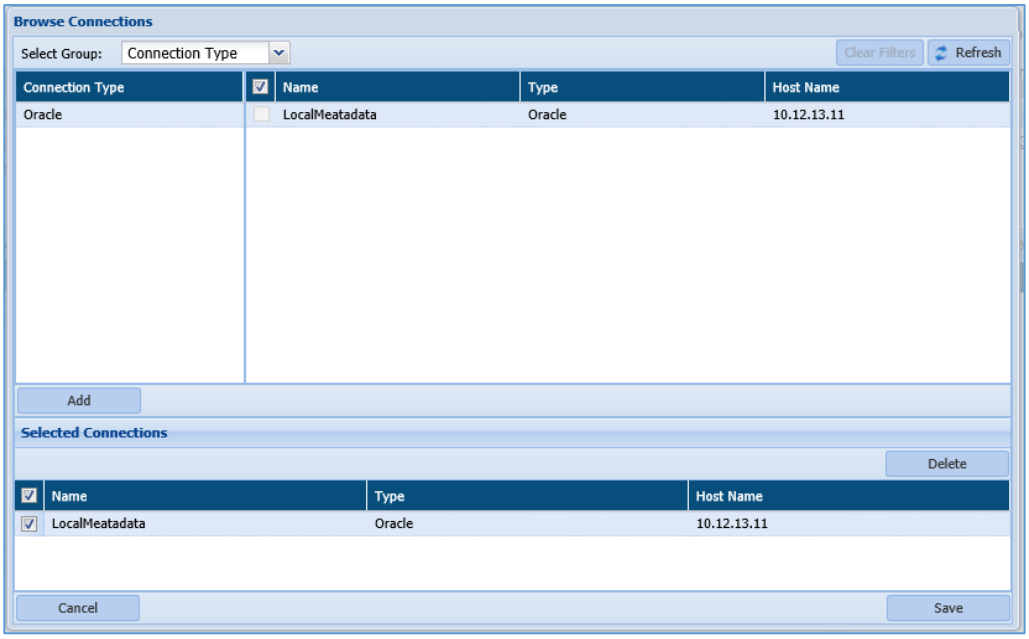
***NOTE:** If a policy is selected, user can still add more sensitive types to the scan but the sensitive types under the selected policies cannot be excluded from the scan.

65. The Database Connection panel lists down all the available RDBMS connections. Any number of connections can be selected for a task. This panel list down all the available connections. For details on how to create and manage connections refer Connection Manager Perform the following steps to choose a connection:

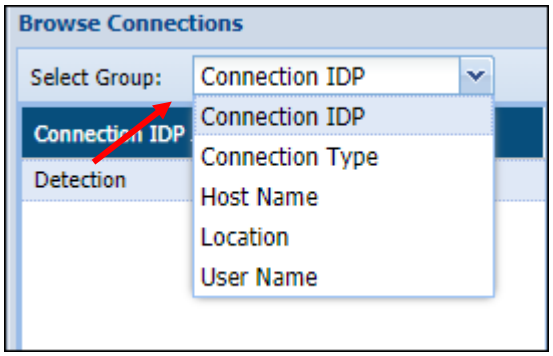
a) Click Browse connections.



66. The **Browse Connections** dialog box will be displayed. This screen categorizes connections based on user preferences.



i. Click on the Select Group dropdown and select the required option from the sub groups displayed on the left panel to sort the available connections.



The **Select Group** drop-down has five options:

1. **Connection IDP**: Categorizes the available connections based on the types of IDPs available, i.e., Detection and Masking.

2. **Connection Type**: Categorizes the available connections based on the type of server connected to, i.e., Oracle, Teradata, SQL server etc.

3. **Host Name**: Categorizes the list of available connections based on Host Names.

4. **Location**: Categorizes the available connections based on the location of the target source system server, i.e., On-Premises and Cloud.

5. **User Name**: Categorizes the list of available connections based on the Usernames.

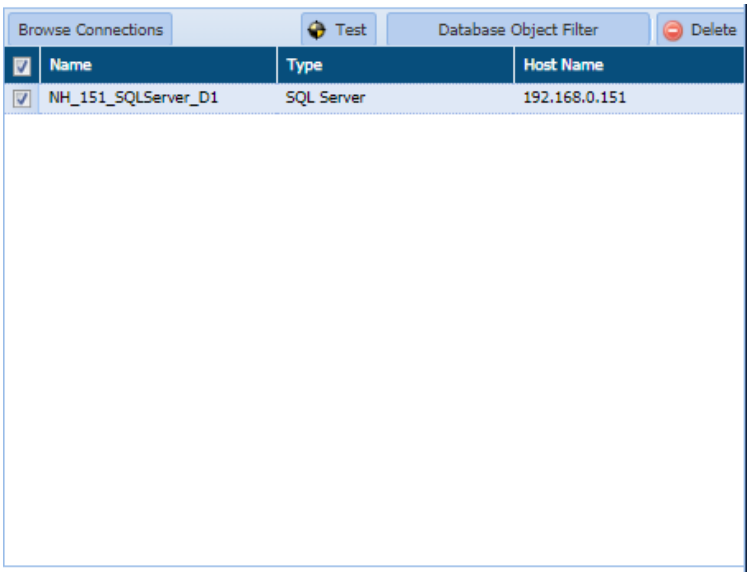
ii. Click **Add** to include the selected database connection in the **Selected Connection** panel.

iii. Check the Selected connection. Click the **Save** button to include connections.

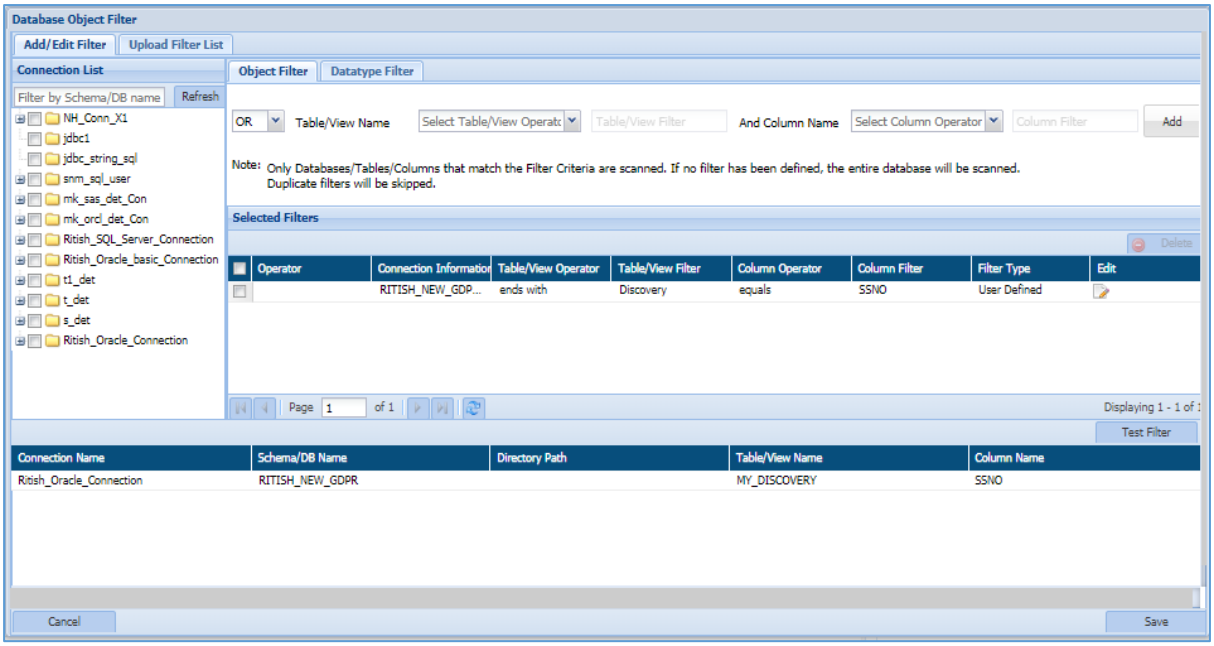
iv. Click the **Test** button to test the listed RDBMS connection.

v. Click the **Database Object Filter** button to filter tables and/or columns. Once filters are defined, then only those databases/tables/columns that match the filter are scanned.

Check the checkbox next to the connection to enable the Database Object Filter.



You can **Add/Edit Filter** in two ways i.e. either by specifying in manually it manually or by uploading the filter list in the **Upload Filter List** tab.



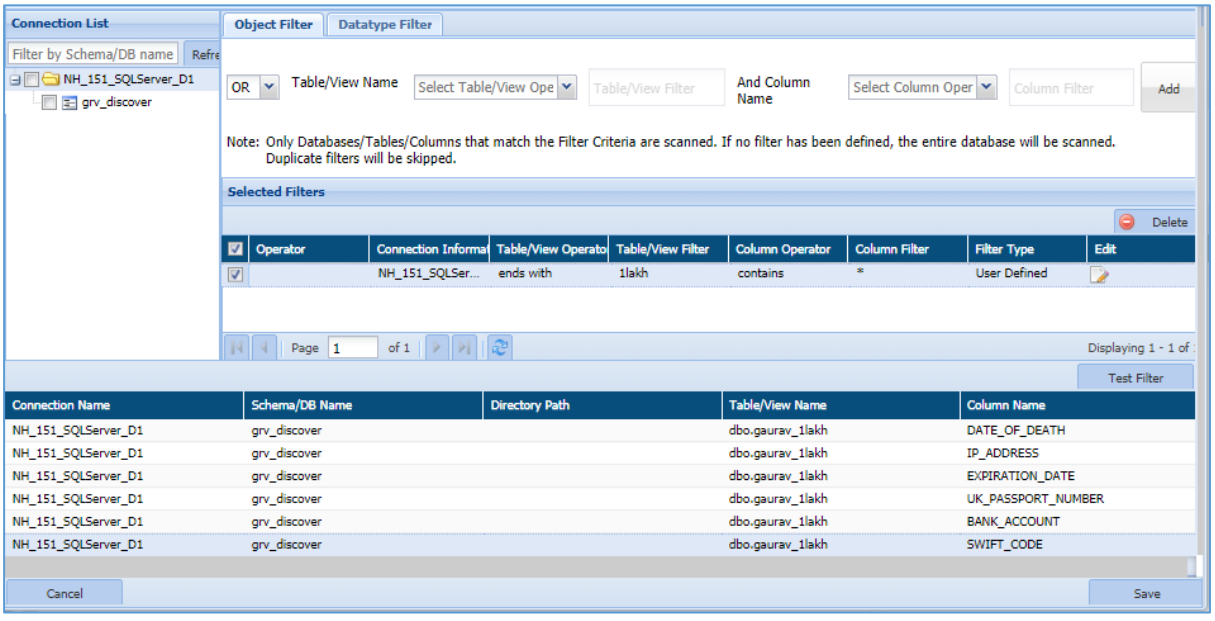
- **Add/Edit Filter**: This tab allows you to apply the filter for the selected connection. Once the filter has been applied then only those databases/tables/columns and datatypes that matched the criteria will be scanned.

  There are two types of filter which can be applied.

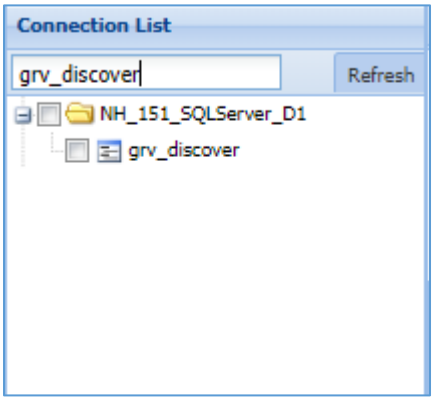
1. Object Filter
2. Datatype Filter

Object Filter

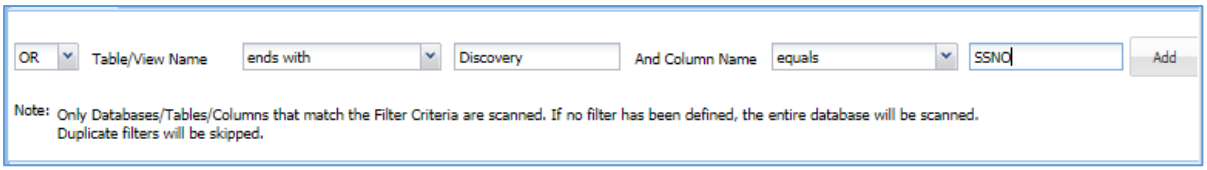
The Object Filter allows you to scan the database/tables/columns based on the defined filter. To apply an Object Filter, perform the following steps:



a) Select the connection from the Connection List panel or enter the DB/Schema name in the Filter by Schema/DB Name textbox.



b) Apply the **Object Filter** in the top panel by specifying the **Operator, Table/View** and **Column** name.



For example, in the above image the object filter specifies the table name should end with 'Discovery' and the selected table should contain SSNO column.

There are eight types of Operators based on which you can select the Table and Column name.

1. **Equals**: This operator will check whether the given table/column name exist in the selected database/table. It will return the matched records if the condition is fulfilled.

2. **Not Equal to**: This operator will return all the records except the given table/column name.

3. **Contains**: This operator will return only those tables/columns which matched the given criteria.

4. **Does not contain**: The functionality of this operator is similar to the **Not Equal to** operator, since it returns all the records except the given table/column name.

5. **Starts with**: This operator will return all the tables/column whose name starts with the given criteria.

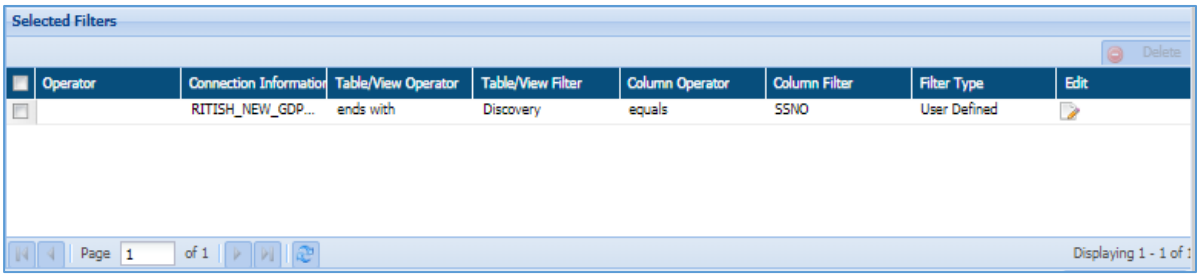
6. **Does not start with:** The functionality of this operator is similar to the **Does not contain** and **Not Equal to**, since it will return all the tables/column name except the one which has been entered.

7. **Ends with**: This operator will return all the tables/column name whose name ends with the given input.

8. **Does not ends with**: The functionality of this operator is similar to the Does not contain and Not Equal to, since it will return all the tables/column name except the one which has been entered.

c) Click the **Add** button to add the filter in the **Selected Filters** panel.

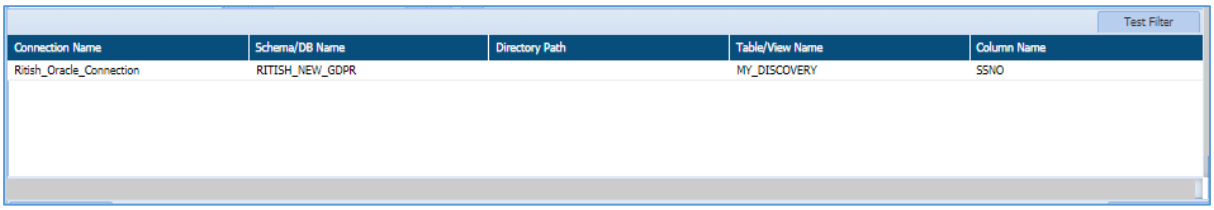
9. The **Selected Filters** panel will list down all the user defined filters. It displays information about the filters such as Connection Name, Table/View Operator, Table/View Filter, Column name, etc.



- To edit a filter, click the  button in the **Edit** column. This functionality allows you to re-select the Operator, Table/View and Column name.

- To delete a filter, check the checkbox for that filter and click the **Delete** button. This button will get enabled when you check the checkbox for any filter.

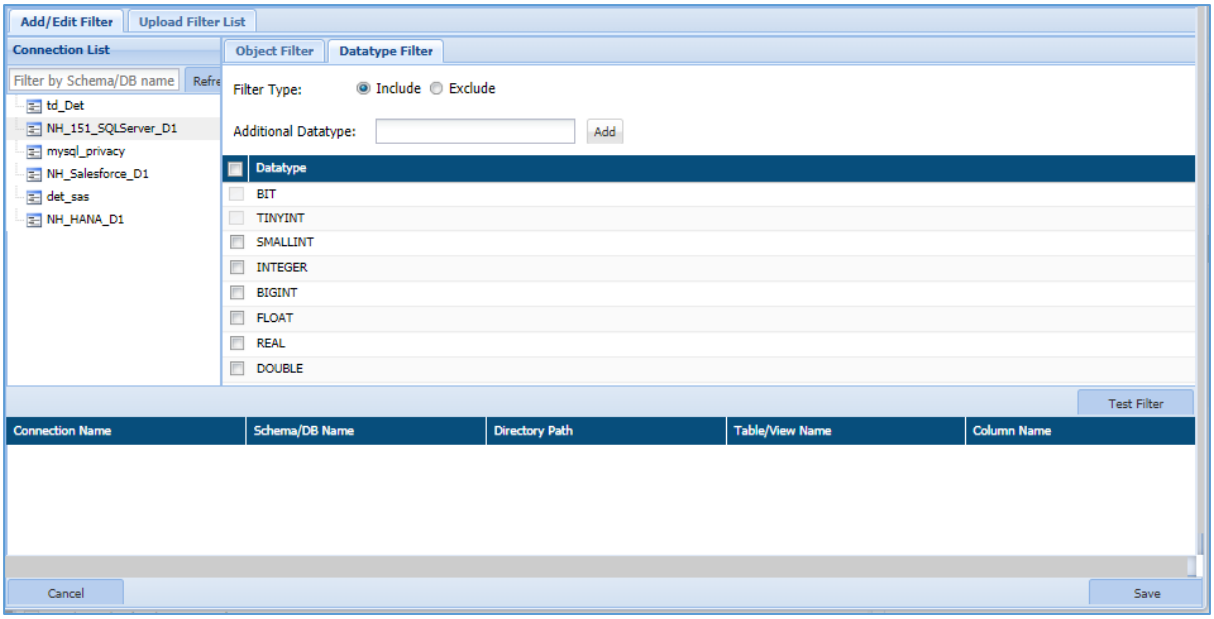
10. Click **Test** button to test the filter. It lists down the result matching the filter criteria.



11. Click **Save** button to make the changes effective.
12. Click **Cancel** button, if you do not want to save the changes.

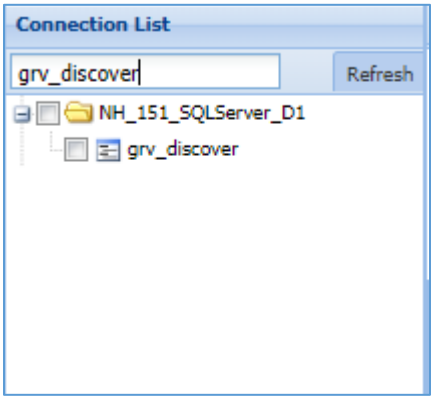
Datatype Filter

This tab allows you to specify the datatypes to be included or excluded while scanning based on the selection.



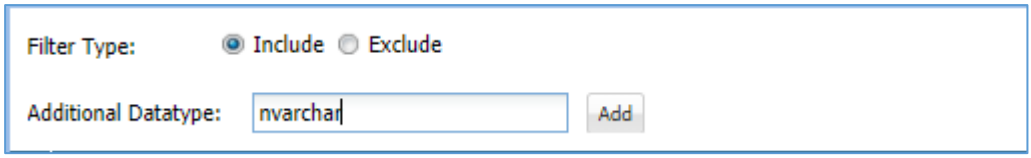
To apply Datatype Filter, perform the following steps:

a) Select the connection from the **Connection List** panel or enter the Database/Schema name in the **Filter by Schema/DB Name** textbox.

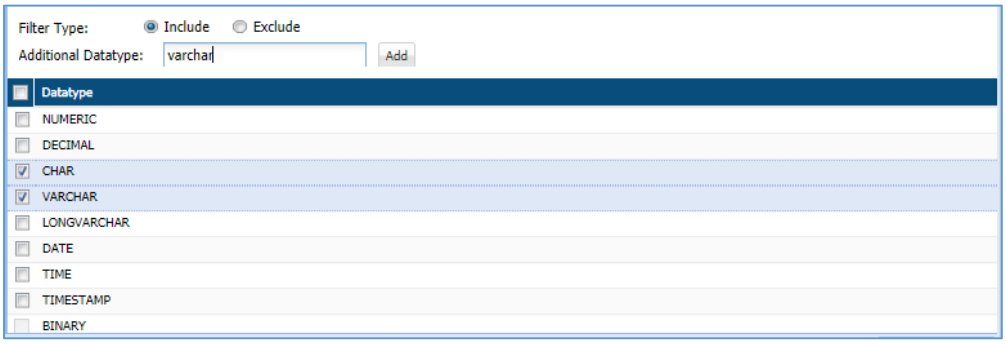


b) Select the **Filter Type** from the given option. By default, **Include** filter type is selected.

- **Include**: This option allows to select the datatype that need to be included while scanning.
- **Exclude**: This option allows to select the datatype that need to be excluded while scanning.
- **Additional Datatype**: This field allows you to add a datatype if it's not present in the DataType panel. Once that datatype is entered, click **Add** button to specify it in the DataType panel.

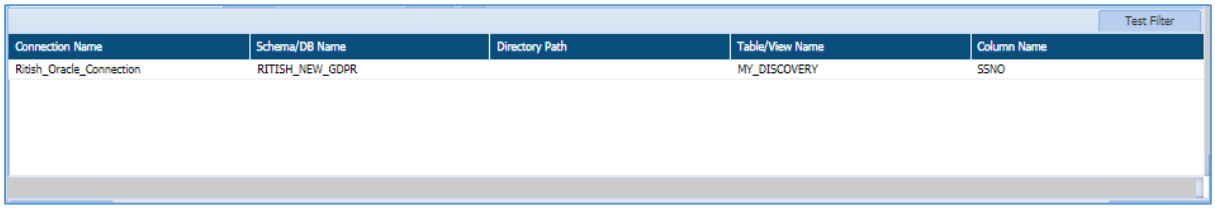


13. Check the checkbox for the datatype which you want to include or exclude based on the selection of **Filter Type** in above panel.



For example, in the above image the CHAR and VARCHAR datatypes are included in the scanning process since Filter Type specify the option as 'Include'. If 'Exclude' is selected as Filter Type then selected CHAR and VARCHAR datatype will be excluded from the scanning process.

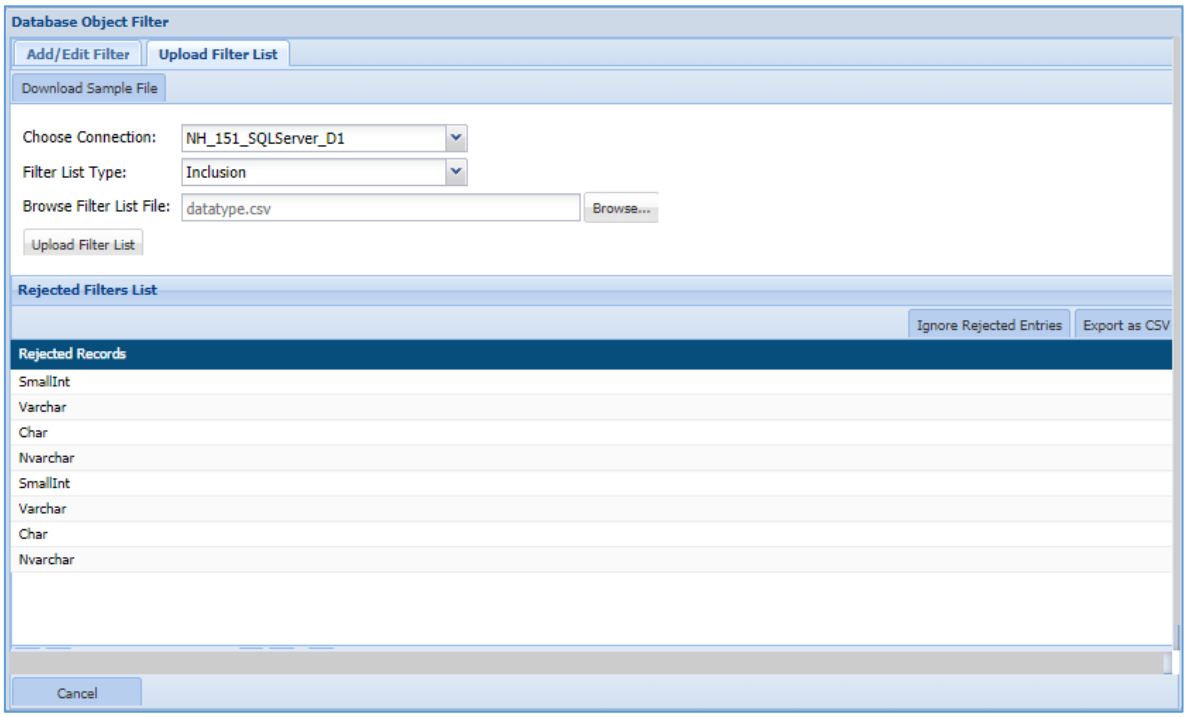
14. Click **Test** button to test the whether any column in the database contains the selected datatype. This functionality will list down all the columns that contain the selected datatype.



15. Click **Save** button to make the changes effective.

16. Click **Cancel** button if you do not want to save the changes.

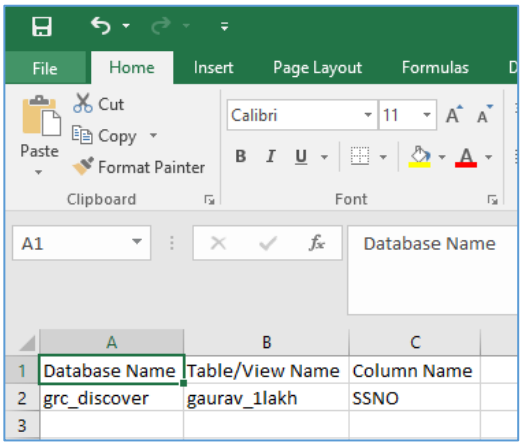
- **Upload Filter List**: This tab allows you to upload a file containing the list of all columns.



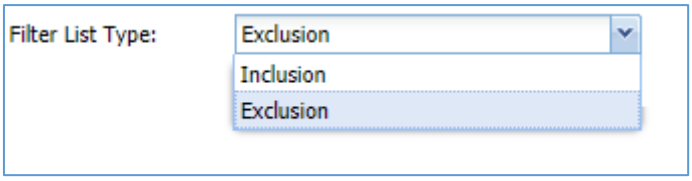
To upload the filter list, perform the following steps.

a) Select the connection from the **Choose Connection** drop-down.

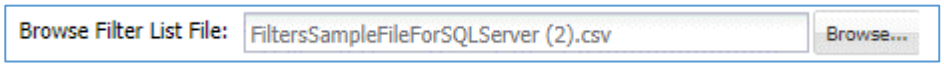
17. The **Download Sample File** button will be enabled once a connection has been chosen. Enter the Database, Table/View and Column Name in the sample file.



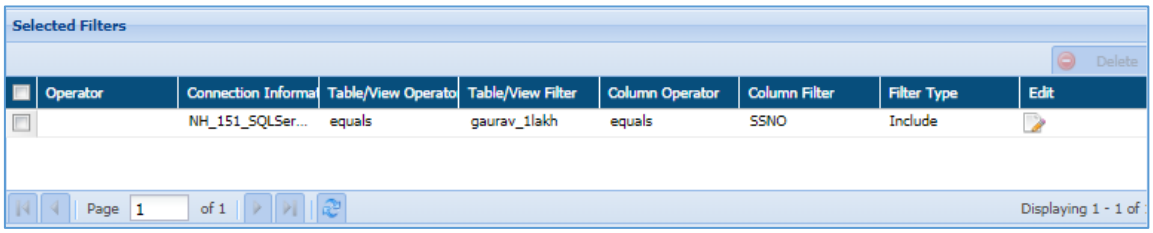
18. Select the **Filter List Type** from either ‘Inclusion’ or ‘Exclusion’. This functionality allows you to specify whether to include or exclude the Database, Table/View and Column name.



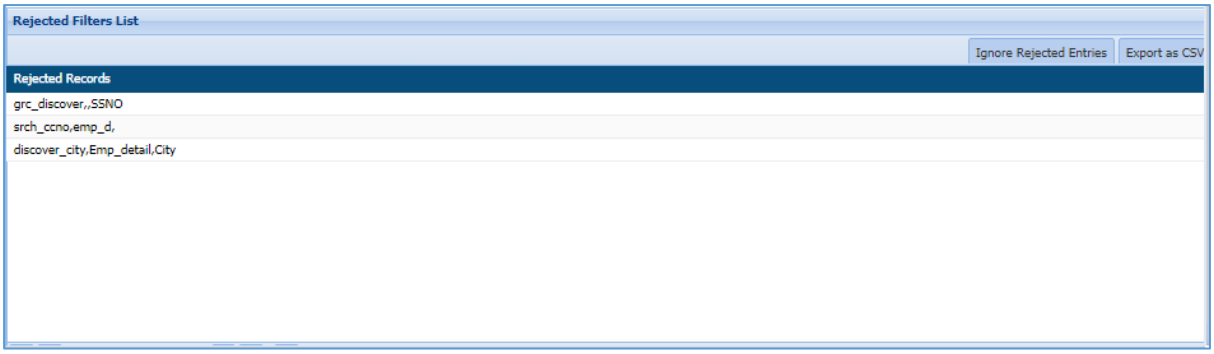
19. Click the **Browse** button to search and upload the saved sample file containing the list of Database, Table/View and Column name which will be either excluded or included.



20. Click **Upload Filter List** button to add the defined filters in the **Selected Filters** panel under **Add/Edit Filter** tab.



21. The **Rejected Filters List** will display all the entries from the uploaded list which are not in a proper format as specified in the sample file.



- To download the list of rejected entries, click **Export as CSV** button. A downloaded file will contain the list of rejected entries which were not formatted as per specified format.

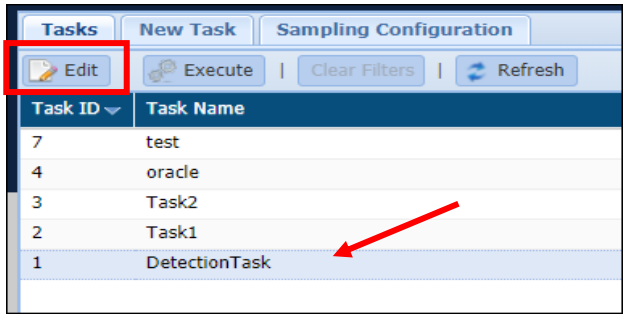
- To remove the rejected entries from the **Rejected Filters List** panel, click the **Ignore Rejected Entries.** This functionality will remove all the rejected entries from the panel.

22. Click **Save** button to make the changes effective.

23. Click **Cancel** button if you do not want to save the changes.

24. Click **Save**, if you want to execute the task later else click **Save and Execute**. The results of the task and its status can be viewed under **RDBMS>DETECTION>RESULTS** (Refer to Section Results).

To edit an existing task, select the required task from the list of tasks on the Tasks screen and click edit. A task can be edited using the same steps for task creation.



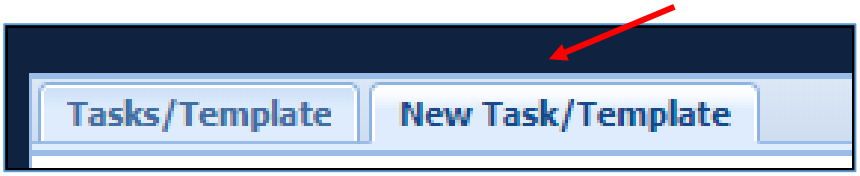
***Note**: Task defining features such as Incremental, Exit on First Hit, Search View and the Task Type cannot be edited. Some of the originally selected options can be modified but new options cannot be added.

7.2.6.2.2 Masking Task

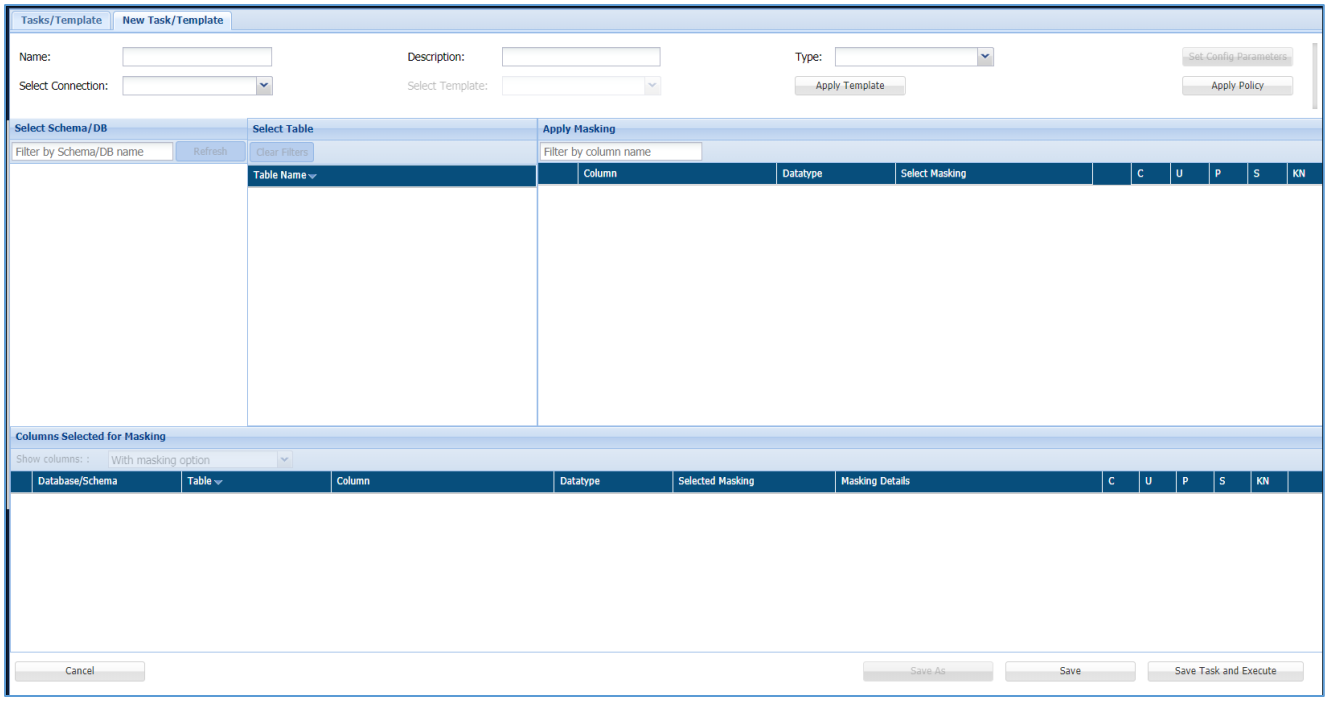
Perform the following steps to create a masking task:

Access the NEW TASKS/TEMPLATE screen, click **AZURE > DATABASES > MASKING > TASKS/TEMPLATES > NEW Task/Template** tab.

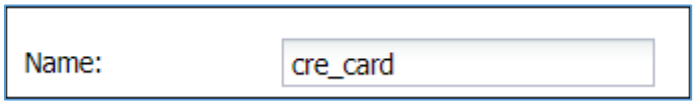
1. To create a new task or template for masking tasks, click on the **New Task/Template** tab.



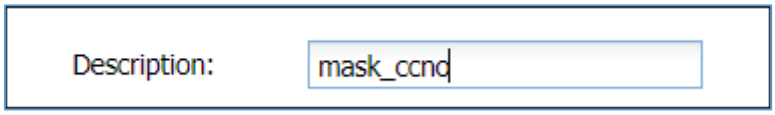
The following image shows the user interface for creating a task.



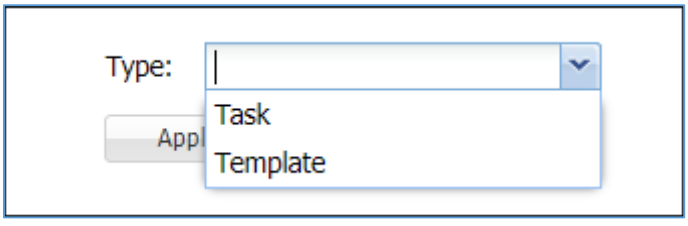
25. Enter a unique **Task Name**. This field supports numeric and character values.



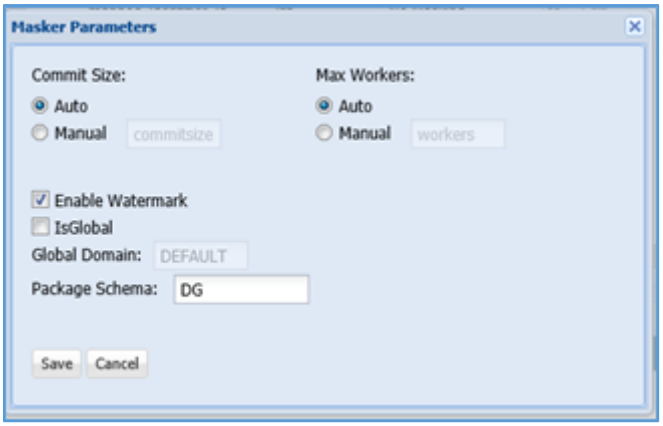
26. Enter a **Task Description** of maximum 254 characters. This field supports numeric and character values.



27. Click on the **Type** dropdown. Select **Task** to create a masking task or **Template** to create a template for masking tasks.



28. Click the **Set Config Parameters** button. It will display the environment settings for the masking operations such as **Commit Size**, **Max Workers**, **Package Schema, IsGlobal** and **Enable Watermark**.



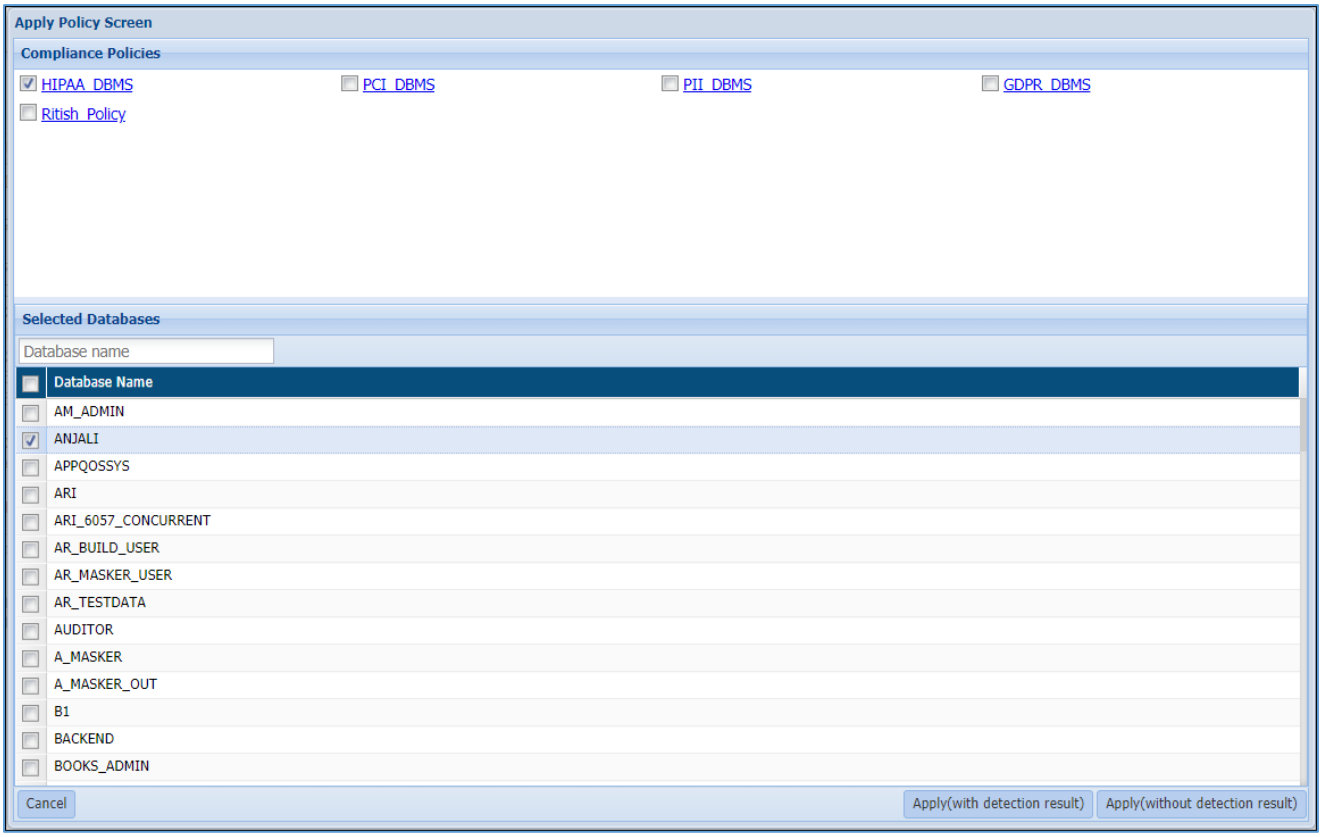
29. Click **Select Connection** to view the list of the available database connections for masking. For details on how to create a connection for masking refer to Connection Manager

30. The **Select Template** option provides a list of user created templates for masking**.** This option will be greyed out if no templates have been created. To create a new template select the Type as Template in step 6 and follow the next steps for creating a task and save the template. Once created, the new template will appear in the select template dropdown on the new task screen.

***Note:** Templates are connections specific and only one template can be selected at a time.

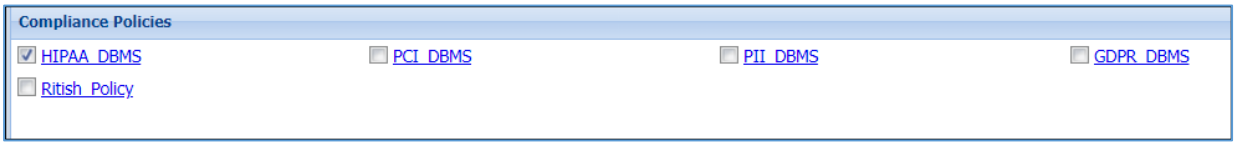
31. Click the **Apply Template** button to apply the selected template in **Select Template** drop-down.

a) Click the **Apply Policy** button to choose the available Compliance Policies.

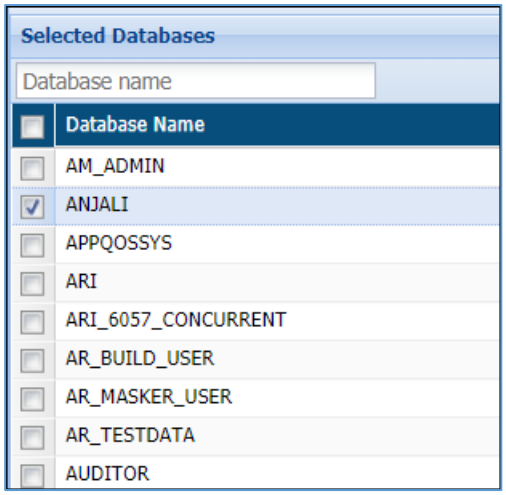


Perform the following steps to apply a policy to the task or template:

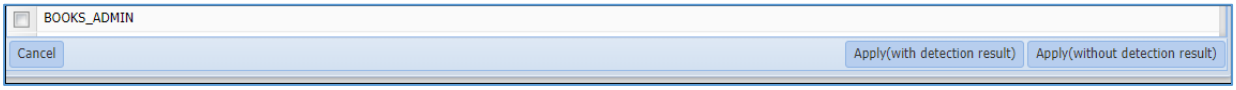
i. Select the required policy/policies under the **Compliance Policies** panel.



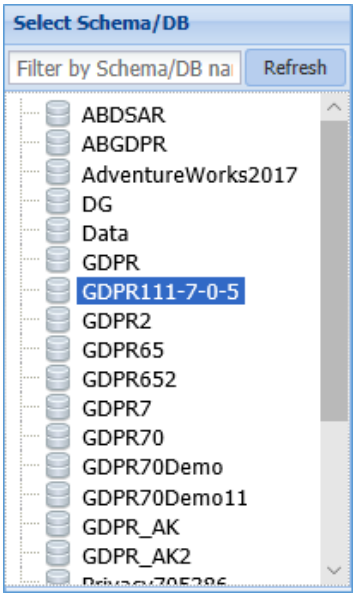
ii. Select the databases you need to mask by checking the checkbox next to the Database Name.



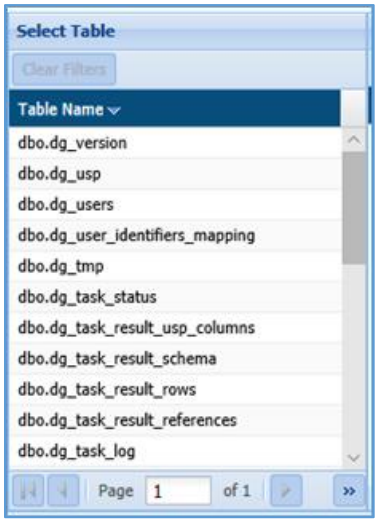
iii. Click the **Apply** (with detection result) button to apply the selected policy with detection results or click the Apply (without detection result) button to apply the selected policy without results. Click Cancel to redo your selection.



32. The Select Schema/DB pane will display the list of databases or schemas for a selected connection in **Select Connection** drop-down.



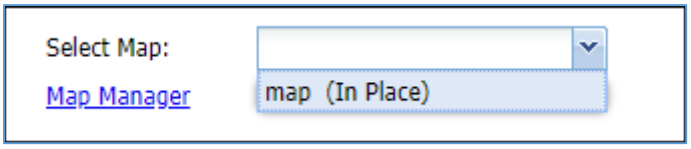
33. Select the table from the Select Table pane. This pane lists all the tables for the selected database or schema.



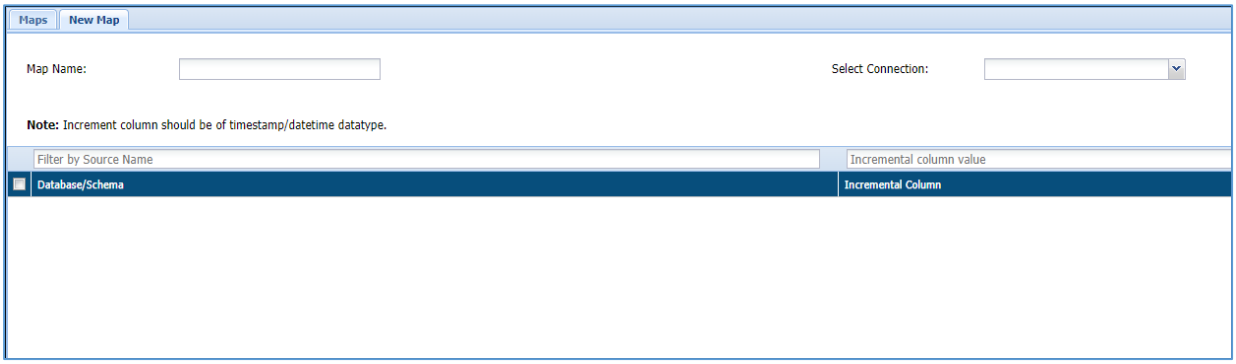
34. Check the Incremental checkbox to apply incremental masking to the database. This feature is useful to mask new values added in a database after masking has been executed on it. Only the new entries will be masked, thus, the time taken for masking would be reduced. Perform the following steps to make your masking task incremental:

a) Check incremental checkbox.

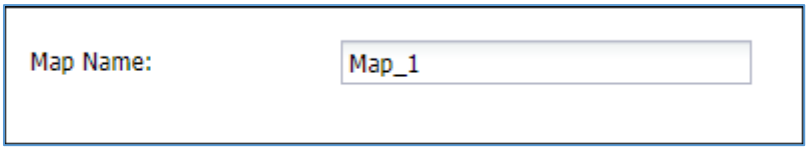
35. The Select map Dropdown will appear. Select the required map. Maps define incremental columns within a database which are considered for indexing the data in order to mask the new rows added to the database.



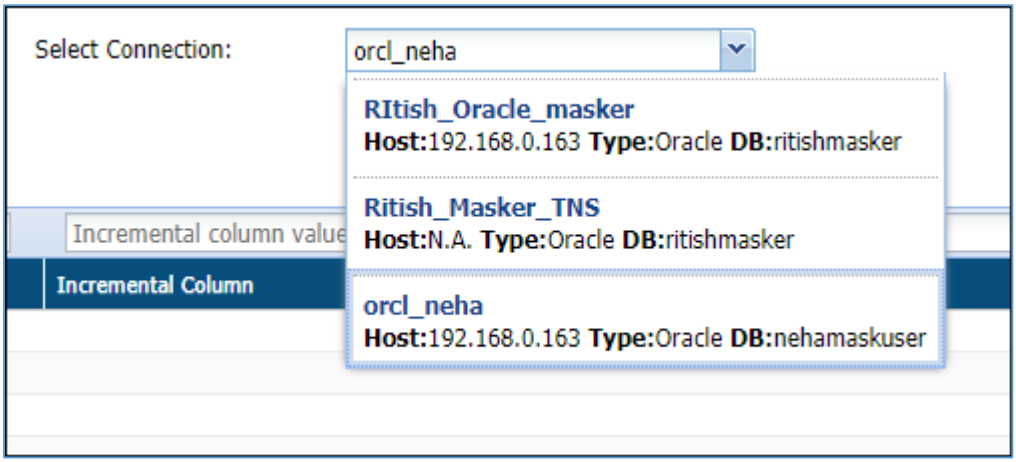
36. To add a map click on the Map Manager link
37. The Map Manager Screen can also be accessed from the menu bar. The following image displays the Map Manager interface:



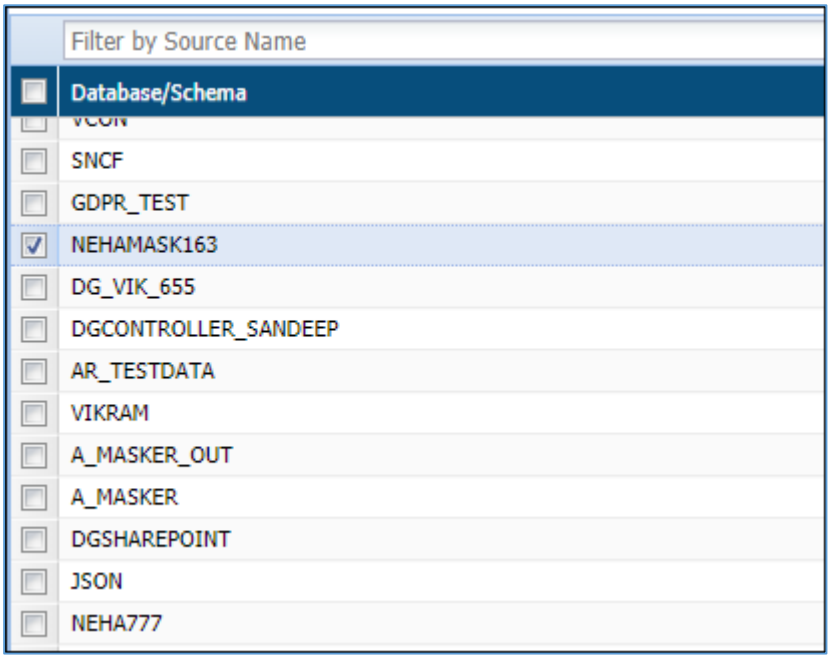
38. Enter a Map Name.



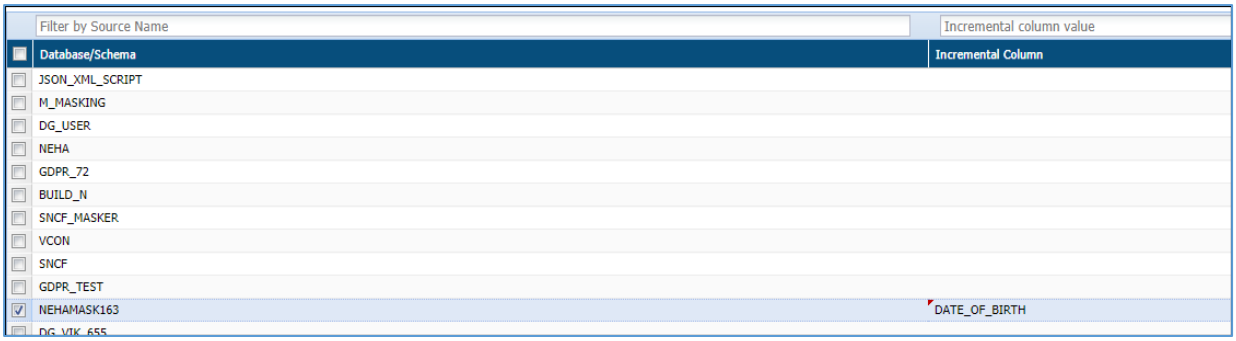
39. Select a connection that contains the database on which incremental masking has to be applied.



40. Select the required Database/Schema.



41. Enter the name of the incremental Column to the corresponding database and ensure that it is a timestamp or date-time datatype.

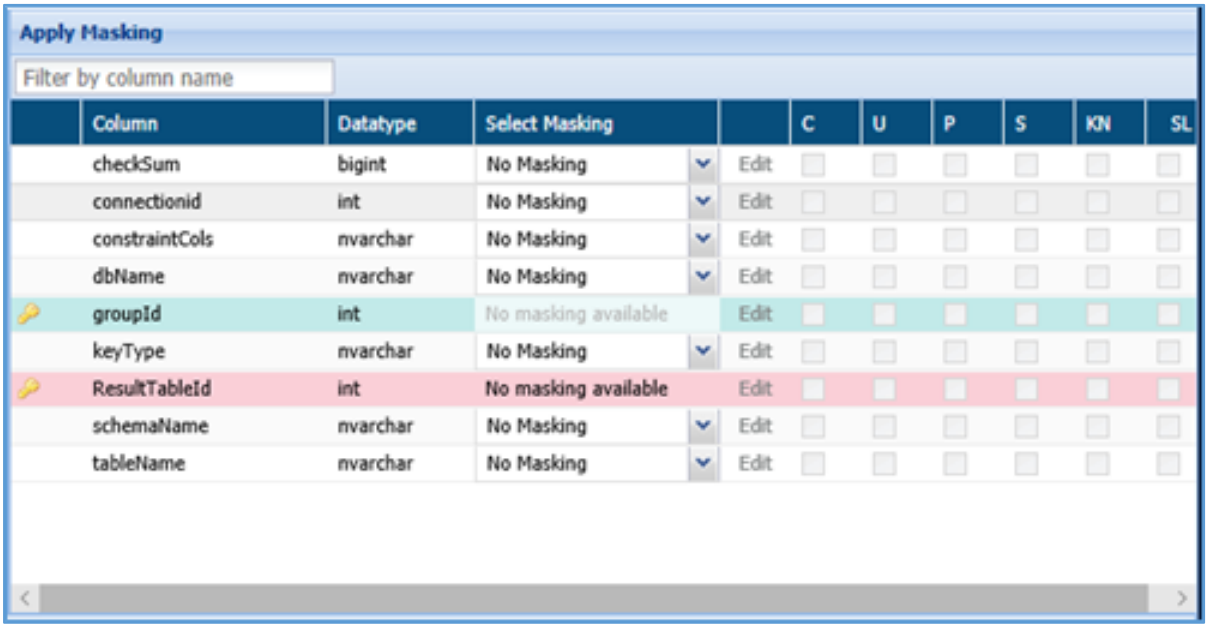


42. Save the map. It will be available in the Select Map dropdown on the new task/template screen.

NOTE: To apply incremental masking the following criteria must be met:
1. Create a map to execute incremental masking and apply it to the task.
2. Relational tables cannot be included.
3. Column holding date, time stamp or a numeric incremental value should be added as incremental column.
4. The incremental column cannot be masked.

43. The Apply Masking pane display the list of all the columns for the selected table in Select Table pane. For detailed information on all the available masking options in DgSecure refer to Masking Options . Perform the following steps to apply masking option to the columns in the database:

a) Select the masking option from the drop-down against the column entry. You can apply the masking to the selected column by checking on the checkbox corresponding to the column name.



To further enhance the results of masking following options can be combines with the masking options:

iv. **Consistent**: Masks the data of the selected table with consistent values. E.g. If the name John is masked as FVGB, throughout the table it will be masked the same way.

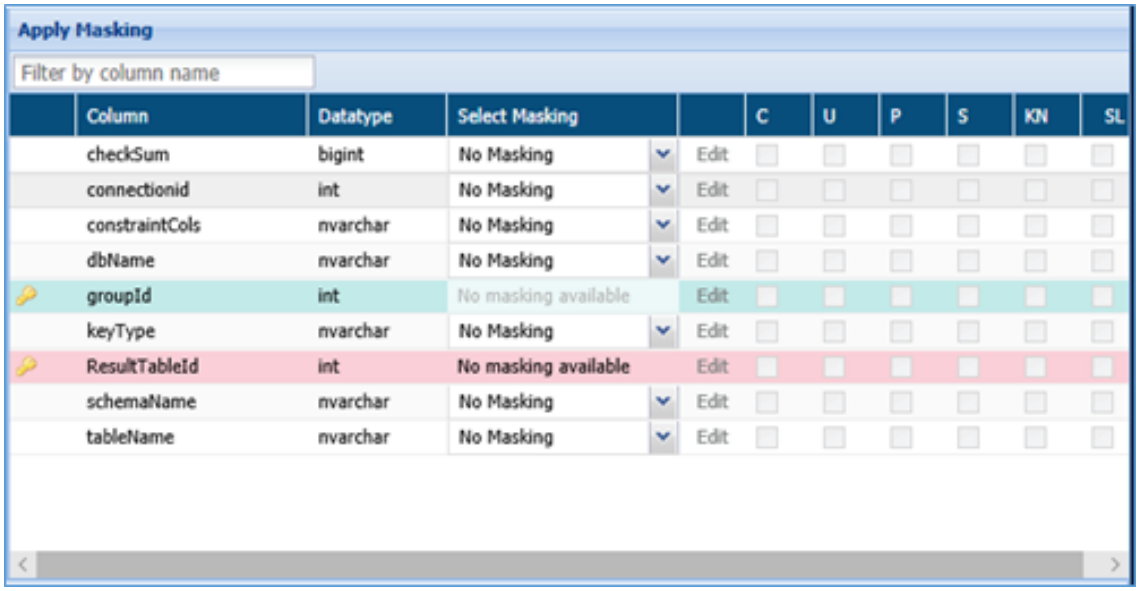
v. **Unique**: Masks each entry with a unique value.

vi. **Persistent**: Similar to Consistent, however in this case the same values will be masked consistently across all the tables of the database.

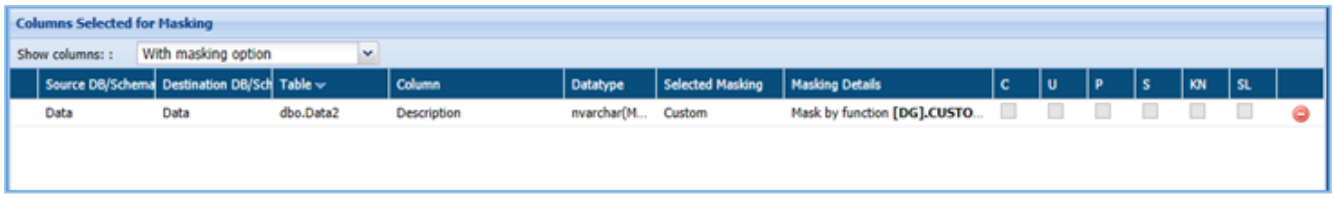
vii. **Sync**: This options allows tracking of masked entries in different tables if any of the same entries are found in other tables they will also be masked.

viii. **Keep Null**: The cells containing null values are kept null even after masking.

ix. **Stateless**: Persistently masks the data without creating any metadata. No extra space is required to create masking tables.

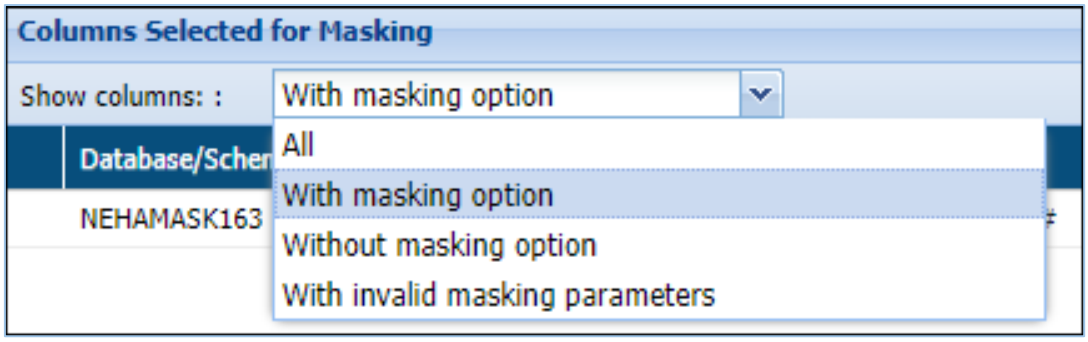


44. View the selection under the **Columns Selected for Masking** panel.



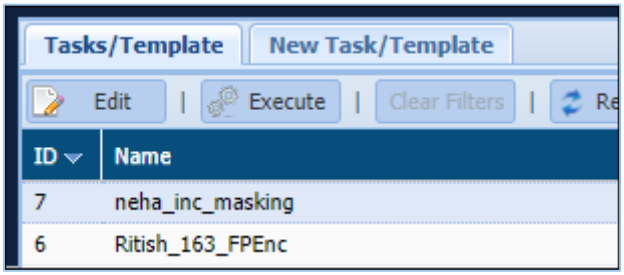
45. Select the option from the Show Column drop-down. There are four options:

a) All
b) With masking option
c) Without masking option
d) With invalid masking parameters



46. Click save to save the task or template or save and execute to execute the masking task.

47. To edit a task, select the task from the Tasks/Template tab and click edit. A task can be edited using the same steps for creating a new task.



7.2.7 Google Cloud

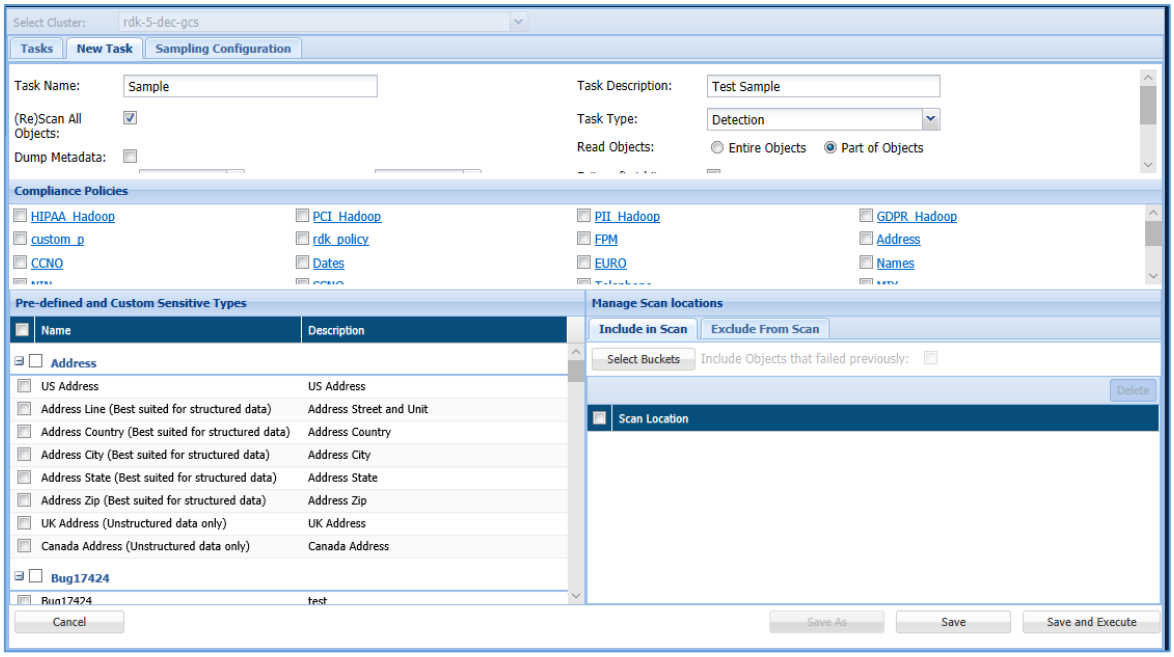
7.2.7.1 GCS

In Google Cloud, you can create and manage the GCS.

These tasks search for sensitive data hosted in Google Cloud Storage (GCS). They are designed to run on dataproc clusters spun up using the DgSecure Cloud IDP. The Cloud IDP is responsible for interacting with Google Cloud platform in order to spin up the cluster, manage the cluster's life cycle and installing the GCS IDP on the cluster.

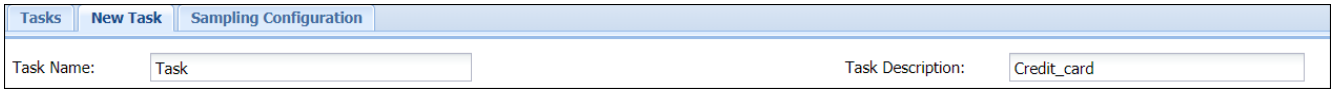
7.2.7.1.1 Create a task

1. Go to Google Cloud > GCS > Tasks. Select the New Task tab.



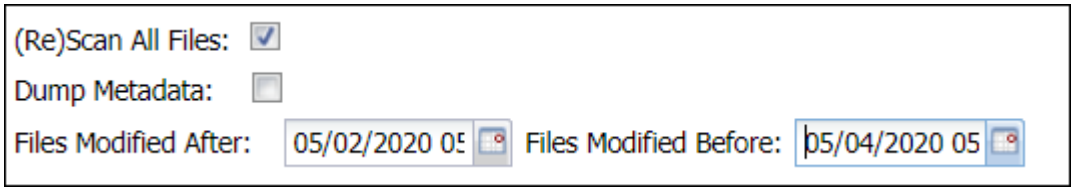
2. Select cluster from the **Select Cluster** drop-down.

48. Enter a meaningful **Task Name** and **Task Description**. The task name must be unique to the task. It can be up to 256 characters and consist of letters, numbers, certain symbols (! @ # $ _), without any spaces. The definition can be as long as the task name and contain any combination of numbers, letters, and symbols.



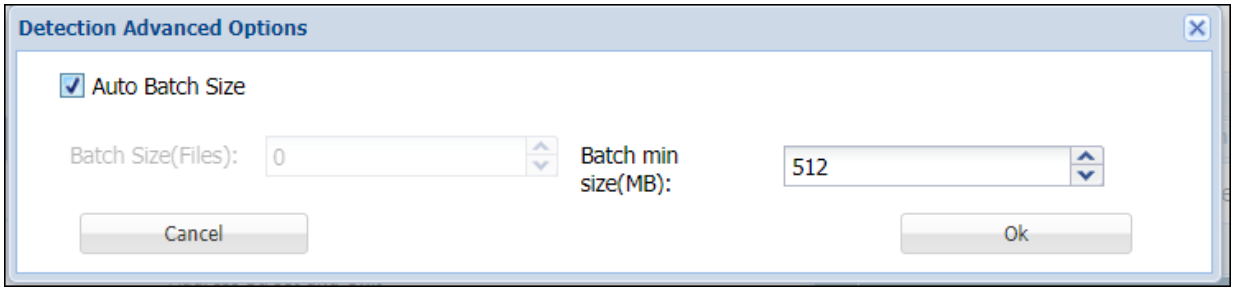
49. Choose **Detection** as the **Task Type**. Following are the options, specific to the **Detection**

50. Check **Scan All Files** checkbox to scan all the available files for a given connection between the dates specified in **Files Modified After** and **Files Modified Before** drop down.



51. Check **Dump Metadata** option to remove the metadata files after scanning.

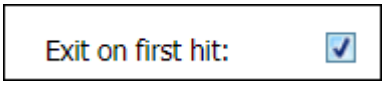
52. Click on the **Advanced Options** button to define the batch size of the data.



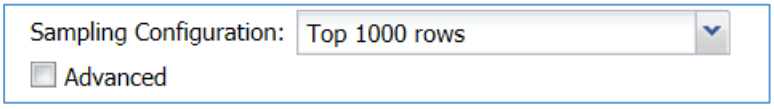
Define the number of files per batch in the **Batch Size (Files)** option or check the **Auto Batch Size** option to enter the minimum batch size in **Batch min size (MB)** option.

53. Choose to read the entire file or a part of the file at random in the **Read Files** options.

54. Check **Exit on first hit** checkbox to report the table or database as sensitive, at the first event of detection of a sensitive type.



DgSecure is equipped with **Sampling Configuration** to limit the area of scan which helps in reducing the time taken for detection.

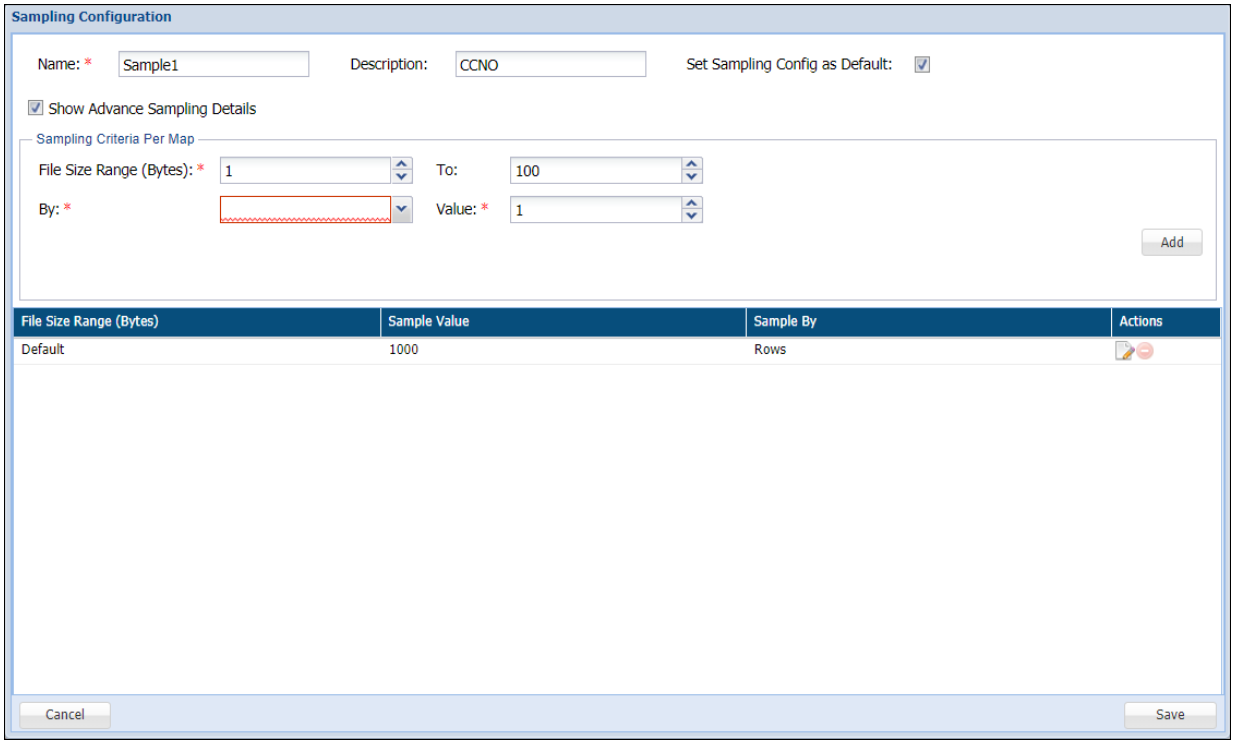


Default options to scan sample data from the database are:

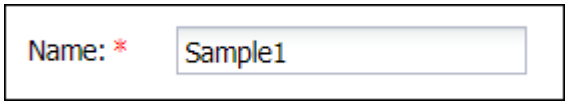
- Top 1000 Rows
- Read top 5% of data

The sampling configuration field is set to sample Top 1000 Rows by default. To create a new sampling configuration perform the following steps:

a) Go to **GCS -> TASKS -> SAMPLING CONFIGURATION** tab or check the Advanced checkbox.

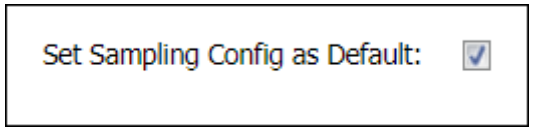


55. Enter the name of the Sampling Configuration.

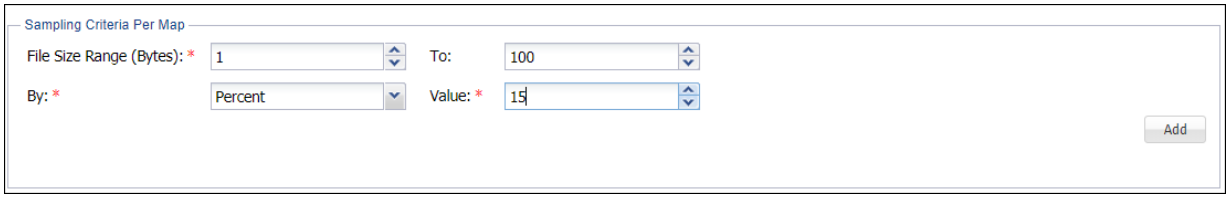


56. Enter the description.

57. Check the option **Set Sampling Config as Default** to set the Sampling Configuration as the default configuration for all your tasks.



58. Check the option **Show Advance Sampling Details** to set the advanced settings for sampling.



Below are the options for advanced settings:

- **File Size Range:** Enter the range for the sample in Bytes.
- **To:** Enter the ending range for the sample.
- **By:** To Specify how to pick data for sampling from the source system, there are two ways:

  i. **By Rows:** Select **Rows** from the drop-down, to sample data based on the number of rows.

  ii. **By Percent:** Select **Percent** from the drop-down, to sample a percentage of the data

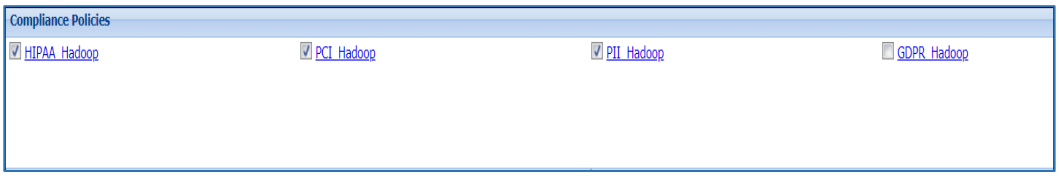
- **Value:** Enter the numeric value. It will specify the total number of records to be processed if sampling By-Rows is selected and denotes the percentage of sampling By-Percent is selected.

59. After setting up the required configuration, click **Add** to add the user-defined sampling configuration to the list.

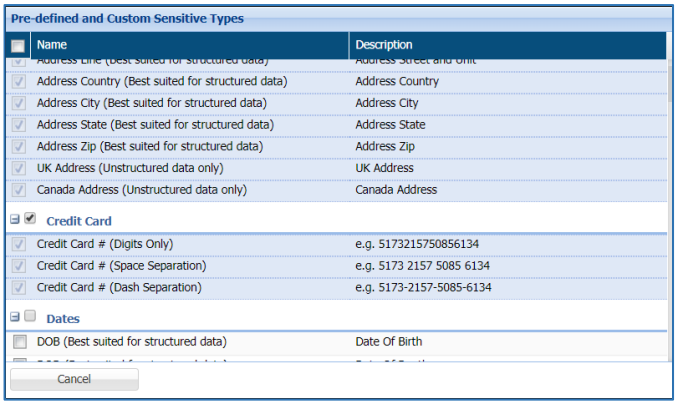
60. Click the **Save** button to save the changes.

61. Compliance Policy can be set with all the task types in HDFS except Metadata Discovery. For more details about compliance policies, refer to section Policy . After selecting the required options, perform the following steps:

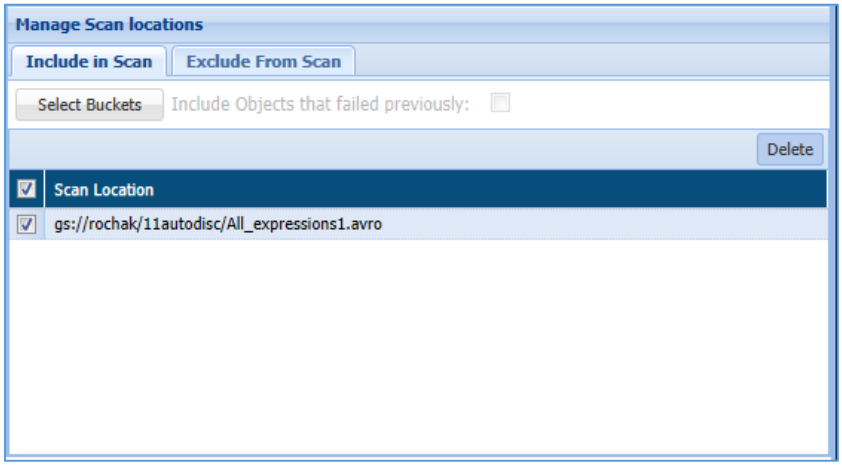
a) Select the required policies.



62. Select the required sensitive types in the **Pre-defined and Custom Sensitive Types** panel.



63. Specify location of the files to scan in the **Manage Scan Location** panel. It displays either task target directories or excluded directories, depending on which tab is selected. You can add more objects by clicking the **Select Buckets** button.



a) **Delete**: Check the **Delete** checkbox corresponding to the scan location that you want to delete. Click the **Delete** button to delete the selected scan location.

b) **Select Buckets:** Click the **Select Buckets** button, if you want to include the object, follow the below steps for including an object:

i. Click **Select Buckets** button. It will open **GCS File Browser** window.

ii. Select objects from the **Select Object** Pane. Check the File in the right pane of the **GCS Object Browser** window.

iii. Click the **Add** button. It will add the file in **Selected Locations** pane.

iv. Check the file in the Selected Locations pane.

v. Click Done.

64. **Include Objects that failed previously:** Check this option, if you want to include the objects which skipped in the previous run. Such objects will get included when you re-run the task.

65. **Exclude From Scan:** You can specify an object or a folder that need to be excluded in the targeted scan path. There are two ways in which you can specify an object is excluded. These are:

    - **Object Extension:** Enter the type of **Object Extension** which need to be excluded.

      For Example: .txt, .docx, .CSV, etc.
    - **Add:** Click Add button to include the **Object Extension** type in the **File Extension** pane.

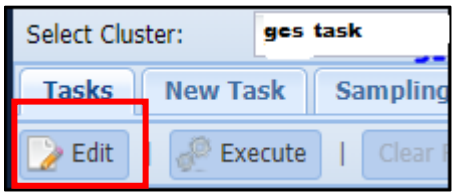
    - **Exclusion List:** You can upload object **Exclusion List** either from your local machine using **Browse** button or **GCS Object Browser**.

    - **Select Buckets:** Click **Select Buckets** to include object Extension list from **GCS File Browser.**

    - **Delete:** Check the **Delete** checkbox corresponding to the **File Extension** or **Scan Location** that you want to delete. Click the **Delete** button to delete it.

66. After creating the required task, i.e., detection, masking, encryption, decryption or metadata discovery, click save to save the task to schedule later, or save and execute to execute it right away.

67. To edit an existing task, select the required task from the list of tasks on the Tasks screen and click **Edit**. A task can be edited using the same steps for task creation.



7.2.7.2 BigQuery

7.2.8 SharePoint

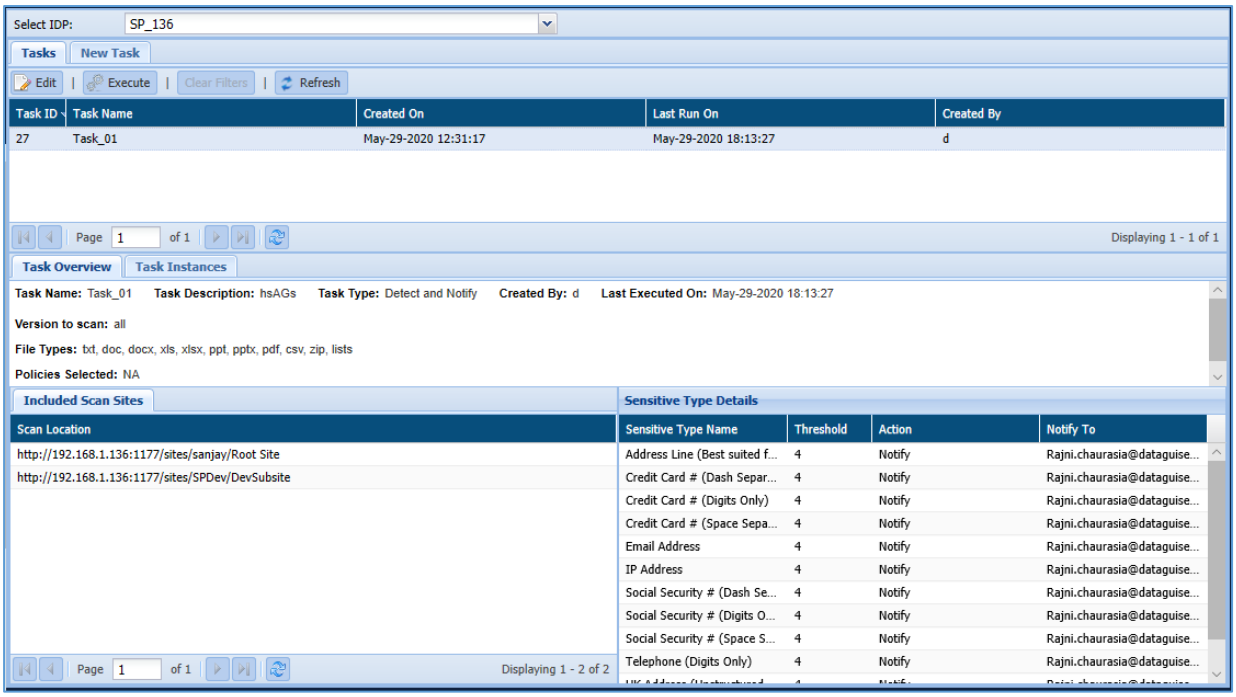
It supports for the detection of sensitive data in Microsoft Sharepoint. **SHAREPOINT** sub-menu

provides the facility to create and manage tasks to identify the data that is subtle to the data handling regulations.

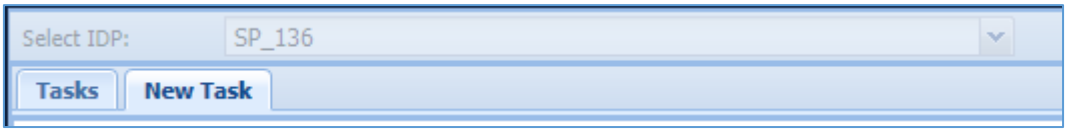
Sharepoint IDP supports detection on various file types: text, excel, pdf, csv, ppt, doc and zip. Detection task locates and identifies sensitive data as per the applied policy.

The below steps provides the facility to create a new SharePoint task. A task consists of one or more policies, an action such as detection, notify etc., and a target scan path.

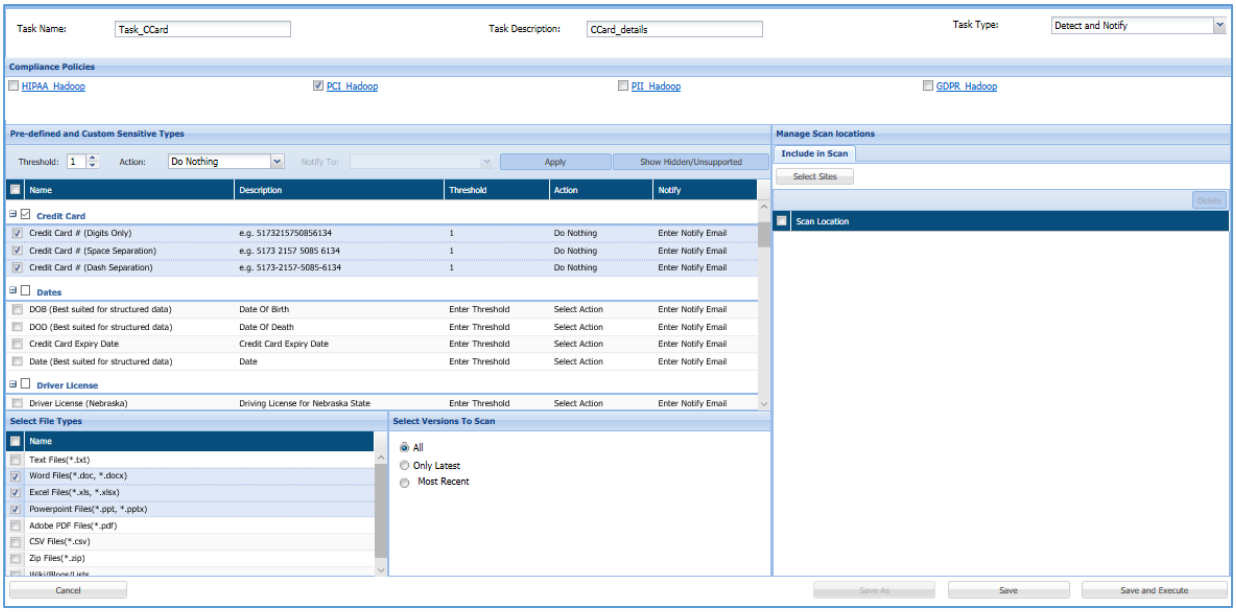
Go to **SHAREPOINT > TASKS**.



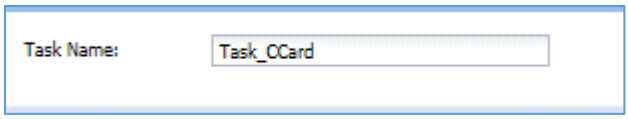
1. Select an IDP from **Select IDP** drop –down and click **NEW TASK** tab.



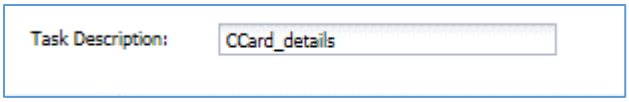
2. The following image shows the user interface for creating a task.



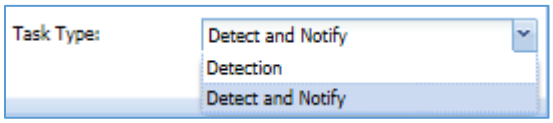
3. **Task Name**: Enter the name of the task.



68. **Task Description**: Enter the description of the task.

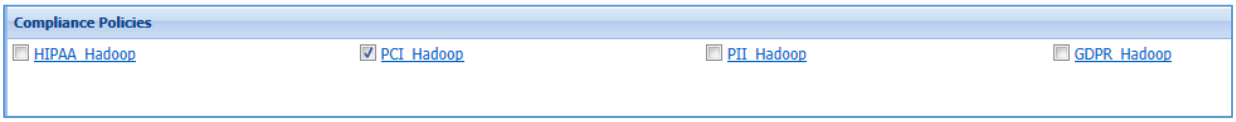


69. **Task Type**: Select the type of task. Following are the options:

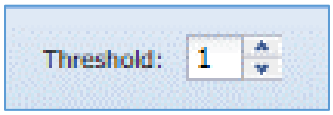


a) **Detection** - Detects the sensitive data.
b) **Detection and Notify** – Detects the sensitive data and sends the notification emails to the email IDs mentioned in the **Notify To** field.

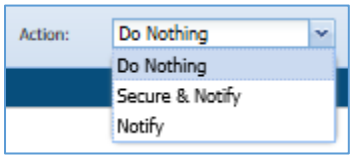
70. **Compliance Policies**: Select the policy based on which, the sensitive data you want to identify.



71. **Threshold**: This field will appear only for the Task Type: Detection and Notify. Enter the number of records. The system will perform the action defined in the **Action** field when the number of sensitive records exceeds the number defined in this field.



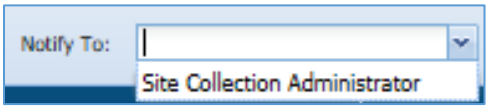
72. **Action**: This field will appear only for the Task Type: Detection and Notify. Select the action that you want to perform when the number of sensitive records exceeds the number defined in the **Threshold** field. Following are the options:



a) **Secure & Notify**: Removes access rights of all the users except administrator and sends the notification emails to the email IDs mentioned in the **Notify To** field.

73. **Notify**: Sends the notification emails to the email IDs mentioned in the **Notify To** field.

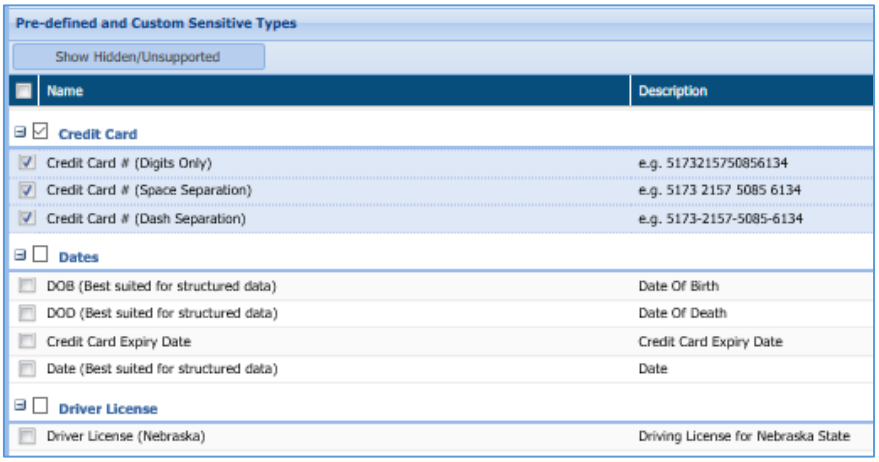
74. **Notify To**: This field will be enabled when value for **Action**: Secure & Notify and Notify. Select the email IDs to send the notifications. Emails IDs of sharepoint administrator and site owner are already configured. You can also enter the email IDs manually.



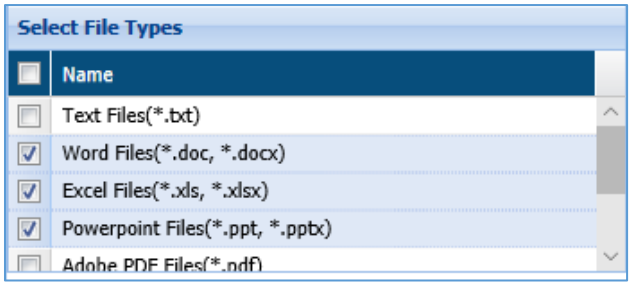
75. Click the **Apply** button to apply all the changes made for Threshold, Action and Notify field.

76. Click **Show Hidden/Unsupported** button to view the data types that are not supported or hidden.

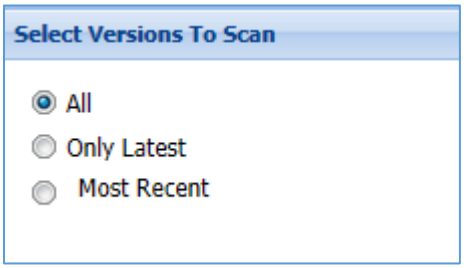
77. **Pre-defined and Custom Sensitive Type**: This grid displays all the pre-defined data types. It allows you to define Threshold, Action and Notify field specific to a data type. You can also select the data types to be included for the sensitive data scan.



78. **Select File Types:** Select all the file types that you want to scan. The supported file types are text, excel, powerpoint, pdf, csv, zip, word files.



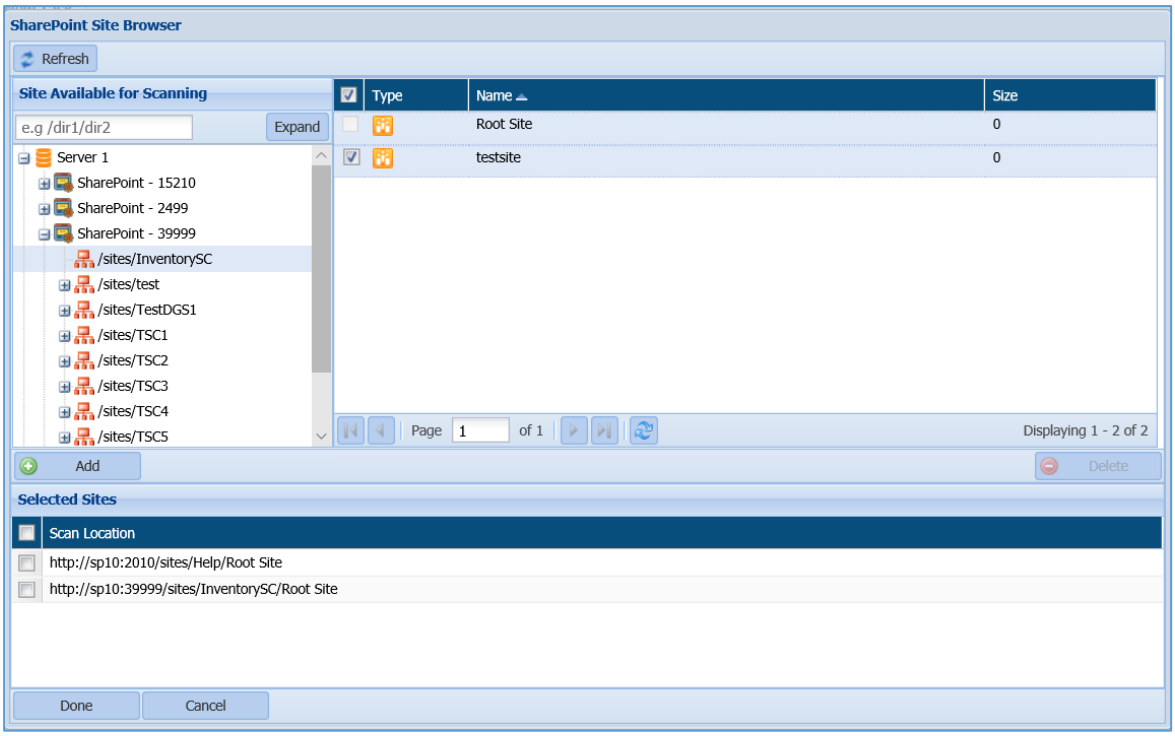
79. **Select Versions To Scan**: Select the data file version to scan. The available options are:



a) **All** - Select this option, if you want to scan the complete dataset.

80. **Only Latest** - Select this option, if you want to scan only the latest version of the dataset.
81. **Most Recent**-Specify the number of recent versions of the dataset that you want to check.

82. Click **Select Sites** button to include all the sites that you want to scan.



i. Browse the site level from the **Site Available for Scanning** panel.
ii. To select the sites, check the checkbox corresponding to the site names.
iii. Click **Add** to include the selected sites in **Selected Sites** panel.
iv. Select the locations by checking the checkbox next to the scan location name.
v. Click **Done** button and the selected sites will be available in the **Select Sites** pane.
vi. If you want to delete any site from the list, select the site and click **Delete.**

83. Click **Save** to save the filters. Click **Save and Execute** to save the filters and start the scan on the dataset. The saved task will be available on the **Task** page.

7.3 List a Task

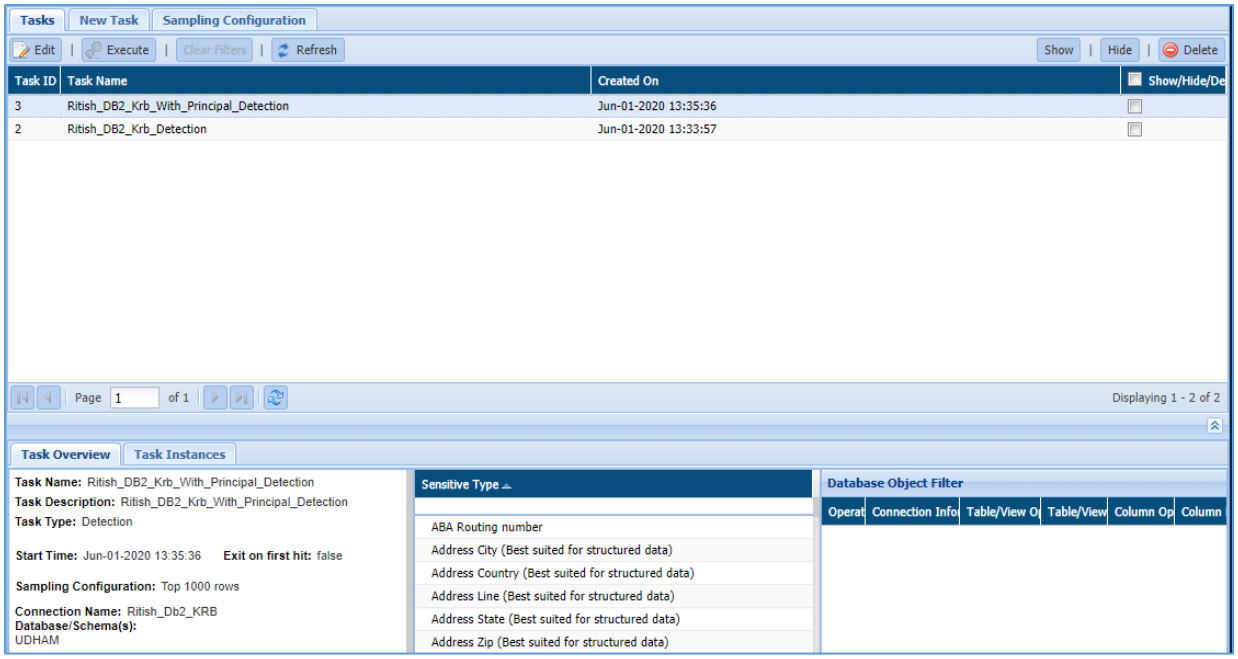
This section will explain the screen which appears when clicked on Task.

7.3.1 RDBMS

In RDBMS, a default screen appears when click on **Task** sub-menu. This page offers in-depth details about the detection tasks that the user has permission to view.

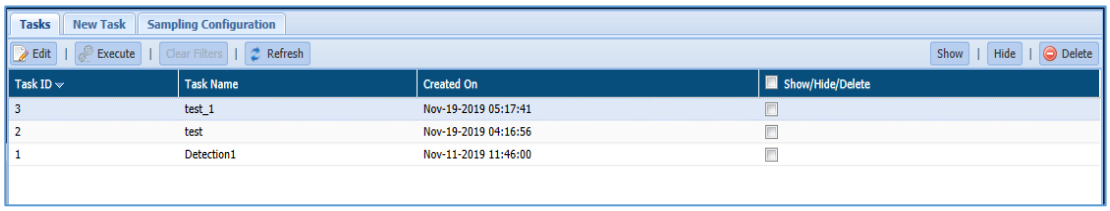
Detection

The below screenshot shows the user interface of the default screen of the Detection Task page.

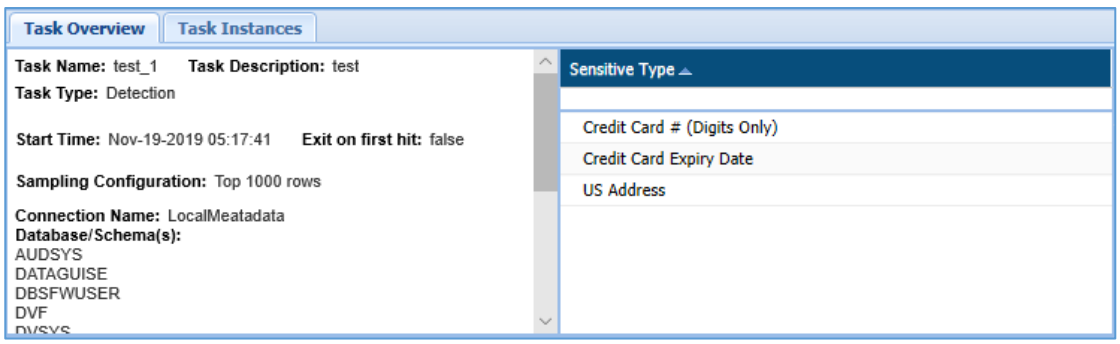


To access the **Task** page from the menu. Click **RDBMS > Detection > Tasks**.

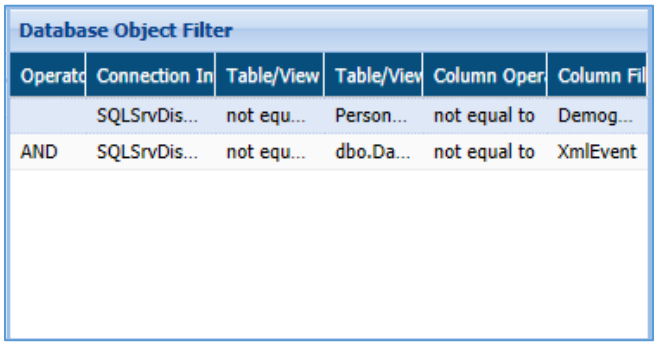
1. **Detection Task Panel:** The detection task panel shows the tasks and the properties associated with each task. Properties include details about the task creation date, system-generated task ID.



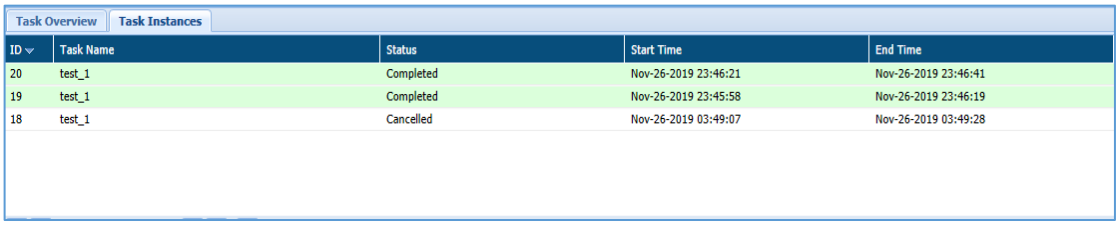
84. **Task Overview tab:** It displays the basic information for the selected task. It displays the information for the selected task such as the Task Name, Task Description, Task Type, Sampling Configuration, Connection Name, Database schema, list of Sensitive Type, etc.



a) **Database Object Filter:** The database Object Filter pane displays only those databases/tables/columns that match the filter applied. The columns display information such as the applied operator, connection information, Table/View operator, Table/View Filter, column operator and column filter.



85. **Task Instances tab:** it displays the related information about each instance of the task selected in the detection task panel. Information such as Task Name, Task ID (system generated), Status of the task, Start time and End time.

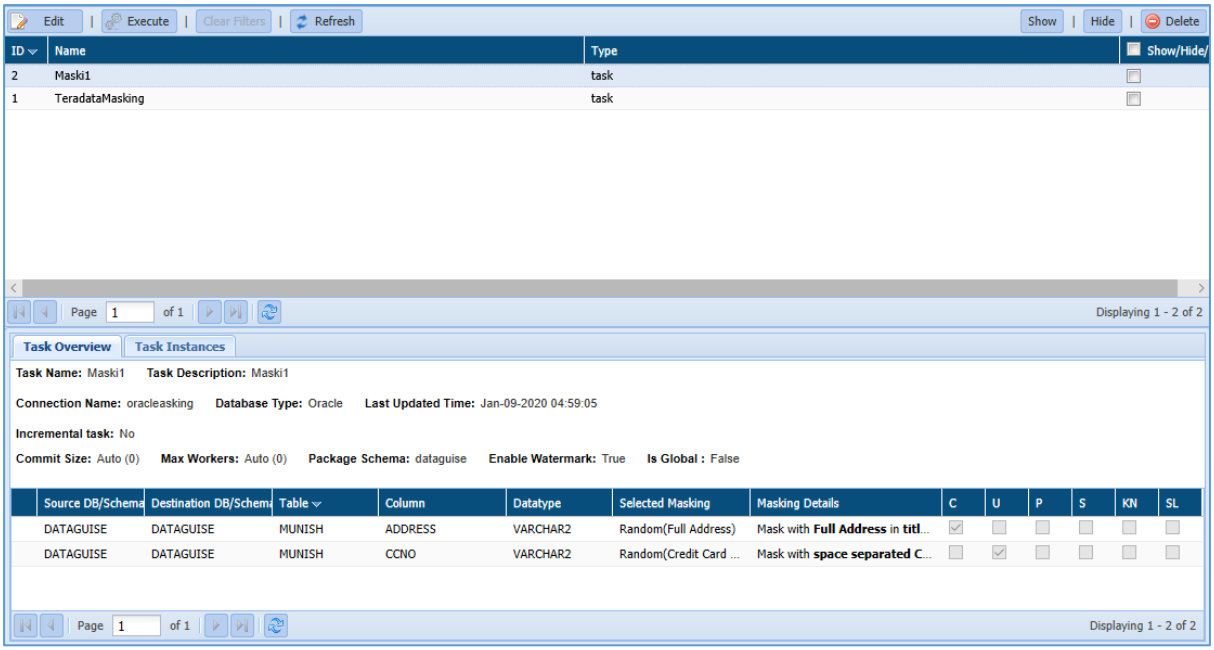


The status of the task can be in any of the listed states:

i. Initializing
ii. Completed
iii. Running
iv. Failed
v. Stopped

Masking

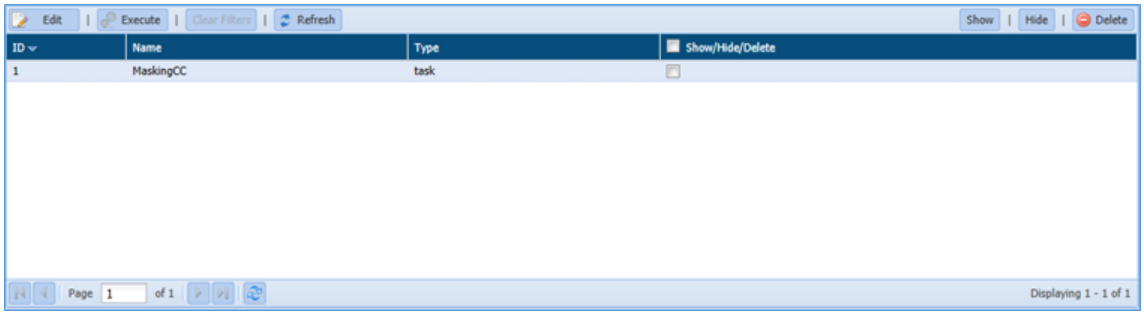
The below screenshot shows the user interface of the default screen of the Masking Task page.



The Tasks/Template screen is divided into three panels. These are:

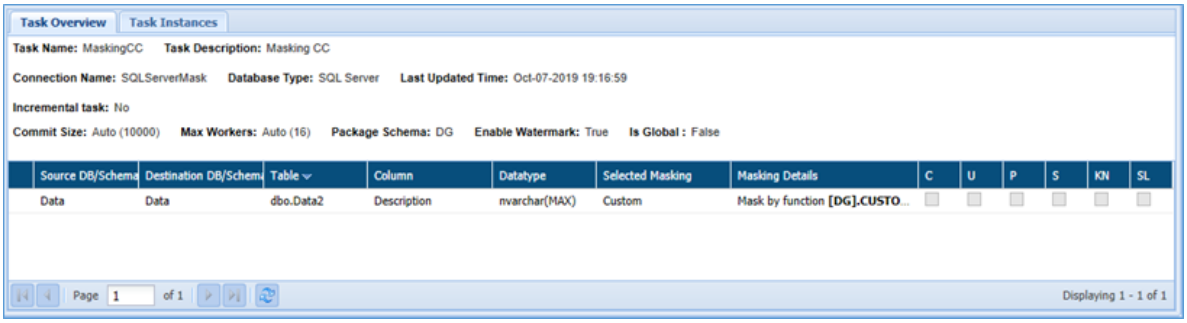
1. **Masking Tasks/Template:**

   The Masking Tasks/Template panel shows the tasks and the properties associated with each masking task. The task properties include details such as Task ID (system generated), Task Name, Type, etc.



86. **Task Overview**

The Task Overview pane displays the details for the selected task. It includes information such as Task Name, Task Description, Database Type, Connection Name, etc. It also displays information about the masking details for the Sensitive Type such as SourceDB/Schema, Table, Column, Datatype, Selected Masking, Masking Details, CUPS option, etc.



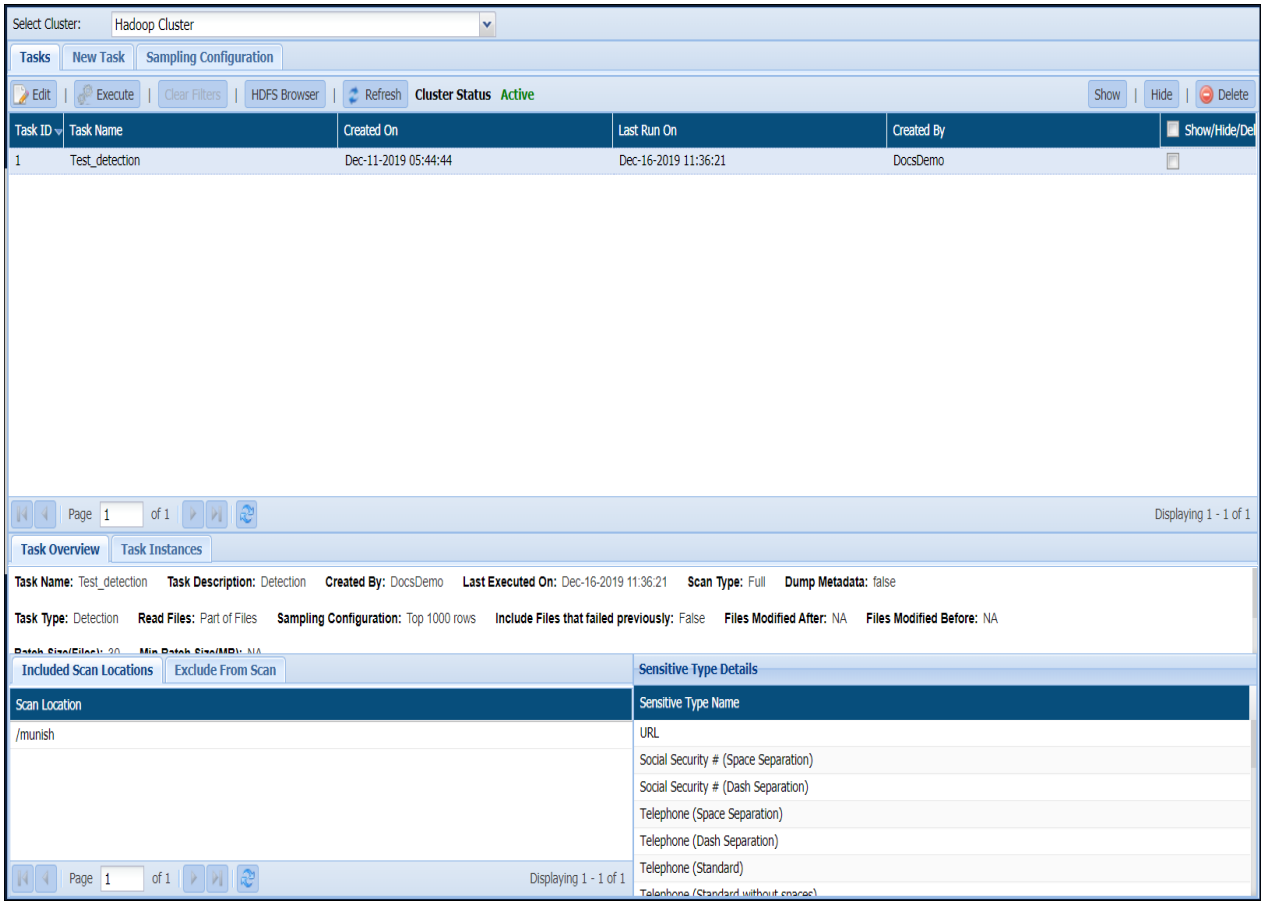
87. **Task Instances**

The Task Instances pane displays the information about each instance of the task selected in the Detection Tasks panel.Information includes such as Task ID (system generated), Task Name, Status, Start Time and, End Time.

7.3.2 Hadoop

7.3.2.1 HDFS

1. **Task Details**
   The top panel of the HDFS Tasks page lists all the tasks that you have permission to view. When you select a task in this list, information about the task is displayed in the tabbed panel below. Click the HDFS Browser button to view the directories and files in the targeted cluster.

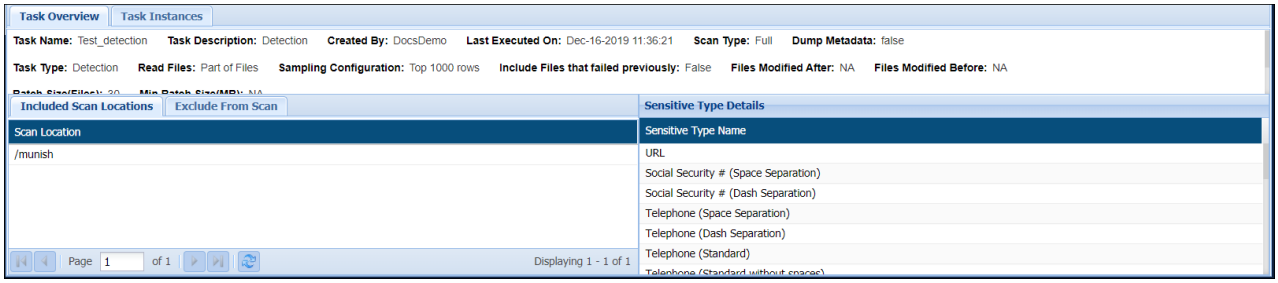


88. **Task Overview**

For this tab, the panel displays the date and time that the task was last executed on, and details the task's composition.The displayed parameters include:

a) The types of sensitive data that are searched for (e.g., social security and credit card numbers).

89. The type of task that is performed — discovery, masking, encryption by row, encryption by cell, or decryption.
90. The directory path details.
91. Task Instances.

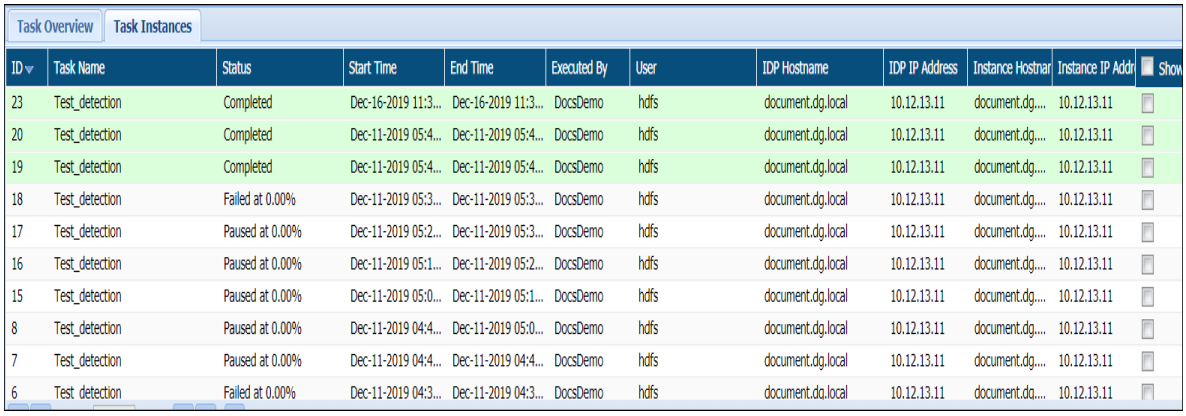


92. **Task Instance**

When a task is executed, the resulting scan, with its unique start time and results, is called a task instance. For this tab, the panel tracks these instances ordered by the date of execution.For each instance, the tab displays:

a) The task name.

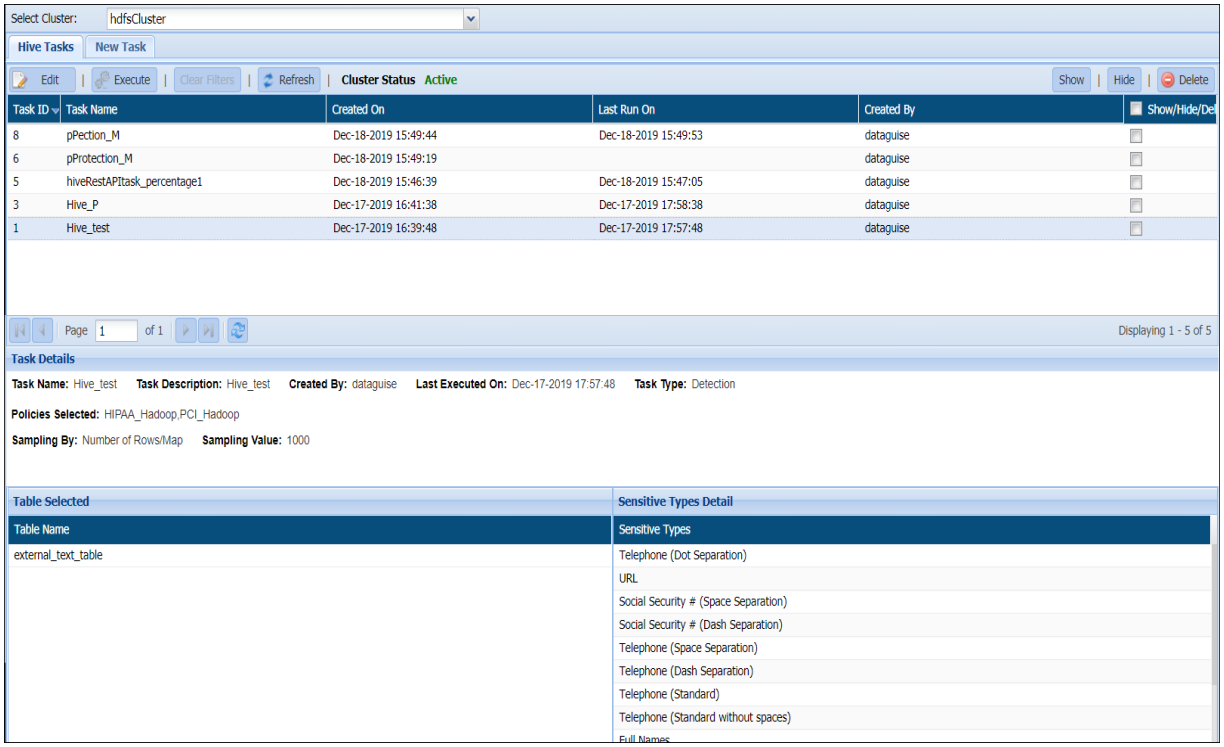
93. The start and finish times.
94. The status (Started, Running, Completed, or Canceled).



ID	Task Name	Status	Start Time	End Time	Executed By	User	IDP Hostname	IDP IP Address	Instance Hostnar	Instance IP Addr	Show
23	Test_detection	Completed	Dec-16-2019 11:3...	Dec-16-2019 11:3...	DocsDemo	hdfs	document.dg.local	10.12.13.11	document.dg....	10.12.13.11	
20	Test_detection	Completed	Dec-11-2019 05:4...	Dec-11-2019 05:4...	DocsDemo	hdfs	document.dg.local	10.12.13.11	document.dg....	10.12.13.11	
19	Test_detection	Completed	Dec-11-2019 05:4...	Dec-11-2019 05:4...	DocsDemo	hdfs	document.dg.local	10.12.13.11	document.dg....	10.12.13.11	
18	Test_detection	Failed at 0.00%	Dec-11-2019 05:3...	Dec-11-2019 05:3...	DocsDemo	hdfs	document.dg.local	10.12.13.11	document.dg....	10.12.13.11	
17	Test_detection	Paused at 0.00%	Dec-11-2019 05:2...	Dec-11-2019 05:3...	DocsDemo	hdfs	document.dg.local	10.12.13.11	document.dg....	10.12.13.11	
16	Test_detection	Paused at 0.00%	Dec-11-2019 05:1...	Dec-11-2019 05:2...	DocsDemo	hdfs	document.dg.local	10.12.13.11	document.dg....	10.12.13.11	
15	Test_detection	Paused at 0.00%	Dec-11-2019 05:0...	Dec-11-2019 05:1...	DocsDemo	hdfs	document.dg.local	10.12.13.11	document.dg....	10.12.13.11	
8	Test_detection	Paused at 0.00%	Dec-11-2019 04:4...	Dec-11-2019 05:0...	DocsDemo	hdfs	document.dg.local	10.12.13.11	document.dg....	10.12.13.11	
7	Test_detection	Paused at 0.00%	Dec-11-2019 04:4...	Dec-11-2019 04:4...	DocsDemo	hdfs	document.dg.local	10.12.13.11	document.dg....	10.12.13.11	
6	Test_detection	Failed at 0.00%	Dec-11-2019 04:3...	Dec-11-2019 04:3...	DocsDemo	hdfs	document.dg.local	10.12.13.11	document.dg....	10.12.13.11	

7.3.2.2 Hive

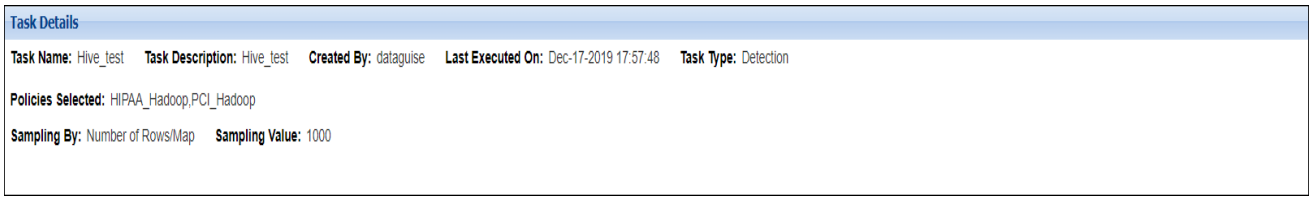
1. **Task Details**
   The top panel of the Hive Tasks page lists all the tasks that you have permission to view. When you select a task in this list, information about the task is displayed in the panels below.



95. **Task Overview**

For this tab, the panel displays the date and time that the task was last executed on, and details the task's composition.The displayed parameters include:

a) The types of sensitive data that are searched for (e.g., social security and credit card numbers).
b) The type of task that is performed — discovery, masking, encryption by row, encryption by cell, or decryption.
c) The directory path details.
d) Task Instances.



96. **Table Selected**

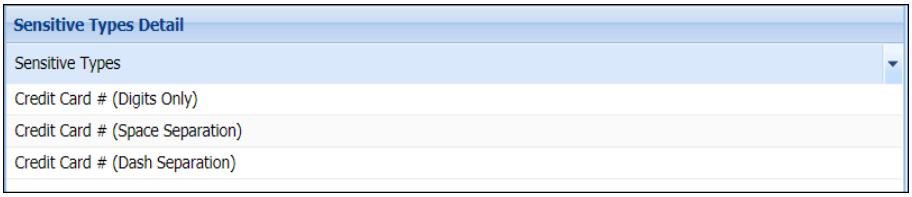
Lists the tables selected for the scan under the selected task and provides details of the selected table name, column name, Sensitive Type, data type and Domain name.

Table Selected

Table Name	Column Name	Sensitive Type	Data Type	Domain Name
external_text_table	ccno_digits	Credit Card # (Digi...	STRING	HDFS

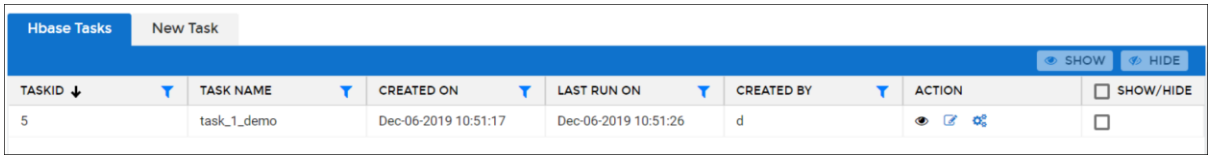
97. **Sensitive Type Detail**

Lists all the sensitive types selected in the selected task.



7.3.2.3 Hbase

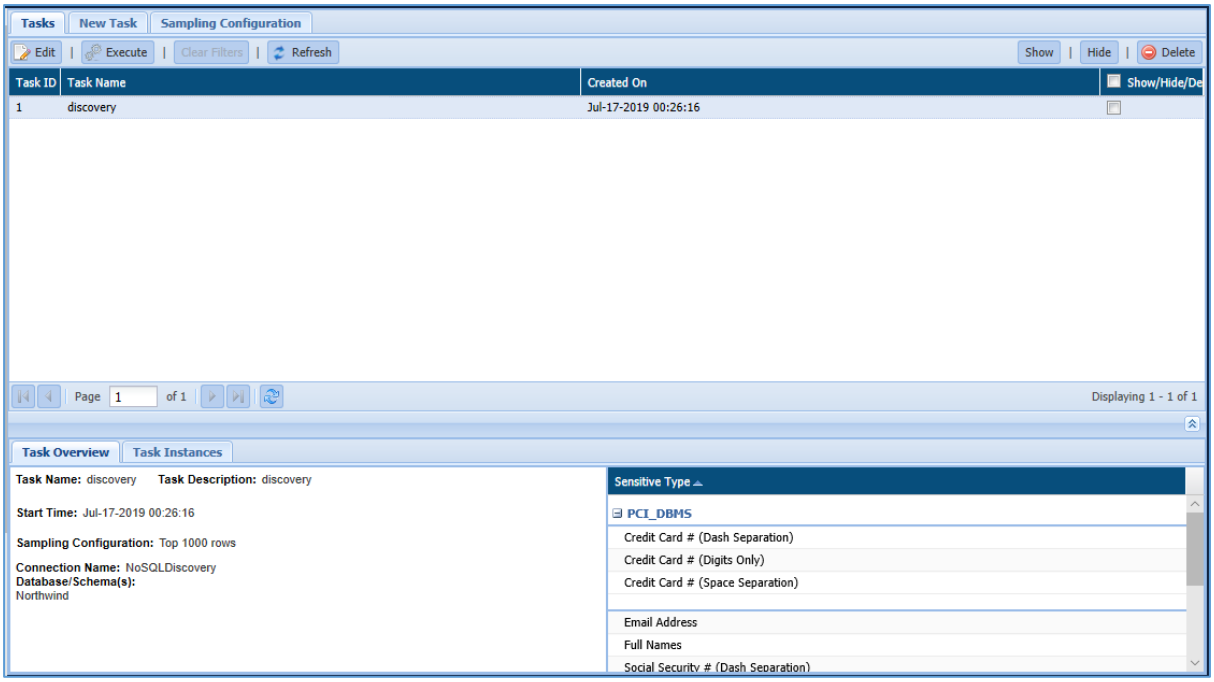
To view all the existing tasks, go to **HBASE> HBASE** Tasks.



7.3.3 NoSQL

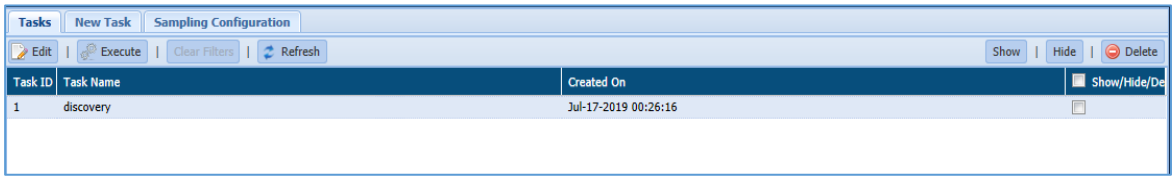
In NoSQL, screen appears when click on **Tasks** sub-menu. This page offers in-depth details about the tasks that the user has permission to view.

The below image shows the user interface of the screen of the **Tasks** page.

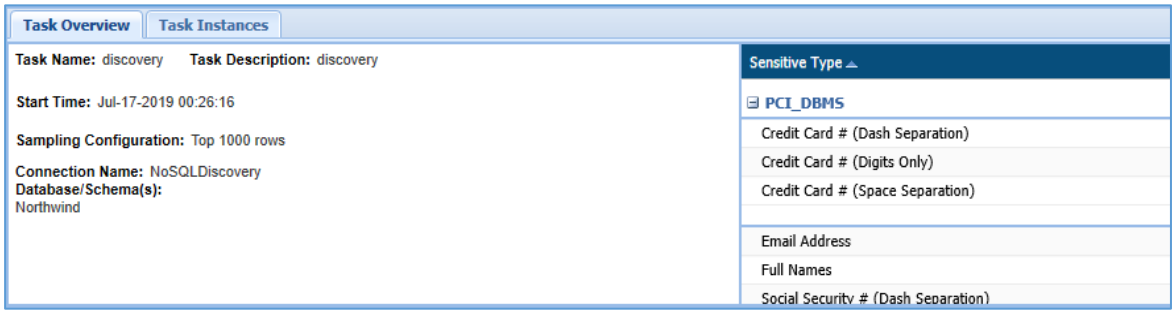


To access the **Task** page. Click **NoSQL > Detection > Tasks**.

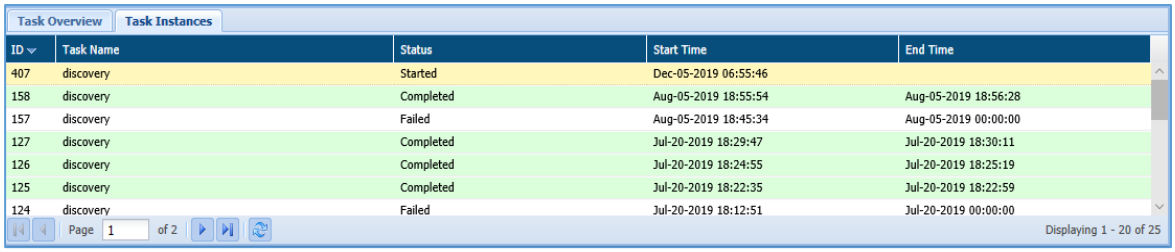
1. **Detection Task Panel:** The detection task panel shows the tasks and the properties associated with each task. Properties include details about the task creation date, system-generated task ID. `



98. **Task Overview tab:** It displays the basic information for the selected task. It displays information such as the Task Name, Task Description, Sampling Configuration, Connection Name, Database schema, list of Sensitive Type, etc.



99. **Task Instances tab:** it displays the information about each instance of the task selected in the Tasks panel. Information such as Task Name, Task ID (system generated), Status of the task, Start time and End time.



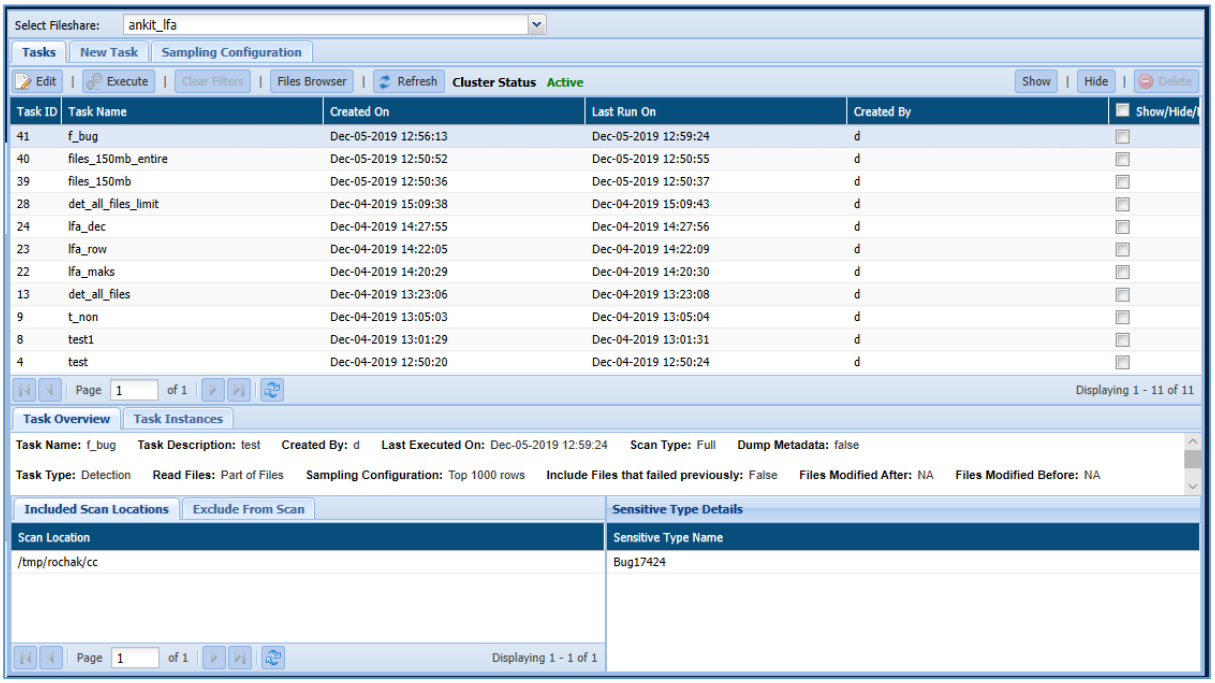
The status of the task can be in any of the listed states:

i. Completed
ii. Running
iii. Failed
iv. Stopped

7.3.4 Files

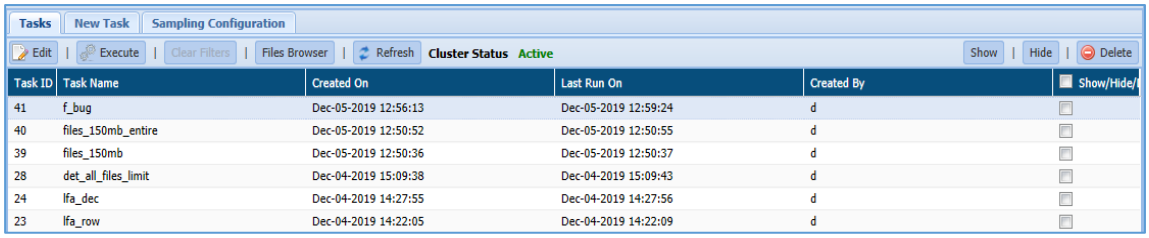
In Files, screen appears when click on **Tasks**. This page offers in-depth details about the tasks that the user has permission to view.

The below image shows the user interface of the screen.



To access the **Task** page. Click **Files > Tasks > Tasks** tab.

1. **Detection Task Panel:** The detection task panel shows the tasks and the properties associated with each task. Properties include details about the task such as Task ID, Task Name, creation date, Created by, etc.



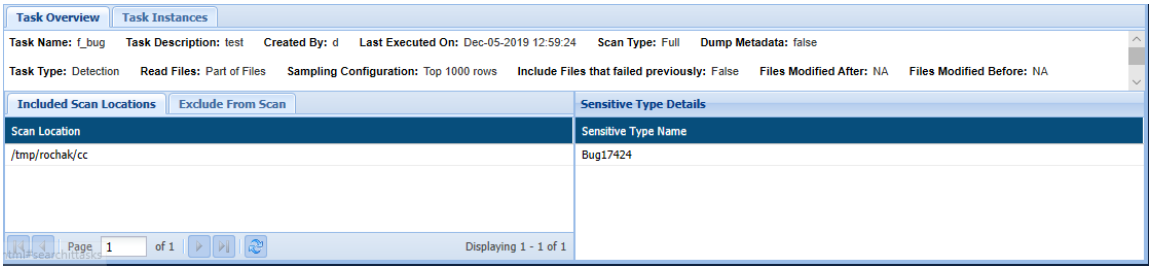
100. **Task Overview:** It displays the basic information for the selected task. It displays information such as Task Name, Task Description, Created by, Last executed on, Sampling Configuration, etc.

101. **Task Overview** tab also includes Included Scan Location and Exclude From Scan tab, Sensitive Type Details panel.

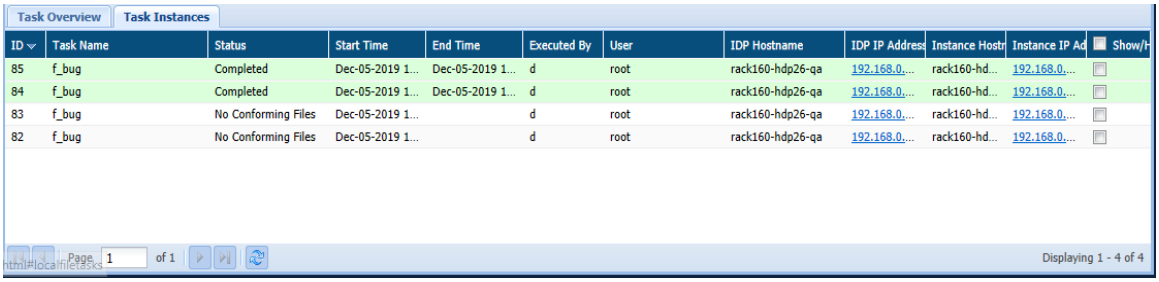
a) **Included Scan Location:** This window will display list of directory location from where the files are scanned.

b) **Exclude from Scan:** This tab will display File Extension and Scan Location pane.

c) **Sensitive Type Details:** This tab displays the list of Sensitive Type for the selected task.



102. **Task Instances:** it displays the information about each instance of the task selected in the Tasks panel. Information such as Task ID, Task Name, Status, Start time and End time, Executed By, IDP Hostname, IDP IP Address, etc.



The status of the task can be in any of the listed states:

i. Completed
ii. Running
iii. Failed
iv. Stopped

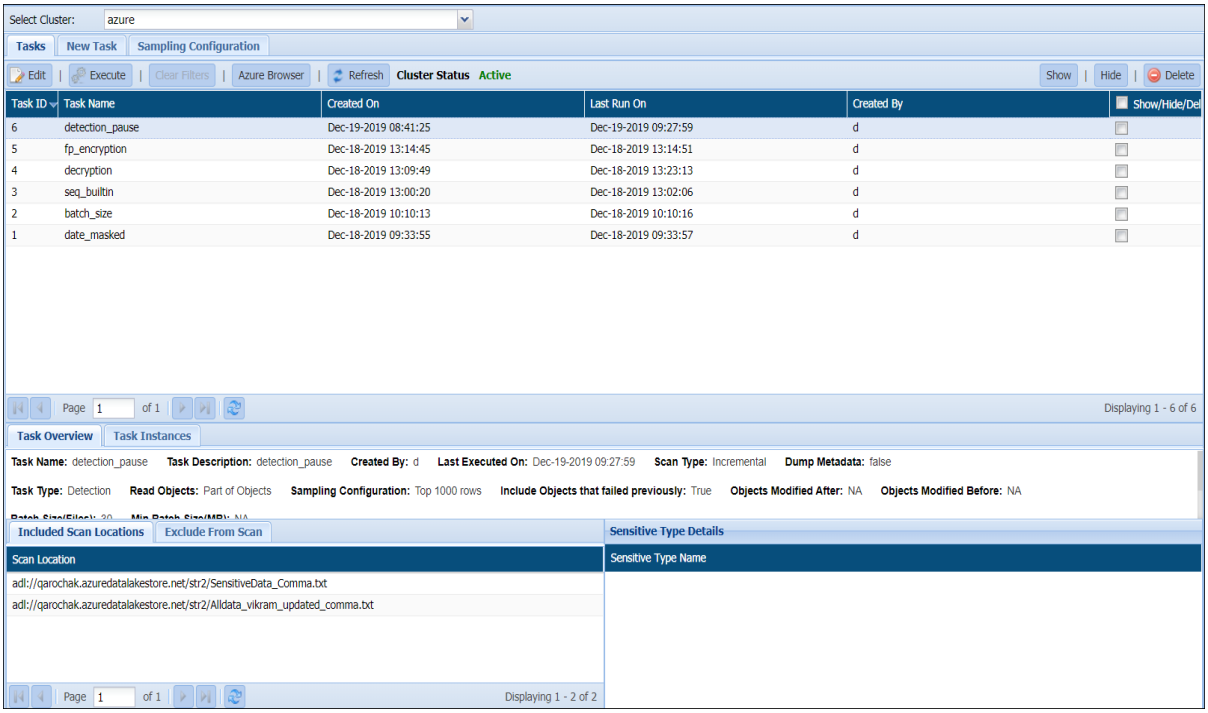
7.3.5 Azure

1. **Task**

   Use Azure tasks to define and launch tasks that search for, and optionally mask or encrypt sensitive information within an HDFS cluster. Create tasks with the information to search for (such as credit card numbers and names), the locations to search in, and the masking option to apply.

   103. **Task Details**

   The top panel of the Azure Tasks page lists all the tasks that you have permission to view. When you select a task in this list, information about the task is displayed in the tabbed panel below.

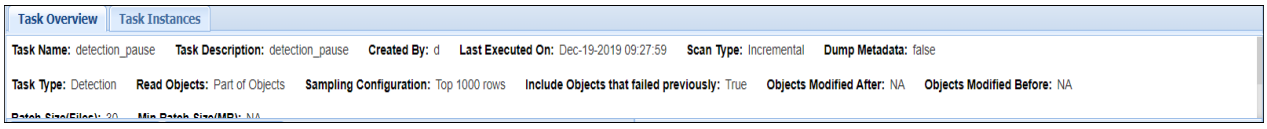


104. **Task Overview**

For this tab, the panel displays the date and time that the task was last executed on, and details the task's composition. The displayed parameters include:

a) The types of sensitive data that are searched for (e.g., social security and credit card numbers).

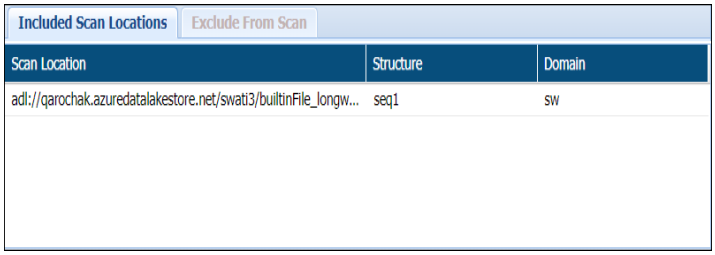
105. The type of task that is performed — discovery, masking, encryption by row, encryption by cell, or decryption.
106. The directory path details.
107. Task Instances.



Following tabs get populated on the screen when the Task Overview tab is selected:

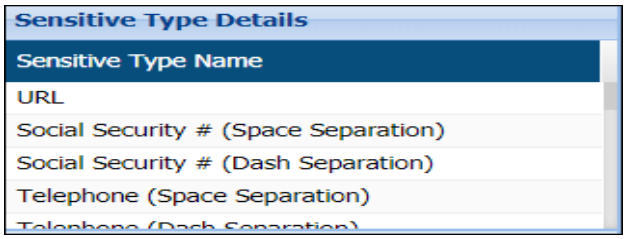
a) **Include Scan Locations and Exclude From Scan**
The locations added to the Include list. When the Included Scan Location tab is selected, the instance's target directory, the structure assigned to the directory, and the domain to which it is assigned are shown. Not all scan locations are associated with a structure or domain.

108. The locations added to the Exclude list. When the Exclude from Scan tab is selected, the panel displays any excluded file extensions and file paths.



109. **Sensitive Type Details**

The Sensitive Type Details panel shows the task instance's sensitive types.

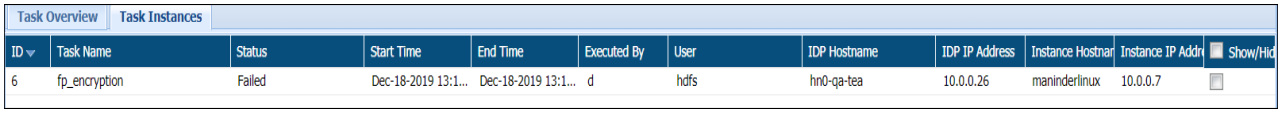


110. **Task Instance**

When a task is executed, the resulting scan, with its unique start time and results, is called a task instance. For this tab, the panel tracks these instances ordered by the date of execution.For each instance, the tab displays:

a) The task name.

111. The start and finish times.
112. The status (Started, Running, Completed, or Canceled).

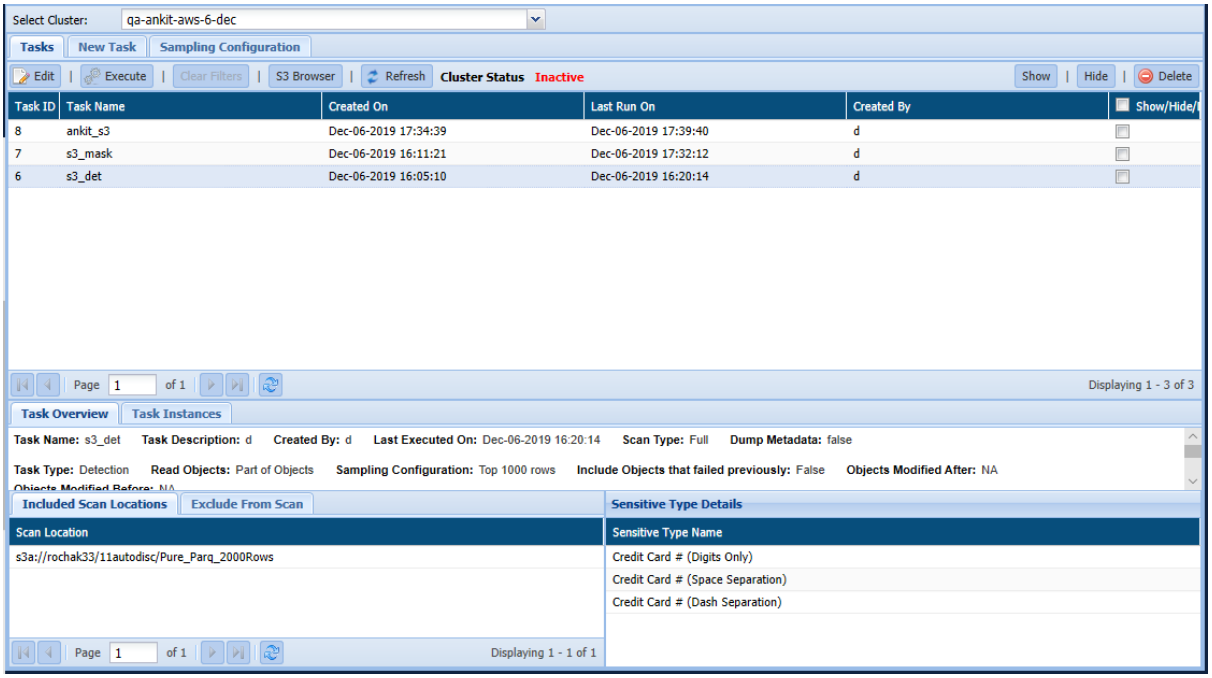


7.3.6 AWS

7.3.6.1.1 S3

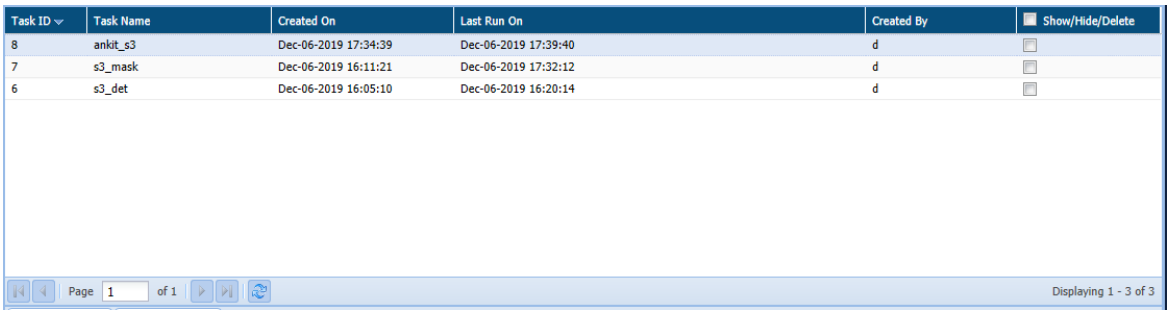
In S3, screen appears when clicked on **Tasks**. This page offers in-depth details about the tasks that the user has permission to view.

The below image shows the user interface of the screen.

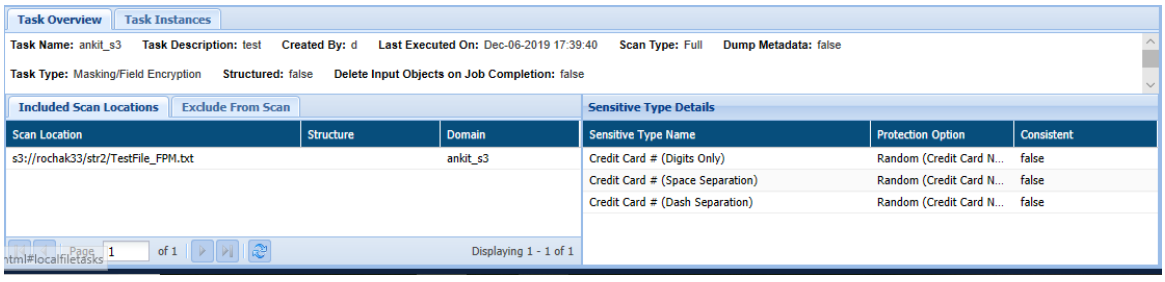


To access the **Task** page. Click **AWS > S3 > Tasks** tab.

1. **Detection Task Panel:** The detection task panel shows the tasks and the properties associated with each task. Properties include details about the task such as Task ID (system generated), Task Name, Created On, Last Run On, Created by, etc.

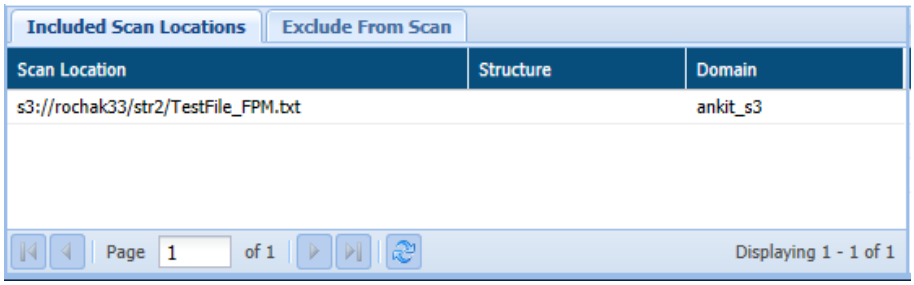


113. **Task Overview:** It displays the details for the selected task. It includes information such as Task Name, Task Description, Created by, Last Executed On, Sampling Configuration, Scan Type, etc.

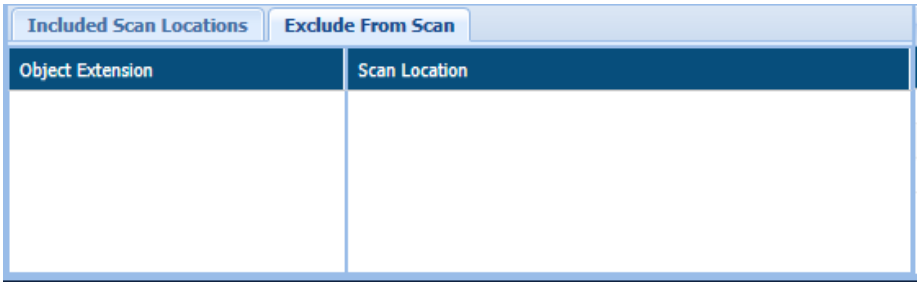


Task Overview tab also includes **Included Scan Location** tab, **Exclude From Scan** tab, and **Sensitive Type Details** pane.

a) **Included Scan Location**: This pane displays the list of included files for the selected scan locations. Information includes Scan Location, Structure, Domain.

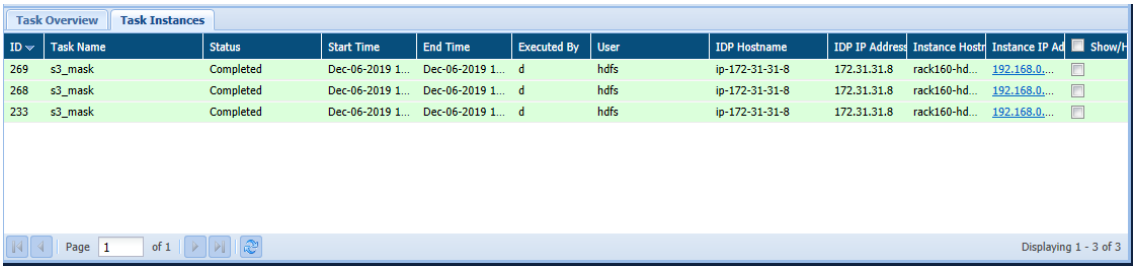


114. **Exclude from Scan:** This pane displays the list of excluded file extensions and scan locations of an excluded object.



115. **Sensitive Type Details:** This tab displays the list of Sensitive Type for the selected task.

116. **Task Instances:** it displays the information about each instance of the task selected in the Detection Tasks panel. Information such as Task ID (system generated), Task Name, Status, Start Time and End Time, Executed By, User, IDP Hostname, IDP IP Address, etc.



The status of the task can be in any of the listed states:

i. Initializing
ii. Completed
iii. Running
iv. Failed
v. Stopped

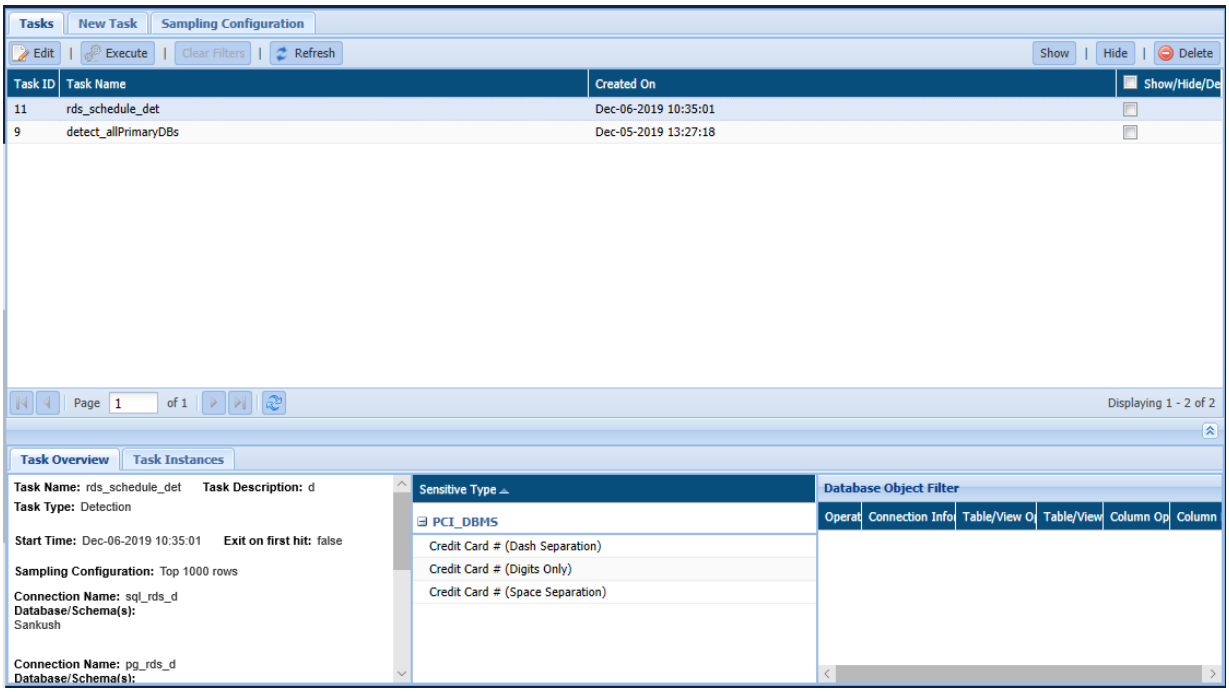
7.3.6.1.2 RDS/RedShift

In RDS/RedShift, you can check tasks for both Detection and Masking module.

Detection

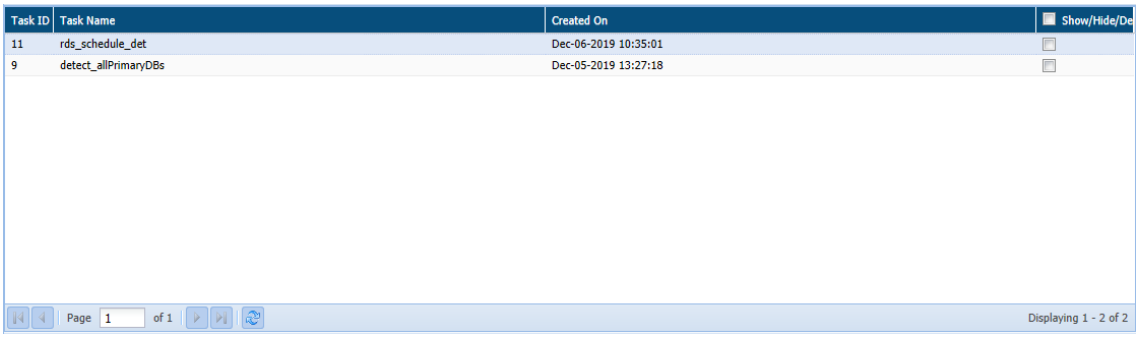
In RDS/RedShift, screen appears when clicked on **Tasks**. This page offers in-depth details about the tasks that the user has permission to view.

The below image shows the user interface of the screen.

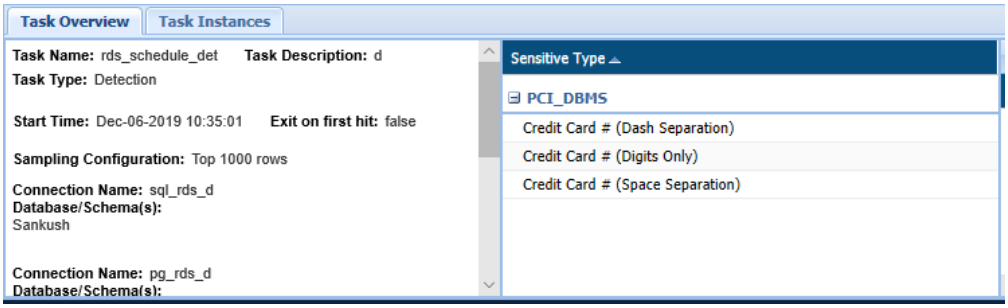


To access the **Task** page. Click **AWS > RDS/RedShift > Detection > Tasks** tab.

1. **Detection Task Panel:** The detection task panel shows the tasks and the properties associated with each task. Properties include details about the task such as Task ID (system generated), Task Name, Created On, Last Run On, Created by, etc.



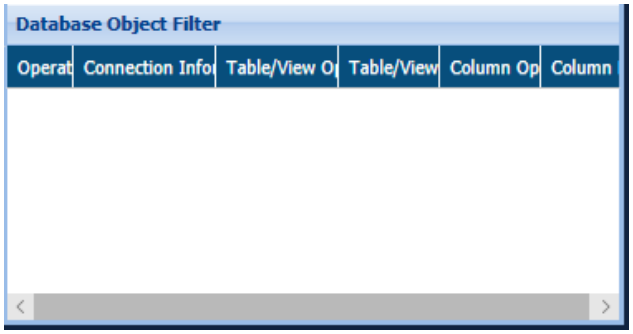
117. **Task Overview:** It displays the details for the selected task. It includes information such as Task Name, Task Description, Task Type, Exit on first hit, Start Time, Sampling Configuration, etc.



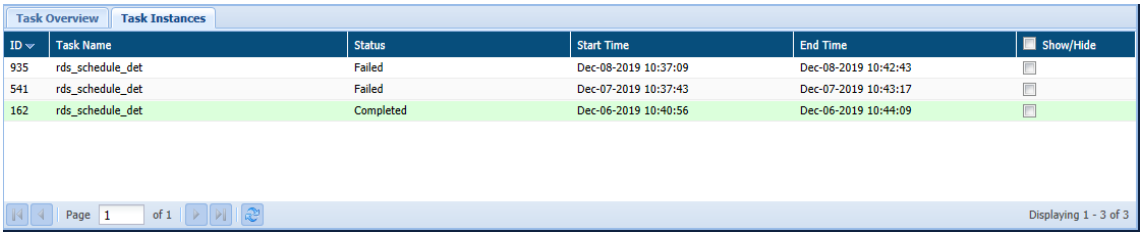
Task Overview tab also includes **Sensitive Type Details** and **Database Object Filter** pane.

a) **Sensitive Type Details:** This tab displays the list of Sensitive Type for the selected task.

118. **Database Object Filter:** The database Object Filter pane displays only those databases/tables/columns that match the filter applied. The columns display information such as the applied operator, connection information, Table/View operator, Table/View Filter, column operator and column filter.



119. **Task Instances:** it displays the information about each instance of the task selected in the Detection Tasks panel. Information includes such as Task ID (system generated), Task Name, Status, Start Time and, End Time and Show/Hide checkbox.



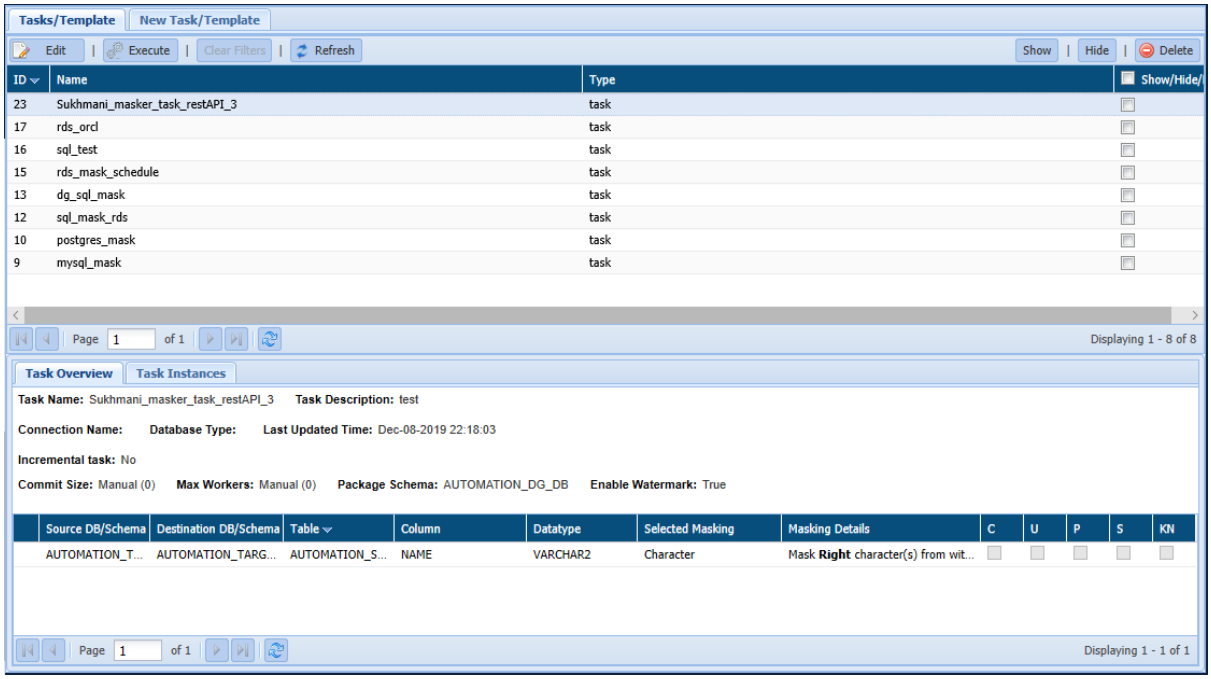
The status of the task can be in any of the listed states:

i. Initializing
ii. Completed
iii. Running
iv. Failed
v. Stopped

Masking

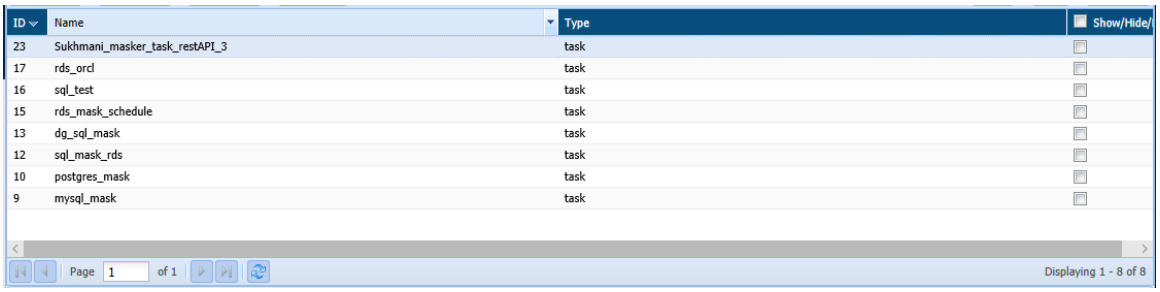
In RDS/RedShift, screen appears when clicked on **Tasks**. This page offers in-depth details about the tasks that the user has permission to view.

The below image shows the user interface of the screen.



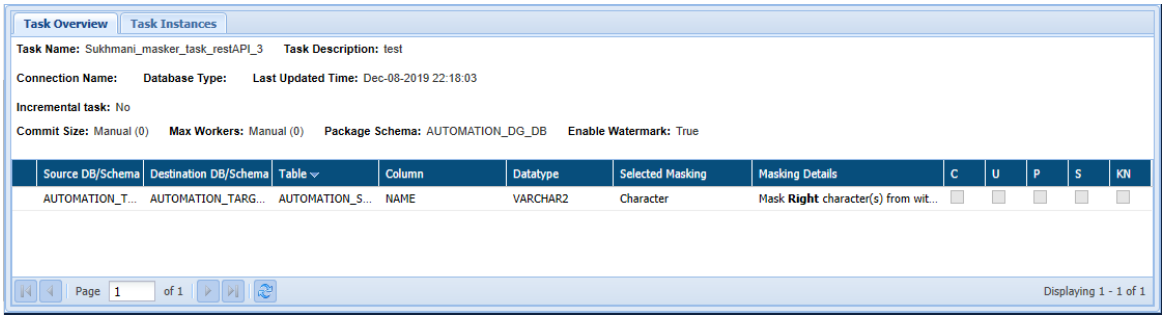
To access the **Task** page. Click **AWS > RDS/RedShift > Detection > Tasks** tab.

1. **Detection Task Panel:** The detection task panel shows the tasks and the properties associated with each task. Properties include details about the task such as Task ID (system generated), Task Name, Type, etc.

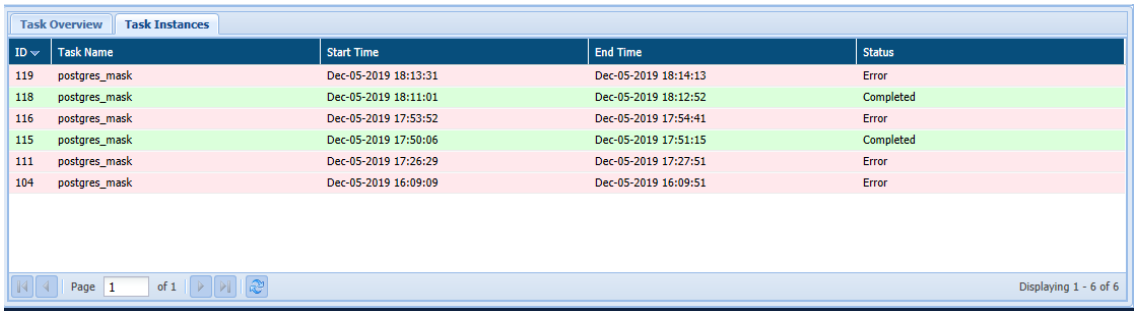


120. **Task Overview:** It displays the details for the selected task. It includes information such as Task Name, Task Description, Database Type, etc.

It also displays information about the database such as SourceDB/Schema, Table, Column, Datatype, Masking Details, etc.



121. **Task Instances:** it displays the information about each instance of the task selected in the Detection Tasks panel. Information includes such as Task ID (system generated), Task Name, Status, Start Time and, End Time.



The status of the task can be in any of the listed states:

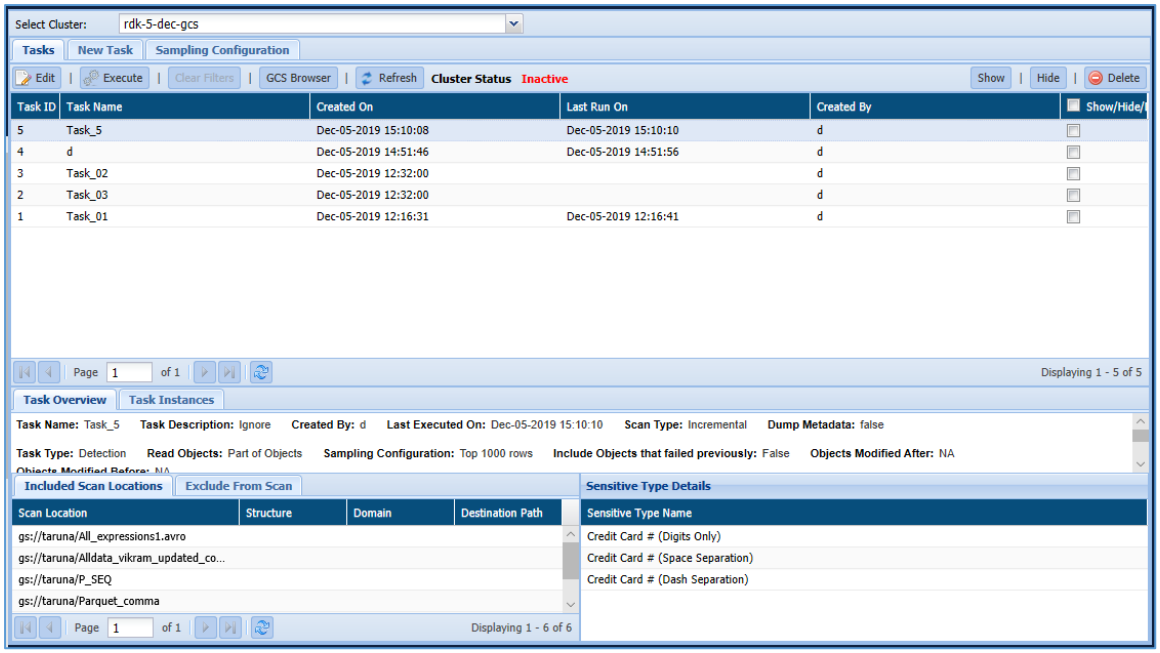
i. Initializing
ii. Completed
iii. Running
iv. Failed
v. Stopped

7.3.7 Google Cloud

7.3.7.1 GCS

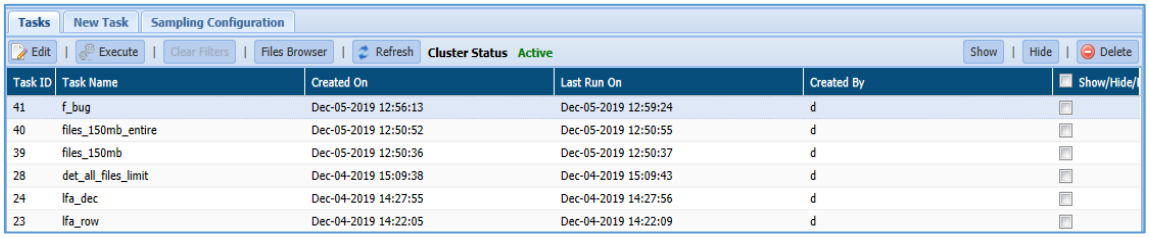
In GCS, screen appears when clicked on **Tasks**. This page offers in-depth details about the tasks that the user has permission to view.

The below image shows the user interface of the screen.



To access the **Task** page. Click **Google Cloud > GCS > Tasks** tab.

1. **Detection Task Panel:** The detection task panel shows the tasks and the properties associated with each task. Properties include details about the task such as Task ID, Task Name, creation date, Created by, etc.



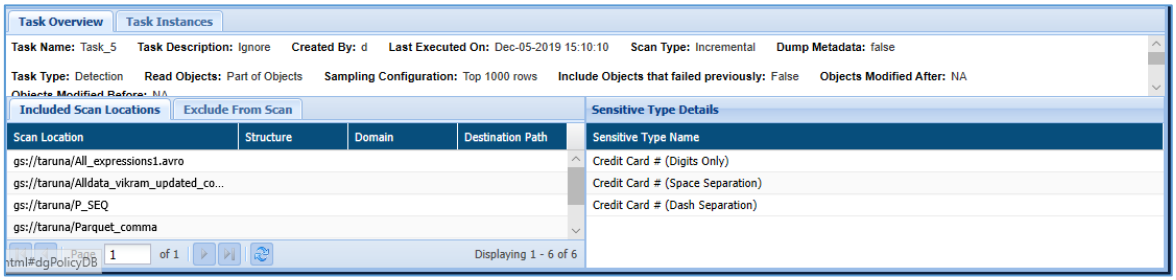
122. **Task Overview:** It displays the details for the selected task. It displays information such as Task Name, Task Description, Created by, Last executed on, Sampling Configuration, Scan Type, etc.

Task Overview tab also includes **Included Scan Location** tab, **Exclude From Scan** tab, and **Sensitive Type Details** pane.

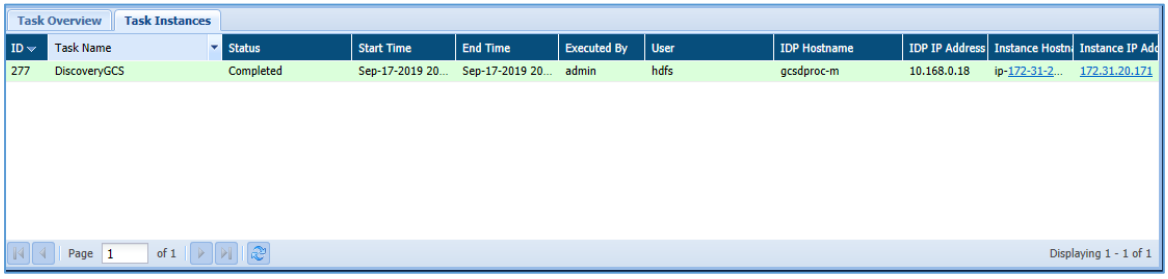
a) **Included Scan Location:** This pane displays the list of Included Objects for the selected scan locations.

123. **Exclude from Scan:** This pane displays the list of excluded **Object Extension** and **Scan Location** of an object.

124. **Sensitive Type Details:** This tab displays the list of Sensitive Type for the selected task.



125. **Task Instances:** it displays the information about each instance of the task selected in the Tasks panel. Information such as Task ID, Task Name, Status, Start time and End time, Executed By, IDP Hostname, IDP IP Address, etc.

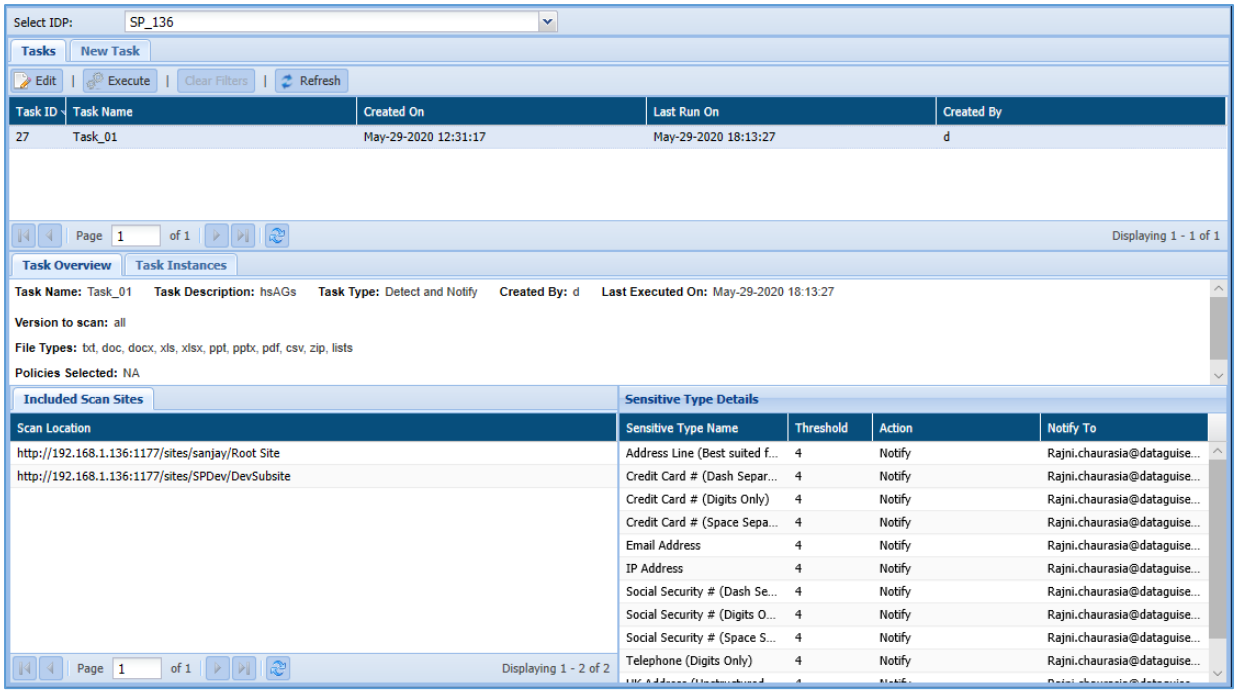


The status of the task can be in any of the listed states:

i. Completed
ii. Initializing
iii. Running
iv. Failed
v. Stopped

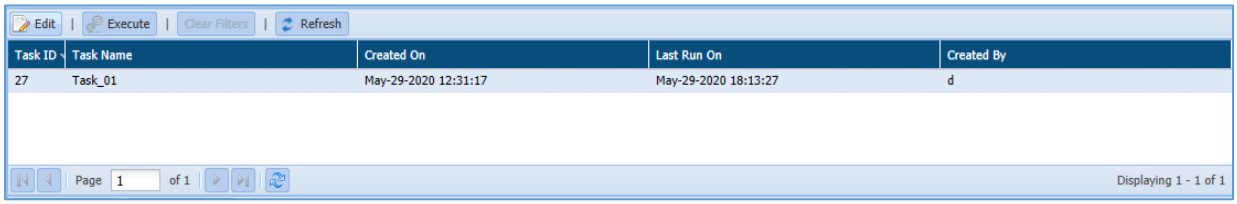
7.3.8 SharePoint

The below screenshot shows the user interface of the default screen of the **Tasks** tab.



To access the **Task** tab from the menu. Click **SHAREPOINT > Tasks** tab.

1. **Task Panel:**
   This panel shows the tasks and the properties associated with each task. Properties include details about the task such as Task ID (system generated), Task Name, Task Creation date.



126. **Task Overview tab:**

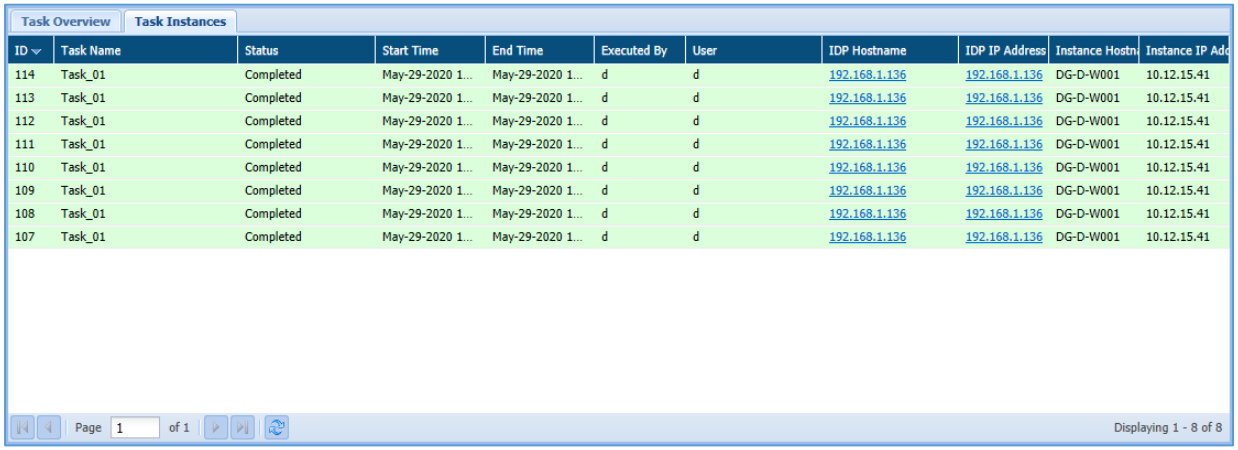
This panel displays the basic information for the selected task. It displays the information such as the Task Name, Task Description, Task Type, Sampling Configuration, Connection Name, Database schema, list of Sensitive Type, etc.

It also displays information for the Included Sites for scanning and Sensitive Type Details.

- **Included Scan Sites:** This panel will display the list of all the sites which were selected for scanning
- **Sensitive Type Details:** This panel will display the list of Sensitive Type discovered while scanning.

127. **Task Instances**

This panel will display the related information about each instance of the task selected in the detection task panel. Information such as Task Name, Task ID (system generated), Status of the task, Start time and End time.



The status of the task can be in any of the listed states:

i. Initializing
ii. Completed
iii. Running
iv. Fail
v. Stopped

7.4 Masking Options

DgSecure provides several masking options for securing sensitive data on an organization's data repositories. The table below shows the masking options available for different data types.

Masking Option Name	Characters (Char)	Variable Characters (Varchar)	Number	Clob
Static mask	X	X	X	X
Character mask	X	X		
Format Preservation Mask (FPM)	X	X	X	
IntelliMask mask	X	X		
Random mask	X	X	X	
NPI mask	X	X	X	
Compose mask	X	X		
Compose Math Expression mask			X	
Date Synch mask		X		
Name Synch mask		X		
Email Policy mask	X	X		
Expression mask			X	
Full Name mask		X		
Regular Expression mask	X	X		
Custom Lookup mask	X	X	X	
Custom mask	X	X	X	
Shuffle mask	X	X	X	
JSON mask		X		X
XML mask		X		X
AES Encryption/Decryption	X	X		
FPE Encryption/Decryption	X	X	X	

7.4.1 Static Mask

Use the static mask to insert the same value into every field in the column. You can enter either a static value (such as AAA or 123) or a null value.

The Static masking option is suitable for columns that meet the following conditions:

- Do NOT have uniqueness constraints.
- Do not require a variety of values for downstream testing or analysis purposes.

7.4.2 Character Mask

Use the Character mask to replace one or more characters at the beginning or end of a string with a meaningless character. The Character mask uses these characters:

- # pound sign
- $ dollar sign
- @ at-the-rate-of sign
- % percent sign
- . period

The Character mask is suitable for structured fields with an invariable format, like account or credit card numbers, where:

- Only a specific portion of the field is sensitive
- Non-sensitive portions contain useful information you want to retain.
- The sensitive part of the data is at the beginning or end of the field. Valid masks include #23456, ###456, #####6, 12345#, 123###, 1#####, but not 12##56.

If you want to mask a segment in the middle of a structured field, consider Intellimask instead.

7.4.3 Format Preservation Mask (FPM)

Use Format Preservation Mask (FPM) to insert a random value that preserves the format of the original data:

***Note:**

Don't use Format Preservation Mask (FPM) on columns of unique values unless the possible number of potential random values is large. For example, if a column contains only unique 2-digit numbers, the pool of potential values is only 99. With such a small possible number of replacement values, the FPM mask will generate duplicate values.

When you apply FPM to a column with unique values, DgMasking monitors the number of "collisions" (duplicate values) produced. Once 20 duplicate values are created, DgMasking stops attempting to apply the mask and skip the column entirely.

The Format Preservation Mask is suitable when:

- The number of characters or the length of the field is not changed.
- Capital letters are masked with random capital letters.
- Small letters are masked with random small letters.
- Digits are masked with random digits.
- Special characters are left as is.

The FPM mask is suitable for structured data with two exceptions:

- If business rules constrain the value or some part of the value. For example, if business rules require a telephone number to have a valid area code and exchange, then FPM is not a good masking choice. Instead, consider using the Random masking option, which

generates random but valid data for common sensitive types such as telephone, credit card, and Social Security numbers. For non-standard sensitive types, consider using the Regular Expression mask, which allows you to apply any necessary constraints.

- If the data in the masked column will be analysed. Random input would render any analysis meaningless. Instead, consider using the Shuffle mask.

FPM supports masking in a variety of European Languages: French, German, Italian, Spanish, Czech, Slovak, Danish, Finnish, Estonian, Latvian, and Polish.

Additionally, Format Preservation Masking (FPM) should not be used on data requiring unique values unless the possible number of potential random values is large. For example, if a column contains only unique 2-digit numbers, the pool of potential values is only 99. With such a small possible number of replacement values, the FPM mask will generate duplicate values.

In order to use Format Preserving Masking, an FPM key must first be generated. To do this, navigate to http://<hostname_or_IP_address>:8111/HDFSIDP/FPMKeygen.html. Enter the domain to which the key should be assigned, a passphrase and passphrase for key. Click **Generate.**

7.4.4 IntelliMask Mask

Use Intellimask to replace a subset of characters with random values based on a regular expression. The rest of the field is left intact.

The Intellimask is suitable for structured fields with an invariable format that meet the following conditions:

- Only a specific portion of the information is sensitive.
- The non-sensitive portion contains useful information you want to leave intact.
- The sensitive portion has format and/or value constraints that are enforced at the database or application level, making it impossible to mask with a simple Character mask.

7.4.5 Random Mask

Use the random mask to insert a random, fictitious value that retains the properties of the original data. The random mask generates random numeric, string, and date values. It can also generate realistic, fictitious values for these common sensitive types:

- Credit card number, Social security number.
- Street address, City, State, and Country
- Email address, Telephone number
- First name, last name, and full name

Choose a random value that matches the type of data you want to mask.

Option	Parameters	Parameter Description
Address Line 1	Case Options	Choose UPPERCASE, lowercase, or Title Case (capitalizes the first letter of each word)
Credit Card Numbers	Select Providers Manually	Credit card number structure varies by provider. Place a check mark next to the variations you want to include in the randomly-generated data. The choices are: American Express, Discover, Master Card, Visa, and User-Defined. If you choose User-Defined, enter a regular expression that describes the custom format.
	Random Number	Generates credit card numbers that are realistic but not necessarily valid. (In other words, they do not contain functioning check digits.) Use this option only if your application does not validate credit card numbers.
	Auto Generation	Generates credit card numbers that match the format of the values being masked. Visa numbers are masked with Visa numbers; MasterCard numbers are masked with MasterCard numbers, and so on.
	Digit/ Space/ Dash Separation	Indicate how to format the credit card numbers: Using digits only With spaces or dashes separating the components of the number.
Date	Minimum/ Maximum	Define a range of output values by selecting a minimum and maximum date.
	Increment By	Select a range of days, months, and years to use to increment the original date.
	Decrement By	Select a range of days, months, and years to use to decrement the original date.
Timestamp	Minimum/ Maximum date	Define a range of output values by selecting a minimum and maximum date and time.
	Format	Select a date format: ddMMyyyy HH:MM:SS, MMddyyyy HH:MM:SS, or yyyyMMdd HH:MM:SS
Email Address	No parameters	
First Name	Case Options	Choose UPPERCASE, lowercase, or Title Case.
First and Last Name	Case Options	Choose UPPERCASE, lowercase, or Title Case.

Option	Parameters	Parameter Description
Last Name	Case Options	Choose UPPERCASE, lowercase, or Title Case.
Random String	(Various output options)	Choose from five options: Alphabetic characters (letters)—choose mixed case, upper case, or lower case Alphanumeric characters (letters and digits) Printable characters (letters, digits, and symbols)
Social Security Number	Digit/ Space/ Dash Separation	Indicate how to format the Social Security numbers: Using digits only. With spaces or dashes separating the components of the number.
	Valid numbers	Generate numbers that could pass validation checks (i.e., numbers that follow the rules of allocation used by the Social Security Administration).
	Random numbers	Generate random numbers that follow the correct format but would not necessarily pass a validation check.
Telephone Number	Determine Generation Type	Choose the type of separation (if any) to use between the components of the phone number (area code, exchange, and subscriber number): Digits Only Space Separation Dash Separation Standard. Standard format is: (123) 456-7890.
Number	Minimum/ Maximum	Define a range of output values by selecting a Minimum and Maximum number.
	Precision	Indicate the number of decimal places (if any) to include in the number.
	Padding	Pads the value with leading zeros, if necessary, to achieve the specified field length.

7.4.6 NPI Mask

Use the NPI mask to insert a number that follows the formatting and rules of the National Provider Identifier (NPI). DgSecure applies the Luhn algorithm to generate valid 10-digit combinations in sequence from lowest to highest. You further randomize this sequence by providing a starting value (called an NPI "seed") and an increment.

Note: Use this masking option only on columns with a numeric data type of at least 10 digits

7.4.7 Compose Mask

Use the Compose mask to generate a value by combining full or partial values from other fields in the same row.

The Compose option is suitable:

- When the field to be masked is a dependent of information obtained from other source fields in the same row.
- One or more of those source fields will be separately masked.
- You want to make the value in the dependent field reflects the new (masked) values in the source fields.

To make sure the dependent field matches the source field, DgSecure masks the source fields before the composed field.

7.4.8 Compose Math Expression Mask

Use this Compose Math Expression mask to generate a value by performing a calculation on two or more fields in the row. The components of the math expression can include any numeric column in the table and any of the following operators:

- + (for addition)
- - (for subtraction)
- * (for multiplication)
- / (for division)

The Compose Math Expression mask is suitable where:

- When the field to be masked is a numeric and derives its value from other source fields in the same row.
- One or more of those source fields will be separately masked.
- You want to make the value in the dependent field reflects the new (masked) values in the source fields.

To make sure the dependent field matches the source field, DgSecure masks the source fields before the composed field.

7.4.9 Date Synch Mask

Use the Date Synch mask to replace the date in the target field with a date from another field in the same row. You can adjust the format of the date as necessary.

Note: This masking option is not available on SQL Server.

This specialized mask is useful with de-normalized tables in which the same value (in this case a date) appears two or more times in a single row. If you mask one of those instances, the remaining instances should be updated with the new value. To accomplish that, you apply a Date Synch mask to those instances.

To make sure the dates are synchronized, DgSecure masks the primary date field before the dependent field(s).

7.4.10 Name Synch Mask

Use the Name Synch mask to replace the name in the target field with a name from another field in the same row, automatically adjusting the format as necessary.

Note: This masking option is not available on SQL Server.

This specialized mask is suitable for de-normalized tables in which the same value (in this case a name) appears two or more times in a single row. If you mask one of those instances, the remaining instances should be updated with the new value. To accomplish that, you apply a Name Synch mask to those instances.

The Name Synch masking option automatically detects and duplicates the name format used in the target field. However, there are instances where Name Synch cannot determine the format of a name field. You need to supply a default format for these occasions, for example, when the field is null.

To make sure the dates are synchronized, DgSecure masks the primary date field before the dependent field(s).

7.4.11 Email Policy Mask

Use the Email Policy mask to generate an email address by combining values from two other fields in the same row (along with a domain and extension that you specify).

The Email Policy option is best used in situations where business rules require:

- A specific, invariable format for email addresses.
- Synchronization between elements of the email address and information contained in other fields (typically the first and last name fields).

To make sure the email fields are synchronized, DgSecure masks the source field before the composed field(s).

7.4.12 Expression Mask

Use the Expression mask to modify a numeric value in any of three ways:

- Incrementing or decrementing it by a set percentage or number.
- Replacing it with a random value within a specified range.
- Replacing it with a random value from a specified sequence.

The expression mask is suitable for:

- Numeric fields that will not be statistically analysed.
- Preserving statistical information such as a column‘s minimum value, maximum value, sum, or average value, consider using the Shuffle option instead.
- Generating random values from a specified sequence is a good way to mask numeric primary keys such as employee or patient IDs. This option, called a "scrambled sequence", does not produce duplicate values, and so it does not violate the primary key constraint.

Used alone, incrementing or decrementing is probably not sufficient protection for sensitive data such as salary, because if even one original value is known, the pattern is easy to decipher. It is best to use this option in conjunction with masking on other fields such as names or other identifiers.

If you use a Scrambled Sequence to mask a primary key, make sure to select the Synchronized CUPS option as well, to ensure that the new primary key values are written to the corresponding foreign keys as well.

7.4.13 Full Name Mask

Use the Full Name mask to replace a full name with a fictitious full name of the same format. This mask is suitable for full name columns that do *not* need to be synched with First Name and Last Name columns.

Note: If you need to keep a full name in synch with first and last names that appear in the same row, use the Compose masking option instead.

Use the Regular Expression mask to insert a value based on a regular expression you define.

This mask is suitable for:

- Non-standard sensitive data for which there are no pre-built masking formulas.
- Data that is constrained to a specific format, specific values, or both.

Verify that the result of the expression matches the data type of the column you are masking.

Component	Description	Expression
DC	A two-letter department code.	[A-Z]{2}
-	Literal hyphen.	/-

Component	Description	Expression
Yy	The last two digits of the fiscal year.	[0-9]{2}
-	Literal hyphen.	/-
T	A one-letter code indicating the contract type. Possible values are: a, b, c, and d. Letter must be lower case.	[a-d]
-	Literal hyphen.	/-
Nnnn	A three or four-digit serial number.	[0-9]{3,4}

Here is an example of a regular expression:

[A-Z] {2}/-[0-9]{2}/-[a-d] /-[0-9]{3,4}

Sample input:	Sample output:
FN-10-c-349	EX-91-a-5234

7.4.14 Regular Expression Mask

Use the Regular Expression mask to insert a value based on a regular expression you define.

This mask is suitable for:

- Non-standard sensitive data for which there are no pre-built masking formulas.
- Data that is constrained to a specific format, specific values, or both.

Verify that the result of the expression matches the data type of the column you are masking.

Component	Description	Expression
DC	A two-letter department code.	[A-Z]{2}
-	Literal hyphen.	/-
Yy	The last two digits of the fiscal year.	[0-9]{2}
-	Literal hyphen.	/-
T	A one-letter code indicating the contract type. Possible values are: a, b, c, and d. Letter must be lower case.	[a-d]
-	Literal hyphen.	/-
Nnnn	A three or four-digit serial number.	[0-9]{3,4}

Here is an example of a regular expression:

[A-Z] {2}/-[0-9]{2}/-[a-d] /-[0-9]{3,4}

Sample input:	Sample output:
FN-10-c-349	EX-91-a-5234

7.4.15 Custom Lookup Mask

This mask retrieves and inserts a substitute value using a lookup table. The lookup table can be in any schema (or database, in the case of an SQL Server) that DgSecure is able to connect to.

This masking option is designed for use with existing masked data sets. Use it when you have rich sets of realistic but fictitious data that you have organized in relational tables for the express purpose of masking data. Tables like this are commonly set up to mask sensitive types such as names, addresses, and telephone numbers.

To configure a Custom Lookup mask, you must:

- Specify the two columns that will form the join: The Base Reference column (in the table of actual data) and the Lookup Reference column (in the table of fictitious data). These columns need not have the same name, but they must share values in common. In this example, the Emp ID column and the EmployeeID column form the join.

- Specify the column that contains the fictitious data that will replace the actual data. This is called the Lookup Data column, and in this example the column is named TelephoneNo.

During the actual masking operation, DgMasking reads each value in the Base Reference column and searches for a matching value in the Lookup Reference column. When it finds a match, it retrieves and inserts the associated lookup data. In the example below, DgMasking has found a match for the value 102 and will now replace the original telephone number (415-456-1234) with the telephone number in the Lookup Data column (617-234-4567).

Base Reference Column	Column to be masked		Lookup Reference Column	Lookup Data Column
Emp ID	Telephone		EmployeeID	TelephoneNo
104	510-834-3643		100	905-123-4567
100	510-567-2347		101	510-567-2378
102	415-456-1234	↔	102	617-234-4567
101	905-234-6789		103	415-456-1237
103	510-345-3456		104	510-456-2345

Note: The lookup table and the table containing the column to be masked must have at least one column in common on which to base a join. Make sure that the data type of the lookup data matches the data type of the column you are masking.

7.4.16 Custom Mask

7.4.16.1 Overview of the Feature

Custom masking option allows users to create their own customized functions on databases for data masking. The dropdown list of Custom function screen displays the custom masking functions within the database for which a connection has been created from DGSecure Connection Manager. To apply custom masking, user will choose a function from the functions list. A parameter list will be populated with text boxes where user can assign a table column, a static value to the parameter or column properties. User can also assign the column properties to the parameter as '$masked column name$', '$column length$', '$column data type$', '$columns scale$', '$column precision $' by selecting it from the drop down list. These properties are added so that user can have access to column properties in custom function.

A value or table column can be assigned to the field as per the parameter datatype and parameter length. User can apply a filter on the function names to get the desired list of functions.

Policy change –New masking option added – 'custom'. User can apply the custom function masking from the policy screen by choosing the custom option. User will select the desired database connection on policy screen and can select the custom functions to apply masking on detected columns using policy

Use the Custom mask for special situations that require complex data masking. The Custom masking option lets you prepare a set of instructions that perform the desired data transformation

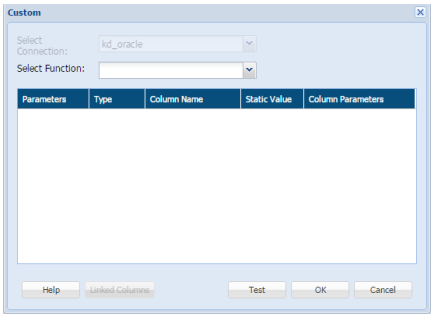
For example, a column in your data named National ID contains different types of values, such as Social Security Numbers (SSN), Individual Taxpayer Identification Numbers (ITIN), and Social Insurance Numbers (SIN). You can create a custom mask (or script) that does the following:

- Checks the format of the current value.
- If the value has the format of a Social Security Number, applies the Random/SSN masking option to generate a fictitious but valid replacement.
- If the value has some other format, applies the Format Preservation masking option (FPM) to generate a random value of the identical format.

Note: The concept of custom masking has been changed. Custom masking function is created at the database. The 'Custom Functions' tab under masking head has been removed from the DgSecure UI screen.

7.4.16.2 Externals of the Feature:

a. User Interface:
On UI, custom masking option will appear on 2 screens - On Policy and on Masking screens:
   - Screen appears as shown below:



b. DGCL Impact:

DGCL will be responsible for following things:

- Fetching the List of Functions
- Getting the function parameters
- Assigning static values or table columns to the parameters provided, the length and datatypes match.
- Assigning column properties to the parameters.

7.4.16.3 Detailed Design:

Flow of Custom Masking:

1. **Masking through Policy**
   - Create a Policy and select 'custom' option to mask the detected column.
   - Drop down in custom function screen will load all functions from back end database with which connection is created in connection manager. User can type the name of the function to load or search the function.
   - After selecting the function, the list of parameters will be displayed.
   - Assign static value or column properties against the parameter
   - Apply detection through the created policy.
   - Create masking task by selecting the above created policy.
   - Execute the task to mask the data.

Note: The option to test custom function does not appear on the policy screen. This option is only available for custom masking from the masking screen.

2. **Custom Masking**
   - Create a masking task.
   - Select masking type as - 'custom'
   - Drop down in custom function screen will load all the functions from the back end database with which connection is created in connection manager. User can search a function by its name.

- After selecting function the parameters list is displayed.
- Assign column name, static value or column properties against parameter. User can enter the value in single Column only.
- User can test the function. Results will be displayed on UI.

Impacts, if any, of the design on:

i. High Availability in the DgSecure system: No

ii. Web Services with Other Components: Earlier there was only one web service which was able to create and test custom function. Now there are 2 web services:

Yes – A new web service has been added to the masker IDP which can be called from DgController. This web service will return a list of all functions with which connection has been created from the Connection manager in DGSecure UI. Prefix of the function can be used to filter functions.
Test Custom Function web service is required to test the function call by database. This web service will return the function result.

iii. Encryption in the Controller Repository, Results Database: No

iv. Audit Reports in DgSecure: No.

v. DgSecure RBAC – Changes needed for RBAC with this feature: No.

vi. Controller Snapshots – Feature requires an addition to the fields saved in the Task Instance snapshot in the Controller: YES. (following tables are required to increase the size of the column 'param2'

1. dg_masking_temp_columns
2. dg_masking_columns
3. dg_policy_details
4. dg_policy_details_hist
5. dg_masking_column_hist
6. dg_mask_cols_snapshot

vii. DDL Changes – Captures DDL changes: Yes.
Alter the table 'dg_columns' –
Set the size of columns param2 and param3 to 2000. Save the json of parameters as param2 and save the function call as param3 column.

viii. Logging – especially overly verbose logging and leakage of sensitive data in logs:
No.

7.4.16.4 Performance and Scalability Considerations

No.

7.4.16.5 Security Considerations

These changes have been made to improve security. Earlier any user logged on to DGSecure could create any type of custom masking, which could also be used for creating malicious queries or content. With the new security features only users that have rights to databases can create custom functions.

7.4.16.6 Other impacts

If user creates multiple connections with multiple databases, user will have to create a custom masking function on all those databases for which connections have been created.

DgSecure requires a specific script format for each supported database. For more information, contact Dataguise Technical Support.

7.4.17Shuffle Mask

Use the Shuffle mask to change the order of values within a table column. In other words, the values in the column are "shuffled" so that each value ends up in a randomly-assigned row that is different than the one it started out in.

If there are fields that need to remain associated, you can shuffle them together as a unit so that they maintain their relationship. You can shuffle up to seven fields in tandem.

This mask is suitable for:

- Preserving statistical information, such as a column's minimum, maximum, sum, or average value.
- Ensuring that the masked data will not violate business rules at the database or application level. (Since the data is repositioned rather than replaced, the values are guaranteed to meet all

7.4.18 JSON Mask

Use the Json names to present the CLOB (Character Large Object) field in Oracle table. It will encrypt or mask the fields within the CLOB.

- CUPS are disabled for Json masking.
- JSON masking is supported for NVARCHAR_MAX, VARCHAR, VARCHAR_MAX and TEXT data types.

Note: For JSON/XML masking support minimum required version is 1.6

7.4.19 XML Mask

Use XML tags to present the CLOB field in Oracle table.

- CUPS are disabled for XML masking.

- XML, XML_TYPE, VARCHAR, VARCHAR_MAX, NVARCHAR_MAX, TEXT and CLOB are the only data types for which masking is available.

Note: For JSON/XML masking support minimum required version is 1.6

7.4.20 AES Encryption/Decryption

Use AES (Advanced Encryption Standard) encryption/decryption to protect classified information. AES uses symmetric block cipher to encrypt the sensitive data.

This masking is suitable for:

- AES encryption/decryption supports CHAR and VARCHAR datatypes.
- Maximum length of the column should be less than or equal to length of encrypted string.

Formulae for calculating length of AES encrypted string using from plain text.

Enc_text_length = ((4*((length(plain_text)/16+1)*16)/3)+3)&`3

Plain text Min Length	Plain text Max Length	Encrypted String Length
1	15	24
16	31	44
32	47	64

For Example:

19 bytes is encrypted using AES results in 32 binary bytes. The 32 bytes represented as a printable string in Base64 is 44 characters. In summary, encrypting 19 bytes with AES will always result in 44 character Base64 bytes.

7.4.21 FPE encryption/Decryption

Use the FPE encryption/decryption to preserve the format of the data. It encrypts the data in such a way that output is in the same format as the input (the plaintext).

This masking if suitable for:

- FPE encryption/decryption supports CHAR, VARCHAR and NUMBER data types.

7.4.22 Partial Field FPM

This option masks a specified portion of the sensitive data. It only applies to numeric characters. It is only applicable to HDFS tasks. This is a good protection option for numbers that need to be protected but still retain their format. This masking option requires a FPM Key. This key can be generated through the …./HDFSIDP/FPMKeygen.html page.

7.4.23Custom Masking

Use the custom masking option to create a user-defined protection solution. It is only applicable to HDFS tasks.

To leverage this solution,

1) place the CustomProtectionDefinition.json file at

   {Installation_path}/webapps/dgcontroller/

***Note**: This JSON file is configurable. It contains the mapping of custom masking plugins with the sensitive types, controller will pass this mapping to GUI and then GUI will populate the custom masking options for the correspondingly mapped sensitive types on tomcat restart

Example JSON:

```
[
	{
		"sensitiveType": "Credit Card (Digits Only)",
		"customProtectionDetails": [{
		"protectionName": "Retain Credit Card Type",
		"paramsList": ["numberOfCharsToRetain", "delimiter"]
	},
	{
		"protectionName": "Address Line 1",
		"paramsList": ["Country", "Case"]
	}
]
```

2) And two jar files (CustomProtection.jar and Retain Card Type.jar) at the path specified by the "local.custom.masking.jar.path" property in HDFSIDPConfig.properties. This property is configurable. By default, the path is {Installation Path}/HDFSIDP/expandedArchive/WEB-INF/plugins/custom_protection/
3) Restart the HDFSIDP.
4) The custom masking solution is ready to use. Apply the masking solution on the **Hadoop Policy** page or **New/Edit HDFS Task** page.

7.4.24 Custom Transformation

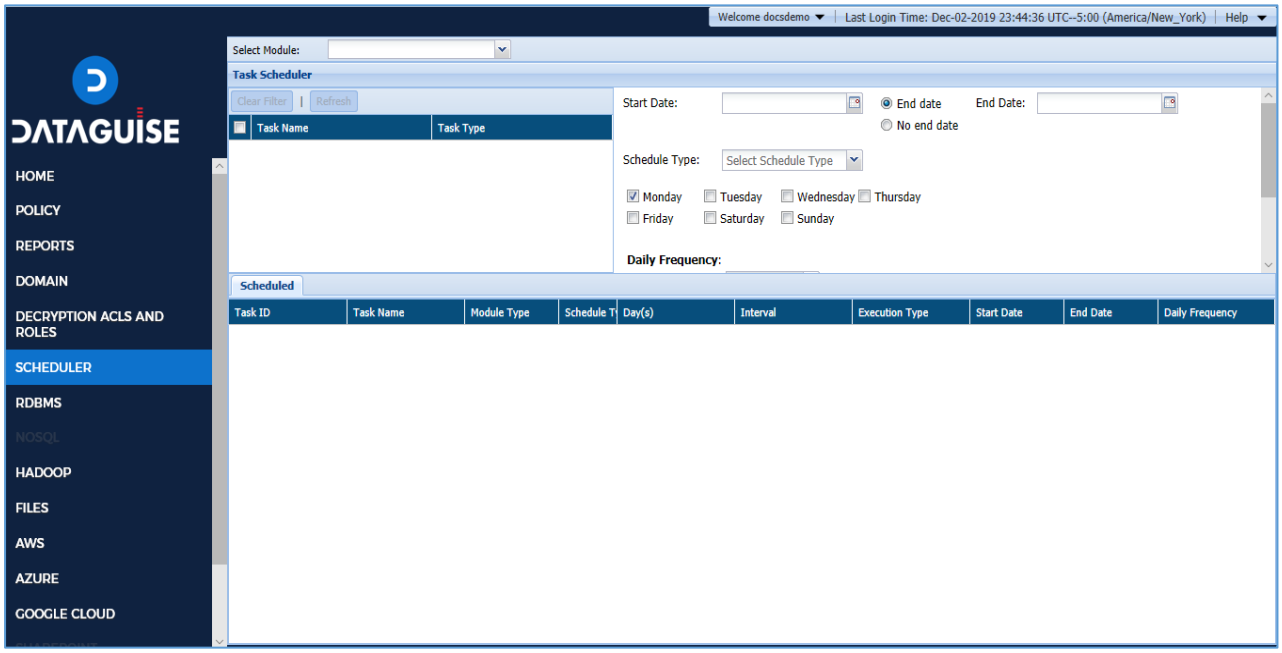
This masking option calls a web service to allow external masking/encryption. It is only available for credit card numbers. Also, this masking option is only available when the property in the projparams.properties file is turned on. For more information on how to configure this property, please refer to the *Installation and Configuration Guide*.

8 Scheduler

Scheduler provides an ability to schedule a task at a pre-defined time or at a specified time interval.

To access the scheduler page. Click **Scheduler**.

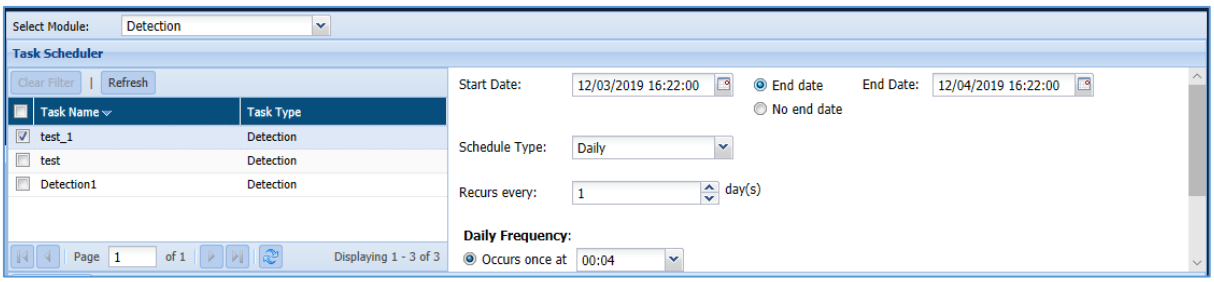
The below screenshot shows the user interface of a Scheduler.



8.1 Schedule a Task

This section will explain the process of scheduling a task.

Following are the steps for scheduling a task:



1. Click the **Select Module** drop-down to select the module.

2. Check the required task in the **Task Scheduler** panel.

3. Select the task schedule **Start Date.**

4. Select the task schedule **End date** or **No end date**, if task scheduled is forever.

5. Select **Schedule Type** from the drop-down.

   i. **Daily:** Select this option to schedule the task daily.
   - Select the frequency of the task in the **Recurs**.
   - Select **Occurs once at** and mention the time, if you want to perform the task once in a day.
   - Select **Occurs every** and mention the hours, **Starting at** and **Ending at**, if you want to perform the task in every few hours.

   ii. **Hourly:** Select this option to schedule the task in every few hours.
   - Select the **Interval Time**.

   iii. **Monthly:** Select this option to schedule the task on the selected days of the month.
   - Select **Day** of one or more **Months** to perform the task.
   - Select a specific **Weekday** of one or more **Months** to perform the task.
   - Select **Occurs once at** and mention the time, if you want to perform the task once in a day.
   - Select **Occurs every** and mention the Hours, **Starting at** and **Ending at**, if you want to perform the task in every few hours.

   iv. **Once:** Select this option to schedule the task only once.

   v. **Weekly:** Select this option to schedule the task on the selected days of the week.
   - Check the **Days** of the week to schedule the task.
   - Select **Occurs once at** and mention the time, if you want to perform the task once in a day.
   - Select **Occurs every** and mention the hours, **Starting at** and **Ending at**, if you want to perform the task in every few hours.

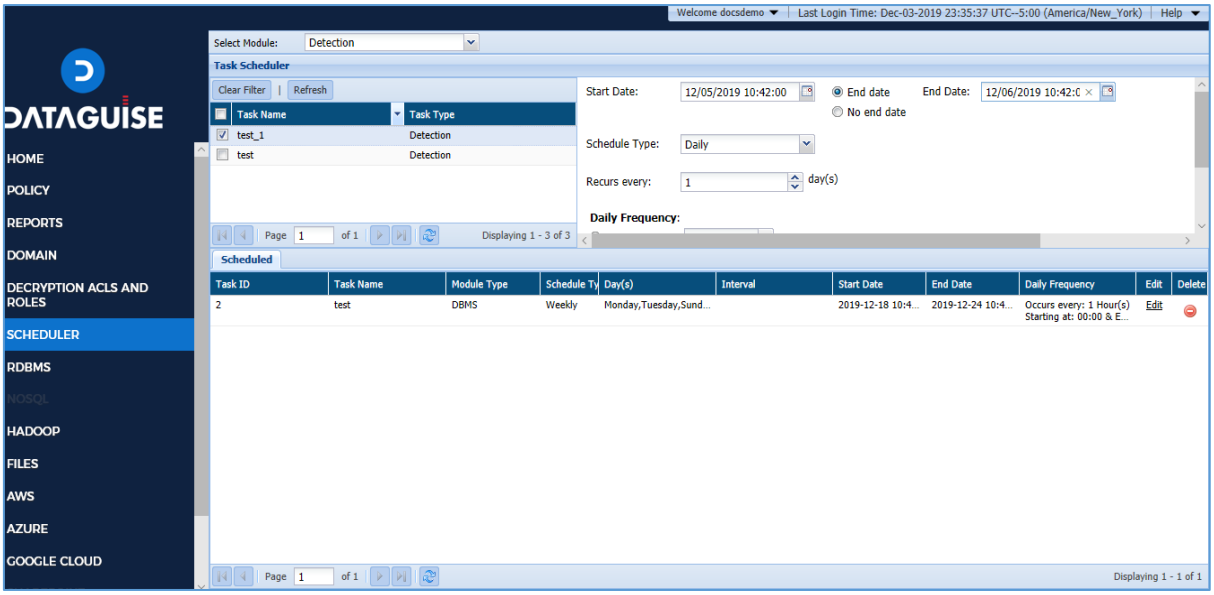
6. Click the **Schedule** button to schedule tasks.

7. Click the **Reset** button to re-scheduled tasks, if required.

8.2 List a Scheduler

This section will explain the screen of the **Scheduler** section.

The below screenshot shows the user interface of the **Scheduler.**

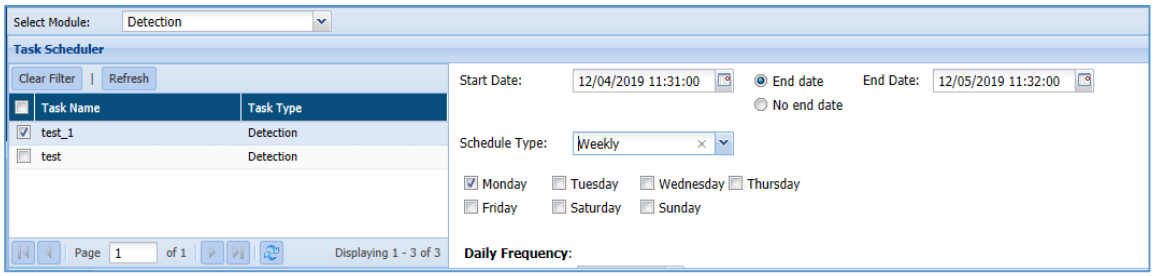


- **Task Scheduler Panel:** This panel lists down all the tasks for the selected module. It displays information about the task such as Task Name, Task Type. A user can also schedule a task by providing inputs such as the Start Date, End Date, Schedule Type, etc.

  You can also **Refresh** and **Clear Filters** from the Task Scheduler Panel.

  i. **Clear Filters:** Click the **Clear Filters** button to remove any applied filters from the column.

  ii. **Refresh:** Click the **Refresh** button to update the current screen.

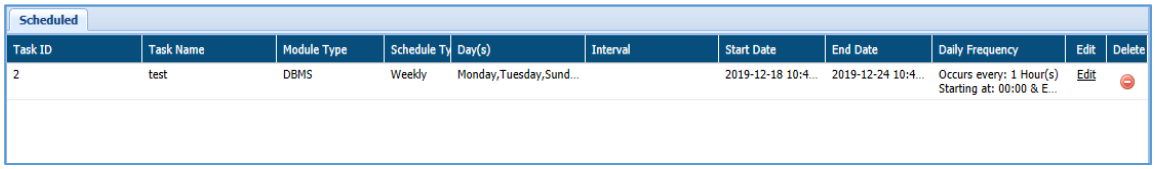


- **Scheduled:** It displays the list of all scheduled tasks and the details related to it. The screen displays details for the scheduled task such as **Task ID** (system generated), **Task Name**, **Module Type**, **Schedule Type**, **Day(s)**, **Interval**, **Start Date**, **End Date**, **Daily Frequency** etc.

  You can also **Edit** and **Delete** a scheduled task from the Scheduled panel.

  i. **Edit**: A user can also edit a scheduled task by clicking the Edit Button. This will allow user to edit or update the information.

ii. **Delete:** Click the **Delete** button to delete the scheduled task.



9 Results

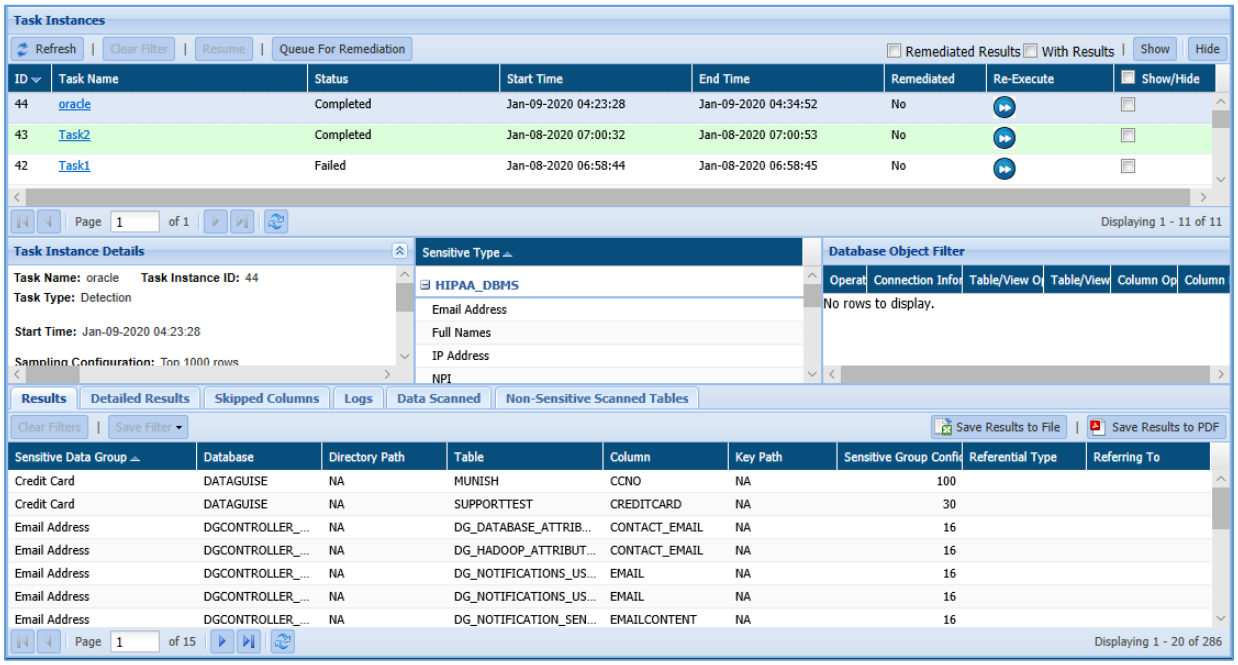
9.1 RDBMS

9.1.1 Detection

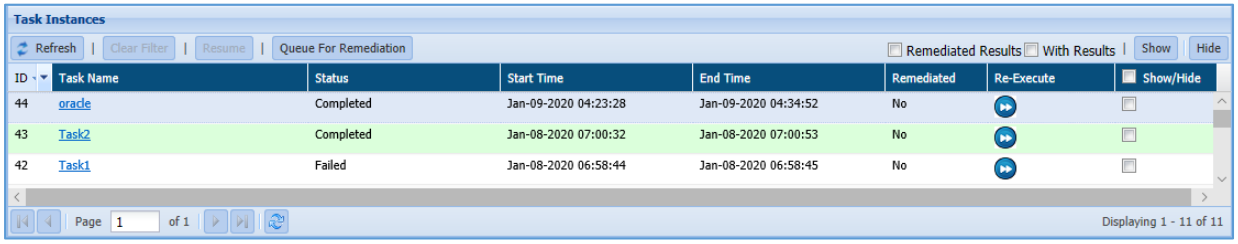
9.1.1.1 Results

The **Result** screen displays information about the Sensitive data detected in the existing database. This screen is divided into three panels.

1. Task Instances
2. Task Instances Detail
3. Overview



- **Task Instances**
  The Task Instance pane display information for the masking tasks. This pane will display information such as ID (system generated), Task Name, Status, Start Time, End Time, etc.



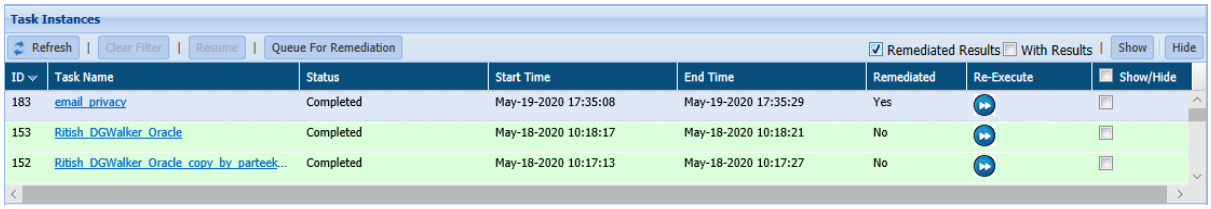
1. **Refresh:** Click the **Refresh** button. It will update the current page with the updated information

2. **Clear Filters**: **Clear Filters:** Click the **Clear Filters** button. It will remove any applied filters on the Tasks page.
3. **Resume:** Click the **Resume** button to re-start the task where it was initially stopped.
4. **Show**: Click the **Show** button to unhide a task.

5. **Hide:** To hide any task, follow the below steps:
    i. Check **Show/Hide** checkbox for the policy.
    ii. Click the **Hide** button. The policy will get greyed out.
6. **With Results**: Check the **With Results** checkbox, if you want to see the results for the selected masking task.

7. **Queue For Remediation**: Click this button to queue the task for remediation workflow. This option allows you to queue the task for remediation manually.

    Once the task has been queued for remediation, the value for the remediation can be seen in the **Task Instances** panel under the column name **REMEDIATED.** It specifies the value as **YES** or **NO**.



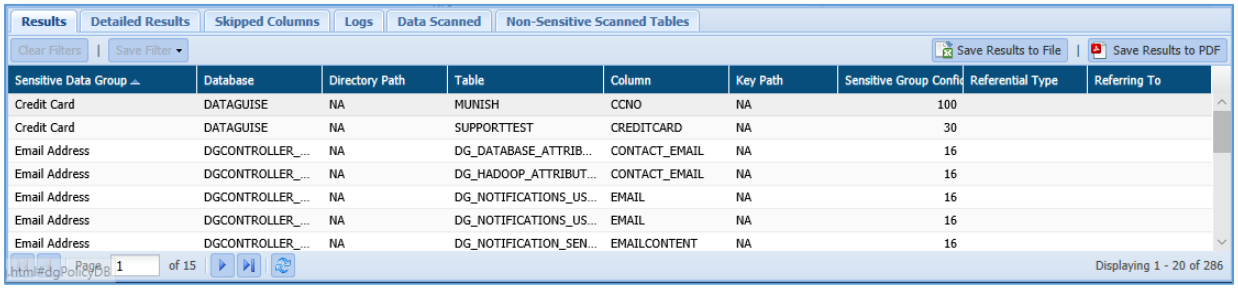
    To queue the task for remediation workflow automatically, set the value of **AUTO QUEUE FOR REMEDIATION** to **YES** in DgAdmin application under **SETTINGS.**

8. **Remediated Results:** check the **Remediated Results** checkbox, if you want to view the final results for the selected fields which are marked as **Remediated**. The remediated result will be displayed in the **Detailed Result** tab under the **Overview** panel.

- **Task Instance Details**
  The Task Instance Details pane will display the basic information for the task selected in the Task Instance pane. The includes details such as Task Name, Task Description, Start Time, End Time, Task Type, etc.

  It also provides additional information for the Sensitive Type and the Database Object Filter.

- **Overview**
  The bottom panel will show the detailed information for the selected task. The information displayed is dependent on the currently selected tab.



1. **Results:** The Result tab provide information for the Sensitive Type encountered in the database along with the additional information such as Column Name, Table Name, Sensitive Group Confidence.
2. **Detailed Results**: This pane list the Sensitive table columns that are discovered, along with their location, data type, Table Name, Column Name, Data Type, etc.
3. **Skipped Columns**: This pane list down any skipped columns along with the data type identified in that column.
4. **Data Scanned**: The Data Scanned pane list down the sampled and the total data targeted with the scan.
5. **Non Sensitive Scanned Tables**: This pane list down all the Database Name along with their Host Name, Directory Path, Table Name and Table Size which were found non – sensitive during the scan process.
6. **Logs:** This pane list any errors which occurred during the task execution. It displays the log information for the errors such as Database Name, Schema Name, Column Name, Error Description, and Error.

***Note**: The **Metadata Results** and **Metadata Relation Results** tab are available in Results screen only when Task Type = 'Metadata Discovery' is selected for Oracle and Teradata connections.

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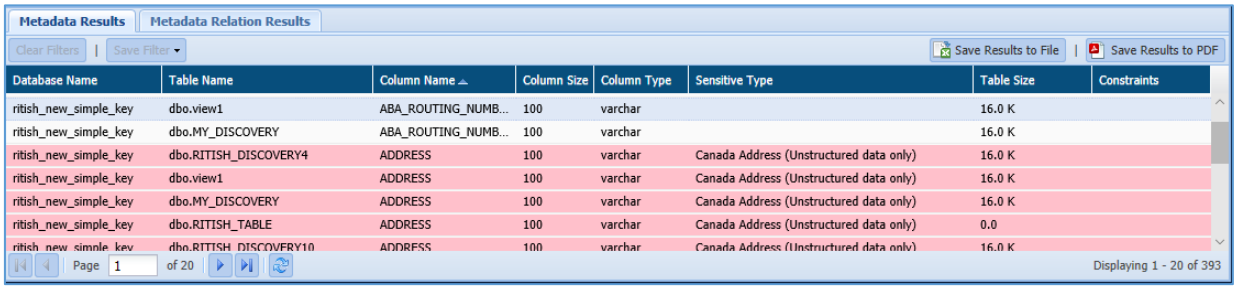
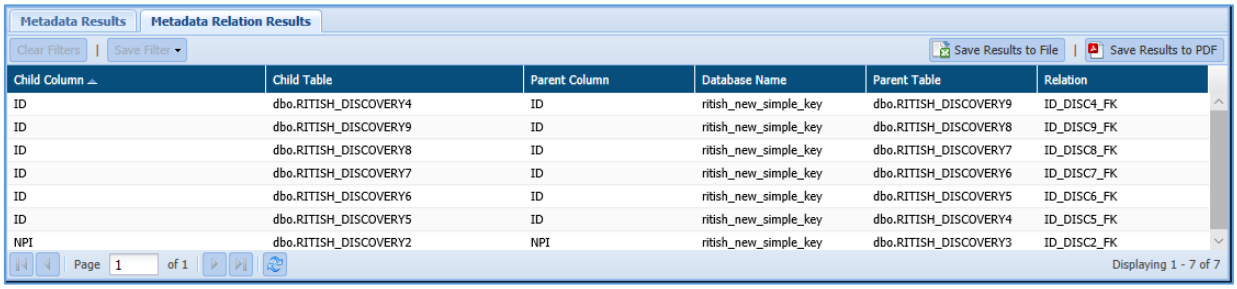
7. **Metadata Results**: This panel will display the list of all the columns names along with the other information such as column size, column type, constraints (primary key, foreign key, surrogate key etc). This tab displays the association of a column name with a table and database name.

   The highlighted records in the tab are the results of Metadata Discovery.



8. **Metadata Relation Results**: This panel will display the relation between the parent and child tables for any database. It will display other information based on which a relation a can be inferred between the child and parent tables. The information includes column names as Child Column, Parent Column and Relation.

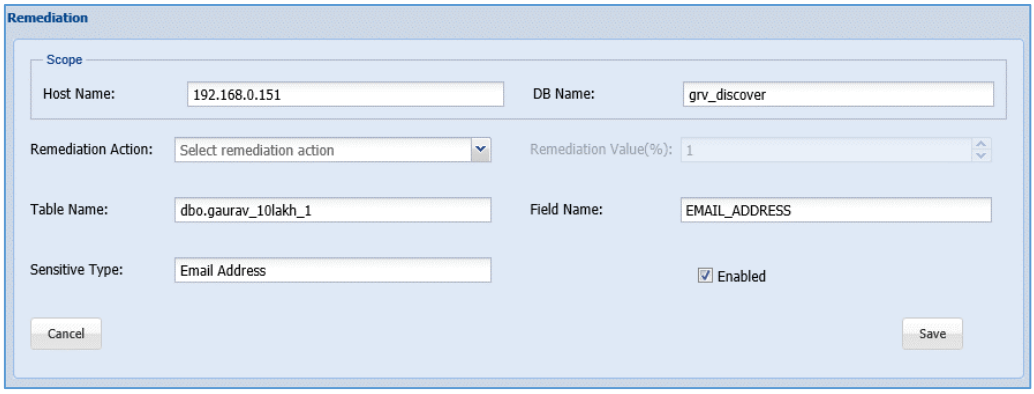


9. **Save Results to File:** Click the Save Results to File, if you wish to download the data in text format.

10. **Save Results to PDF:** Click the Save Results to PDF, if you wish to download the data in PDF format.

11. **Remediate**: Click this button to remediate any result in **DETAILED RESULTS** tab. To remediate the selected result, perform the following steps:
    a) Select the record in the **Detailed Result** tab and click the **Remediate** button.

    b) Enter the details for **Remediation Action** and **Remediation Value (%)** field in the popup.

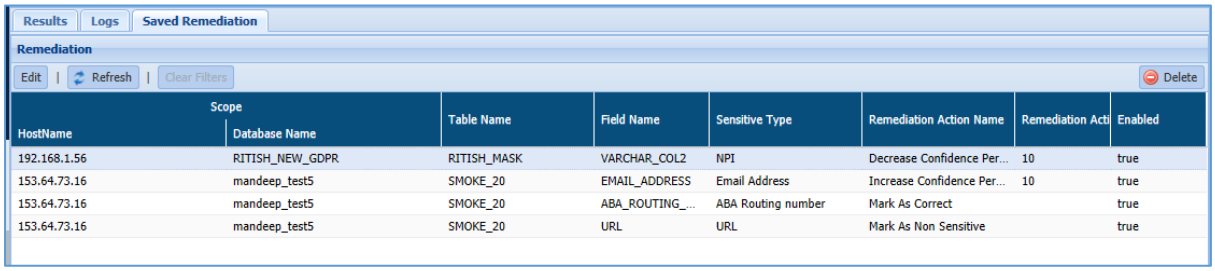


i. Following are the options in **Remediation Action** field.

- **Mark as Non Sensitive**: Select this option to mark the record as Non Sensitive. The system will ignore this record in future re-run.
- **Mark as Correct**: Select this option to mark the record as Sensitive. The system will not ignore this record in future re-run.
- **Decrease the Confidence Factor:** select this option to decrease the confidence factor in Remediation Value (%) field.
- **Increase the Confidence Factor:** Select this option increase the confidence factor in Remediation Value (%) field.

ii. Enter the remediation value in percentage. This field will be enabled when you select **Decrease** or **Increase the Confidence Factor** in **Remediation Action** field.

Once the remediation value has been set and saved, the same can be seen under Saved Remediation tab.

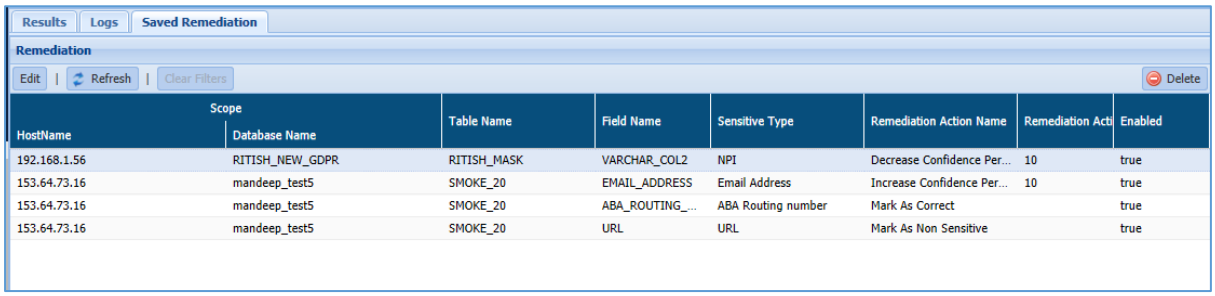


9.1.1.2 Saved Remediation

The Saved Remediation tab allows you to view all the records that have been selected as remediated results in **DETAILED RESULTS** tab under **OVERVIEW** panel.

***Note**: To know more about how to enable and queue the task for remediation workflow, refer section **Settings** under DgAdmin.

Once the remediation value has been set and saved in **DETAILED RESULTS** tab, the same can be seen under **Saved Remediation** tab. The **Saved Remediation** tab will display the information such as Host Name, Database Name under Scope, Table Name, Field Name, Sensitive Type, Remediation Action, etc.



To edit the remediation details, click **EDIT**. This functionality allows you to update the information for remediated results, if required.

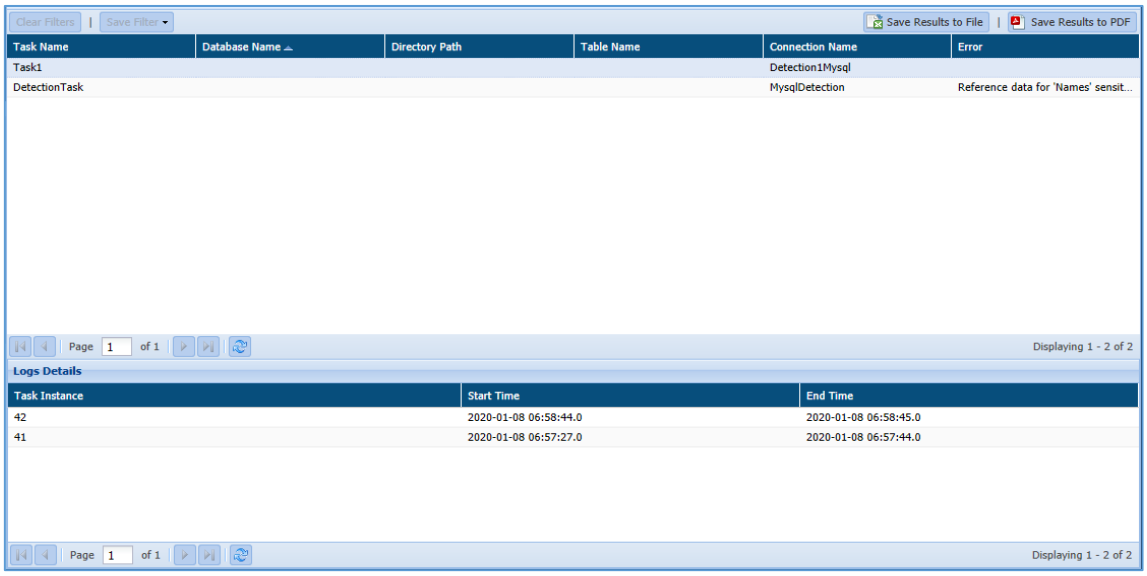
To delete the remediated record, select the record and click **Delete**. This will delete the selected remediated record from the screen.

Click **Refresh** to update the screen.

9.1.1.3 Logs

In Logs tab, you can view the list of all the Task Name along with the errors occurred during the task execution. The Logs tab is divided into two panes:

1. Logs List
2. Logs Details

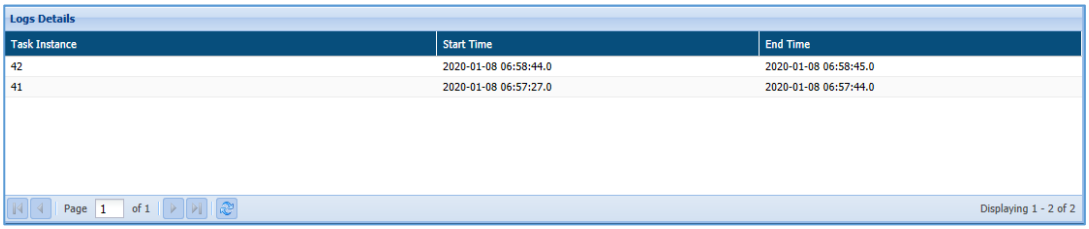


- **Logs List**: This pane will display the list of all the Tasks Name along with the errors occurred during the task execution. It will also display the information such as Database Name, Directory Path, Table Name and Connection Name.

    1. **Save Results to File**: Click the Save Results to File button to save the Logs List information in .csv format.

    2. **Save Results to PDF**: Click the Save Results to PDF button to save the Logs List information in PDF format.

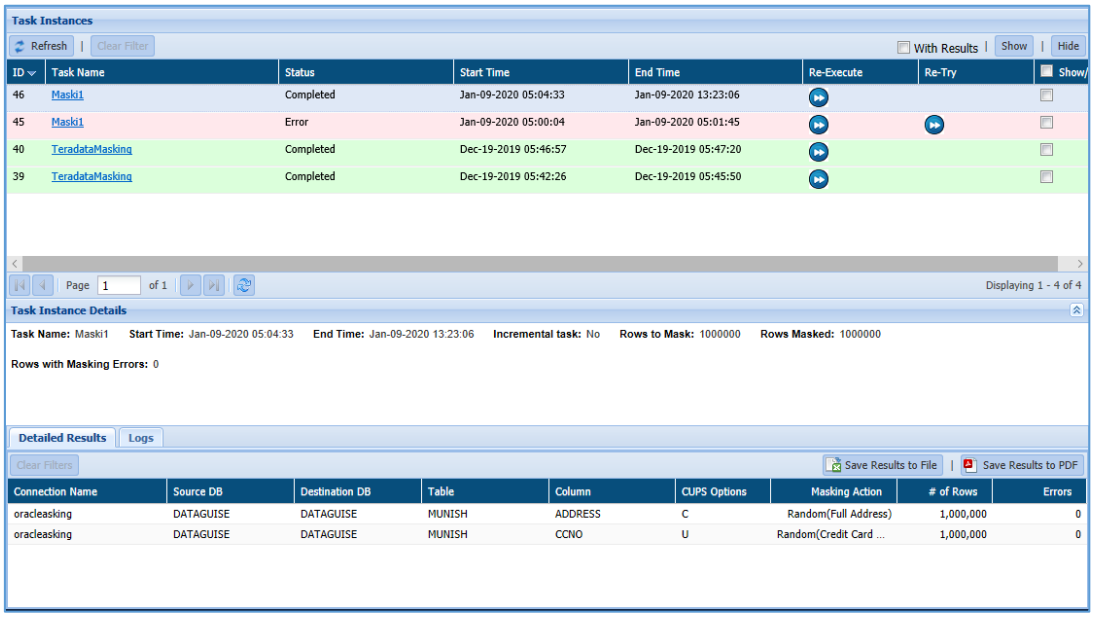
- **Logs Details:** The Logs Details pane will display the information for the selected task in the Logs List. The information includes Task Instance, Start Time and End Time.



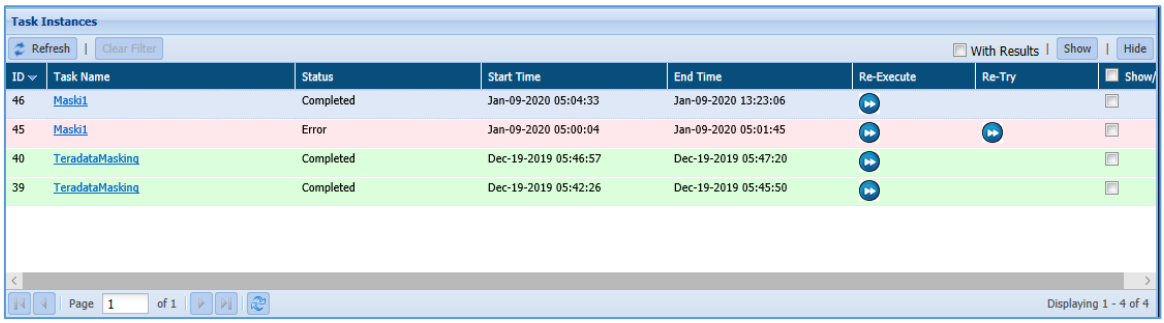
9.1.2 Masking

The Result page displays information about the data masked with each masked task instance. The Result page is divided into three panes:

i. Task Instances
ii. Task Instance Details
iii. Overview

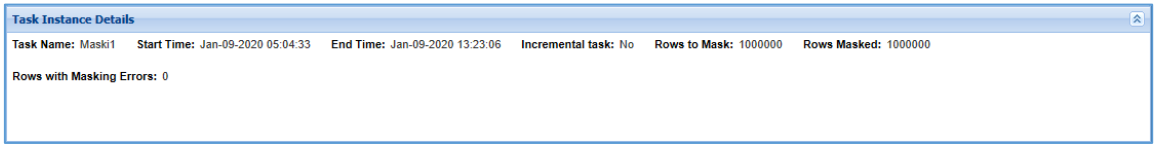


- **Task Instances**:
  The Task Instance pane displays information for the masking tasks. This pane will display information such as ID (system generated), Task Name, Status, Start Time, End Time, etc.

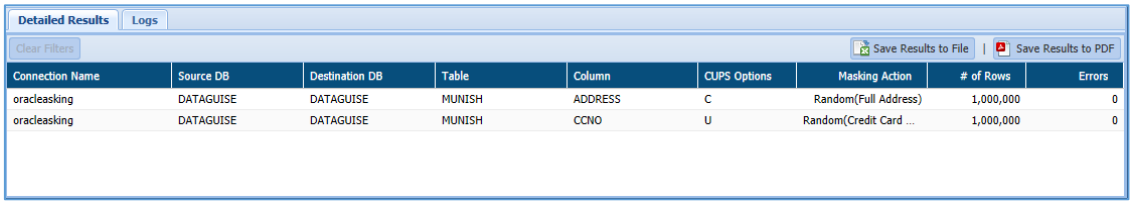


1. **Refresh**: Click the Refresh button. It will update the current page with the updated information
2. **Clear Filters**: Clear Filters: Click the Clear Filters button. It will remove any applied filters on the Tasks page.
3. **Show**: Click the Show button to unhide a task.
4. **Hide**: To hide any task, follow the below steps:
   i. Check Show/Hide checkbox for the policy.
   ii. Click the Hide button. The policy will get greyed out.
5. **With Results**: Check the With Results checkbox, if you want to see the results for the selected masking task.

- **Task Instance Details**:
  The task Instance Details pane will display the basic information for the masking task selected in the Task Instance pane. The information includes details related to tasks such as Task Name, Start Time, End Time, Incremental Task, etc.

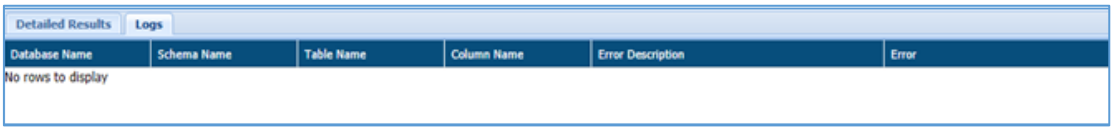


- **Overview**:
  The bottom pane shows the detailed information for the selected task. The information displayed is dependent on the current selected tab.



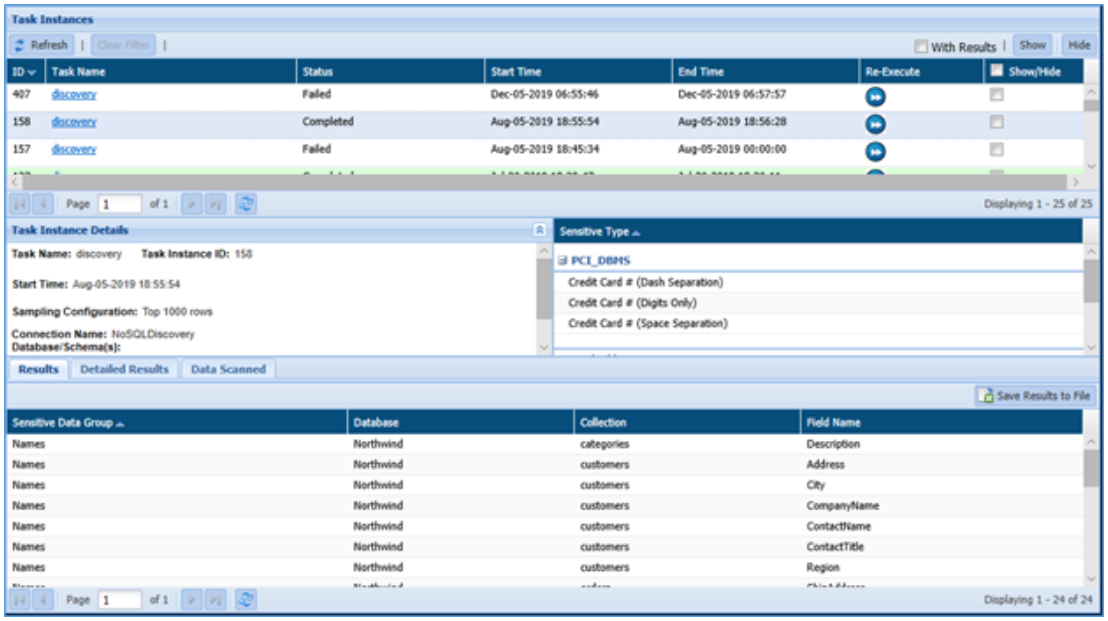
1. **Detailed Results**: The Detailed Results panel lists each masked column along with details such as the Connection Name, Source DB, Destination DB, Table, Column, CUPS Option, etc.
2. **Save Results to File**: Click the Save Results to File, if you wish to download the data in text format.
3. **Save Results to PDF**: Click the Save Results to PDF, if you wish to downlad the data in PDF format.

4. **Logs**: This pane list any errors which occured during the task execution. It display the log information for the errors such as Database Name, Schema Name, Column Name, Error Description, Error.



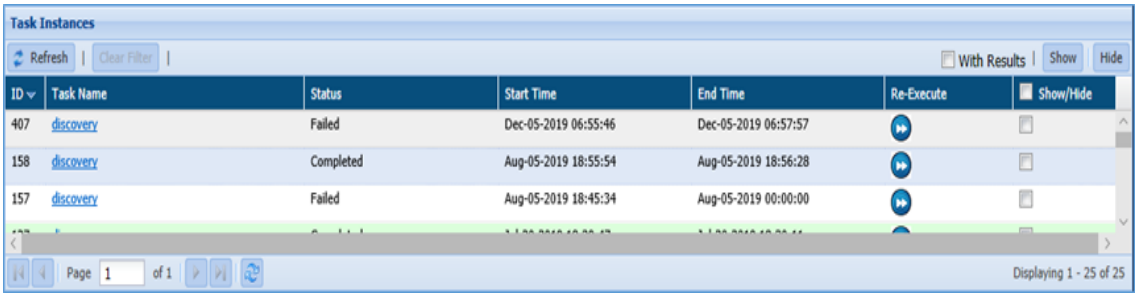
9.2 NoSQL

The Results tab displays the information about the sensitive information found in the database. The tab is divided into three panes. These are:



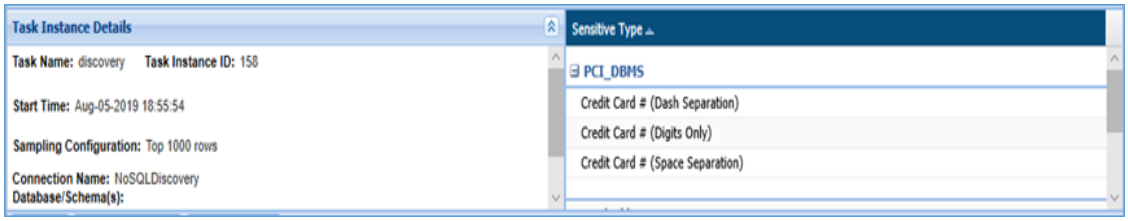
1. Task Instances
2. Task Instances Detail
3. Overview

- **Task Instances:**
  This window will display the information for the task such as ID (system generated), Task Name, Status, Start Time, and End Time.



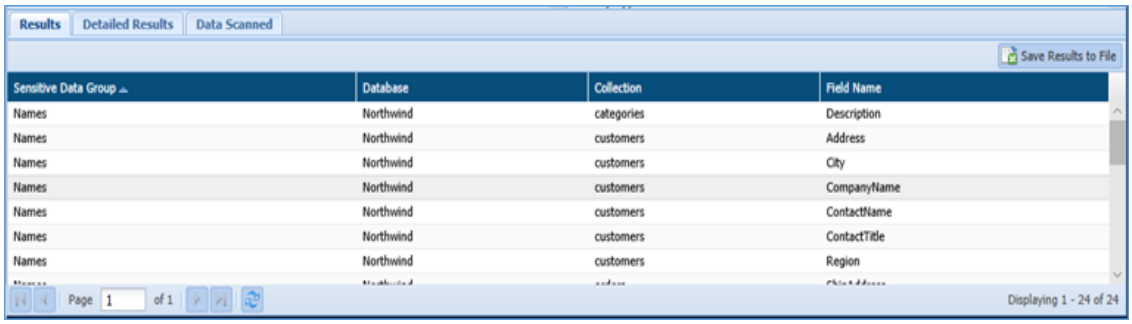
Click the **Re-Execute** button to re-run the task.

- **Task Instance Details:**
  The Task Instance Details pane will display the task properties such as Task Name, Task Instance, Task Type, Start Time, list of Sensitive Type, etc.



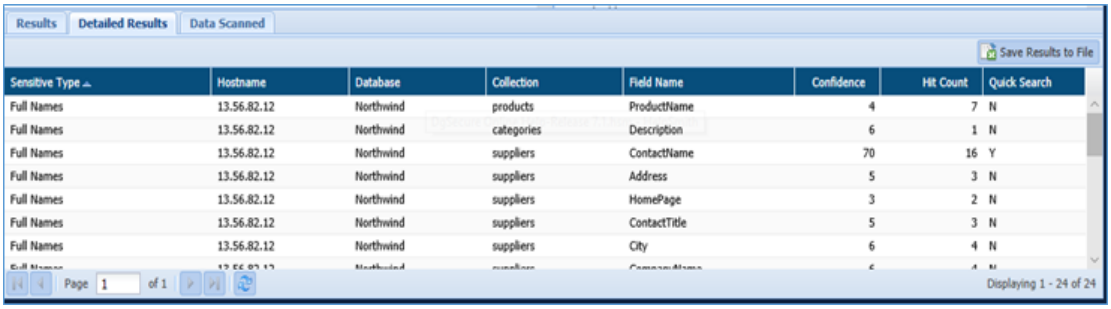
1. **Sensitive Type:** This pane displays the list of Sensitive Type.

- **Overview:**
  The bottom panel will show the detailed information for the selected task. The information displayed is dependent on the currently selected tab.

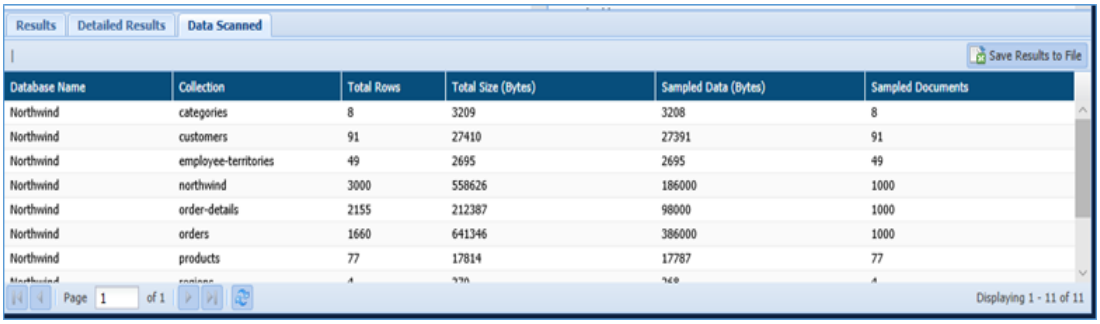


1. **Results:** The result tab will display the high level information of the Sensitive Types for the selected task in the detection task pane. The information includes Sensitive Data Group, Database, Collection and Field Name.

2. **Detailed Results:** The Detailed Results tab will provide you the detailed information for the Sensitive Type encountered in the database. The information will include Sensitive Type, Hostname, Database, Collection, Field Name, Confidence, etc.



3. **Data Scanned:** List the total number of rows in the scanned tables and how many of those rows DgSecure actually scanned.



- **Save Results to File:** Click the **Save Results to File** to download the data in Doc format.

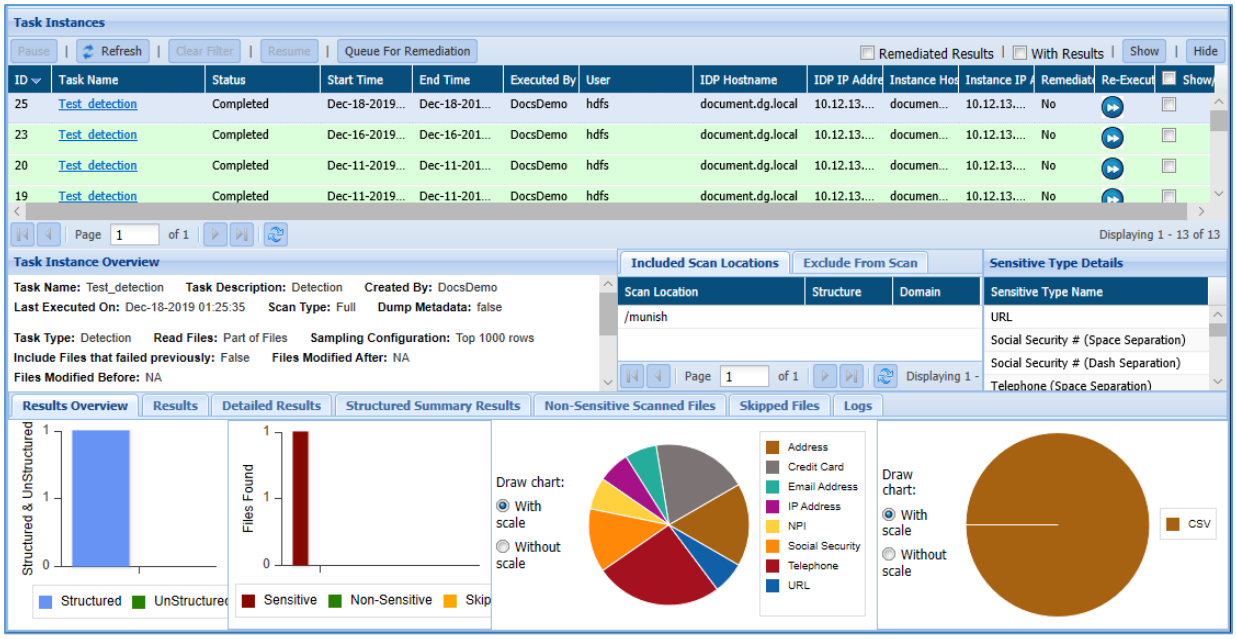
9.3 Hadoop

9.3.1 HDFS

9.3.1.1 Results-By Task

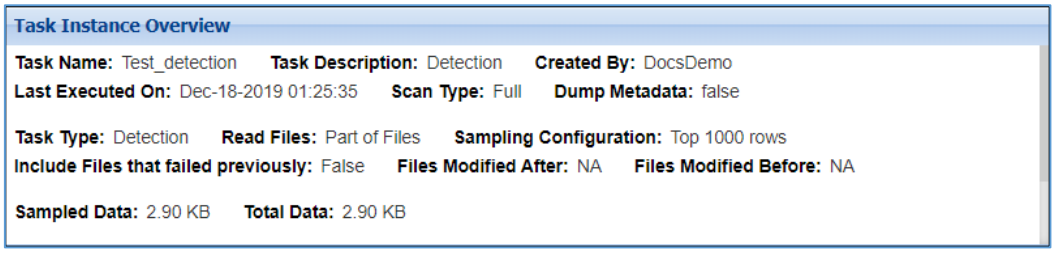
The **By Task** tab under HDFS Results, provides the details of the selected HDFS tasks.The Task Instances panel, at the top of the page, contains a list of all the HDFS tasks that you have permission to view.

1. Select a task instance to display its parameters and results in the panels below.
2. Click Refresh to update the list with any recently-launched task instances. Click Resume to restart canceled tasks.

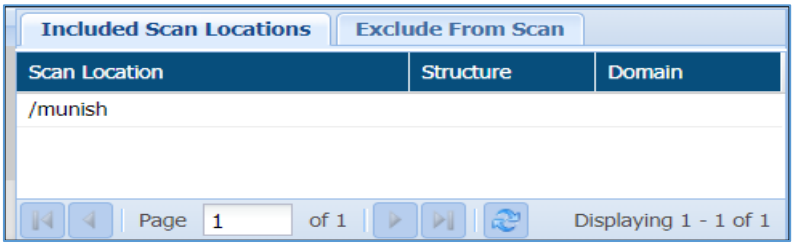


The middle panel shows the Task Instance Overview, Included and Excluded scanning locations and Sensitive Type Details. While the scan is running, the panel displays a progress bar that shows you the total number of tables to be scanned and the number that have been scanned so far. The various tabs on this tab are discussed below:

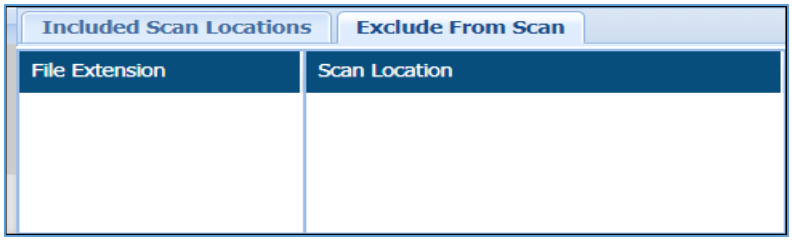
- **Task Instance Overview**: Provides identifying information about the selected task instance and describes the work that it performed.



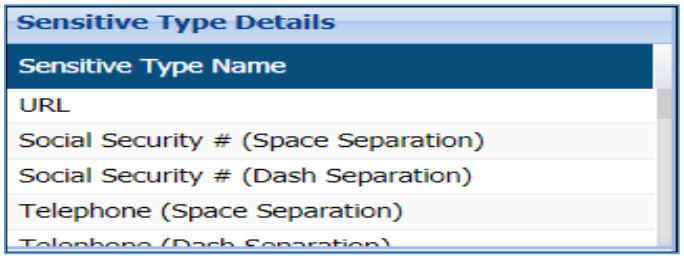
- **Included Scan Locations**: The locations added to the Include list. When the Included Scan Location tab is selected, the instance's target directory, the structure assigned to the directory, and the domain to which it is assigned are shown. Not all scan locations are associated with a structure or domain.



- **Excluded From Scan**: The locations added to the Exclude list. When the Exclude from Scan tab is selected, the panel displays any excluded file extensions and file paths.

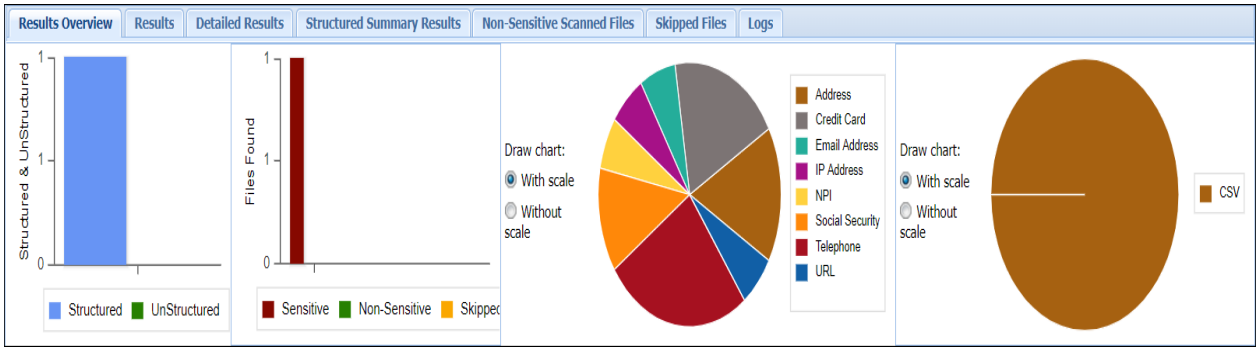


- **Sensitive Type Details**: The Sensitive Type Details panel shows the task instance's sensitive types.

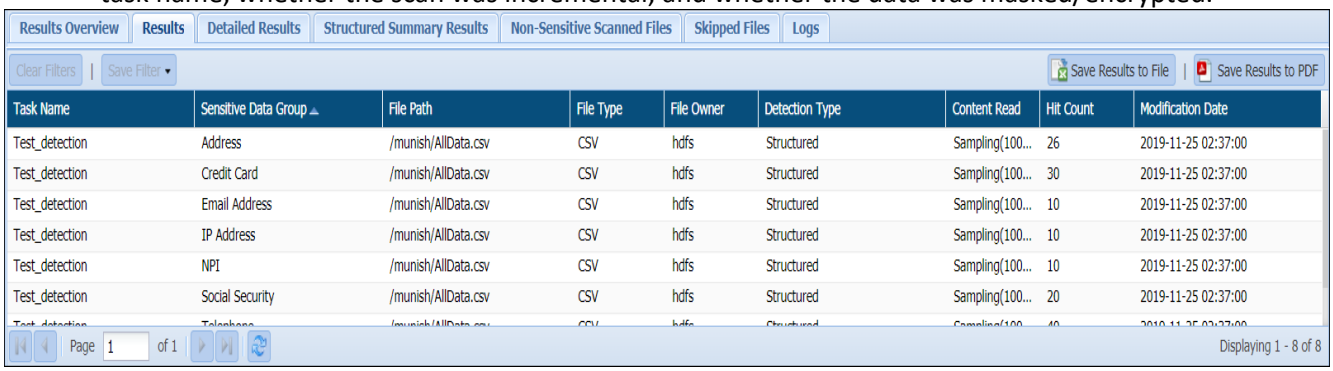


The tabs shown in the bottom panel are as follows:

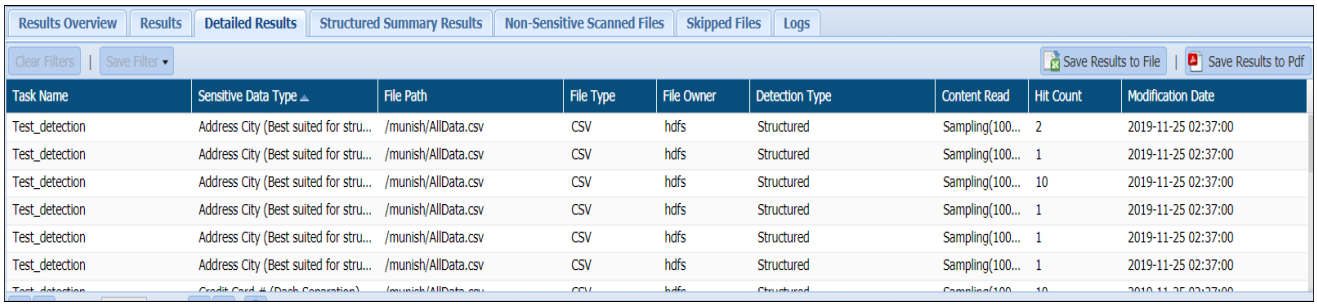
- **Results Overview**: For the Results Overview tab, the panel gives a graphical summary of the results for the selected task instance. Hovering over data points in any of the graphs shows the number of hits and hit percentage for a file or sensitive type.



- **Results**: For the Results tab, the panel displays sensitive data by group, hit count, scan setting, task name, whether the scan was incremental, and whether the data was masked/encrypted.



- **Detailed Results**: The Detailed Results tab displays the sensitive data by type. When the Detailed Results tab is selected, two buttons appear in the menu bar of the bottom panel. You can, Save results to file or Save Results to PDF.



Task Name	Sensitive Data Type	File Path	File Type	File Owner	Detection Type	Content Read	Hit Count	Modification Date
Test_detection	Address City (Best suited for stru...	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(100...	2	2019-11-25 02:37:00
Test_detection	Address City (Best suited for stru...	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(100...	1	2019-11-25 02:37:00
Test_detection	Address City (Best suited for stru...	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(100...	10	2019-11-25 02:37:00
Test_detection	Address City (Best suited for stru...	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(100...	1	2019-11-25 02:37:00
Test_detection	Address City (Best suited for stru...	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(100...	1	2019-11-25 02:37:00
Test_detection	Address City (Best suited for stru...	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(100...	1	2019-11-25 02:37:00

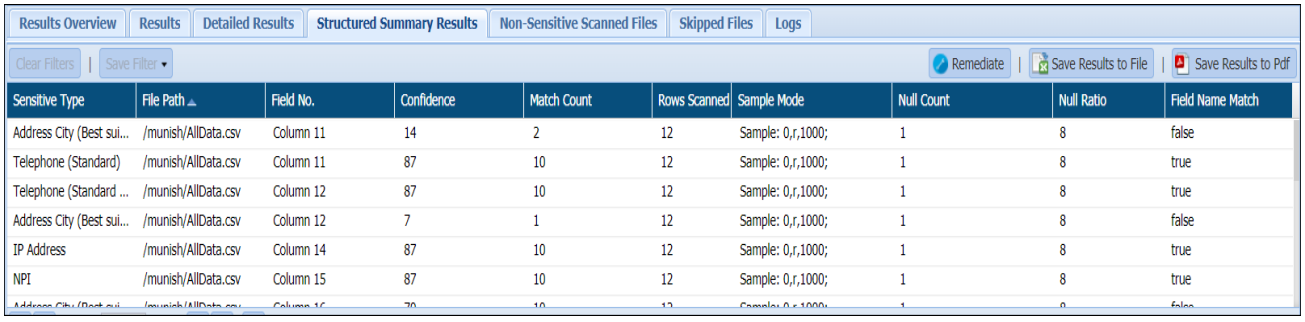
The columns in the Results and Detailed Results tables are described below:

Column	Description
Task Name	The name of the task that was executed to create this instance.
Sensitive Data Type	A specific sensitive type within a sensitive type group. The sensitive type and sensitive type group may be synonymous.
Sensitive Data Group	The type of sensitive information that has been discovered.

File Path	The location of the file with sensitive data. Hit Count. The number of values in in the listed file path that match the search criteria.
File Type	The type of file scanned.
File Owner	The user for task execution.
Detection Type	The type of detection, structured or simulated.
Content Read	The sample type of the data scanned.
Hit Count	The number of sensitive types detected.
AES/Masked	Indicates whether or not the sensitive type was masked. This column displays "False" if the sensitive data was not masked and "True" if the sensitive data was masked.

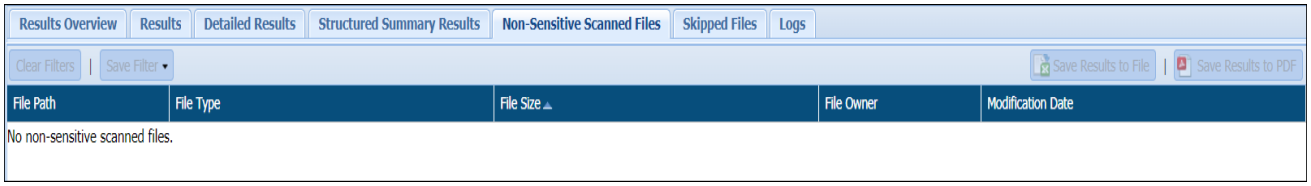
FP/Row Encrypted	Indicates whether or not the sensitive type was encrypted. This column displays "False" if the sensitive data was not encrypted and "True" if the sensitive data was encrypted.
FP/Row Decrypted	Displays "True" if the scan was incremental and "False" if it was a full scan.
Modification Date	The date on which the task was last modified.

- **Structured Summary Results**: This tab only appears for Detection results. It indicates the number of sensitive data items - categorized by sensitive data type - the task instance discovered and which column contains the sensitive elements.

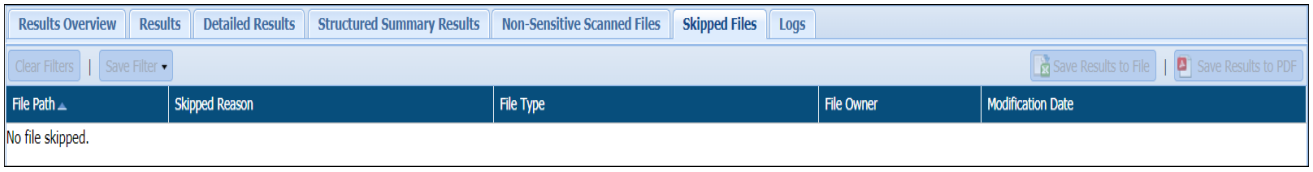


Sensitive Type	File Path	Field No.	Confidence	Match Count	Rows Scanned	Sample Mode	Null Count	Null Ratio	Field Name Match
Address City (Best sui...	/munish/AllData.csv	Column 11	14	2	12	Sample: 0,r,1000;	1	8	false
Telephone (Standard)	/munish/AllData.csv	Column 11	87	10	12	Sample: 0,r,1000;	1	8	true
Telephone (Standard ...	/munish/AllData.csv	Column 12	87	10	12	Sample: 0,r,1000;	1	8	true
Address City (Best sui...	/munish/AllData.csv	Column 12	7	1	12	Sample: 0,r,1000;	1	8	false
IP Address	/munish/AllData.csv	Column 14	87	10	12	Sample: 0,r,1000;	1	8	true
NPI	/munish/AllData.csv	Column 15	87	10	12	Sample: 0,r,1000;	1	8	true

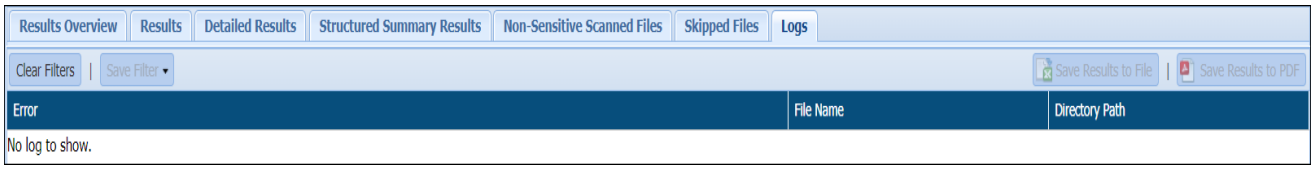
- **Non Sensitive Scanned Files**: Lists out all the fills where no sensitive content was detected.



- **Skipped Files**: The files that were skipped during scan are listed here.



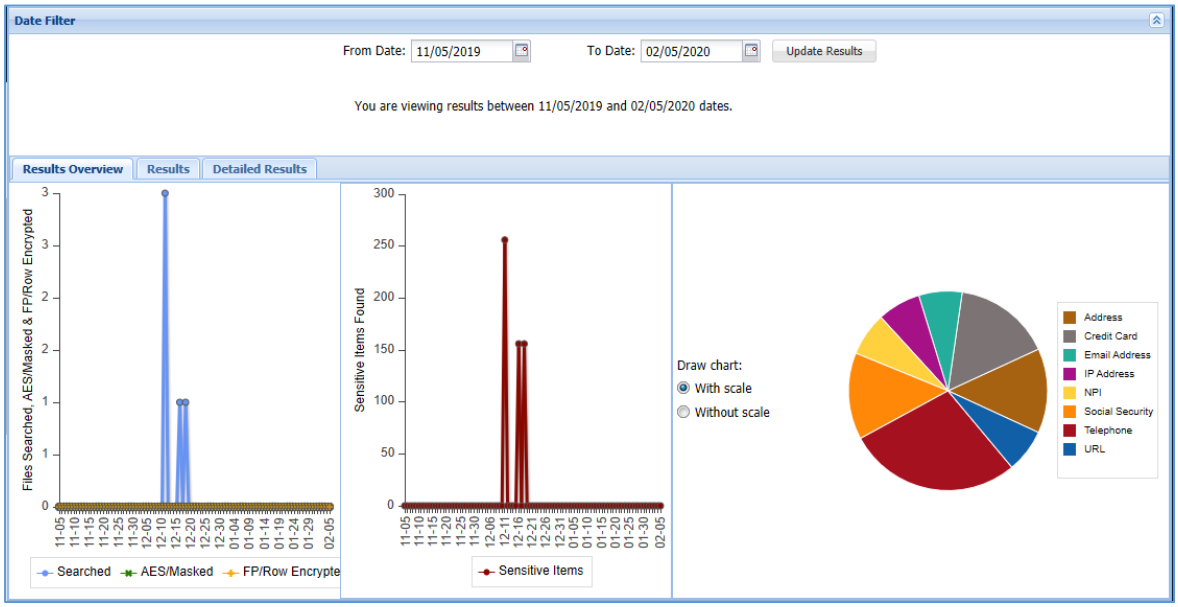
- **Logs**: For the Logs tab, the bottom panel lists any errors that occurred while the task was running (for example, if a target machine was offline and therefore unsearchable).



9.3.1.2 *Results-By Date Range*

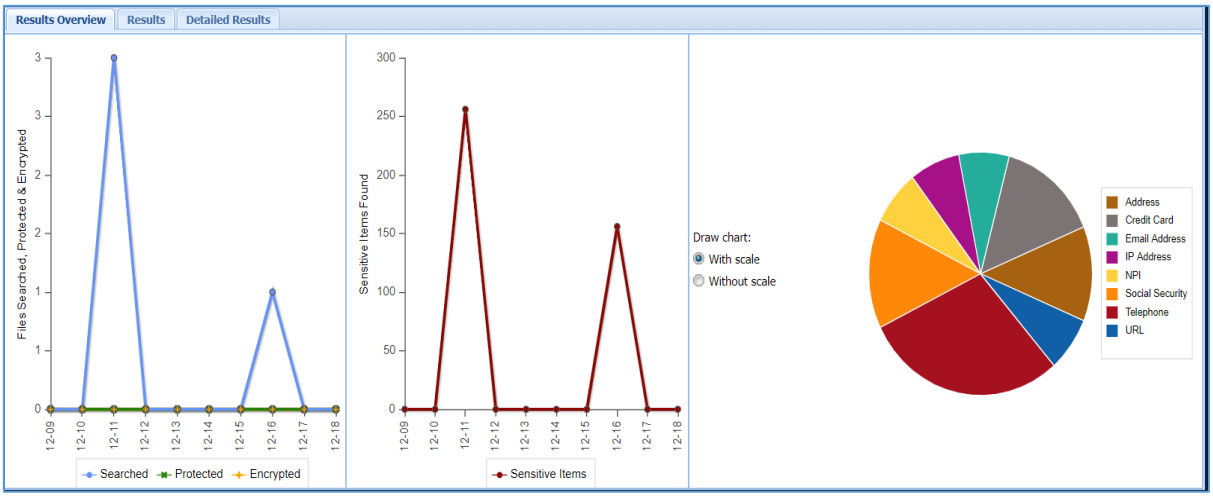
The By Date Range tab under HDFS Results, provides the details of HDFS tasks executed within a period of time. To generate time based results, take the following steps:

1. Enter From Date and To Date, which you require results between.
2. Click Update Results.
3. The three tabs on the bottom panel will get populated with the details of task, data scanned, data protected, data encrypted, sensitive items found and the breakup of different sensitive items detected on your systems within the specified period.

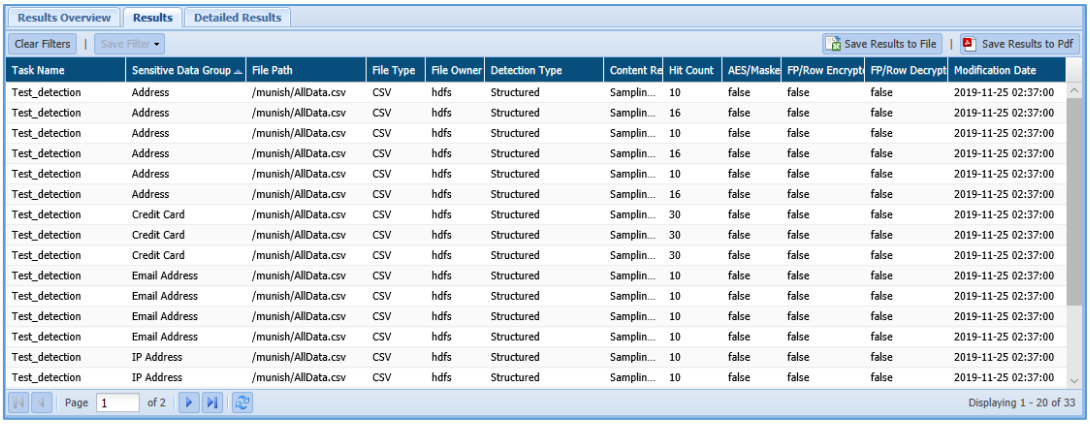


The bottom panel of this screen contains the following three tabs:

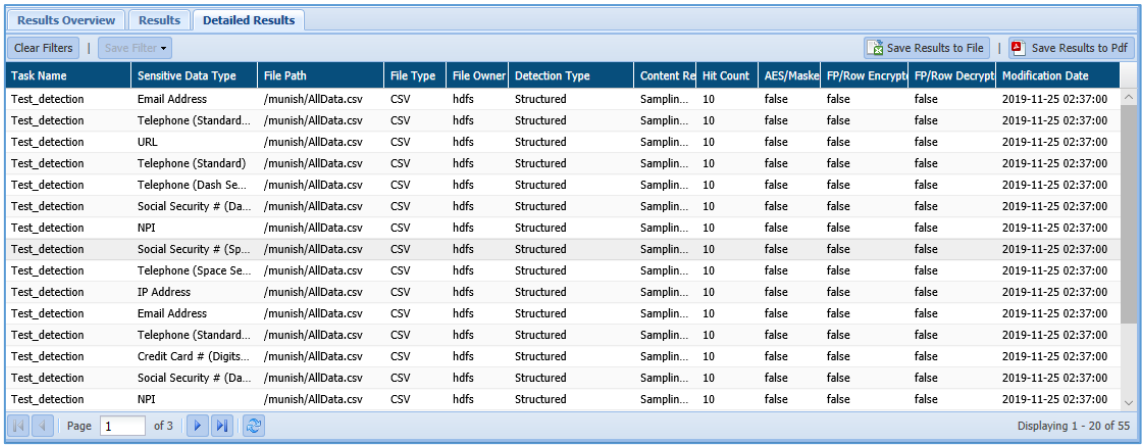
- **Results Overview**: For the Results Overview tab, the panel gives a graphical summary of the results for the selected task instance. Hovering over data points in any of the graphs shows the number of hits and hit percentage for a file or sensitive type. Only sensitive types uncovered by the selected task instance are displayed.



- **Results**: For the Results tab, the panel displays sensitive data by group, hit count, scan setting, task name, whether the scan was incremental, and whether the data was masked/encrypted.



- **Detailed Results**: The Detailed Results tab displays the sensitive data by type.



The Results and Detailed Results can be downloaded as a pdf and csv. Details about the following fields are shown under the Results and Detailed Results tabs:

Column	Description
Task Name	The name of the task that was executed to create this instance.
Sensitive Data Type	A specific sensitive type within a sensitive type group. The sensitive type and sensitive type group may be synonymous.
Sensitive Data Group	The type of sensitive information that has been discovered.

File Path	The location of the file with sensitive data. Hit Count. The number of values in in the listed file path that match the search criteria.
File Type	The type of file scanned.
File Owner	The user for task execution.
Detection Type	The type of detection, structured or simulated.
Content Read	The sample type of the data scanned.
Hit Count	The number of sensitive types detected.
AES/Masked	Indicates whether or not the sensitive type was masked. This column displays "False" if the sensitive data was not masked and "True" if the sensitive data was masked.

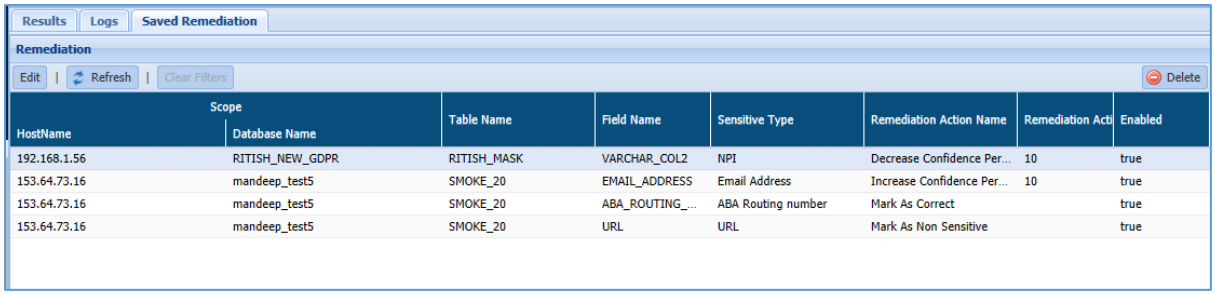
FP/Row Encrypted	Indicates whether or not the sensitive type was encrypted. This column displays "False" if the sensitive data was not encrypted and "True" if the sensitive data was encrypted.
FP/Row Decrypted	Displays "True" if the scan was incremental and "False" if it was a full scan.
Modification Date	The date on which the task was last modified.

9.3.1.3 Saved Remediation

The Saved Remediation tab allows you to view all the records that have been selected as remediated results in **DETAILED RESULTS** tab under **OVERVIEW** panel.

***Note**: To know more about how to enable and queue the task for remediation workflow, refer section **Settings** under DgAdmin.

Once the remediation value has been set and saved in **DETAILED RESULTS** tab, the same can be seen under **Saved Remediation** tab. The **Saved Remediation** tab will display the information such as Host Name, Database Name under Scope, Table Name, Field Name, Sensitive Type, Remediation Action, etc.



To edit the remediation details, click **EDIT**. This functionality allows you to update the information for remediated results, if required.

To delete the remediated record, select the record and click **Delete**. This will delete the selected remediated record from the screen.

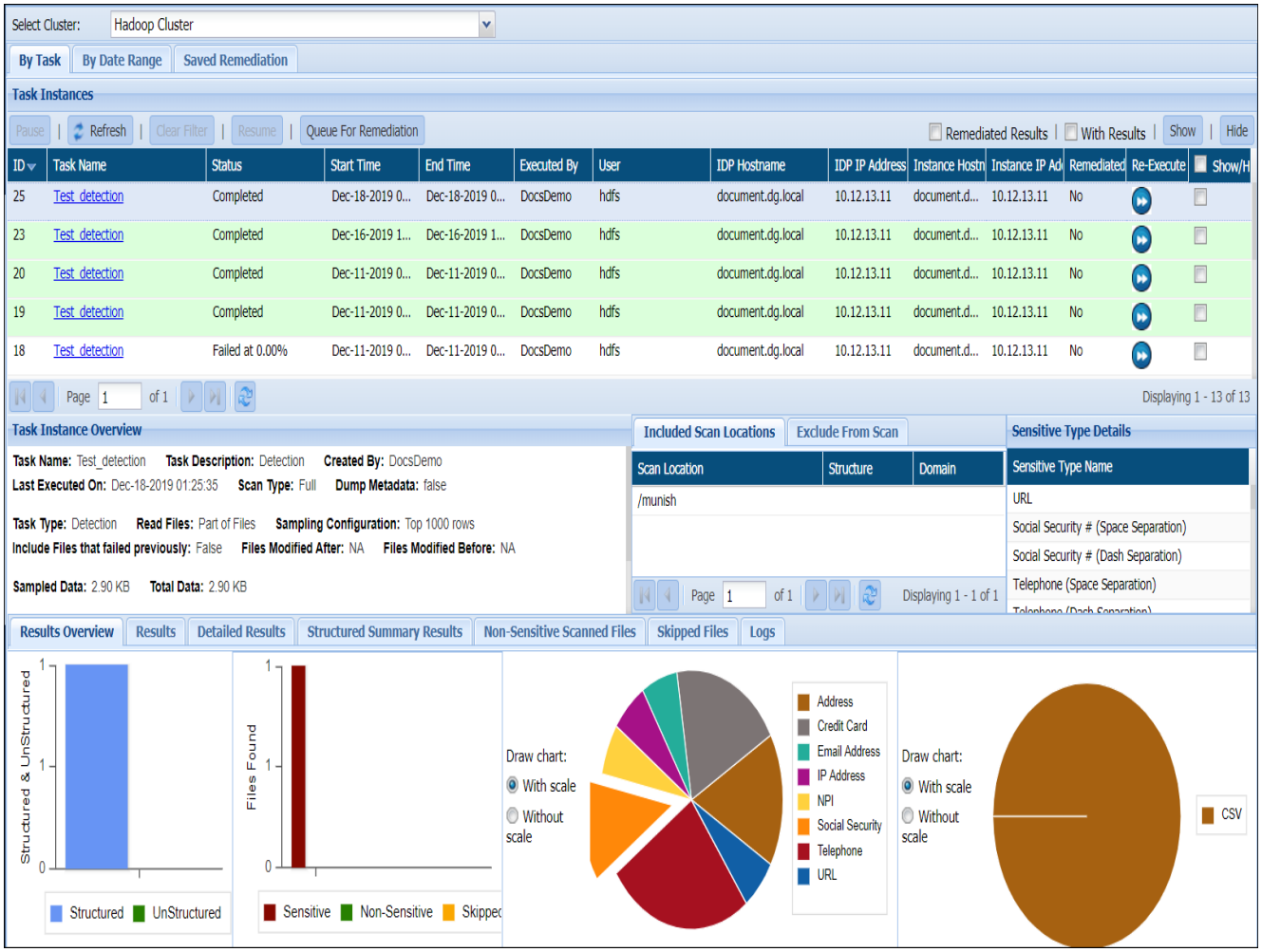
Click **Refresh** to update the screen.

9.3.2 Hive

9.3.2.1 Results-By Task

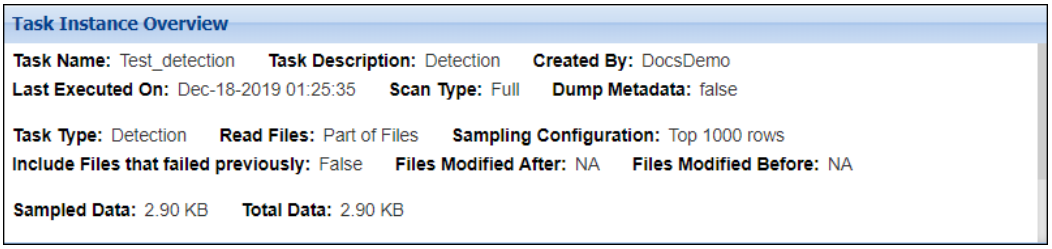
The **By Task** tab under Hive Results, provides the details of the selected Hive tasks.
The Task Instances panel, at the top of the page, contains a list of all the Hive tasks that you have permission to view.

1. Select a task instance to display its parameters and results in the panels below.
2. Click Refresh to update the list with any recently-launched task instances. Click Resume to restart canceled tasks.

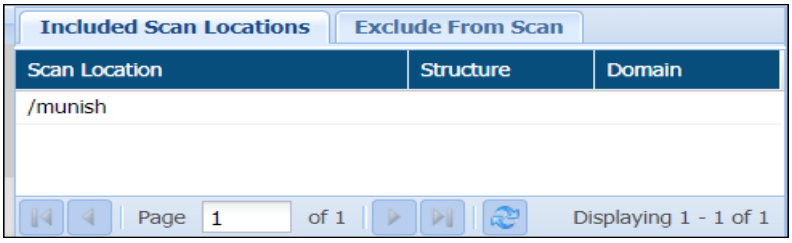


The middle panel shows the Task Instance Overview, Included and Excluded scanning locations and Sensitive Type Details. While the scan is running, the panel displays a progress bar that shows you the total number of tables to be scanned and the number that have been scanned so far. The various tabs on this tab are discussed below:

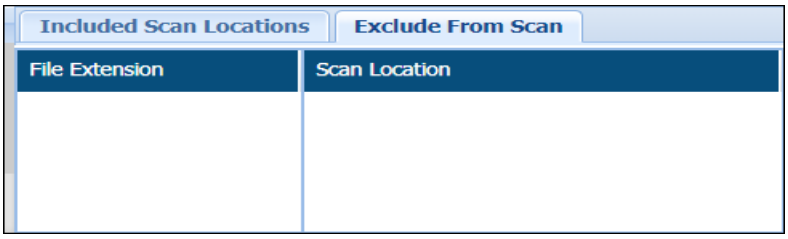
- **Task Instance Overview**: Provides identifying information about the selected task instance and describes the work that it performed.



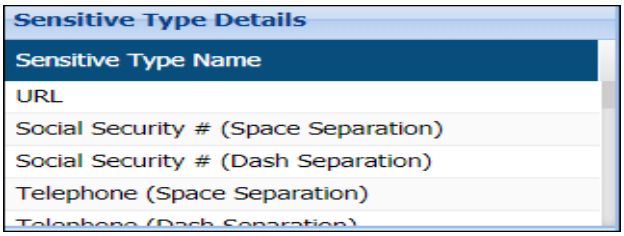
- **Included Scan Locations**: The locations added to the Include list. When the Included Scan Location tab is selected, the instance's target directory, the structure assigned to the directory, and the domain to which it is assigned are shown. Not all scan locations are associated with a structure or domain.



- **Excluded From Scan**: The locations added to the Exclude list. When the Exclude from Scan tab is selected, the panel displays any excluded file extensions and file paths.

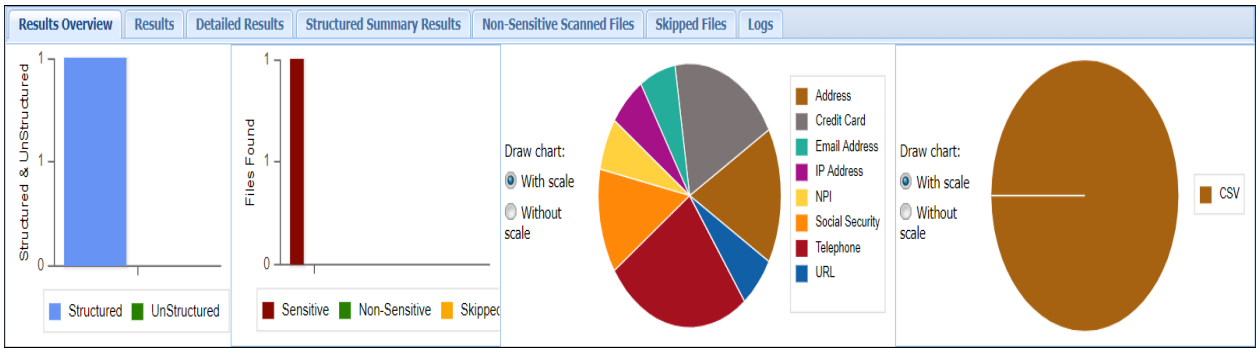


- **Sensitive Type Details**: The Sensitive Type Details panel shows the task instance's sensitive types.

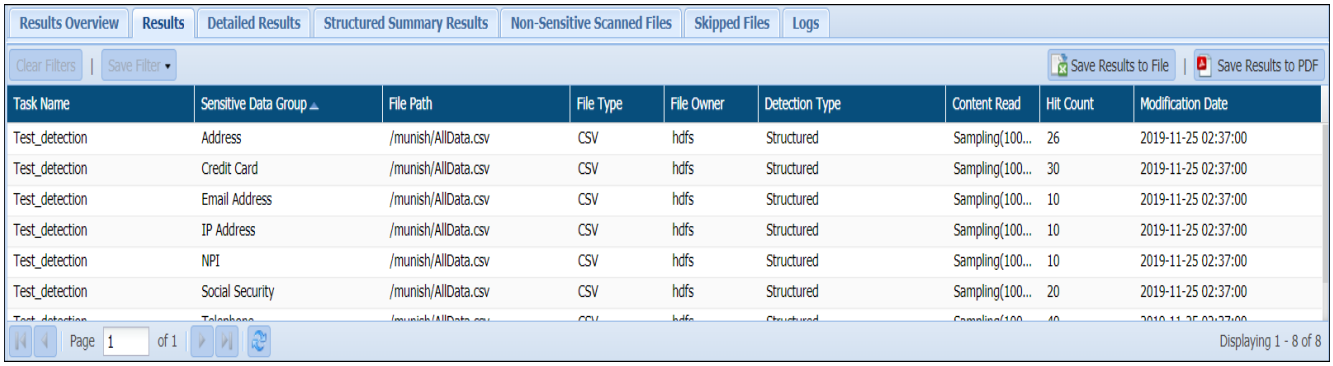


The tabs shown in the bottom panel are as follows:

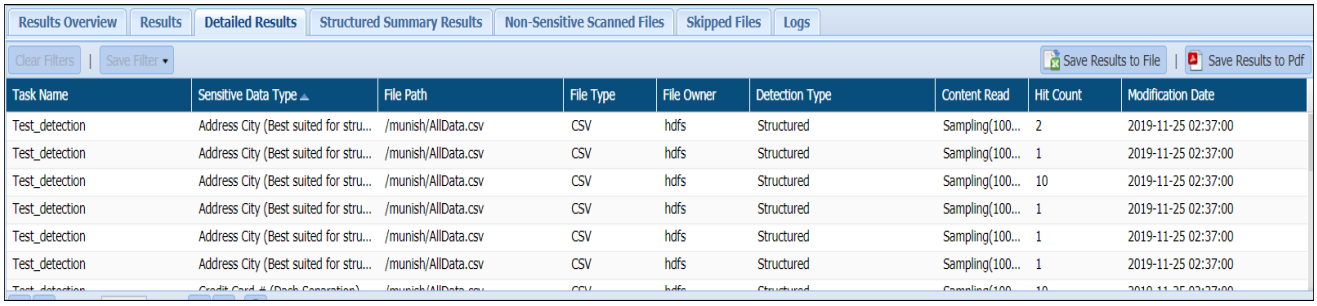
- **Results Overview**: For the Results Overview tab, the panel gives a graphical summary of the results for the selected task instance. Hovering over data points in any of the graphs shows the number of hits and hit percentage for a file or sensitive type.



- **Results**: For the Results tab, the panel displays sensitive data by group, hit count, scan setting, task name, whether the scan was incremental, and whether the data was masked/encrypted.



- **Detailed Results**: The Detailed Results tab displays the sensitive data by type. When the Detailed Results tab is selected, two buttons appear in the menu bar of the bottom panel. You can save results to file or save results to PDF.



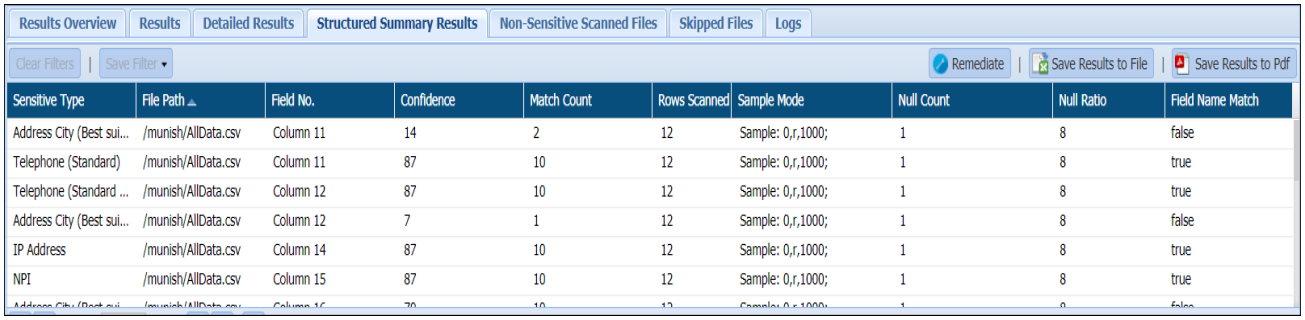
The columns in the Results and Detailed Results tables are described below:

Column	Description
Task Name	The name of the task that was executed to create this instance.
Sensitive Data Type	A specific sensitive type within a sensitive type group. The sensitive type and sensitive type group may be synonymous.

Sensitive Data Group	The type of sensitive information that has been discovered.
File Path	The location of the file with sensitive data. Hit Count. The number of values in in the listed file path that match the search criteria.
File Type	The type of file scanned.
File Owner	The user for task execution.
Detection Type	The type of detection, structured or simulated.
Content Read	The sample type of the data scanned.
Hit Count	The number of sensitive types detected.
AES/Masked	Indicates whether or not the sensitive type was masked. This column displays "False" if the sensitive data was not masked and "True" if the sensitive data was masked.
FP/Row Encrypted	Indicates whether or not the sensitive type was encrypted. This column displays "False" if the sensitive data was not encrypted and "True" if the sensitive data was encrypted.
FP/Row Decrypted	Displays "True" if the scan was incremental and "False" if it was a full scan.

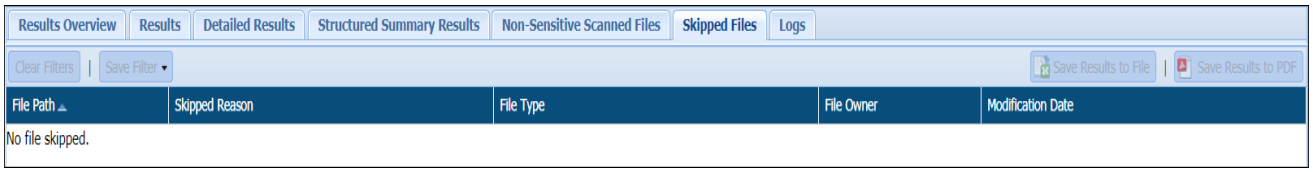
Modification Date	The date on which the task was last modified.

- **Structured Summary Results**: This tab only appears for Detection results. It indicates the number of sensitive data items - categorized by sensitive data type - the task instance discovered and which column contains the sensitive elements.

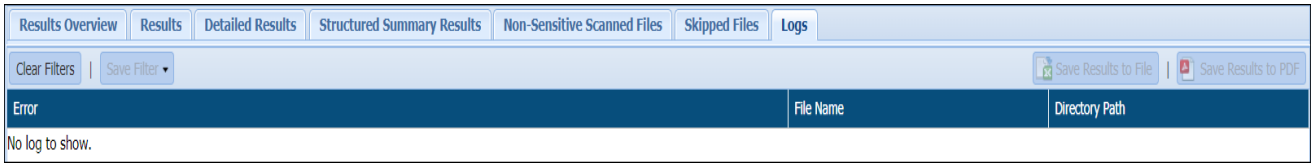


- **Non Sensitive Scanned Files**: Lists out all the fills where no sensitive content was detected.

- **Skipped Files**: The files that were skipped during scan are listed here.



- **Logs**: For the Logs tab, the bottom panel lists any errors that occurred while the task was running (for example, if a target machine was offline and therefore unsearchable).



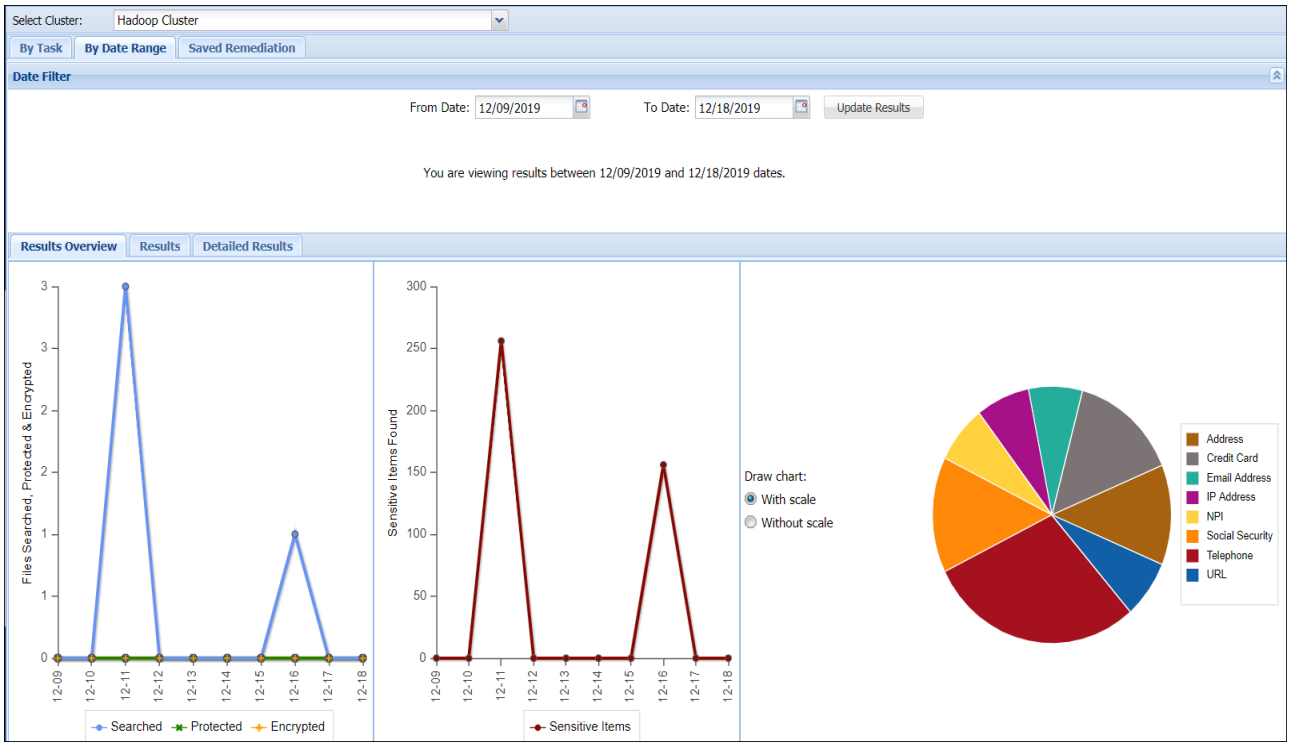
9.3.2.2 Results-By Date Range

The By Date Range tab under Hive Results, provides the details of HDFS tasks executed within a period of time.

To generate time based results, take the following steps:

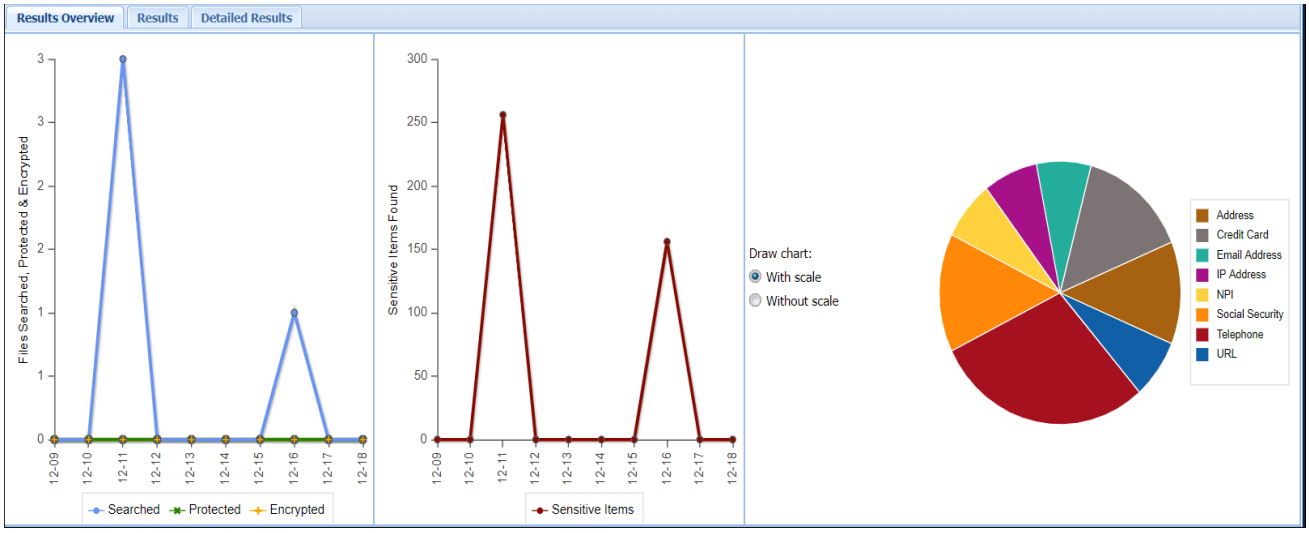
1. Enter From Date and To Date, which you require results between.
2. Click Update Results.

3. The three tabs on the bottom panel will get populated with the details of task, data scanned, data protected, data encrypted, sensitive items found and the breakup of different sensitive items detected on your systems within the specified period.

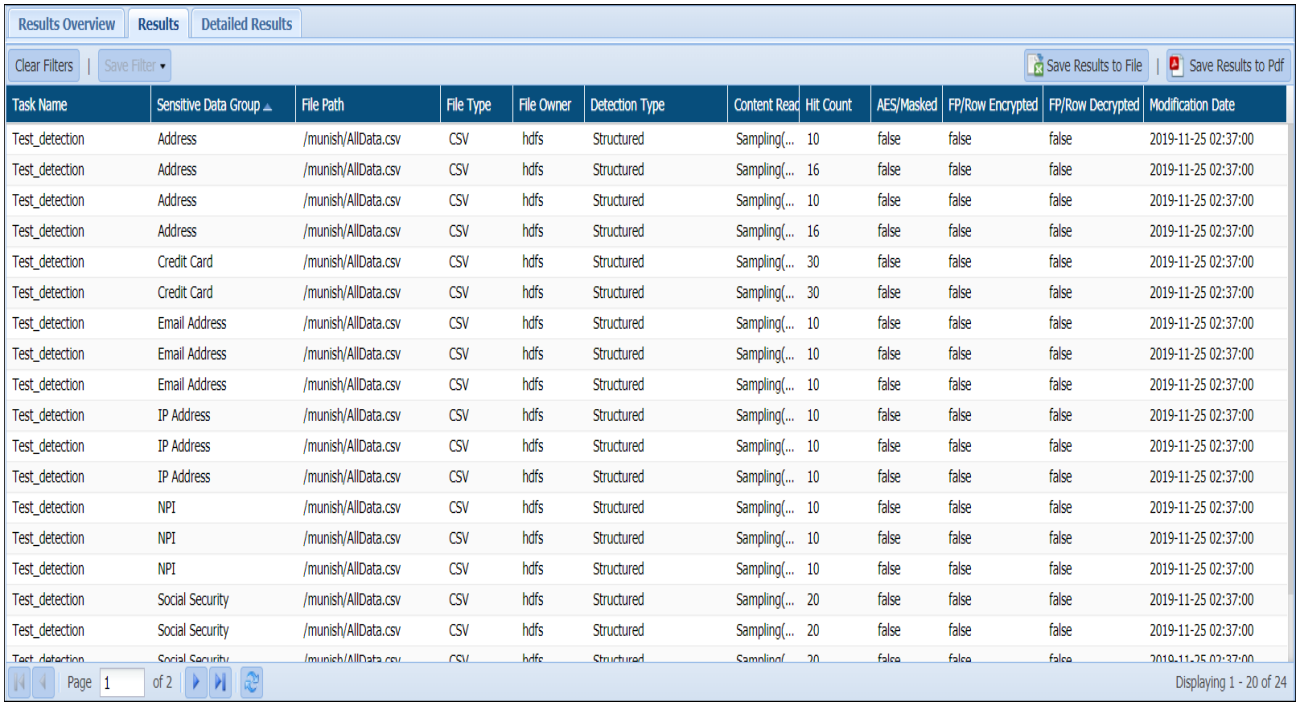


The bottom panel of this screen contains the following three tabs:

- **Results Overview**: For the Results Overview tab, the panel gives a graphical summary of the results for the selected task instance. Hovering over data points in any of the graphs shows the number of hits and hit percentage for a file or sensitive type. Only sensitive types uncovered by the selected task instance are displayed.

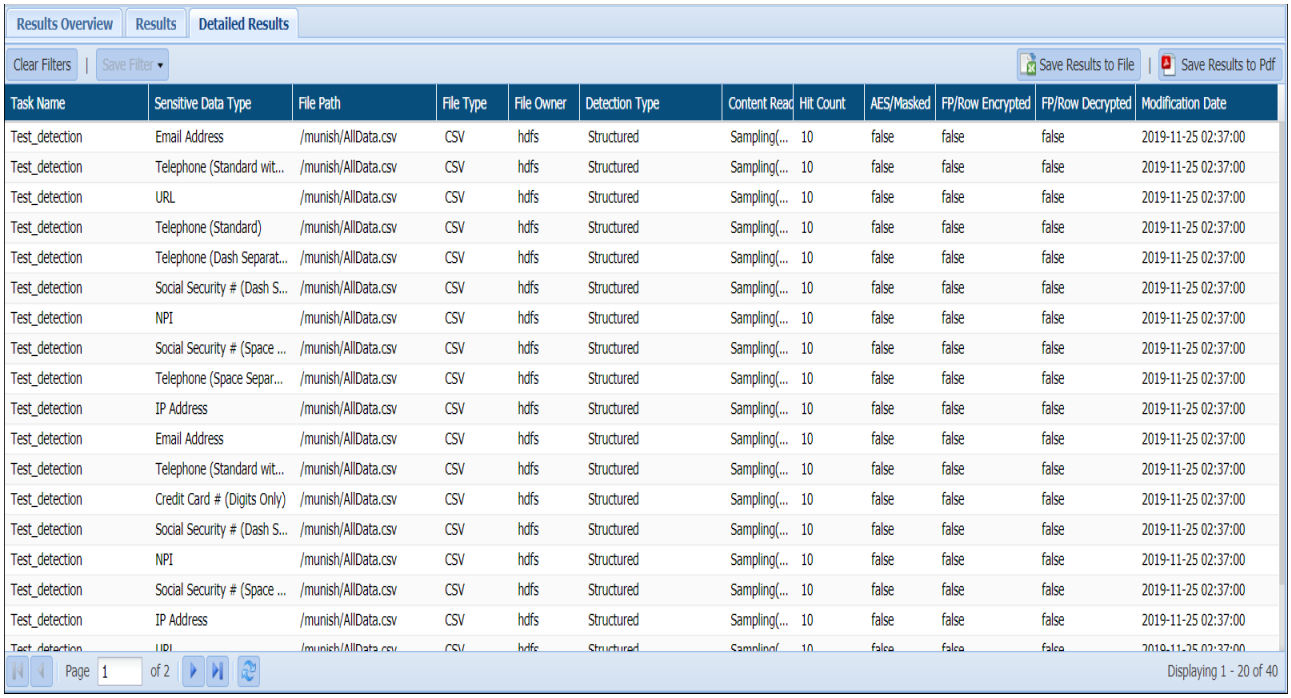


- **Results**: For the Results tab, the panel displays sensitive data by group, hit count, scan setting, task name, whether the scan was incremental, and whether the data was masked/encrypted.



Task Name	Sensitive Data Group	File Path	File Type	File Owner	Detection Type	Content Read	Hit Count	AES/Masked	FP/Row Encrypted	FP/Row Decrypted	Modification Date
Test_detection	Address	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	Address	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	16	false	false	false	2019-11-25 02:37:00
Test_detection	Address	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	Address	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	16	false	false	false	2019-11-25 02:37:00
Test_detection	Credit Card	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	30	false	false	false	2019-11-25 02:37:00
Test_detection	Credit Card	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	30	false	false	false	2019-11-25 02:37:00
Test_detection	Email Address	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	Email Address	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	Email Address	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	IP Address	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	IP Address	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	IP Address	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	NPI	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	NPI	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	NPI	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	Social Security	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	20	false	false	false	2019-11-25 02:37:00
Test_detection	Social Security	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	20	false	false	false	2019-11-25 02:37:00

- **Detailed Results**: The Detailed Results tab displays the sensitive data by type.



Task Name	Sensitive Data Type	File Path	File Type	File Owner	Detection Type	Content Read	Hit Count	AES/Masked	FP/Row Encrypted	FP/Row Decrypted	Modification Date
Test_detection	Email Address	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	Telephone (Standard wit...	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	URL	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	Telephone (Standard)	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	Telephone (Dash Separat...	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	Social Security # (Dash S...	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	NPI	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	Social Security # (Space ...	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	Telephone (Space Separ...	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	IP Address	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	Email Address	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	Telephone (Standard wit...	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	Credit Card # (Digits Only)	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	Social Security # (Dash S...	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	NPI	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	Social Security # (Space ...	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00
Test_detection	IP Address	/munish/AllData.csv	CSV	hdfs	Structured	Sampling(...	10	false	false	false	2019-11-25 02:37:00

The Results and Detailed Results can be downloaded as a pdf and csv. Details about the following fields are shown under the Results and Detailed Results tabs:

Column	Description

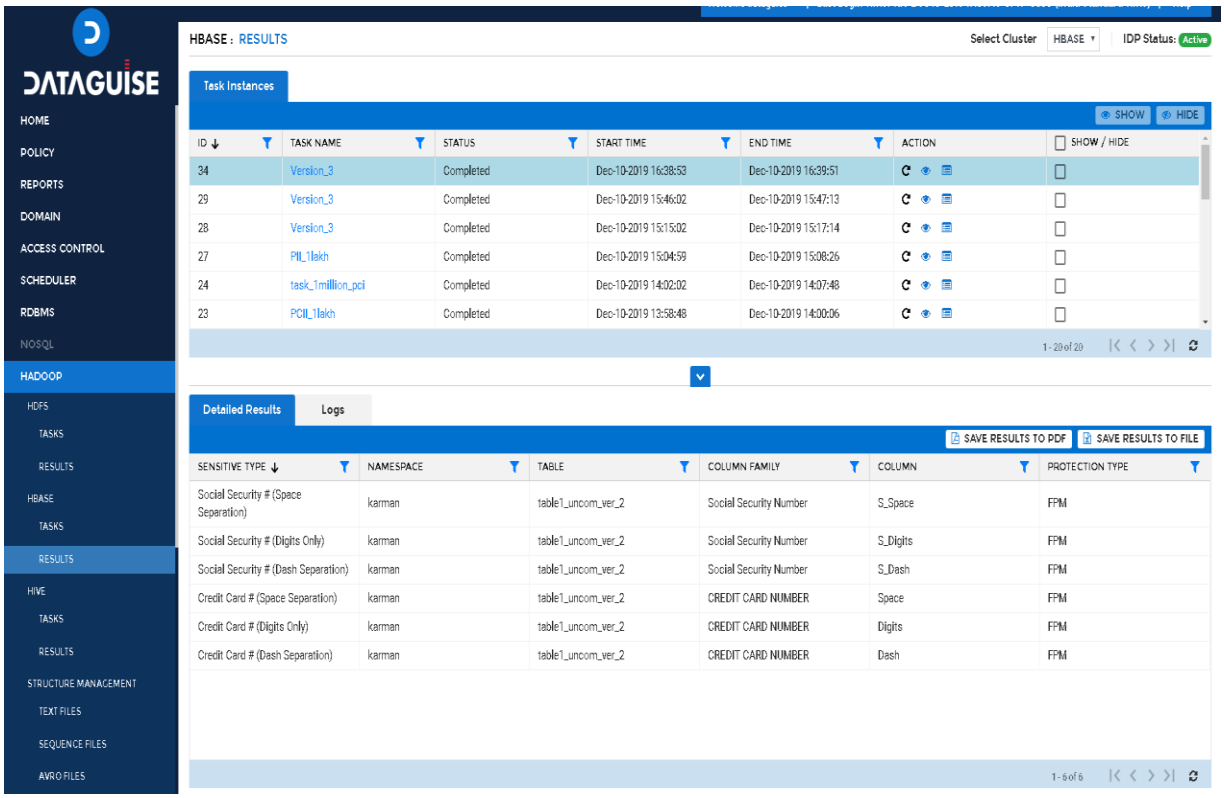
Task Name	The name of the task that was executed to create this instance.
Sensitive Data Type	A specific sensitive type within a sensitive type group. The sensitive type and sensitive type group may be synonymous.
Sensitive Data Group	The type of sensitive information that has been discovered.
File Path	The location of the file with sensitive data. Hit Count. The number of values in in the listed file path that match the search criteria.
File Type	The type of file scanned.
File Owner	The user for task execution.
Detection Type	The type of detection, structured or simulated.

Content Read	The sample type of the data scanned.
Hit Count	The number of sensitive types detected.
AES/Masked	Indicates whether or not the sensitive type was masked. This column displays "False" if the sensitive data was not masked and "True" if the sensitive data was masked.
FP/Row Encrypted	Indicates whether or not the sensitive type was encrypted. This column displays "False" if the sensitive data was not encrypted and "True" if the sensitive data was encrypted.
FP/Row Decrypted	Displays "True" if the scan was incremental and "False" if it was a full scan.

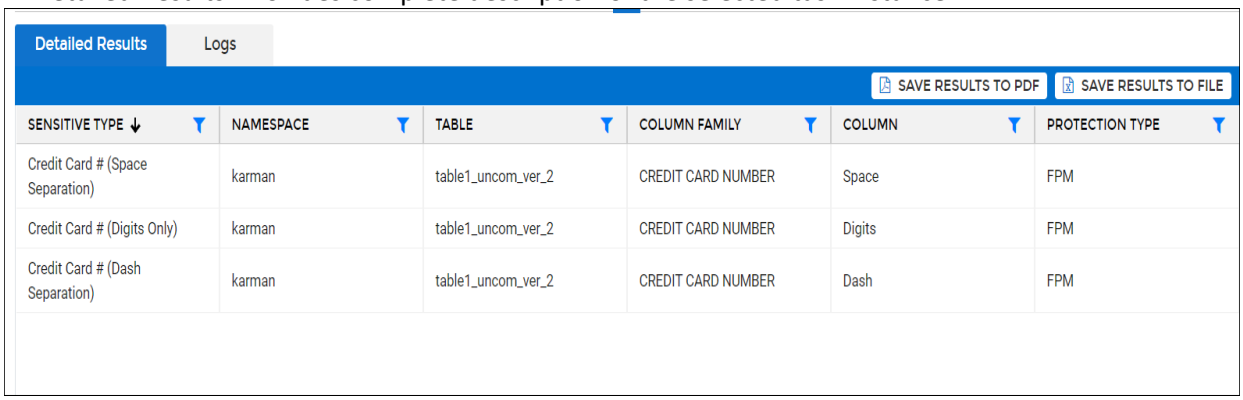
Modification Date	The date on which the task was last modified.

9.3.3 Hbase

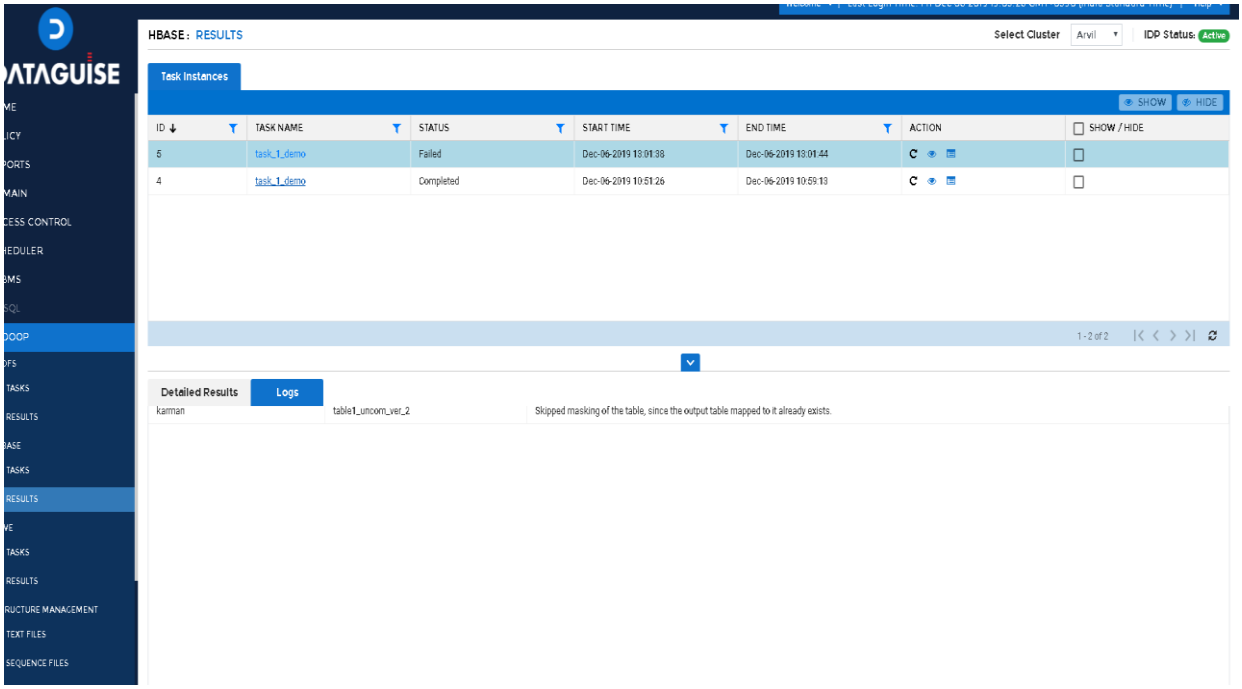
To view results of executed tasks go to results screen under HBASE.
The top panel shows all the task instances on the selected cluster.



The bottom panel has two tabs:
1. Detailed Results: Provides complete description of the selected task instance.



2. Logs: Generates results of errors of any file could not be masked due to an issue at the HBASE level, i.e., was skipped for some reason.

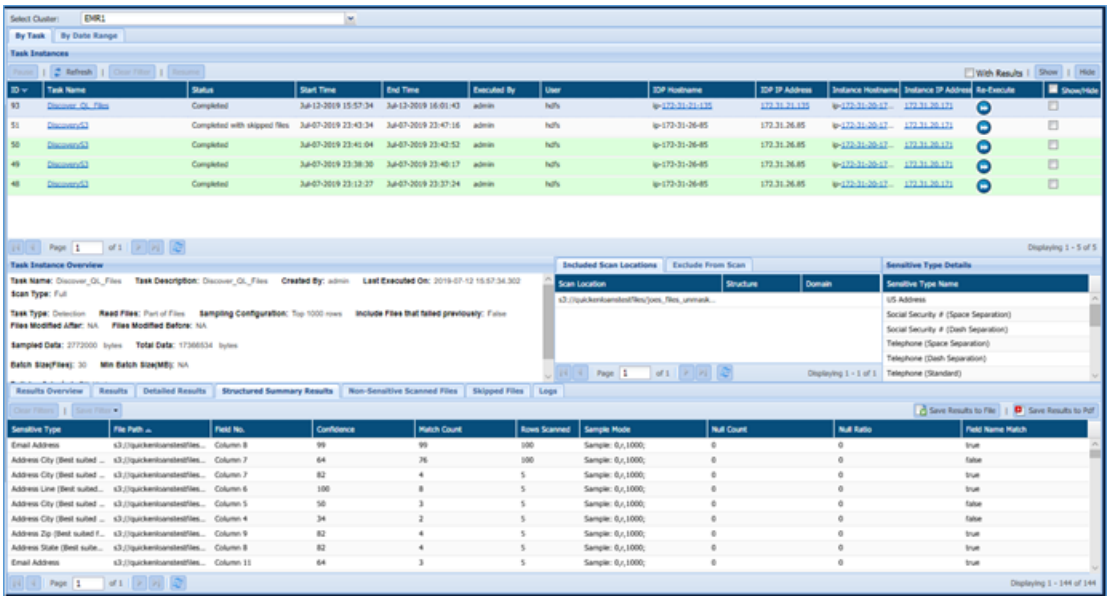


9.4 Files

The Result page displays the status and the results of the Files tasks. The information can be tracked:

1. By Task
2. By Date Range
3. Saved Remediation

The below image shows the user interface of “By Task” tab when clicked on Result page:



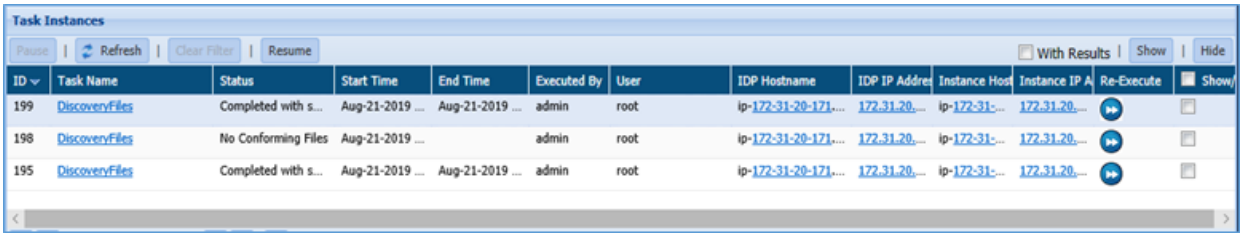
9.4.1 By Task

The 'By Task' pane is divided into three panes. These are:

1. Task Instances
2. Task Instance Overview
3. Overview

- **Task Instances**
  The Task Instances pane display all the task instances along with their ID (system generated), Task Name, Status, Start Time, End Time, Executed By, User, IDP Hostname, IDP IP Address, Instance Hostname, etc.

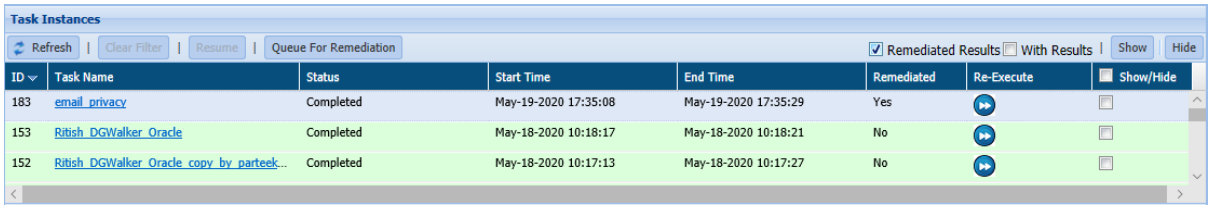
  Click the Re-Execute button, if you wish to re-run the task again.



1. **Pause**: Click the Pause button to pause the running task for a while.
2. **Refresh**: Click the Refresh button. It will update the current page with the updated information.
3. **Clear Filters**: Click the Clear Filters button. It will remove any applied filters on the Tasks page.
4. **Resume:** Click the Resume button to re-start the process from the point where it was paused.
5. **Show**: Click the Show button to unhide a task.
6. **With Results**: Check the **With Results** checkbox, if you want to see the results for the selected masking task.

7. **Queue For Remediation**: Click this button to queue the task for remediation workflow. This option allows you to queue the task for remediation manually.

   Once the task has been queued for remediation, the value for the remediation can be seen in the **Task Instances** panel under the column name **REMEDIATED.** It specifies the value as **YES** or **NO**.



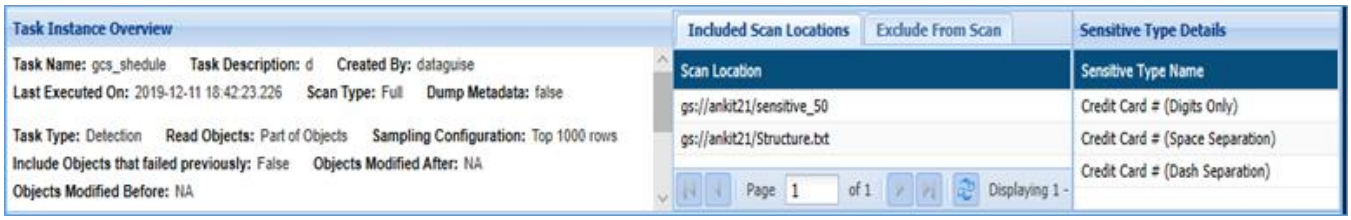
To queue the task for remediation workflow automatically, set the value of **AUTO QUEUE FOR REMEDIATION** to **YES** in DgAdmin application under **SETTINGS.**

8. **Remediated Results:** check the **Remediated Results** checkbox, if you want to view the final results for the selected fields which are marked as **Remediated**. The remediated result will be displayed in the **Detailed Result** tab under the **Overview** panel.

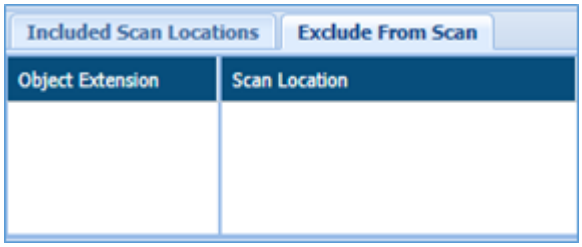
9. **Hide:** To hide any task, follow the below steps:
    i. Check Show/Hide checkbox for the policy.
    ii. Click the Hide button. The policy will get greyed out.

- **Task Instance Overview**
  The Task Instance Overview pane will display the basic information for the Files task selected in the Task Instance pane. This includes details such as Task Name, Task Description, Created By, Last Executed On, etc.

  The Task Instance Overview pane will also display information for the Scanned Locations in Included Scan Locations and Exclude From Scan tab, Sensitive Type Details.

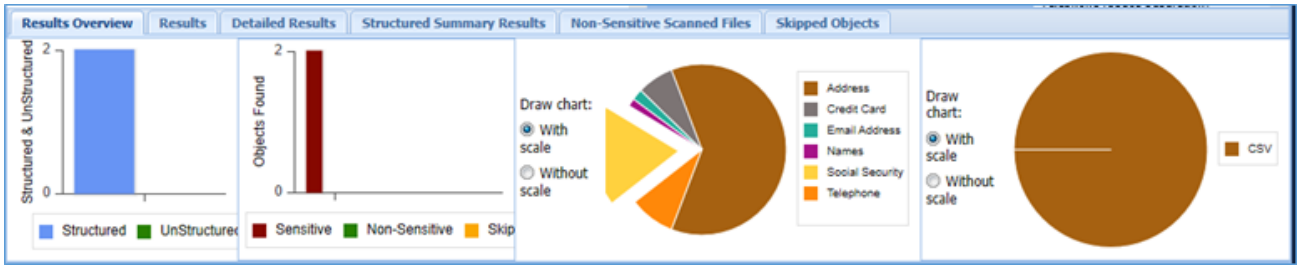


1. **Included Scan Locations**: It displays the information about the task target directories.
2. **Exclude From Scan**: It will display the list of excluded object extension and the file location.



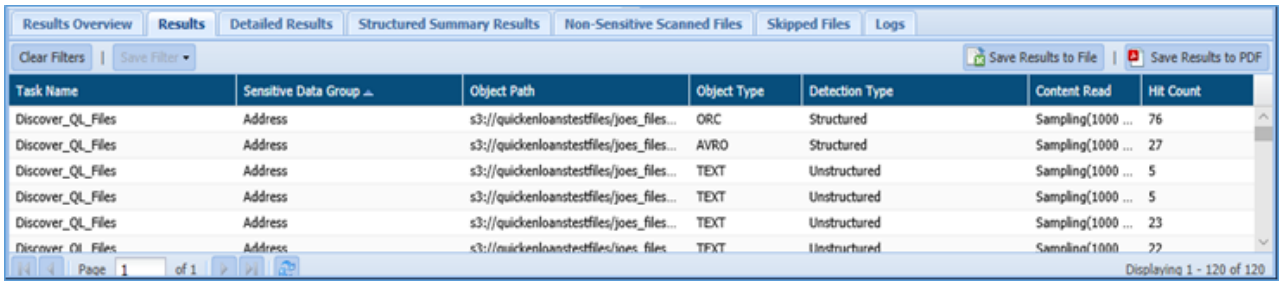
3. **Sensitive Type Details**: It display the list of all Sensitive Types discovered in the task.

- **Overview**
  The bottom panel will show the detailed information for the selected task. The information displayed is dependent on the currently selected tab.

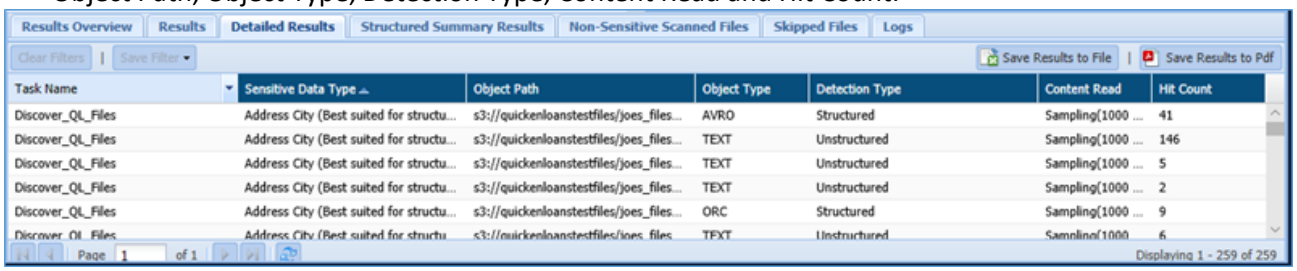


1. **Result Overview**: The Result Overview tab gives a graphical summary of the results for the selected task instance. Hovering over the data points in any of the graphs shows the number of hits and hit percentage for a file or an expression.

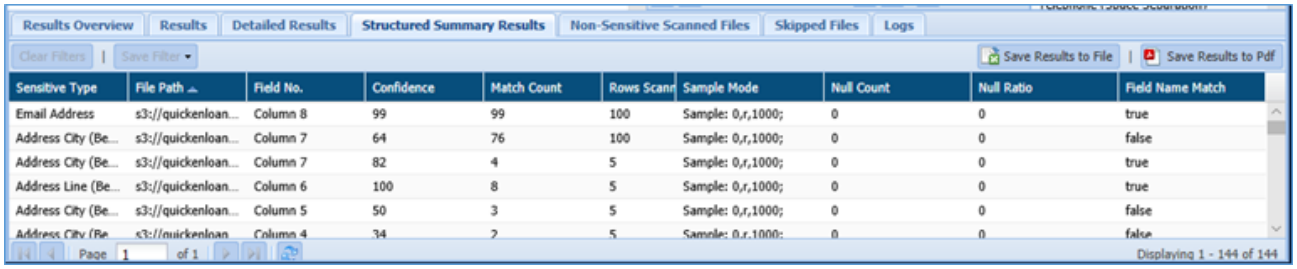
2. **Results**: The Results tab displays sensitive data groups, hit count, task name, Object Path, Object Type, Detection Type and Content Read.



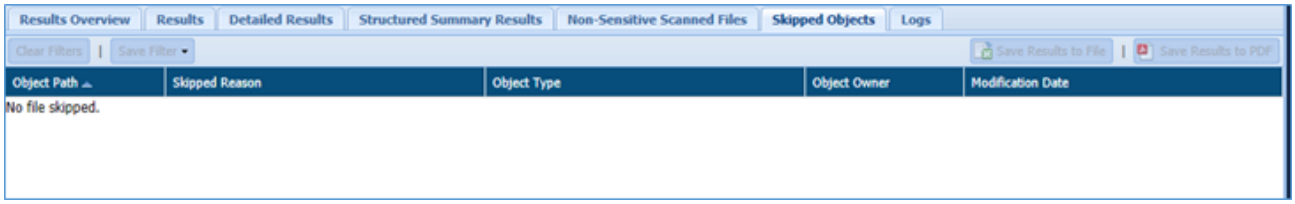
3. **Detailed Results:** The Detailed Results tab will provide you the detailed information for the Sensitive Type discovered in the database. The information will include Sensitive Data Type, Task Name, Object Path, Object Type, Detection Type, Content Read and Hit Count.



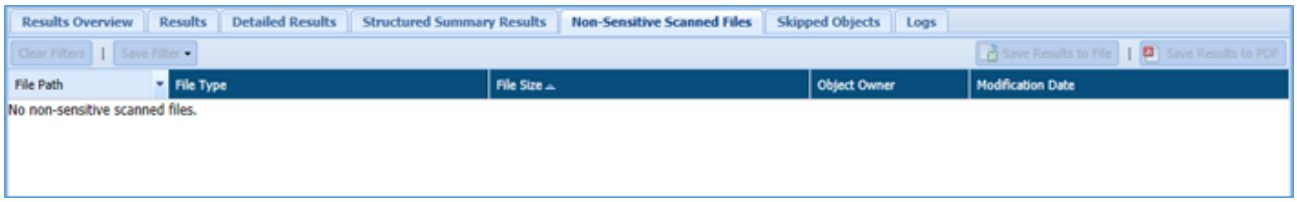
4. **Structured Summary Results**:



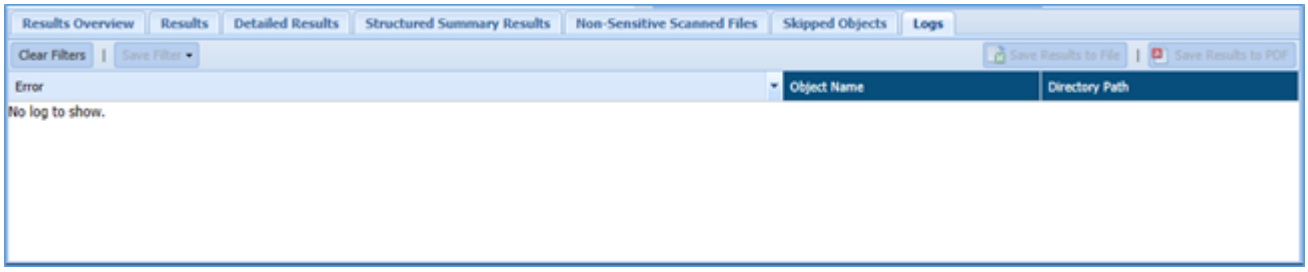
5. **Skipped Objects**: This tab will provide you with the list of objects that were skipped during the execution. It displays information about the Object Path, Skipped Reason, Object Type, Object Owner and Notification Date.



6. **Non-Sensitive Scanned Files:**



7. **Logs**: It will list errors that occurred during task execution.

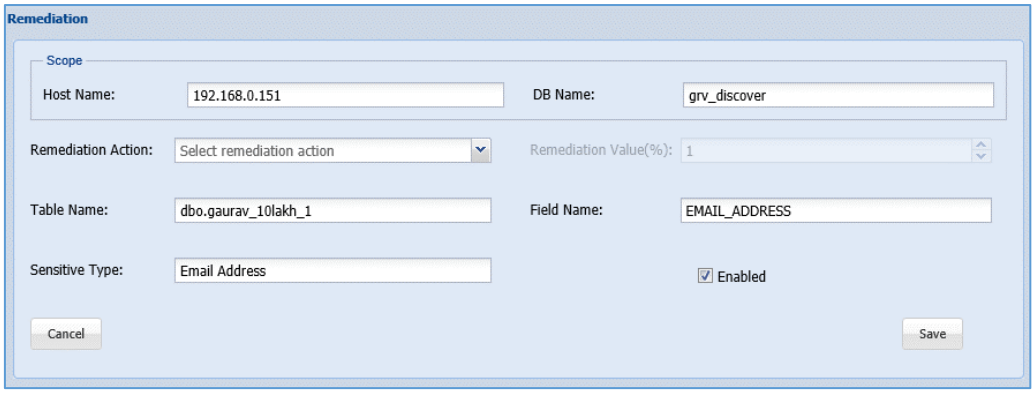


- **Save Results to File**: Click the Save Results to File, if you wish to download the data in text format.
- **Save Results to PDF:** Click the Save Results to PDF, if you wish to download the data in PDF format.

12. **Remediate**: Click this button to remediate any result in **STRUCTURED SUMMARY** tab. To remediate the selected result, perform the following steps:

c) Select the record in the **Detailed Result** tab and click the **Remediate** button.

d) Enter the details for **Remediation Action** and **Remediation Value (%)** field in the popup.

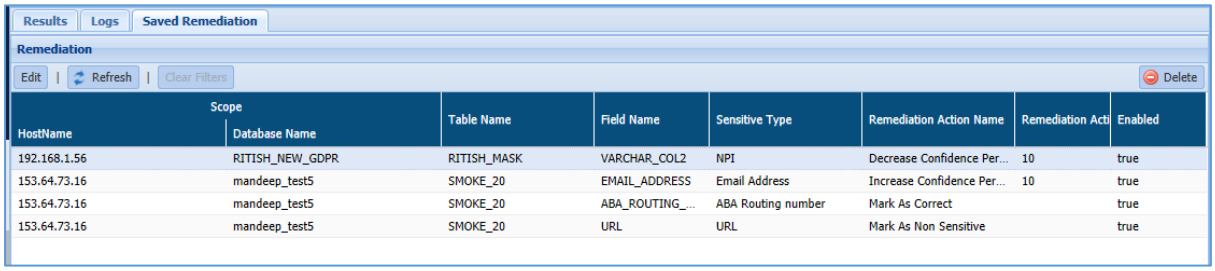


iii. Following are the options in **Remediation Action** field.

- **Mark as Non Sensitive**: Select this option to mark the record as Non Sensitive. The system will ignore this record in future re-run.
- **Mark as Correct**: Select this option to mark the record as Sensitive. The system will not ignore this record in future re-run.
- **Decrease the Confidence Factor:** select this option to decrease the confidence factor in Remediation Value (%) field.
- **Increase the Confidence Factor:** Select this option increase the confidence factor in Remediation Value (%) field.

iv. Enter the remediation value in percentage. This field will be enabled when you select **Decrease** or **Increase the Confidence Factor** in **Remediation Action** field.

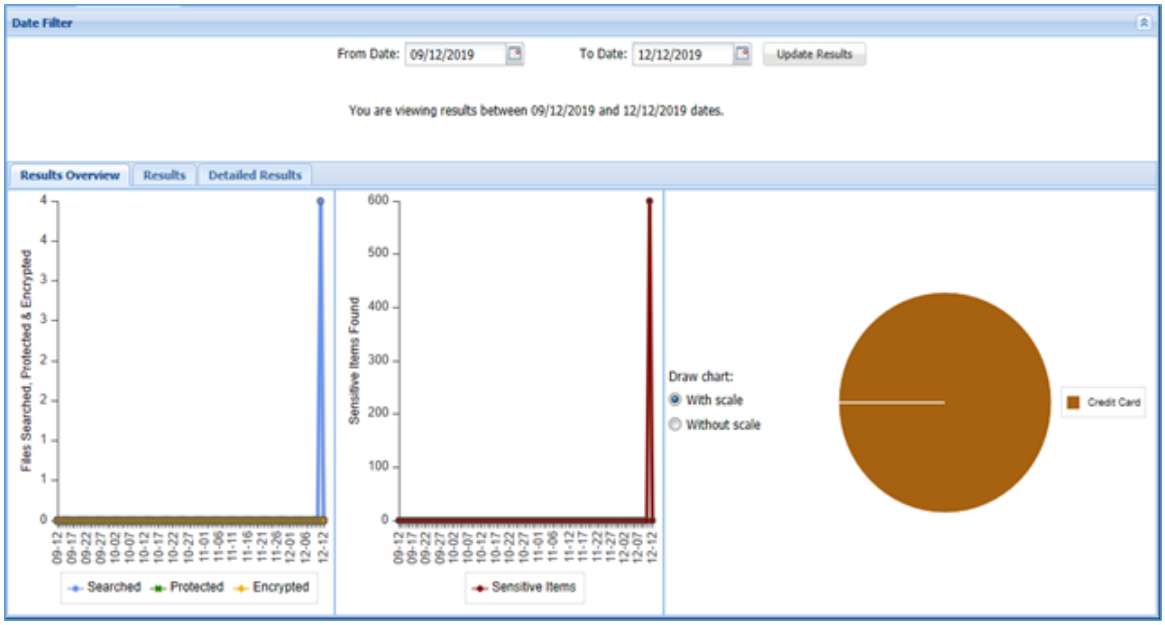
Once the remediation value has been set and saved, the same can be seen under Saved Remediation tab.



9.4.2 By Date Range

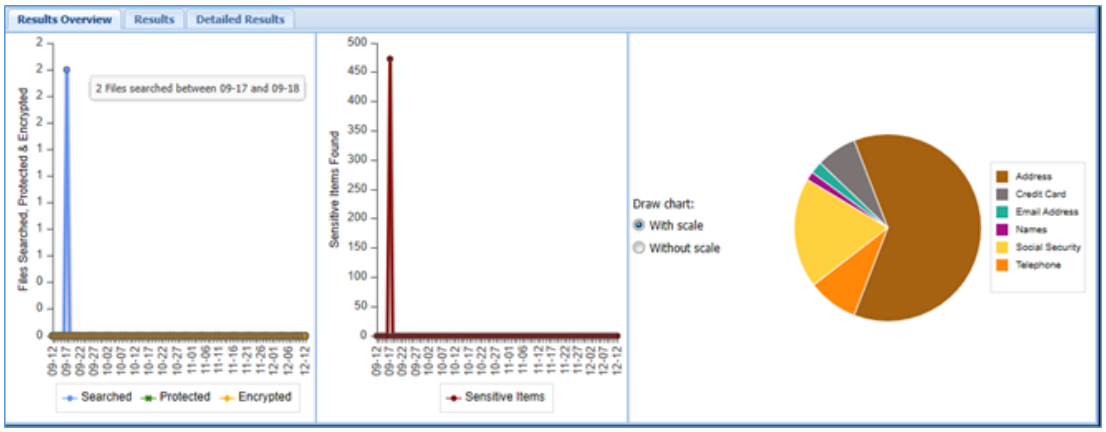
The 'By Date Range' tab is divided into two panes. These are:

1. Date Filter
2. Overview



- **Date Filter:** In Date Filter pane, you can specify the date range. Using this option, you can filter out results based on the date range.

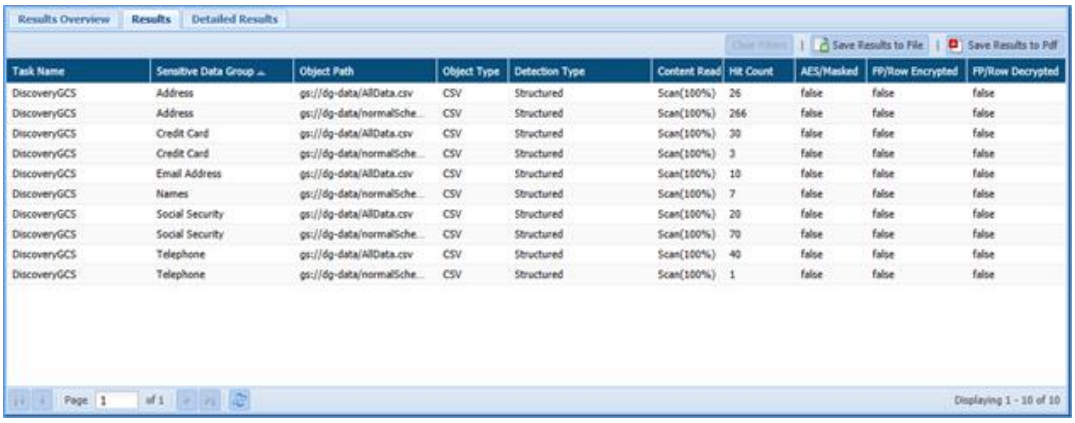
- **Overview**
  The Overview pane display the graphical representation of the information in Results Overview tab and detailed information in Results and Detailed Results tab.



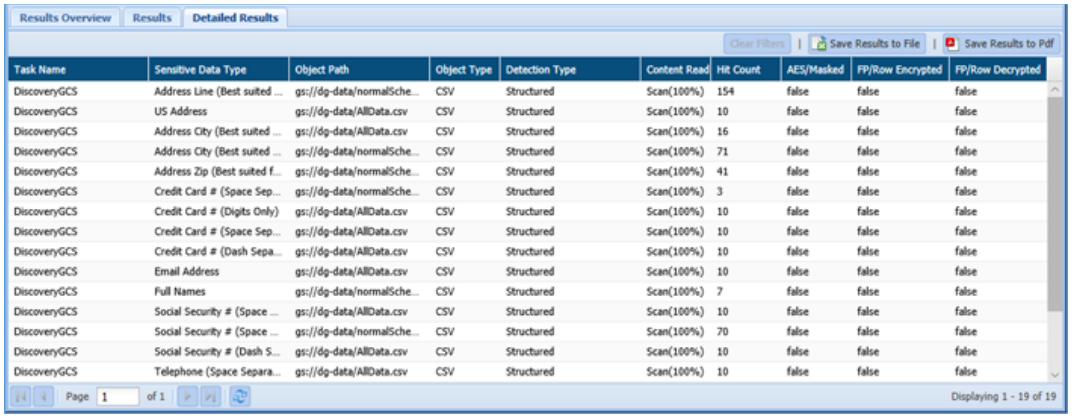
1. **Results Overview**: The Results Overview tab display information in form of graphical representation. It displays two bar chart and a pie chart.

   - The first bar chart shows the number of files searched, encrypted and masked.
   - The second bar chart shows the total number of sensitive files found.
   - The pie chart shows the Sensitive Type found in each segment.

2. **Results**: The Results tab lists down the Sensitive Data Group detected in the specified time range. It includes information such as Task Name, Sensitive Data Group, Object Path, Object Type, Detection Type, Content Read, Hit Count, AES/Masked, FP/Row Encrypted, FP/Row Decrypted.



3. **Detailed Results**: The Detailed Results tab lists down the Sensitive Types detected in the specified time range, grouped by type and location. The tab also displays information such as Task Name, Sensitive Data Group, Object Path, Object Type, Detection Type, Content Read, Hit Count, and whether the data was masked.



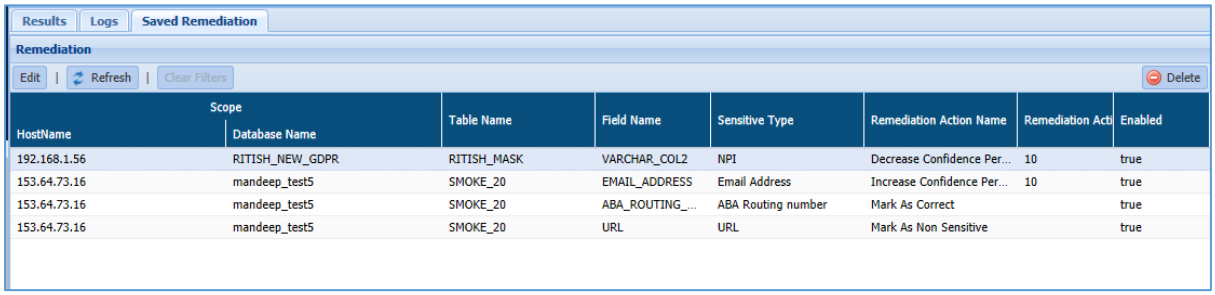
- **Save Results to File**: Click the Save Results to File, if you wish to download the data in text format.
- **Save Results to PDF**: Click the Save Results to PDF, if you wish to download the data in PDF format.
- **Clear Filters**: Click the Clear Filters button. It will remove any applied filters on the Detection task page.

9.4.3 Saved Remediation

The Saved Remediation tab allows you to view all the records that have been selected as remediated results in **DETAILED RESULTS** tab under **OVERVIEW** panel.

***Note**: To know more about how to enable and queue the task for remediation workflow, refer section **Settings** under DgAdmin.

Once the remediation value has been set and saved in **DETAILED RESULTS** tab, the same can be seen under **Saved Remediation** tab. The **Saved Remediation** tab will display the information such as Host Name, Database Name under Scope, Table Name, Field Name, Sensitive Type, Remediation Action, etc.



To edit the remediation details, click **EDIT**. This functionality allows you to update the information for remediated results, if required.

To delete the remediated record, select the record and click **Delete**. This will delete the selected remediated record from the screen.

Click **Refresh** to update the screen.

9.5 AWS

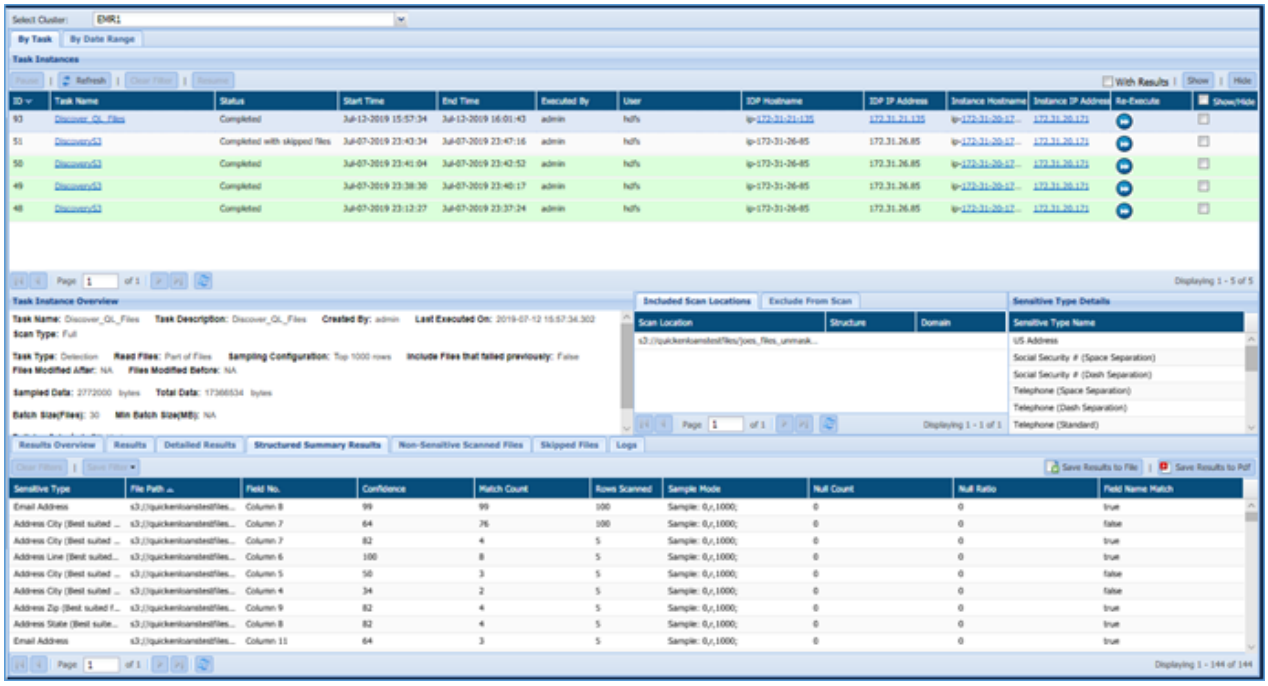
In AWS, you can track the information for the tasks executed in S3 and RedShift/RDS.

9.5.1 S3

The Result page displays the status and the results for the S3 tasks. The information can be tracked:

1. By Task
2. By Date Range
3. Saved Remediation

The below image shows the user interface of “By Task” tab when clicked on Result page:



9.5.1.1 *By Task*

The 'By Task' tab is divided into three panes. These are:

1. Task Instances
2. Task Instance Overview
3. Overview

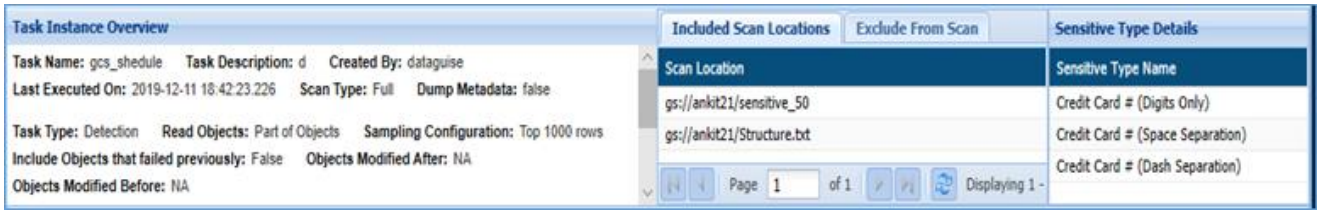
- **Task Instances:**
  The Task Instances pane display all the task instances along with their ID (system generated), Task Name, Status, Start Time, End Time, Executed By, User, IDP Hostname, IDP IP Address, Instance Hostname, etc. Click the Re-Execute button, if you wish to re-run the task again.

1. Pause: Click the Pause button to pause the running task for a while.
2. Refresh: Click the Refresh button. It will update the current page with the updated information.
3. Clear Filters: Click the Clear Filters button. It will remove any applied filters on the Tasks page.
4. Resume: Click the Resume button to re-start the process from the point where it was paused.
5. Queue For Remdiation
6. With Results
7. Show: Click the Show button to unhide a task.
8. Hide: To hide any task, follow the below steps:
   i. Check Show/Hide checkbox for the policy.

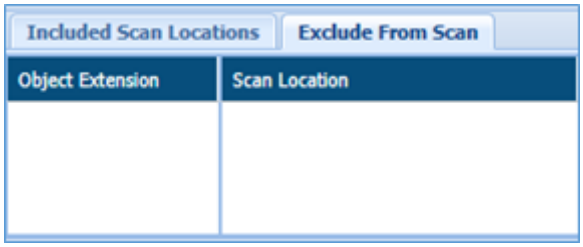
ii. Click the Hide button. The policy will get greyed out.

- **Task Instance Overview:**
  The Task Instance Overview pane will display the basic information for the GCS task selected in the Task Instance pane. The includes details such as Task Name, Task Description, Created By, Last executed On, etc.

  The Task Instance Overview pane will also display information for the Scanned Locations in included Scan Locations and Exclude From Scan tab, Sensitive Type Details.

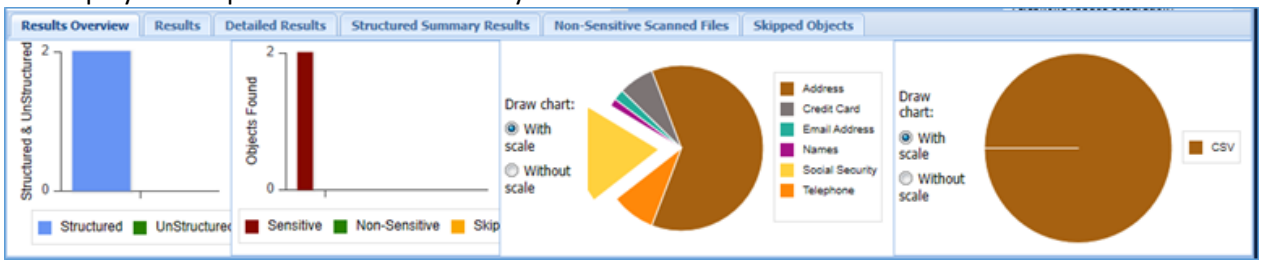


1. **Included Scan Locations**: It displays the information about the task target directories.
2. **Exclude From Scan**: It will display the list of excluded object extension and the file location.



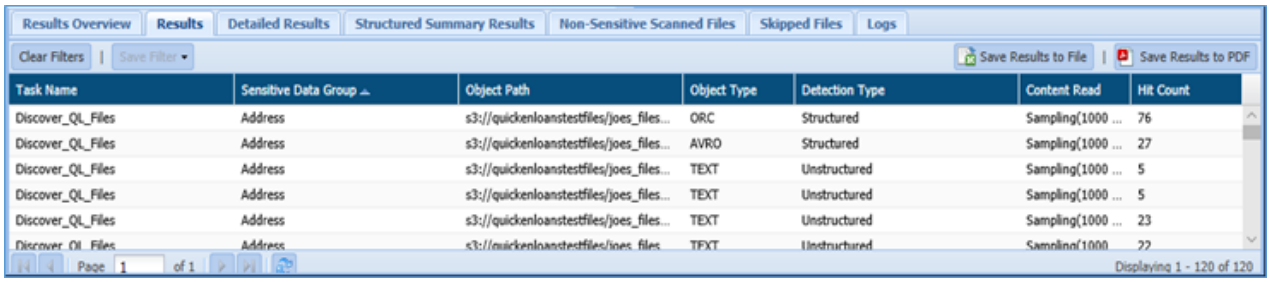
3. **Sensitive Type Details**: It display the list of all Sensitive Types discovered in the task.

- **Overview:**
  The bottom panel will show the detailed information for the selected task. The information displayed is dependent on the currently selected tab.

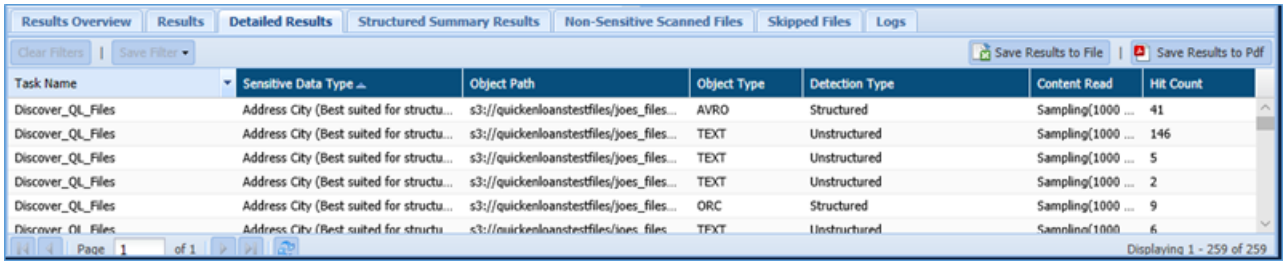


1. **Result Overview:** The Result Overview tab gives a graphical summary of the results for the selected task instance. Hovering over the data points in any of the graphs shows the number of hits and hit percentage for a file or an expression.

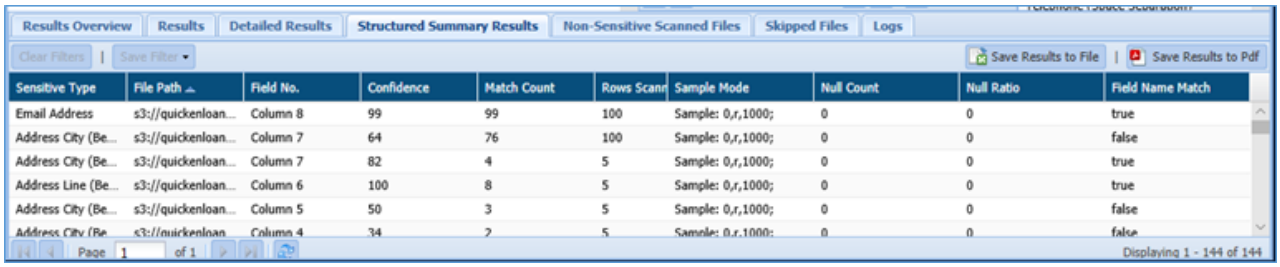
2. **Results**: The Results tab displays sensitive data groups, hit count, task name, Object Path, Object Type, Detection Type and Content Read.



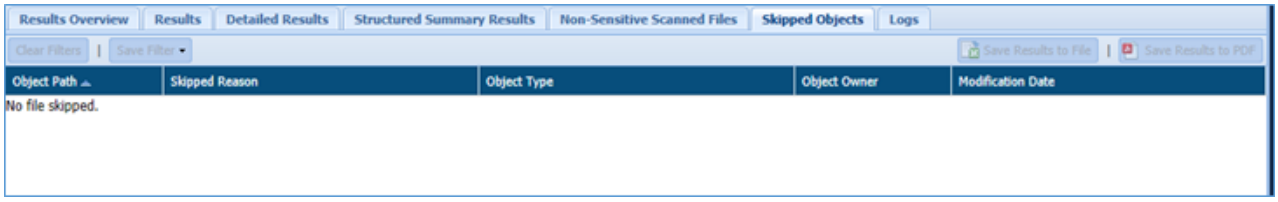
3. **Detailed Results**: The Detailed Results tab will provide you the detailed information for the Sensitive Type discovered in the database. The information will include Sensitive Data Type, Task Name, Object Path, Object Type, Detection Type, Content Read and Hit Count.



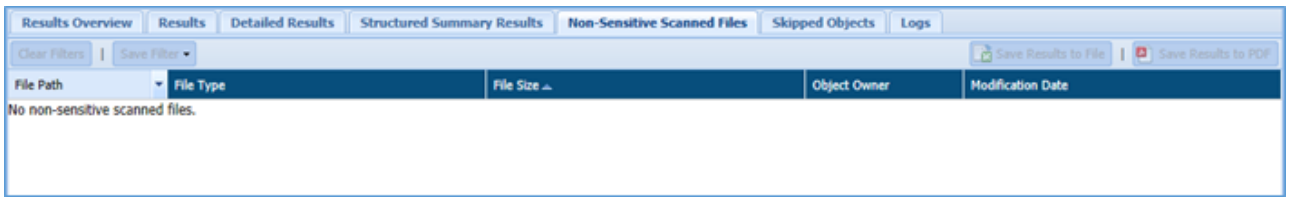
4. **Structured Summary Results**:



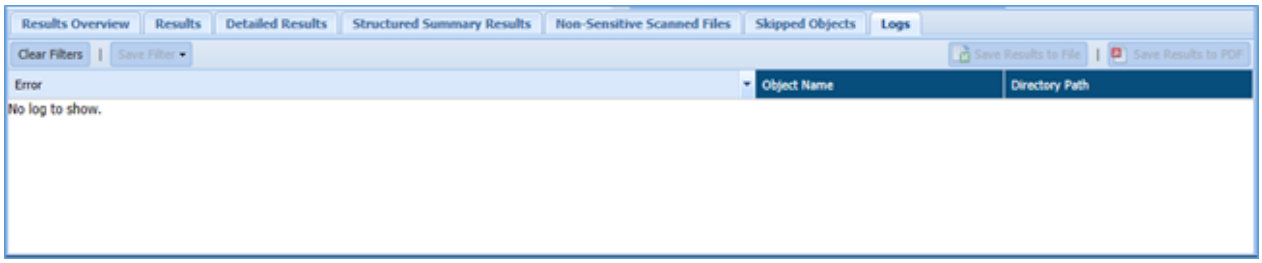
5. **Skipped Objects**: This tab will provide you with the list of objects that were skipped during the execution. It displays information about the Object Path, Skipped Reason, Object Type, Object Owner and Notification Date.



6. **Non-Sensitive Scanned Files**:



7. **Logs**: It will list errors that occurred during task execution.

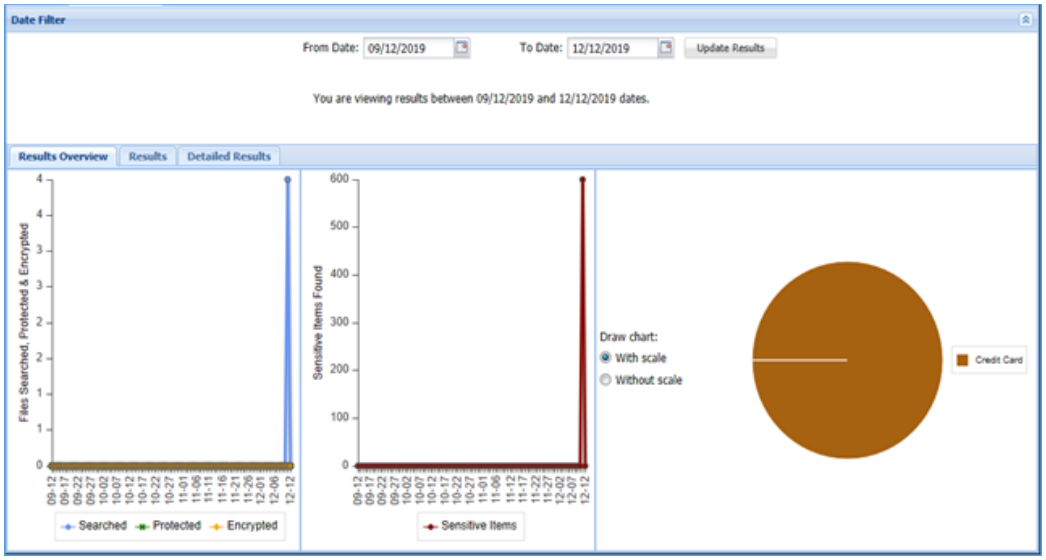


- **Save Results to File**: Click the Save Results to File, if you wish to download the data in text format.
- **Save Results to PDF**: Click the Save Results to PDF, if you wish to downlad the data in PDF format.

9.5.1.2 By Date Range

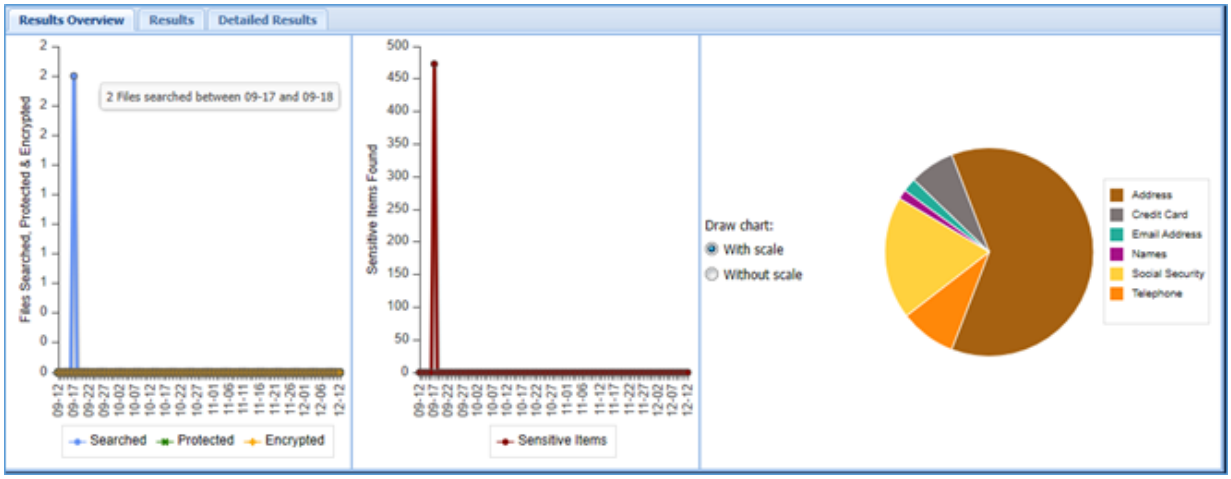
The 'By Date Range' tab is divided into two panes. These are:

1. Date Filter
2. Overview



- **Date Filter:** In Date Filter pane, you can specify the date range. Using this option, you can filter out result based on the date range.

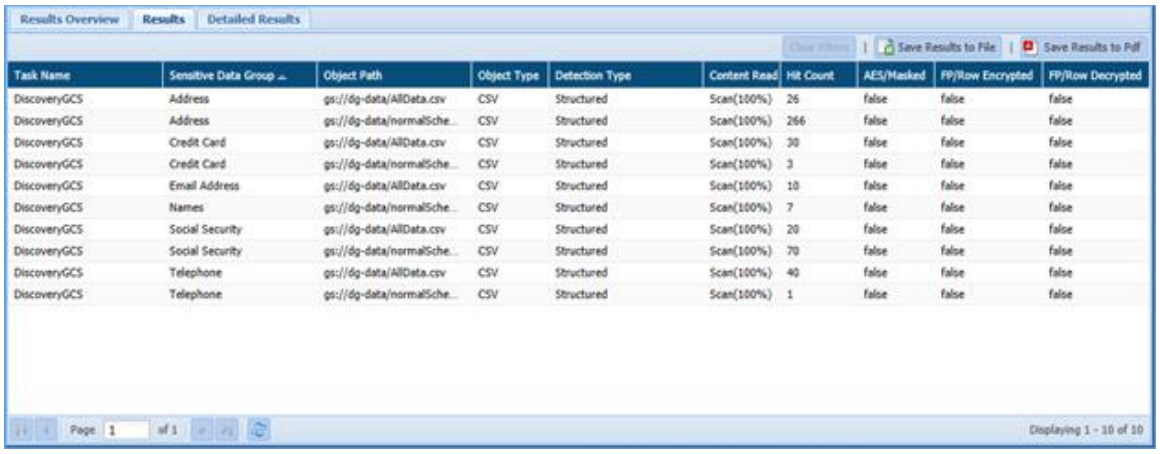
- **Overview**:
  The Overview pane display the graphical representation of the information in Results Overview tab and detailed information in Results and Detailed Results tab.



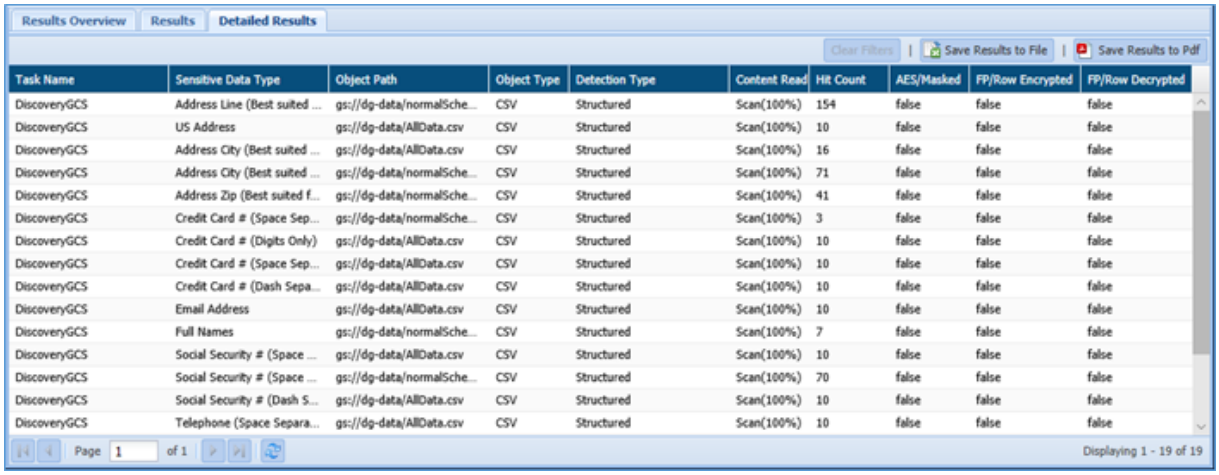
1. **Results Overview**: The Results Overview tab display information in form of graphical representation. It displays two bar chart and a pie chart.

   - The first bar chart shows the number of files searched, encrypted and masked.
   - The second bar chart shows the total number of sensitive files found.
   - The pie chart shows the Sensitive Type found in each segment.

2. **Results**: The Results tab lists down the Sensitive Data Group detected in the specified time range. It includes information such as Task Name, Sensitive Data Group, Object Path, Object Type, Detection Type, Content Read, Hit Count, AES/Masked, FP/Row Encrypted, FP/Row Decrypted.



3. **Detailed Results**: The Detailed Results tab lists down the Sensitive Types detected in the specified time range, grouped by type and location. The tab also displays information such as Task Name, Sensitive Data Group, Object Path, Object Type, Detection Type, Content Read, Hit Count, and whether the data was masked.



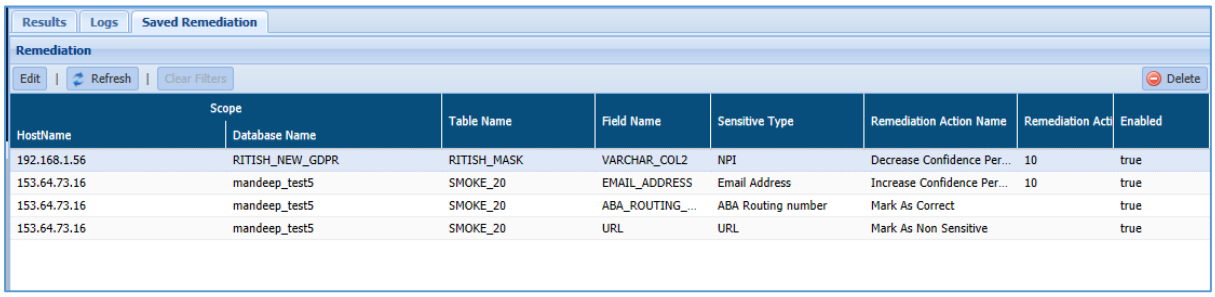
- **Save Results to File**: Click the Save Results to File, if you wish to download the data in text format.
- **Save Results to PDF**: Click the Save Results to PDF, if you wish to downlad the data in PDF format.
- **Clear Filters**: Click the Clear Filters button. It will remove any applied filters on the Detection task page.

9.5.1.3 Saved Remediation

The Saved Remediation tab allows you to view all the records that have been selected as remediated results in **DETAILED RESULTS** tab under **OVERVIEW** panel.

***Note**: To know more about how to enable and queue the task for remediation workflow, refer section **Settings** under DgAdmin.

Once the remediation value has been set and saved in **DETAILED RESULTS** tab, the same can be seen under **Saved Remediation** tab. The **Saved Remediation** tab will display the information such as Host Name, Database Name under Scope, Table Name, Field Name, Sensitive Type, Remediation Action, etc.



To edit the remediation details, click **EDIT**. This functionality allows you to update the information for remediated results, if required.

To delete the remediated record, select the record and click **Delete**. This will delete the selected remediated record from the screen.

Click **Refresh** to update the screen.

9.5.2 RedShift/RDS

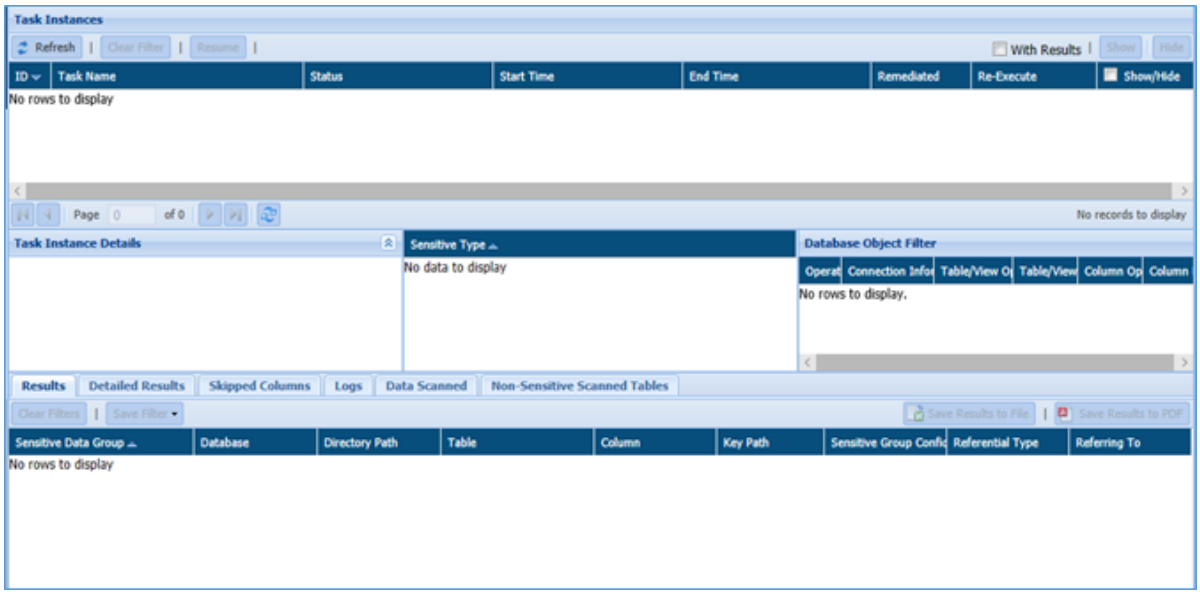
In RedShift/RDS, the Result page displays the status and results of the Detection and Masking tasks.

9.5.2.1 Detection

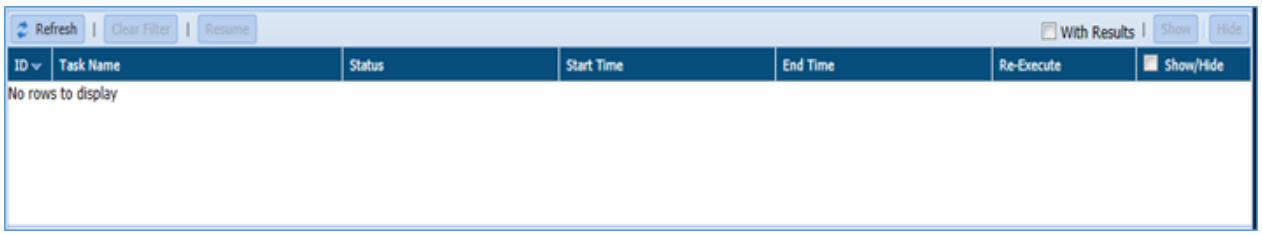
9.5.2.1.1 Results

The Results tab is divided in three panes. These are:

1. Task Instances
2. Task Instance Details
3. Overview

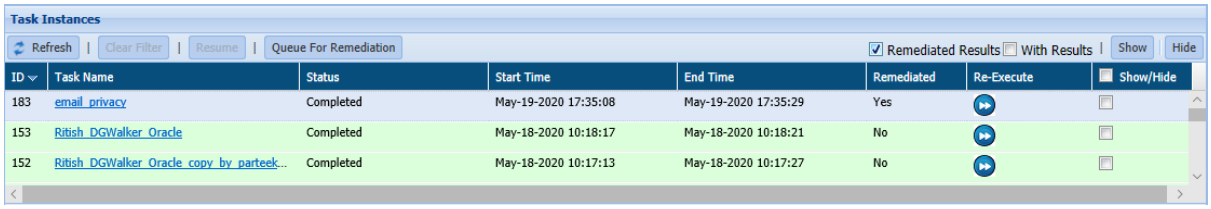


- **Task Instances**
  This pane will display the information for the task such as ID (system generated), Task Name, Status, Start Time, End Time, Show/Hide, etc. Click the Re-Execute button next to the selected task to re-run it. Selecting a task instance displays its parameters and results in the panels below.



1. **Refresh**: Click the Refresh button. It will update the current page with the updated information.
2. **Clear Filters**: Click the Clear Filters button. It will remove any applied filters on the Tasks page.
3. **Resume**: Click the Resume button to re-start the process from the point where it was paused.
4. **Show**: Click the Show button to unhide a task.
5. **Hide**: To hide any task, follow the below steps:
    i. Check Show/Hide checkbox for the policy.
    ii. Click the Hide button. The policy will get greyed out.
6. **Queue For Remediation**: Click this button to queue the task for remediation workflow. This option allows you to queue the task for remediation manually.

    Once the task has been queued for remediation, the value for the remediation can be seen in the **Task Instances** panel under the column name **REMEDIATED.** It specifies the value as **YES** or **NO**.



To queue the task for remediation workflow automatically, set the value of **AUTO QUEUE FOR REMEDIATION** to **YES** in DgAdmin application under **SETTINGS.**

7. **Remediated Results:** check the **Remediated Results** checkbox, if you want to view the final results for the selected fields which are marked as **Remediated**. The remediated result will be displayed in the **Detailed Result** tab under the **Overview** panel.
8. **With Results**: Check the **With Results** checkbox, if you want to see the results for the selected masking task.

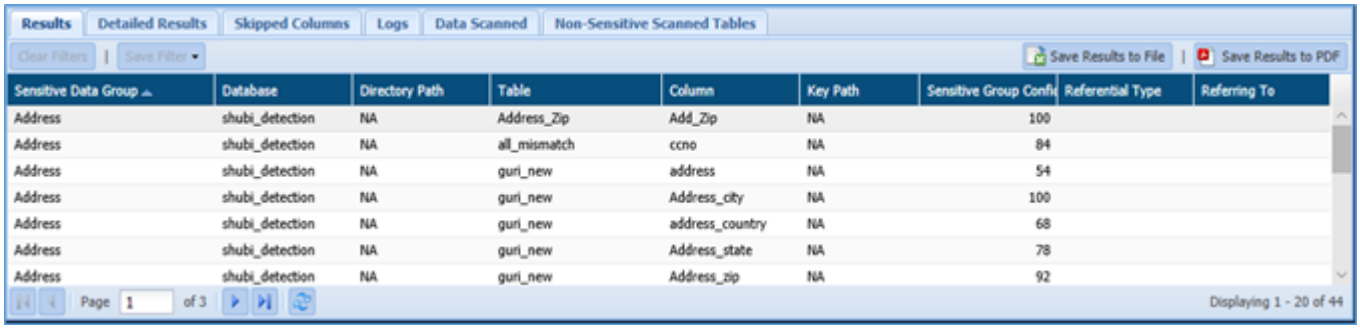
- **Task Instance Details:**
  The Task Instance Detail pane will display the basic information for the RDS/RedShift detection task selected in the Task Instance pane. It includes details such as Task Name, Task Description, Created By, Last Executed On, etc.

  The Task Instance Details pane will also display the list of Sensitive Types and Database Object Filter used.

1. **Sensitive Type**: The Sensitive Type pane will display the list of Sensitive Type for the selected task.

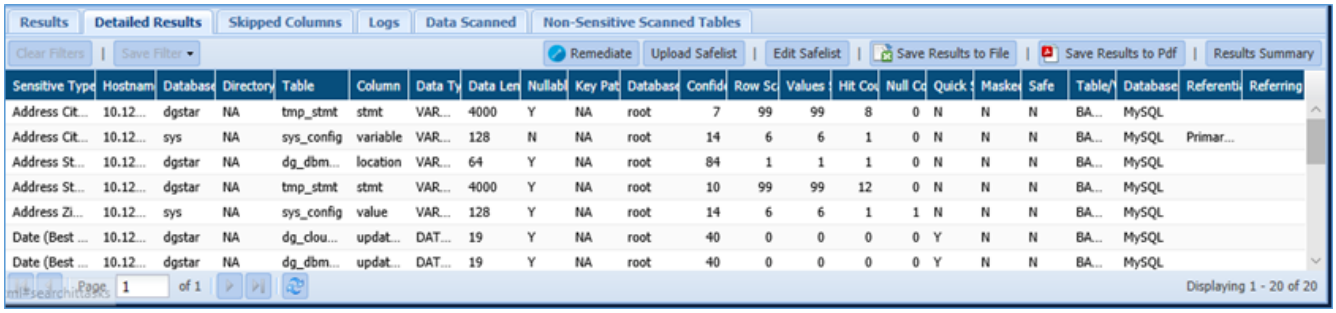
2. **Database Object Filter**: The database Object Filter pane displays only those databases/tables/columns that match the filter applied. The columns display information such as the applied operator, connection information, Table/View operator, Table/View Filter, column operator and column filter.

- **Overview:**
  The Overview pane will show the overview of basic information for the selected task. The information displayed is dependent on the currently selected tab.



1. **Results**: The result tab will display the high level information of the Sensitive Types for the selected task in the detection task pane. The information includes Sensitive Data Group, Database, Table, Column, Sensitive Group Confidence, etc.

2. **Detailed Results**: The Detailed Results tab will provide you the detailed information for the Sensitive Type encountered in the database. The information will include Sensitive Type, Hostname, Database, Table, Column, Database User, etc.



- Remediate
- Upload Safelist
- Edit Safelist
- Results Summary

3. **Skipped Columns**: This tab will provide you with the list of columns that were skipped during the execution.

4. **Logs**: It will list errors that occurred during task execution.

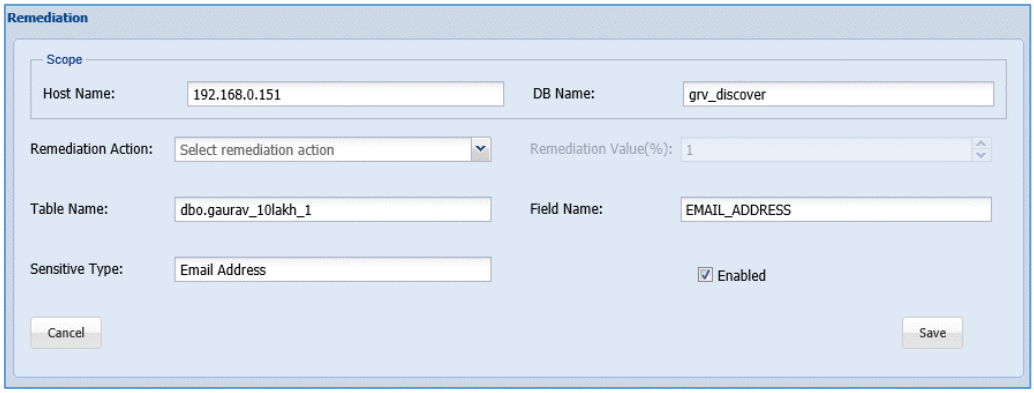
5. **Data Scanned**: List the total number of rows in the scanned tables and how many of those rows DgSecure actually scanned.

6. **Non Sensitive Scanned Tables**: It will list down the tables which contain non sensitive data. This tab includes information such as Host Name, Database Name, Table Name, Table Size(bytes).

7. **Remediate**: Click this button to remediate any result in **DETAILED RESULTS** tab. To remediate the selected result, perform the following steps:

e) Select the record in the **Detailed Result** tab and click the **Remediate** button.

f) Enter the details for **Remediation Action** and **Remediation Value (%)** field in the popup.

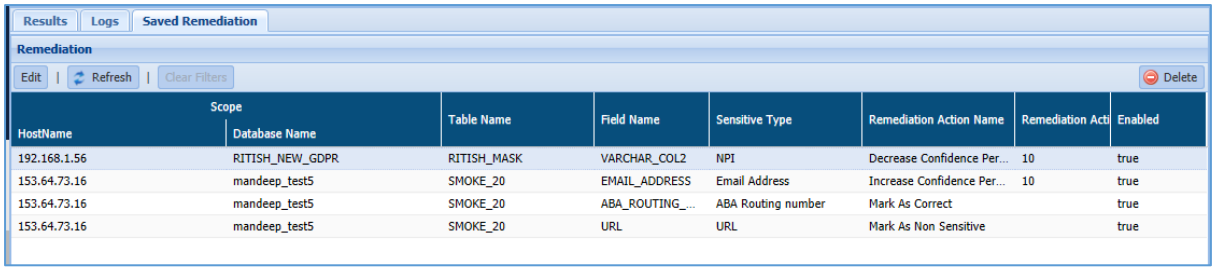


v. Following are the options in **Remediation Action** field.

- **Mark as Non Sensitive**: Select this option to mark the record as Non Sensitive. The system will ignore this record in future re-run.
- **Mark as Correct**: Select this option to mark the record as Sensitive. The system will not ignore this record in future re-run.
- **Decrease the Confidence Factor:** select this option to decrease the confidence factor in Remediation Value (%) field.
- **Increase the Confidence Factor:** Select this option increase the confidence factor in Remediation Value (%) field.

vi. Enter the remediation value in percentage. This field will be enabled when you select **Decrease** or **Increase the Confidence Factor** in **Remediation Action** field.

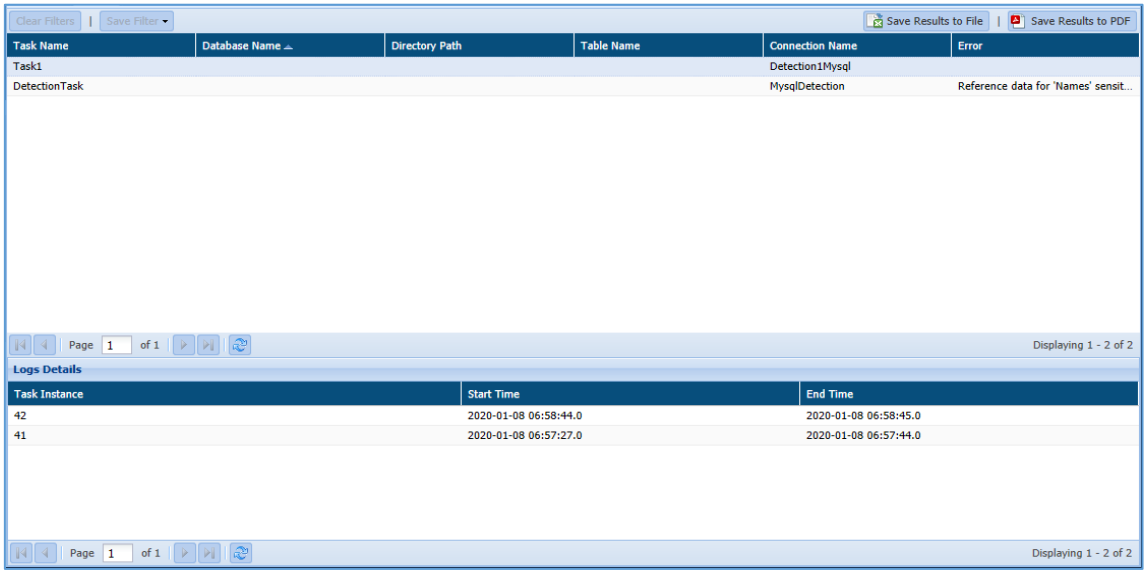
Once the remediation value has been set and saved, the same can be seen under Saved Remediation tab.



9.5.2.1.2 Logs

In Logs tab, you can view the list of all the Task Name along with the errors occurred during the task execution. The Logs tab is divided into two panes:

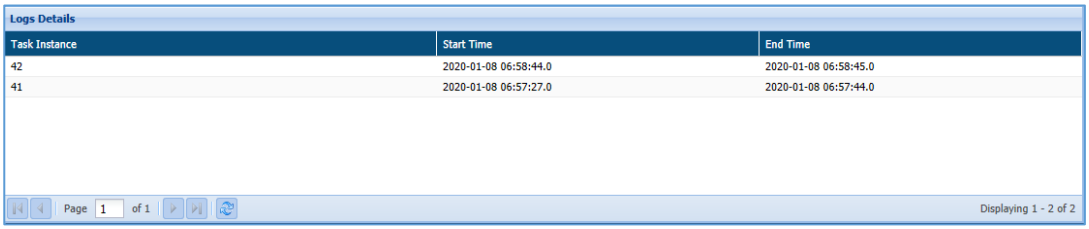
1. Logs List
2. Logs Details



- **Logs List**: This pane will display the list of all the Tasks Name along with the errors occurred during the task execution. It will also display the information such as Database Name, Directory Path, Table Name and Connection Name.

    1. **Save Results to File**: Click the Save Results to File button to save the Logs List information in .csv format.
    2. **Save Results to PDF**: Click the Save Results to PDF button to save the Logs List information in PDF format.

- **Logs Details:** The Logs Details pane will display the information for the selected task in the Logs List. The information includes Task Instance, Start Time and End Time.

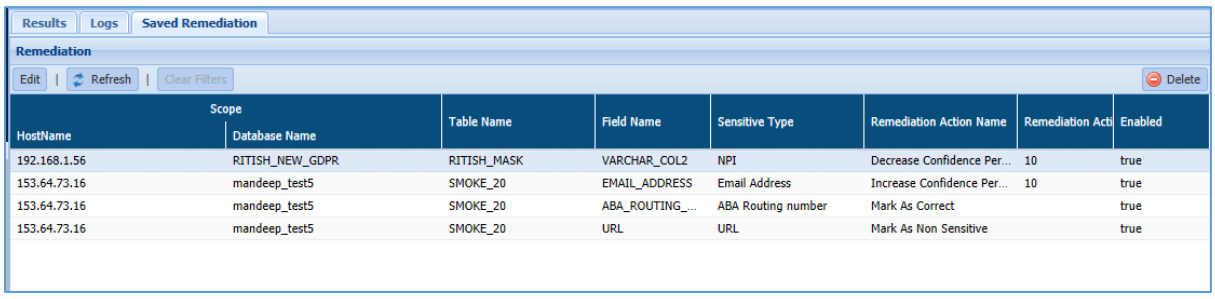


9.5.2.1.3 Saved Remediation

The Saved Remediation tab allows you to view all the records that have been selected as remediated results in **DETAILED RESULTS** tab under **OVERVIEW** panel.

***Note**: To know more about how to enable and queue the task for remediation workflow, refer section **Settings** under DgAdmin.

Once the remediation value has been set and saved in **DETAILED RESULTS** tab, the same can be seen under **Saved Remediation** tab. The **Saved Remediation** tab will display the information such as Host Name, Database Name under Scope, Table Name, Field Name, Sensitive Type, Remediation Action, etc.



To edit the remediation details, click **EDIT**. This functionality allows you to update the information for remediated results, if required.

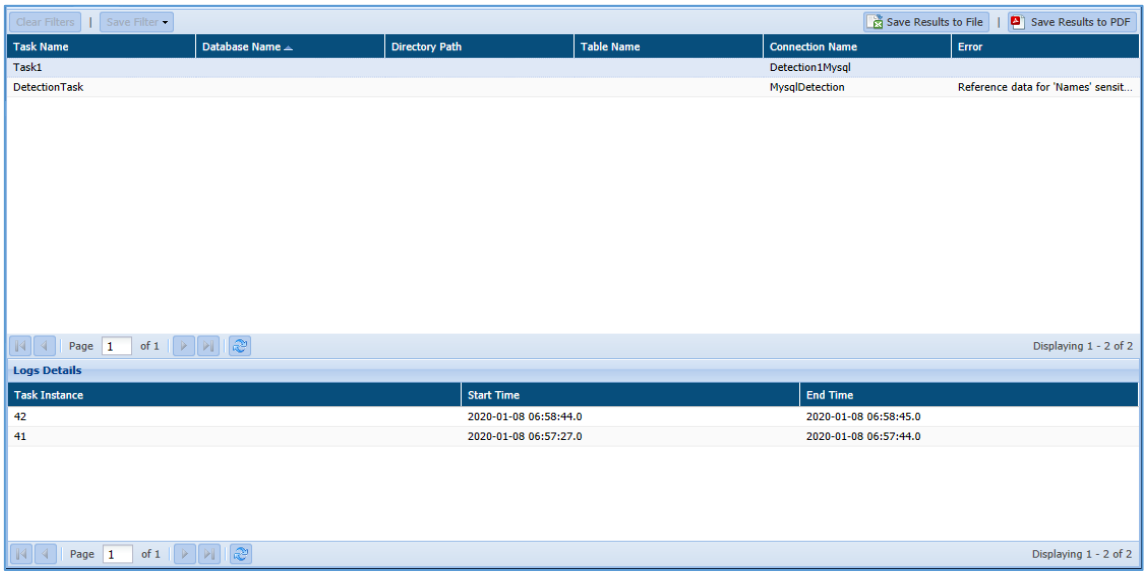
To delete the remediated record, select the record and click **Delete**. This will delete the selected remediated record from the screen.

Click **Refresh** to update the screen.

9.5.2.2 Masking

In Logs tab, you can view the list of all the Task Name along with the errors occurred during the task execution. The Logs tab is divided into two panes:

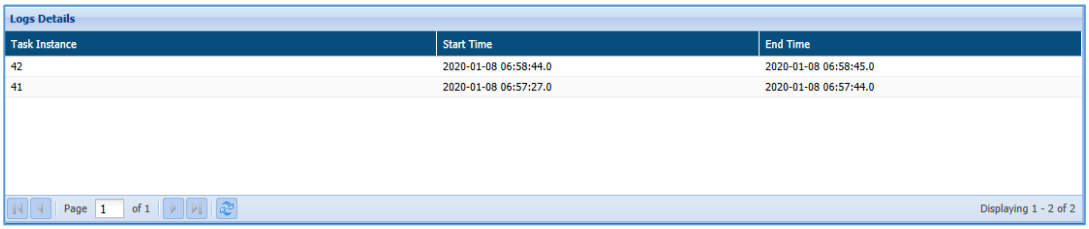
1. Logs List
2. Logs Details



- **Logs List**: This pane will display the list of all the Tasks Name along with the errors occurred during the task execution. It will also display the information such as Database Name, Directory Path, Table Name and Connection Name.

1. **Save Results to File**: Click the Save Results to File button to save the Logs List information in .csv format.
2. **Save Results to PDF**: Click the Save Results to PDF button to save the Logs List information in PDF format.

- **Logs Details:** The Logs Details pane will display the information for the selected task in the Logs List. The information includes Task Instance, Start Time and End Time.



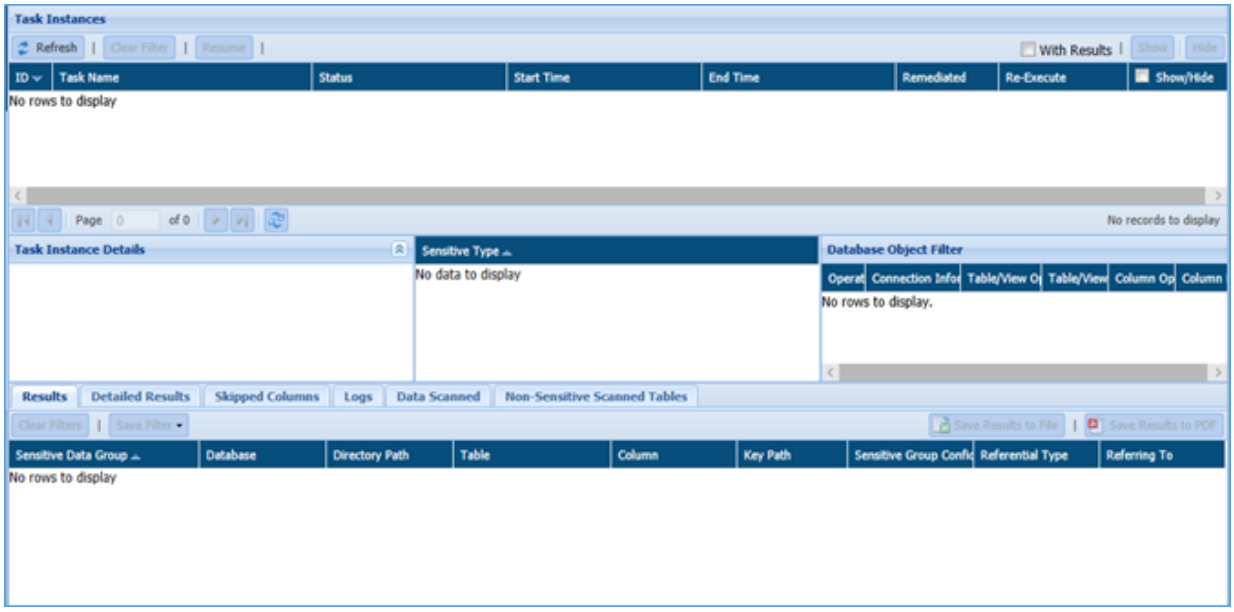
9.6 Azure

9.6.1 Azure Blob/Data Lake

9.6.1.1 By Task

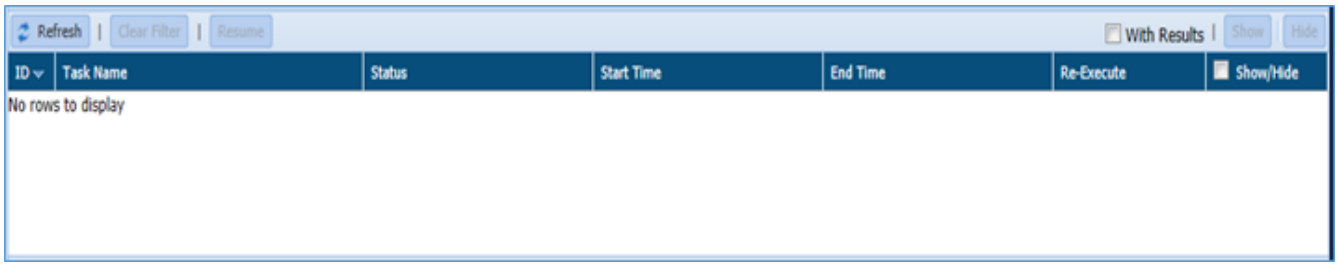
The Results tab is divided in three panes. These are:

1. Task Instances
2. Task Instance Details
3. Overview



4. **Task Instances**

   This pane will display the information for the task such as ID (system generated), Task Name, Status, Start Time, End Time, Show/Hide, etc. Click the Re-Execute button next to the selected task to re-run it. Selecting a task instance displays its parameters and results in the panels below.



Refresh: Click the **Refresh** button. It will update the current page with the updated information.

Clear Filters: Click the **Clear Filters** button. It will remove any applied filters on the Tasks page.

Resume: Click the Resume button to re-start the process from the point where it was paused.

Show: Click the **Show** button to unhide a task.

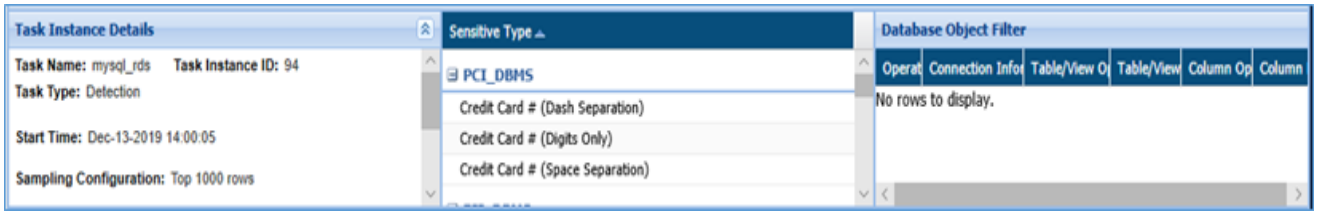
Hide: To hide any task, follow the below steps:

i. Check **Show/Hide** checkbox for the policy.
ii. Click the **Hide** button. The policy will get greyed out.

5. **Task Instance Details:**

The Task Instance Detail pane will display the basic information for the RDS/RedShift detection task selected in the Task Instance pane. It includes details such as Task Name, Task Description, Created By, Last Executed On, etc.

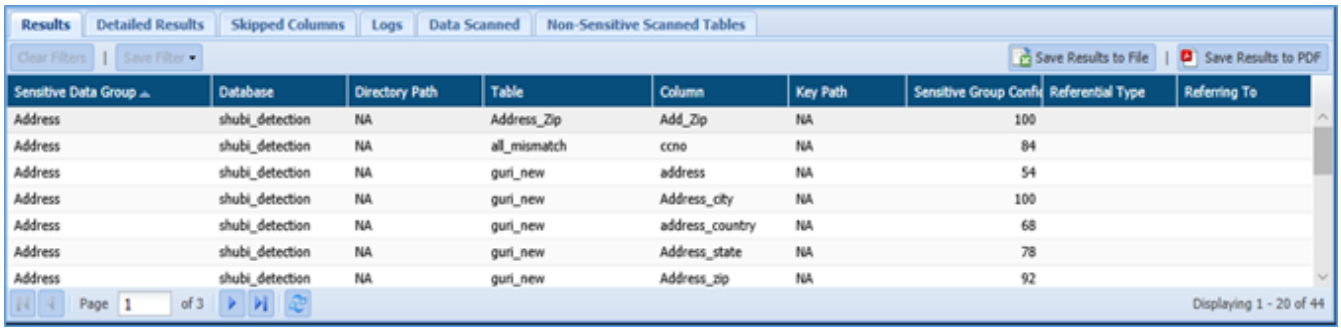
The Task Instance Details pane will also display the list of Sensitive Types and Database Object Filter used.



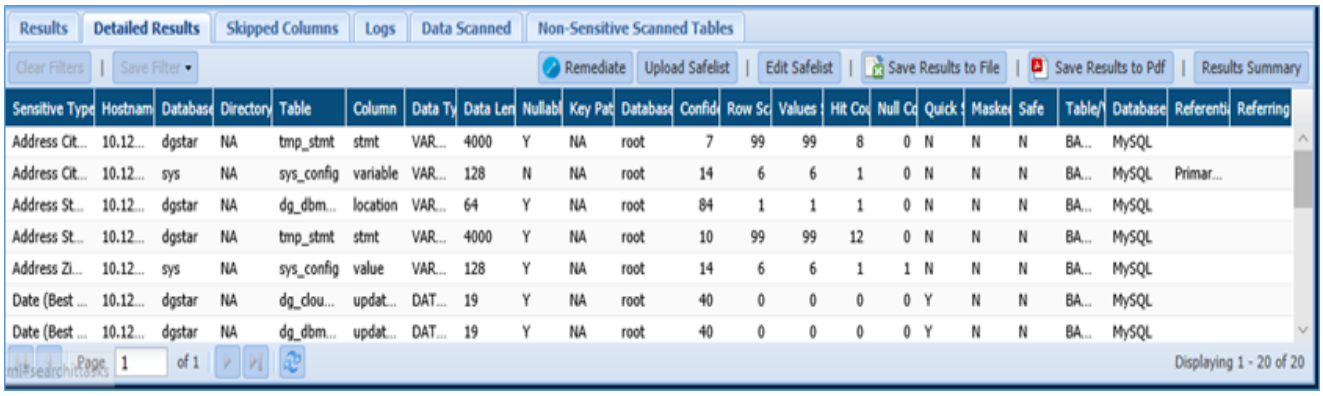
6. **Sensitive Type:** The Sensitive Type pane will displays the list of Sensitive Type for the selected task.
7. **Database Object Filter:** The database Object Filter pane displays only those databases/tables/columns that match the filter applied. The columns display information such as the applied operator, connection information, Table/View operator, Table/View Filter, column operator and column filter.

8. **Overview:**

The Overview pane will show the overview of basic information for the selected task. The information displayed is dependent on the currently selected tab.

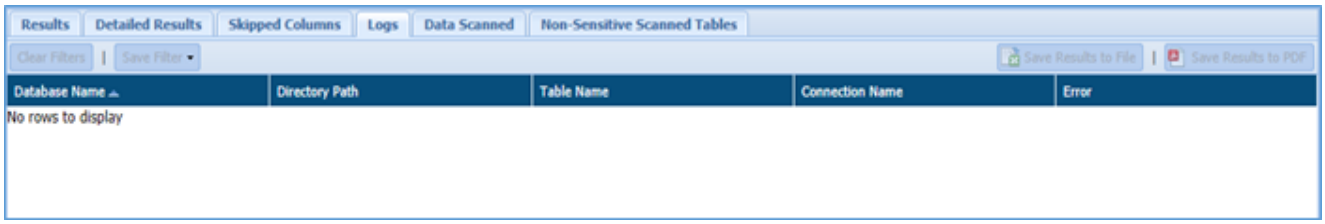


- **Results:** The result tab will display the high level information of the Sensitive Types for the selected task in the detection task pane. The information includes Sensitive Data Group, Database, Table, Column, Sensitive Group Confidence, etc.
- **Detailed Results:** The Detailed Results tab will provide you the detailed information for the Sensitive Type encountered in the database. The information will include Sensitive Type, Hostname, Database, Table, Column, Database User, etc.

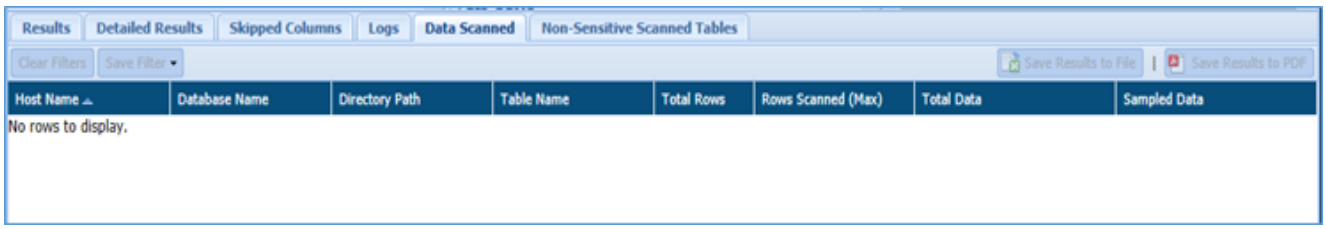


- **Skipped Columns:** This tab will provide you with the list of columns that were skipped during the execution.

- **Logs:** It will list errors that occurred during task execution.



- **Data Scanned:** List the total number of rows in the scanned tables and how many of those rows DgSecure actually scanned.



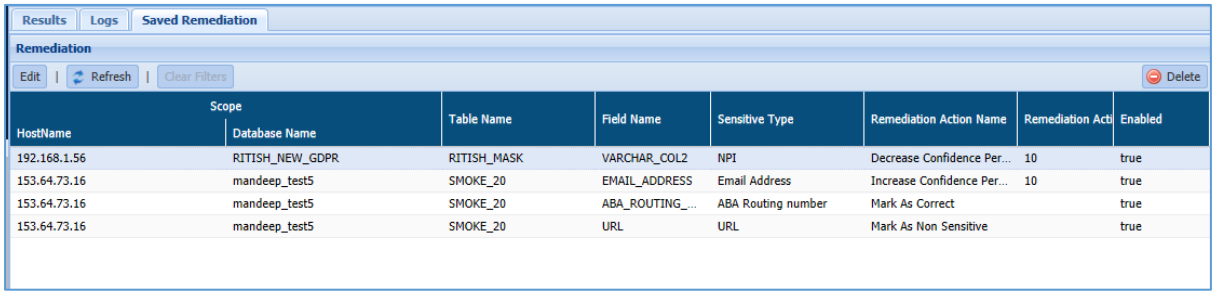
- **Non Sensitive Scanned Tables:** It will list down the tables which contain non sensitive data. This tab includes information such as Host Name, Database Name, Table Name, Table Size (bytes).

9.6.1.2 Saved Remediation

The Saved Remediation tab allows you to view all the records that have been selected as remediated results in **DETAILED RESULTS** tab under **OVERVIEW** panel.

***Note**: To know more about how to enable and queue the task for remediation workflow, refer section **Settings** under DgAdmin.

Once the remediation value has been set and saved in **DETAILED RESULTS** tab, the same can be seen under **Saved Remediation** tab. The **Saved Remediation** tab will display the information such as Host Name, Database Name under Scope, Table Name, Field Name, Sensitive Type, Remediation Action, etc.



To edit the remediation details, click **EDIT**. This functionality allows you to update the information for remediated results, if required.

To delete the remediated record, select the record and click **Delete**. This will delete the selected remediated record from the screen.

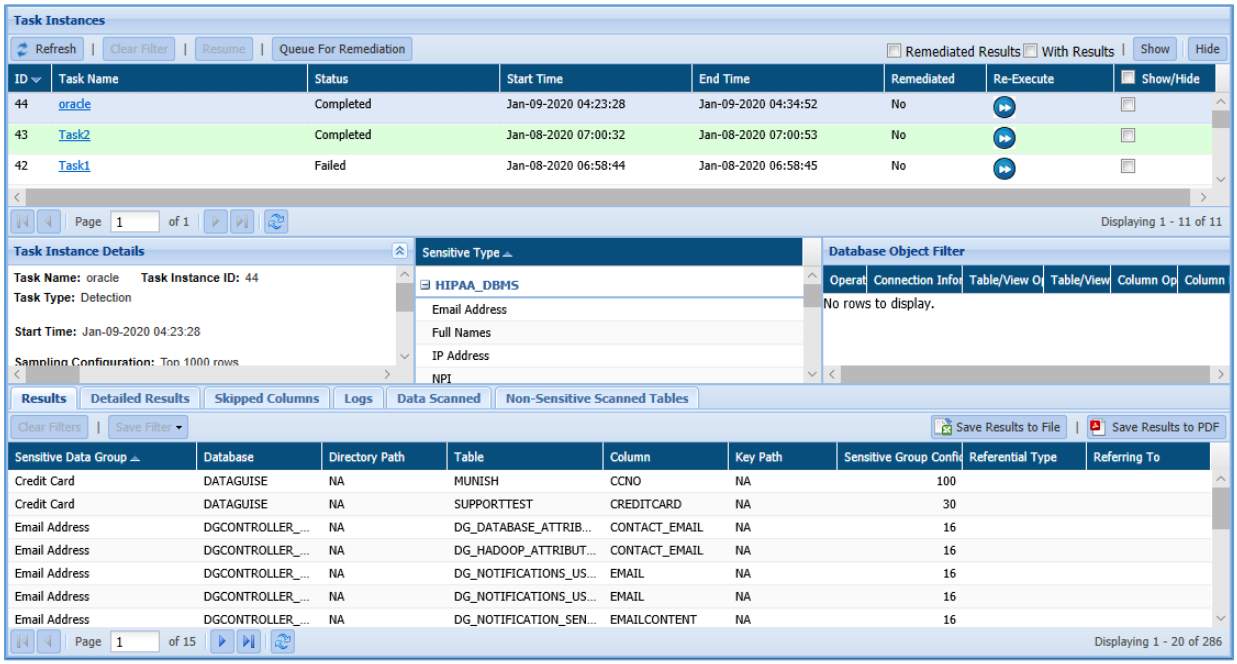
Click **Refresh** to update the screen.

9.6.2 Databases

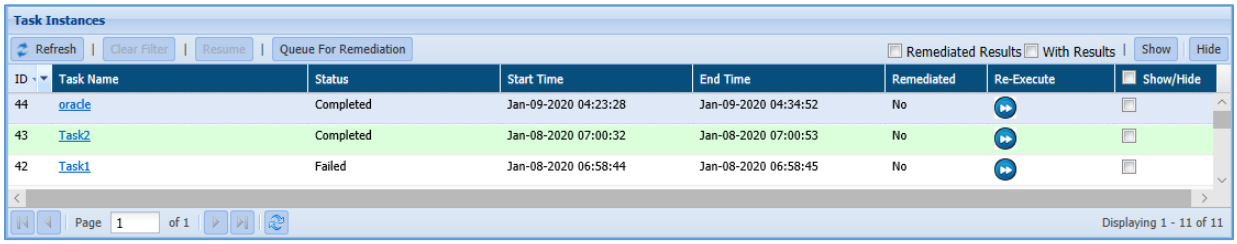
9.6.2.1 Results

The **Result** screen displays information about the Sensitive data detected in the existing database. This screen is divided into three panels.

4. Task Instances
5. Task Instances Detail
6. Overview



- **Task Instances**
  The Task Instance pane display information for the masking tasks. This pane will display information such as ID (system generated), Task Name, Status, Start Time, End Time, etc.

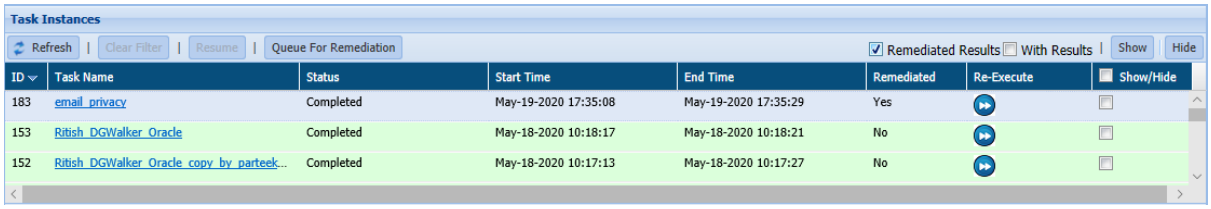


9. **Refresh:** Click the **Refresh** button. It will update the current page with the updated information
10. **Clear Filters**: **Clear Filters:** Click the **Clear Filters** button. It will remove any applied filters on the Tasks page.
11. **Resume:** Click the **Resume** button to re-start the task where it was initially stopped.
12. **Show**: Click the **Show** button to unhide a task.

13. **Hide:** To hide any task, follow the below steps:
    i. Check **Show/Hide** checkbox for the policy.
    ii. Click the **Hide** button. The policy will get greyed out.
14. **With Results**: Check the **With Results** checkbox, if you want to see the results for the selected masking task.

15. **Queue For Remediation:** Click this button to queue the task for remediation workflow. This option allows you to queue the task for remediation manually.

Once the task has been queued for remediation, the value for the remediation can be seen in the **Task Instances** panel under the column name **REMEDIATED.** It specifies the value as **YES** or **NO**.



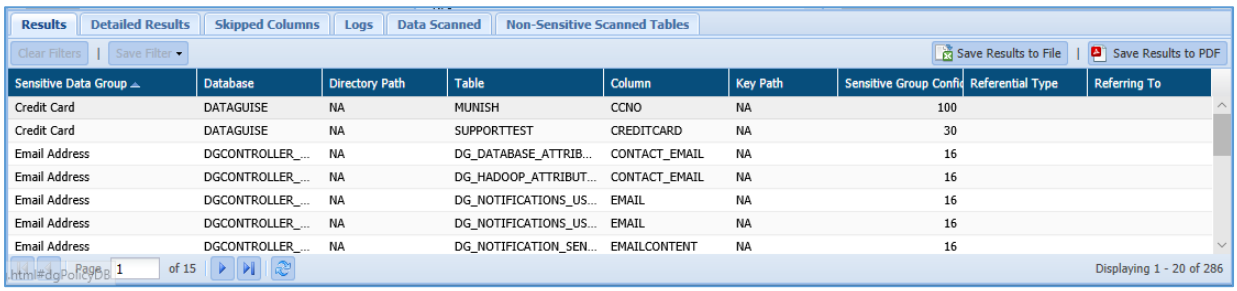
To queue the task for remediation workflow automatically, set the value of **AUTO QUEUE FOR REMEDIATION** to **YES** in DgAdmin application under **SETTINGS.**

16. **Remediated Results:** check the **Remediated Results** checkbox, if you want to view the final results for the selected fields which are marked as **Remediated**. The remediated result will be displayed in the **Detailed Result** tab under the **Overview** panel.

- **Task Instance Details**
  The Task Instance Details pane will display the basic information for the task selected in the Task Instance pane. The includes details such as Task Name, Task Description, Start Time, End Time, Task Type, etc.

  It also provides additional information for the Sensitive Type and the Database Object Filter.

- **Overview**
  The bottom panel will show the detailed information for the selected task. The information displayed is dependent on the currently selected tab.



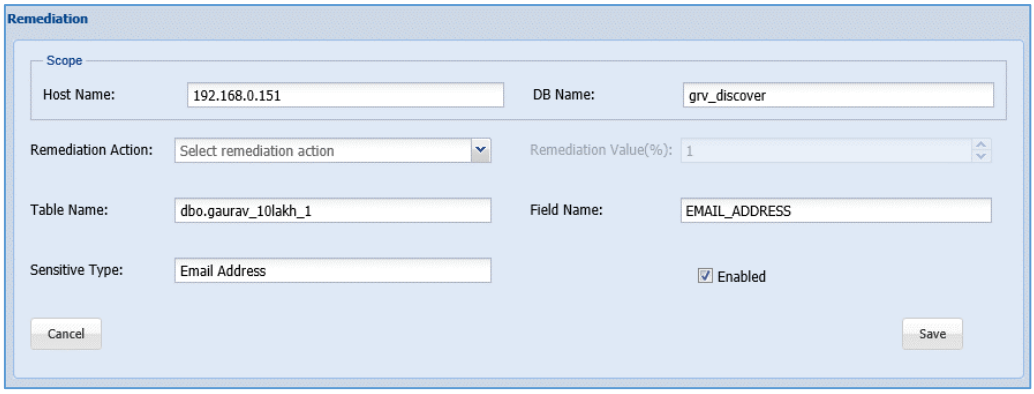
13. **Results:** The Result tab provide information for the Sensitive Type encountered in the database along with the additional information such as Column Name, Table Name, Sensitive Group Confidence.
14. **Detailed Results**: This pane list the Sensitive table columns that are discovered, along with their location, data type, Table Name, Column Name, Data Type, etc.
15. **Skipped Columns**: This pane list down any skipped columns along with the data type identified in that column.
16. **Data Scanned**: The Data Scanned pane list down the sampled and the total data targeted with the scan.
17. **Non Sensitive Scanned Tables**: This pane list down all the Database Name along with their Host Name, Directory Path, Table Name and Table Size which were found non – sensitive during the scan process.
18. **Logs:** This pane list any errors which occurred during the task execution. It displays the log information for the errors such as Database Name, Schema Name, Column Name, Error Description, and Error.

19. **Save Results to File:** Click the Save Results to File, if you wish to download the data in text format.

20. **Save Results to PDF:** Click the Save Results to PDF, if you wish to download the data in PDF format.

21. **Remediate**: Click this button to remediate any result in **DETAILED RESULTS** tab. To remediate the selected result, perform the following steps:
    g) Select the record in the **Detailed Result** tab and click the **Remediate** button.

    h) Enter the details for **Remediation Action** and **Remediation Value (%)** field in the popup.

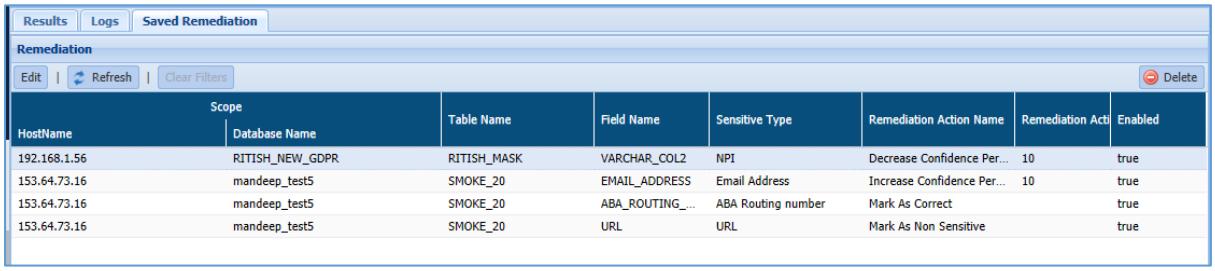


vii. Following are the options in **Remediation Action** field.

- **Mark as Non Sensitive**: Select this option to mark the record as Non Sensitive. The system will ignore this record in future re-run.
- **Mark as Correct**: Select this option to mark the record as Sensitive. The system will not ignore this record in future re-run.
- **Decrease the Confidence Factor:** select this option to decrease the confidence factor in Remediation Value (%) field.
- **Increase the Confidence Factor:** Select this option increase the confidence factor in Remediation Value (%) field.

viii. Enter the remediation value in percentage. This field will be enabled when you select **Decrease** or **Increase the Confidence Factor** in **Remediation Action** field.

Once the remediation value has been set and saved, the same can be seen under Saved Remediation tab.

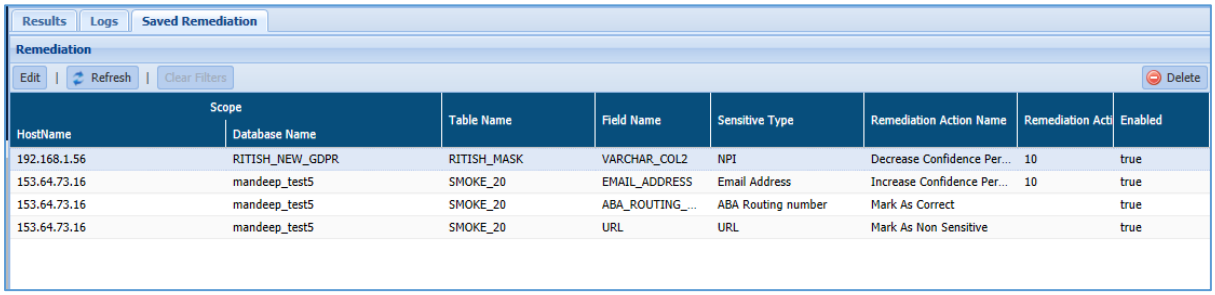


9.6.2.2 Saved Remediation

The Saved Remediation tab allows you to view all the records that have been selected as remediated results in **DETAILED RESULTS** tab under **OVERVIEW** panel.

***Note**: To know more about how to enable and queue the task for remediation workflow, refer section **Settings** under DgAdmin.

Once the remediation value has been set and saved in **DETAILED RESULTS** tab, the same can be seen under **Saved Remediation** tab. The **Saved Remediation** tab will display the information such as Host Name, Database Name under Scope, Table Name, Field Name, Sensitive Type, Remediation Action, etc.



To edit the remediation details, click **EDIT**. This functionality allows you to update the information for remediated results, if required.

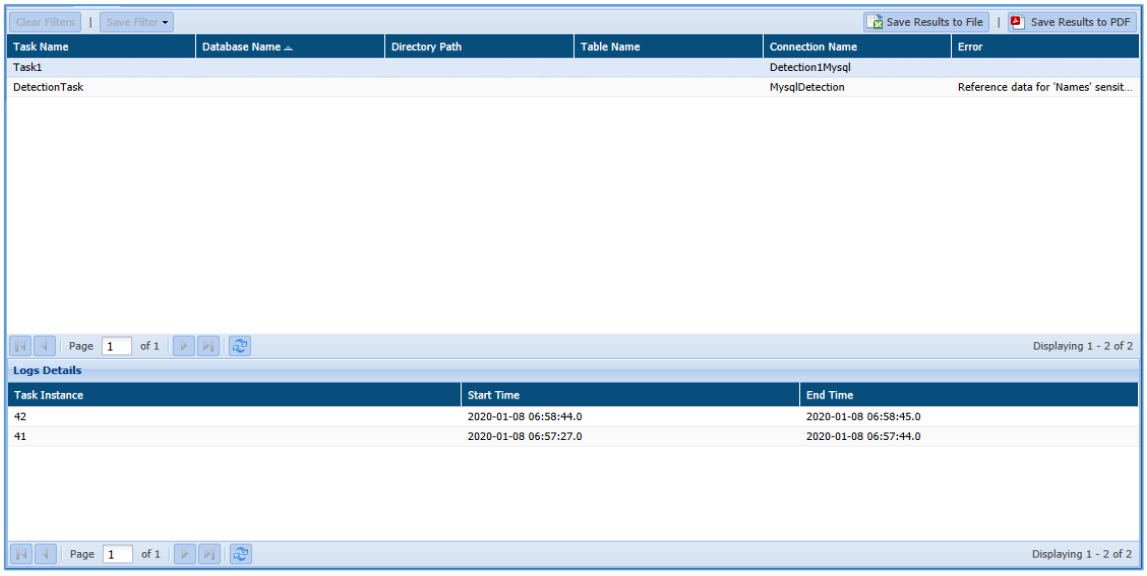
To delete the remediated record, select the record and click **Delete**. This will delete the selected remediated record from the screen.

Click **Refresh** to update the screen.

9.6.2.3 Logs

In Logs tab, you can view the list of all the Task Name along with the errors occurred during the task execution. The Logs tab is divided into two panes:

1. Logs List
2. Logs Details

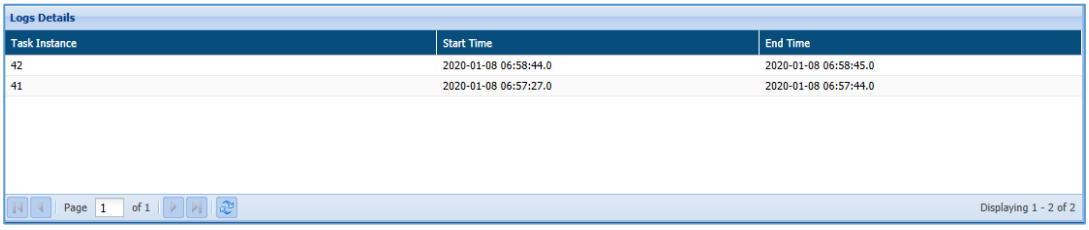


- **Logs List**: This pane will display the list of all the Tasks Name along with the errors occurred during the task execution. It will also display the information such as Database Name, Directory Path, Table Name and Connection Name.

3. **Save Results to File**: Click the Save Results to File button to save the Logs List information in .csv format.

4. **Save Results to PDF**: Click the Save Results to PDF button to save the Logs List information in PDF format.

- **Logs Details:** The Logs Details pane will display the information for the selected task in the Logs List. The information includes Task Instance, Start Time and End Time.

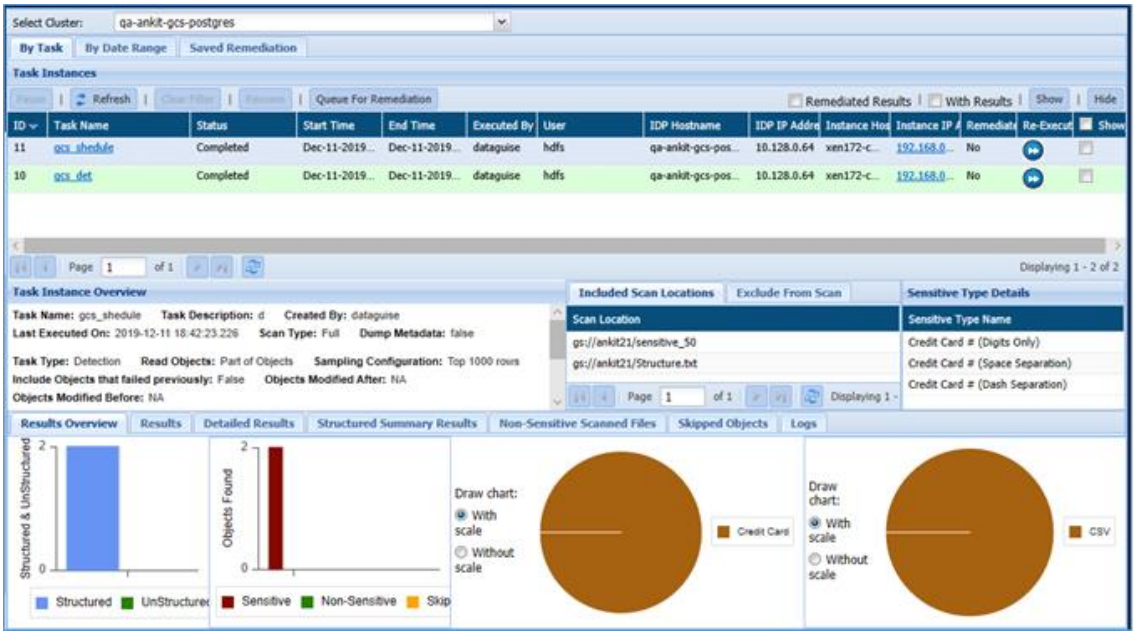


9.7 Google Cloud

The Result page displays the status and the results of the GCS tasks. The information can be tracked:

1. By Task
2. By Date Range
3. Saved Remediation

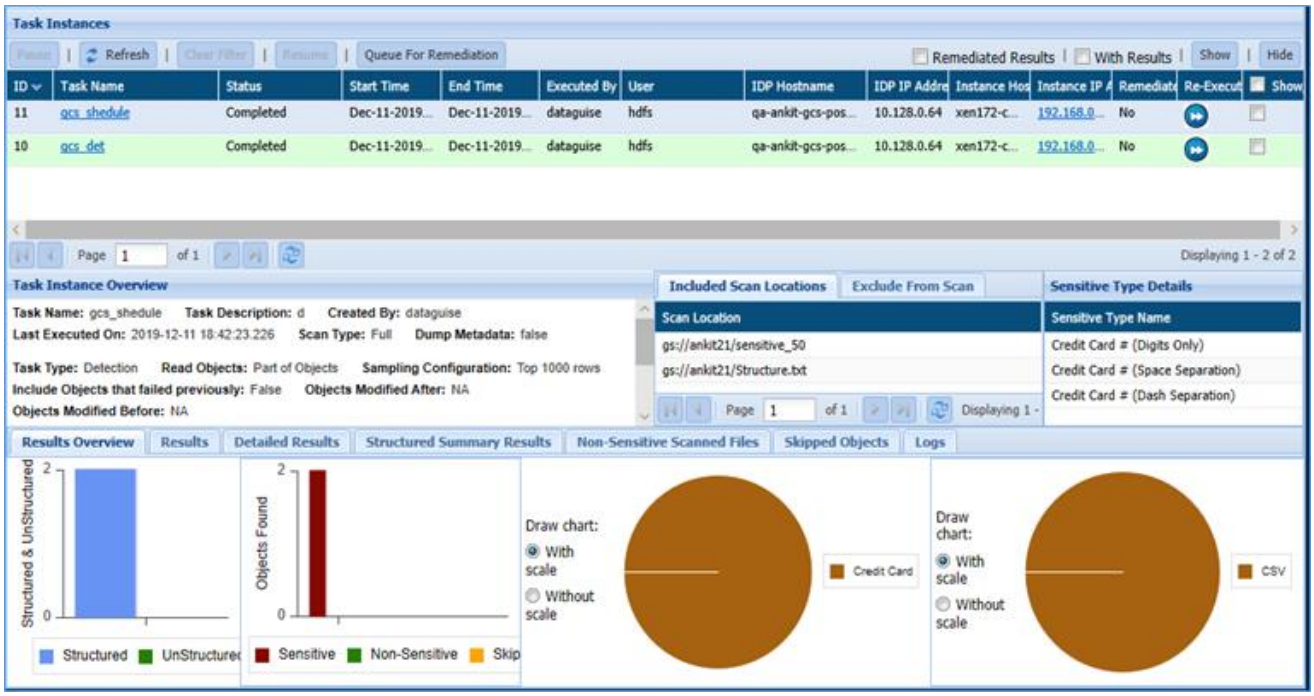
The below image shows the user interface of “By Task” tab when clicked on Result page:



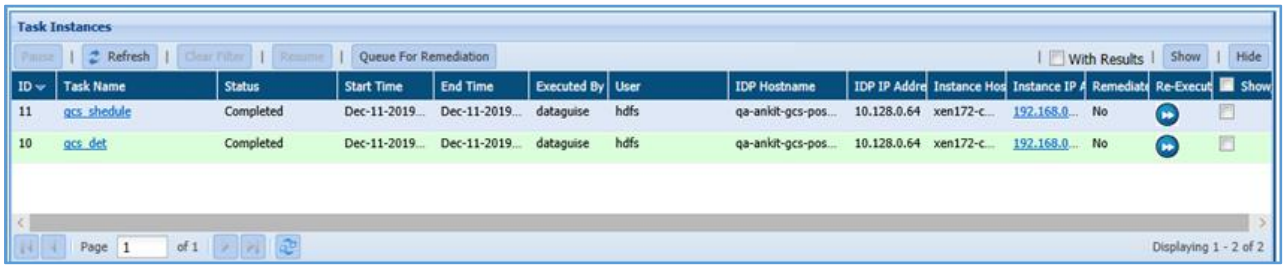
9.7.1 By Task

The 'By Task' tab is divided into three panes. These are:

1. Task Instances
2. Task Instance Overview
3. Overview



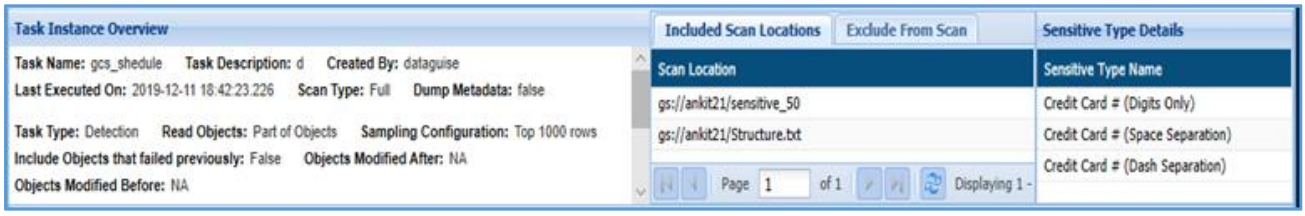
- **Task Instances:**
  The Task Instances pane display all the task instances along with their ID (system generated), Task Name, Status, Start Time, End Time, Executed By, User, IDP Hostname, IDP IP Address, Instance Hostname, etc. Click the Re-Execute button, if you wish to re-run the task again.



1. **Pause**: Click the Pause button to pause the running task for a while.
2. **Refresh**: Click the Refresh button. It will update the current page with the updated information.
3. **Clear Filters**: Click the Clear Filters button. It will remove any applied filters on the Tasks page.
4. **Resume:** Click the Resume button to re-start the process from the point where it was paused.
5. **Queue For Remdiation**
6. **With Results**
7. **Show**: Click the Show button to unhide a task.
8. **Hide:** To hide any task, follow the below steps:
   i. Check Show/Hide checkbox for the policy.
   ii. Click the Hide button. The policy will get greyed out.

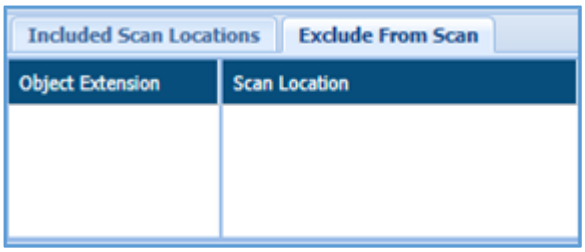
- **Task Instance Overview**:
  The Task Instance Overview pane will display the basic information for the GCS task selected in the Task Instance pane. The includes details such as Task Name, Task Description, Created By, Last Executed On, etc.

  The Task Instance Overview pane will also display information for the Scanned Locations in Included Scan Locations and Exclude from Scan tab, Sensitive Type Details.



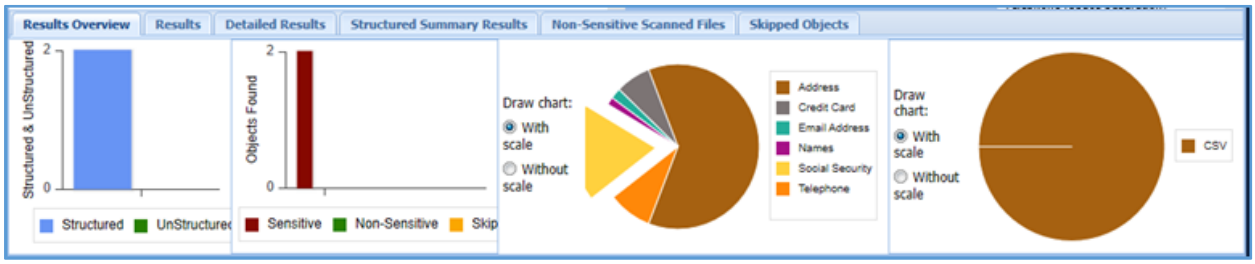
1. **Included Scan Locations:** It displays the information about the task target directories.

2. **Exclude From Scan**: It will display the list of excluded object extension and the file location.



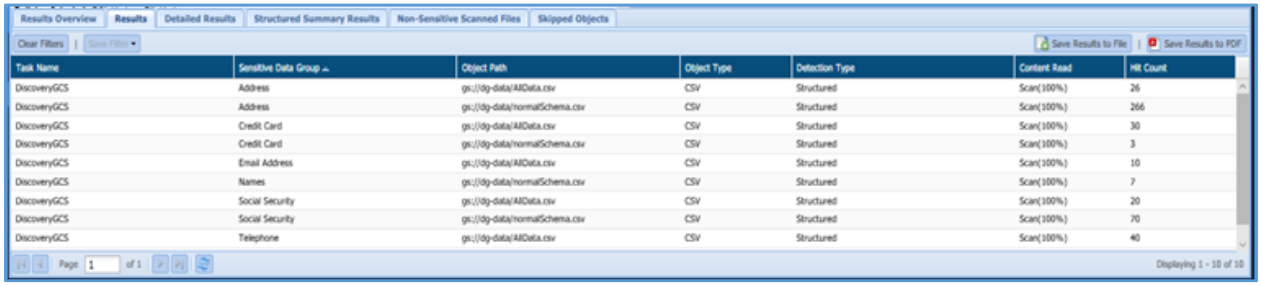
3. **Sensitive Type Details**: It display the list of all Sensitive Types discovered in the task.

- **Overview:**
  The bottom panel will show the detailed information for the selected task. The information displayed is dependent on the currently selected tab.

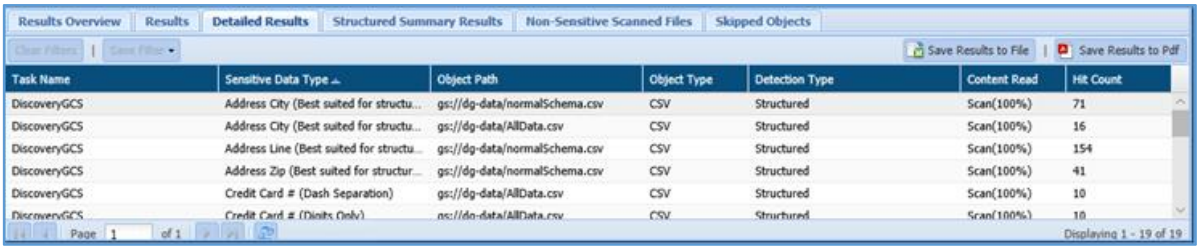


4. **Result Overview:** The Result Overview tab gives a graphical summary of the results for the selected task instance. Hovering over the data points in any of the graphs shows the number of hits and hit percentage for a file or an expression.

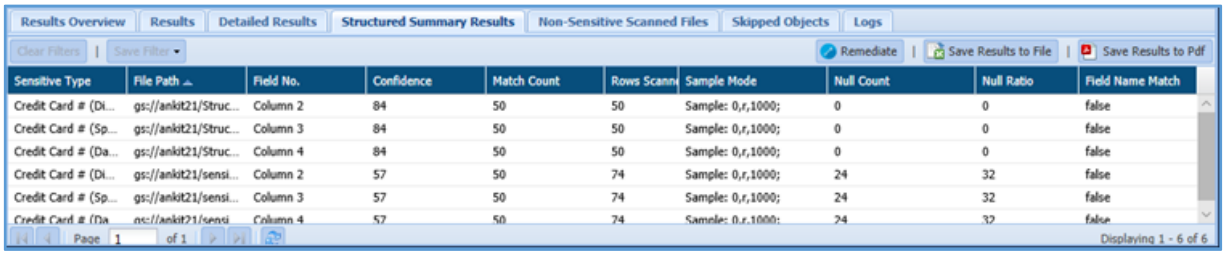
5. **Results**: The Results tab displays sensitive data groups, hit count, task name, Object Path, Object Type, Detection Type and Content Read.



6. **Detailed Results**: The Detailed Results tab will provide you the detailed information for the Sensitive Type discovered in the database. The information will include Sensitive Data Type, Task Name, Object Path, Object Type, Detection Type, Content Read and Hit Count.

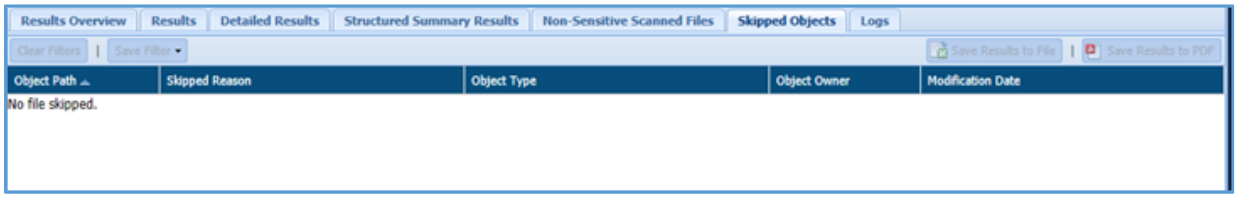


7. **Structured Summary Results:**

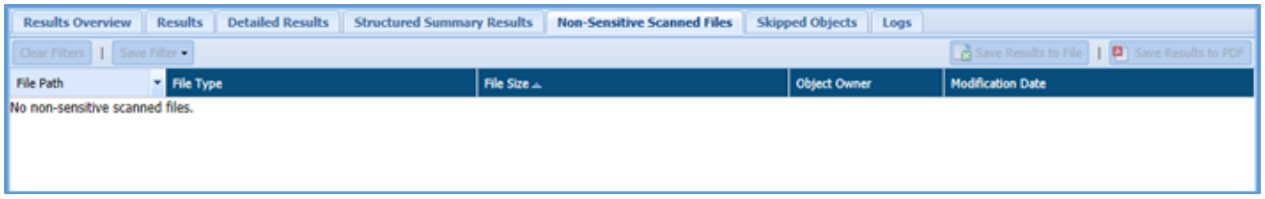


- Remediate

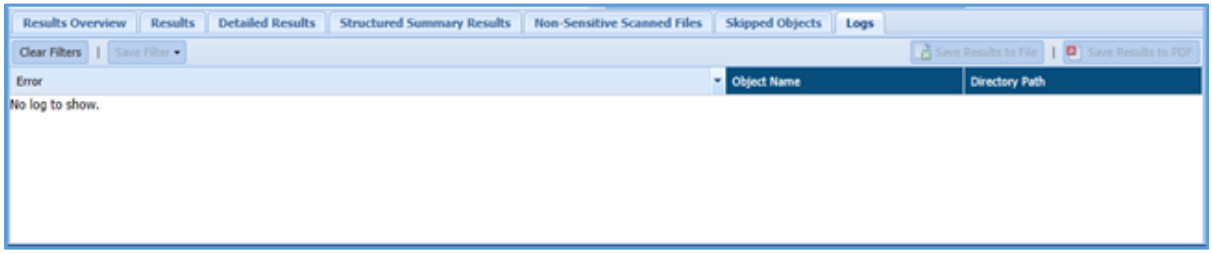
8. **Skipped Objects**: This tab will provide you with the list of objects that were skipped during the execution. It displays information about the Object Path, Skipped Reason, Object Type, Object Owner and Notification Date.



9. **Non-Sensitive Scanned Files:**



10. **Logs**: It will list errors that occurred during task execution.



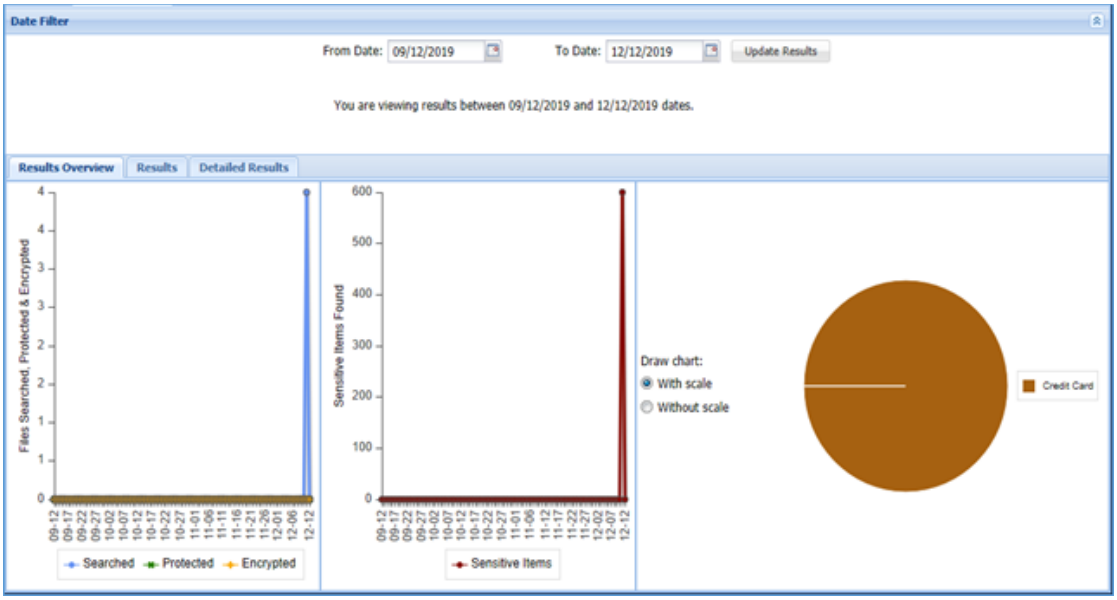
- **Save Results to File:** Click the Save Results to File, if you wish to download the data in text format.

- **Save Results to PDF**: Click the Save Results to PDF, if you wish to downlad the data in PDF format.

9.7.2 By Date Range

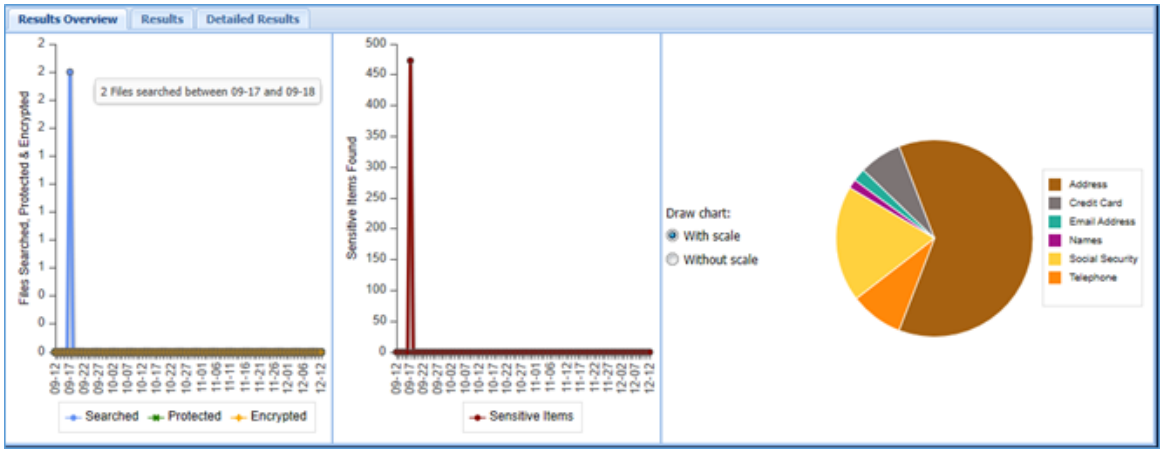
The 'By Date Range' tab is divided into two panes. These are:

1. Date Filter
2. Overview



- **Date Filter:** In Date Filter pane, you can specify the date range.

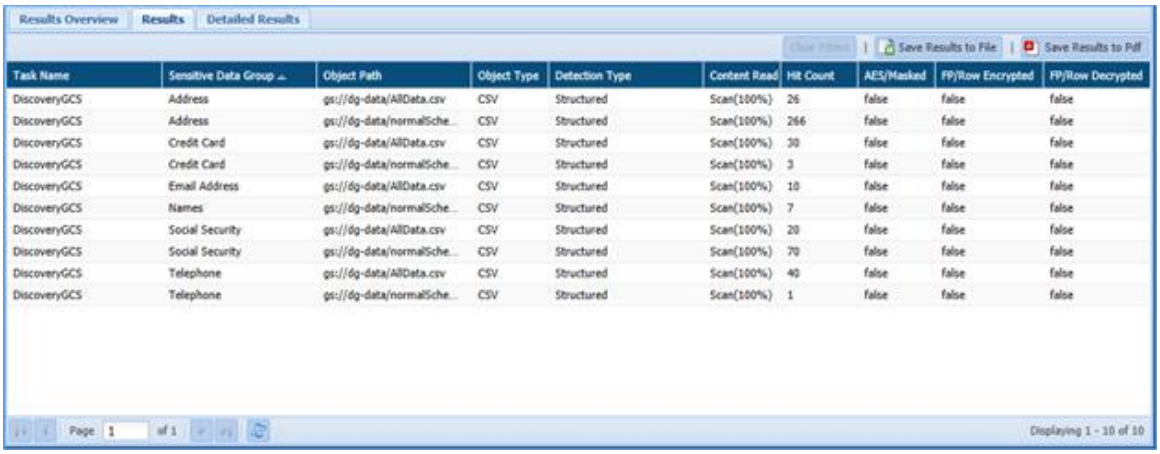
- **Overview:**
  The Overview pane display the graphical representation of the information in Results Overview tab and detailed information in Results and Detailed Results tab.



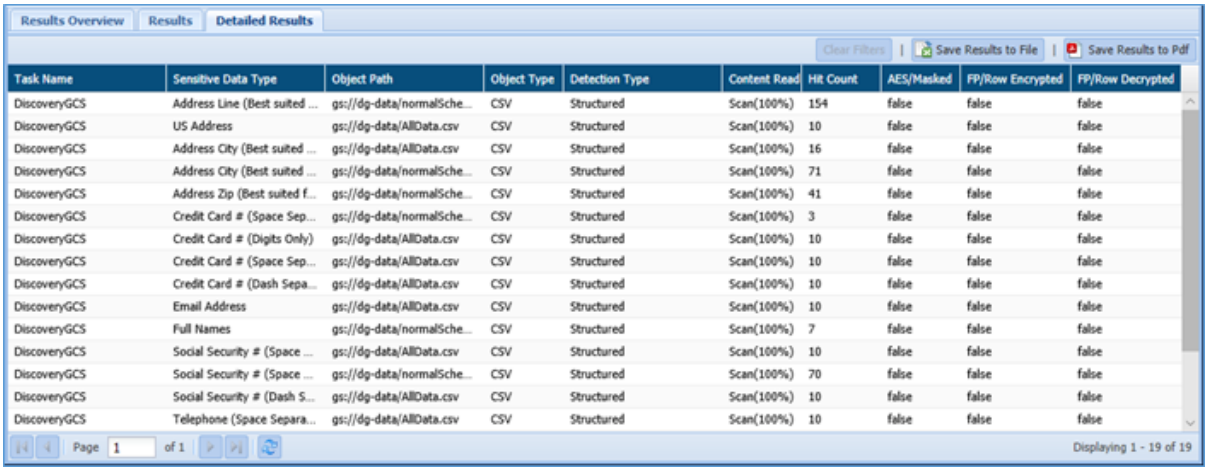
3. **Results Overview:** The Results Overview tab display information in form of graphical representation. It displays two bar chart and a pie chart.

   - The first bar chart shows the number of files searched, encrypted and masked.
   - The second bar chart shows the total number of sensitive files found.
   - The pie chart shows the Sensitive Type found in each segment.

4. **Results**: The Results tab lists down the Sensitive Data Group detected in the specified time range. It includes information such as Task Name, Sensitive Data Group, Object Path, Object Type, Detection Type, Content Read, Hit Count, AES/Masked, FP/Row Encrypted, FP/Row Decrypted.



5. **Detailed Results**: The Detailed Results tab lists down the Sensitive Types detected in the specified time range, grouped by type and location. The tab also displays information such as Task Name, Sensitive Data Group, Object Path, Object Type, Detection Type, Content Read, Hit Count, and whether the data was masked.



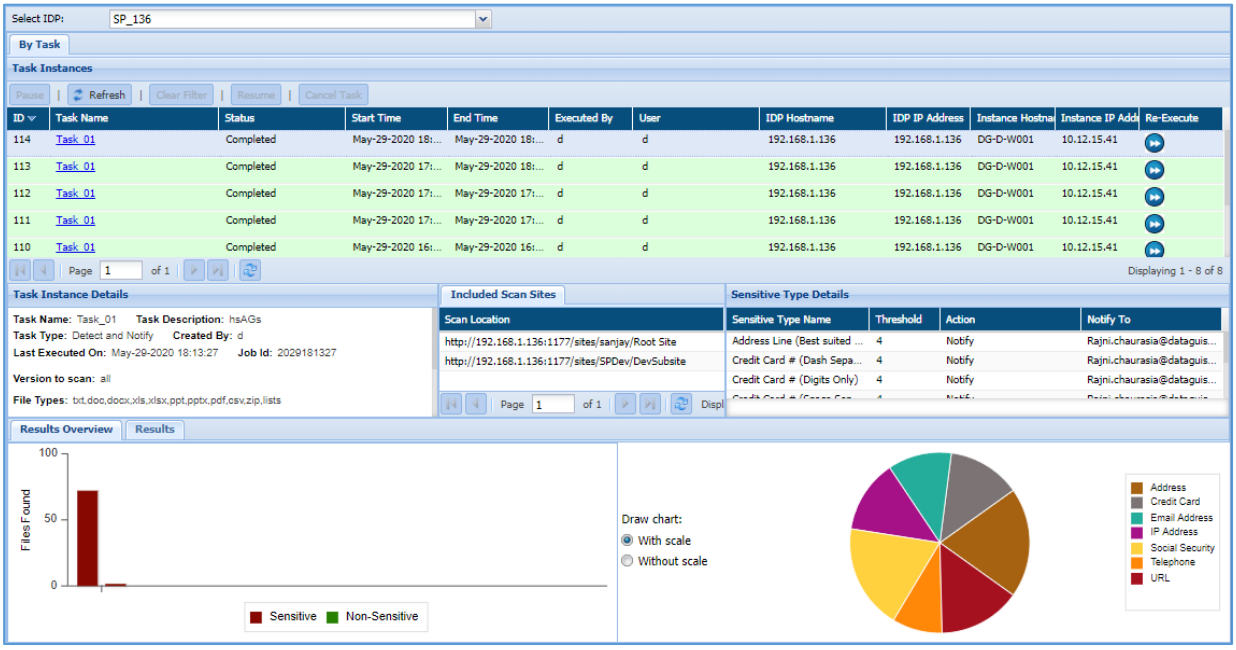
- **Save Results to File**: Click the Save Results to File, if you wish to download the data in text format.
- **Save Results to PDF**: Click the Save Results to PDF, if you wish to downlad the data in PDF format.
- **Clear Filters**: Click the Clear Filters button. It will remove any applied filters on the Detection task page.

9.8 SharePoint

9.8.1 By Task

The **Results** page displays information about the databases discovered with the sensitive data.

Access the **Results** page from the menu under **SHAREPOINT > Results**.

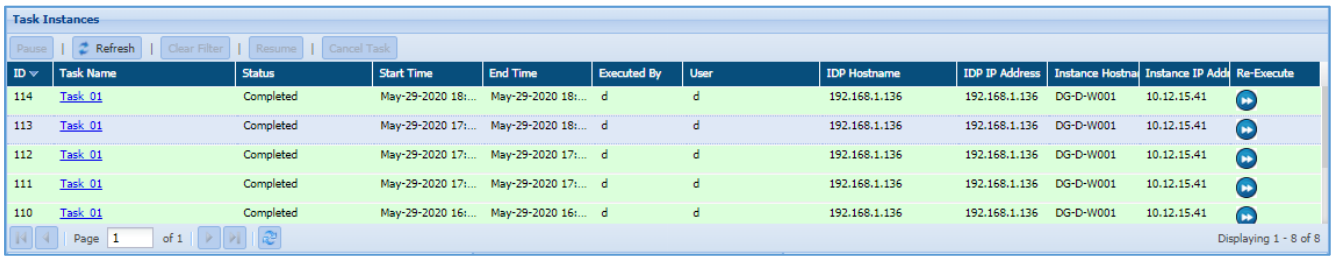


The screen is divided into six panes that are described below.

1. **Task Instance:**

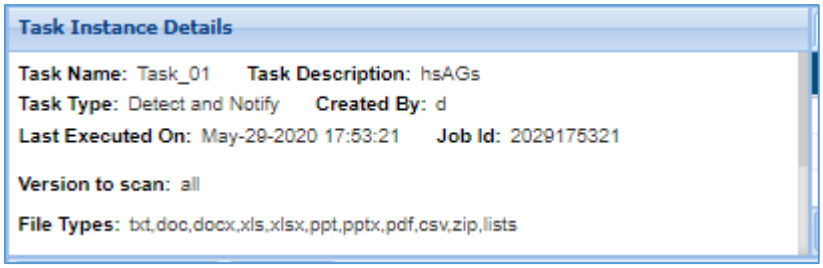
   This panel displays the list of tasks created for the IDP along with the status, start and end time, executor name, user, IP address etc. You can pause, resume and cancel the task.

   To re-execute a task, click button.



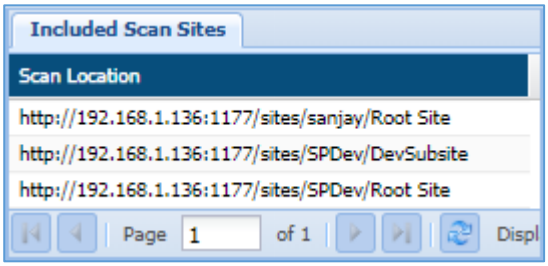
2. **Task Instance Details:**

   This panel displays all the information about the executed task. To view task instance details, select the task from the **Task Instance** panel.



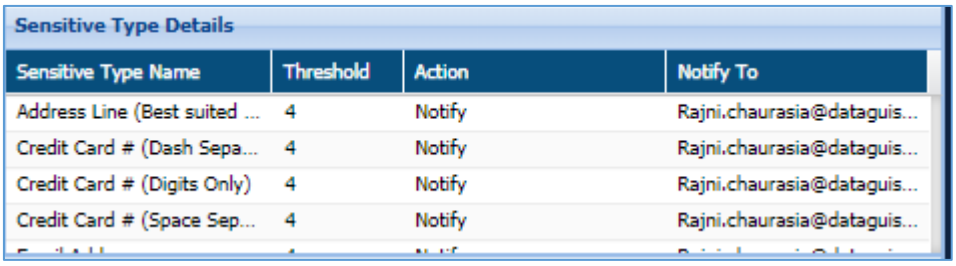
6. **Included Scan Sites:**

This panel displays the locations that are scanned.



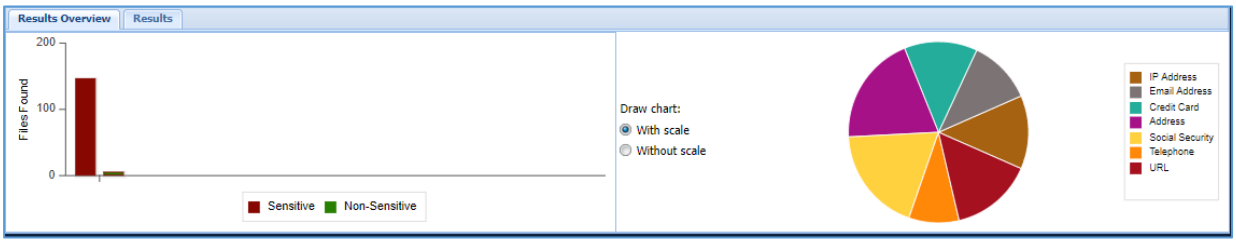
7. **Sensitive Type Details:**

This panel displays the details about the sensitive data type, discovered.



8. **Results Overview:**

This panel displays the graphical summary of the scan result for the selected task.



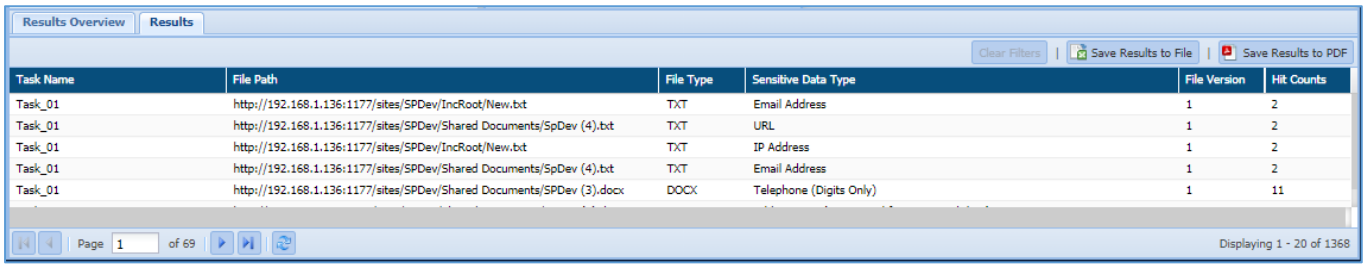
a) The bar chart on the left shows the number of different types of record. The x-axis represents the type of data. The y-axis represents the number of files with different data types.

9. The pie chart displays the ratio of different sensitive record types for that database.

10. **Results:**

This panel displays the details of files with sensitive data and the data type. Click **Save Results to File** or **Save Results to PDF** in the top right corner to export the details.

To download the reports in CSV format, click **Save Results to File**. To download the reports in PDF format, click **Save Results to PDF**.



10 Reports

10.1 Overview

The **Overview page** provides a complete picture of the organization's sensitive data. It displays detailed information about the sensitive data which is **Exposed**, **Protected** (encrypted or masked), **Safe** or **Skipped**. It also shows the information in graphical representation stating the total data processed based on the type of file i.e. structured or unstructured. It also gives a clear picture of the total size of the sensitive data processed, based on the data source type in each policy.

1. **Exposed**: The sensitive data which is not protected during the processing is marked as Exposed.

2. **Protected**: The sensitive data which are encrypted or masked using protection option such as AES Encryption, FPE Masking, etc., while processing is categorized **as Protected.**

3. **Safe:** The sensitive data which is marked safe in Safe-list or the data is already protected is marked as Safe.

4. **Skipped:** The data records which were skipped during the processing is marked as Skipped.

***Note:** By default, only Admin can access the **Reports** section. You can provide rights to other users for accessing the **Reports** section through, **User Management > Roles > Edit Product Access Permissions** option in DgAdmin.

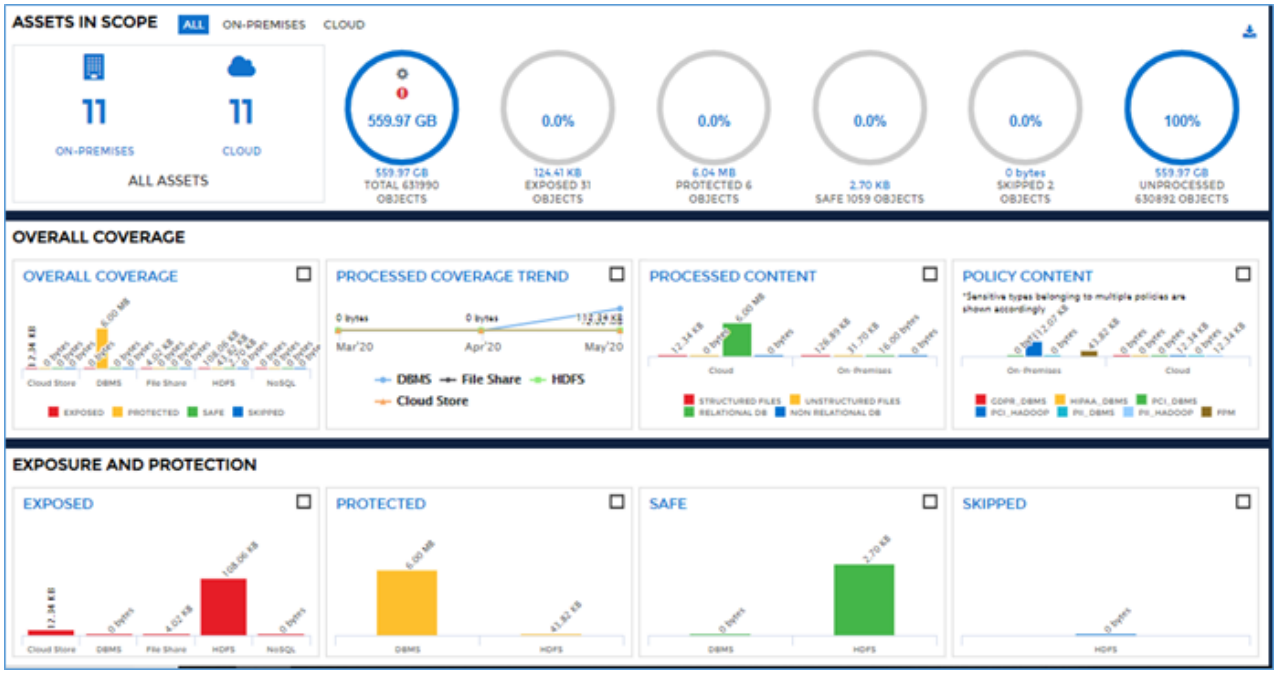
To know more visit section **6.1.5. Manage Roles and Permissions**

To access **Overview** page, click **Reports > Overview**.

The page is divided into three panels.

1. ASSETS IN SCOPE

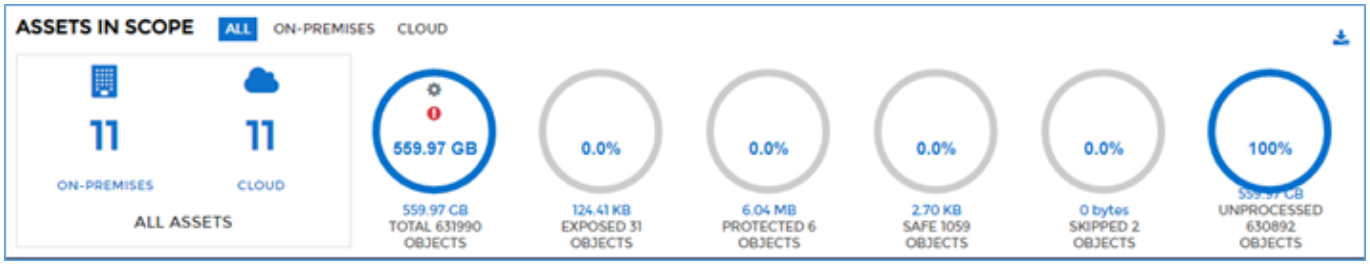
    128. OVERALL COVERAGE
    129. EXPOSTURE AND PROTECTION



The graphics in each row, provide insight of the total objects in all data sources e.g. DBMS, HDFS, S3, Hadoop, etc. You can segregate the result for '**All**', '**On-Premises**' or '**Cloud**' data in the charts, based on the selection made at the top of the screen. Click the  button to download the **Overview** screen in the PDF format.

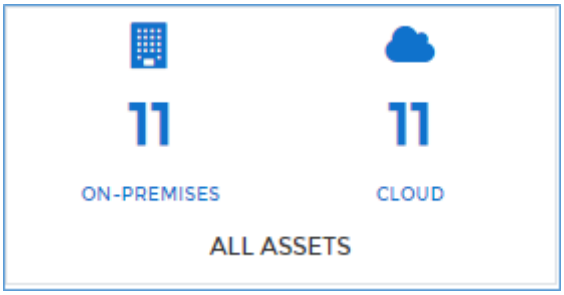
Data assets are termed as data sources or data stores and Data objects are referred as tables/files.

Assets in Scope

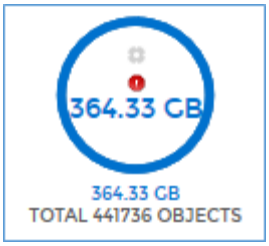


This section provides a complete overview of the data assets. There are various charts that provide information for the sensitive data stored in different tables/files. Click on each chart to view the total size and count of tables/files stored in each data asset.

1. The first chart **All Assets** indicates the total number of data assets present on the **On-Premises** and on the **Cloud** environment.

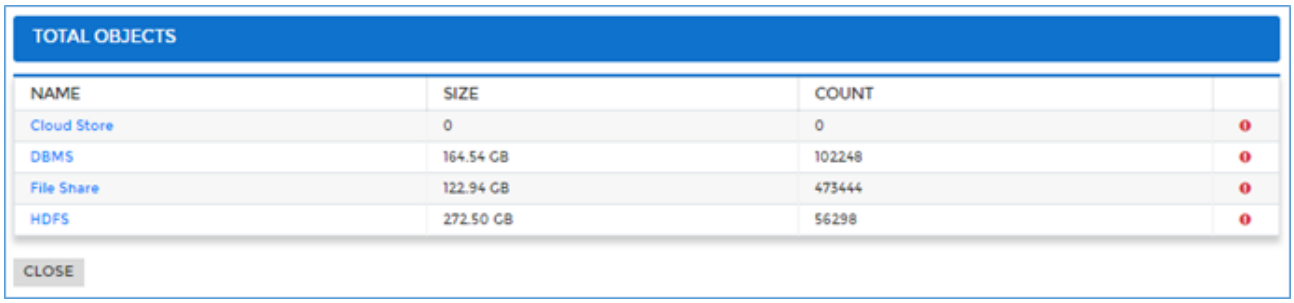


2. The second chart provides the total size and count of all the objects discovered across all the data sources.

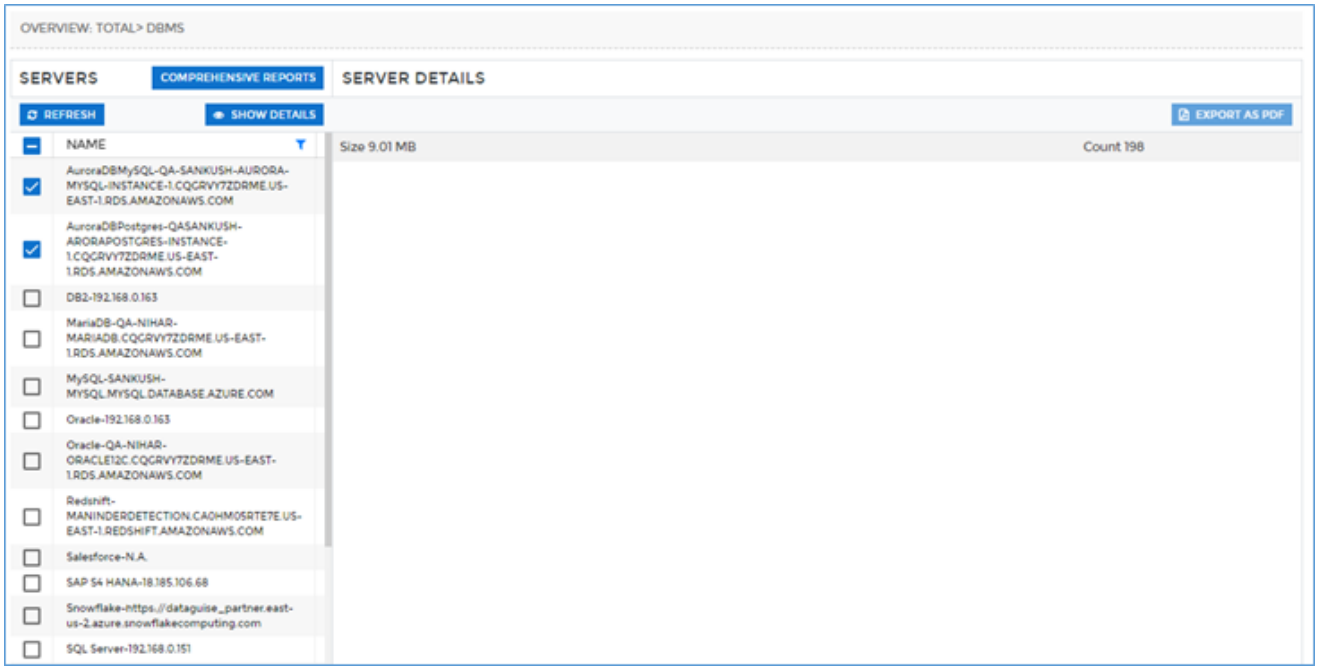


To view the size and count of the total data objects in each data source, click the chart and it will display the total size and count of the tables/files for all the data source.

***Note** – If any object has  in the last column, it means that due to some unexpected reasons such as revoking the permission from the user for accessing the database or unexpected shutdown of the system, etc., you are not able to access it.



To view the in-depth details for each data source, click the data source name and the **Server/Cluster Details** screen will appear.

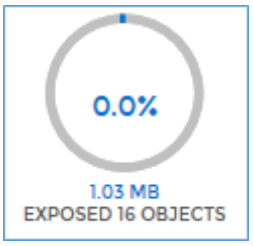


To view the the total size and count of Sensitive Type discovered for the selected server/cluster name, check the checkbox next to the server/cluster name. Click **Show Details** button. This will display the size and count of sensitive type in the **Server/Cluster Details** panel. To update the **Servers/Clusters** panel with all the connections name, click **Refresh** button.

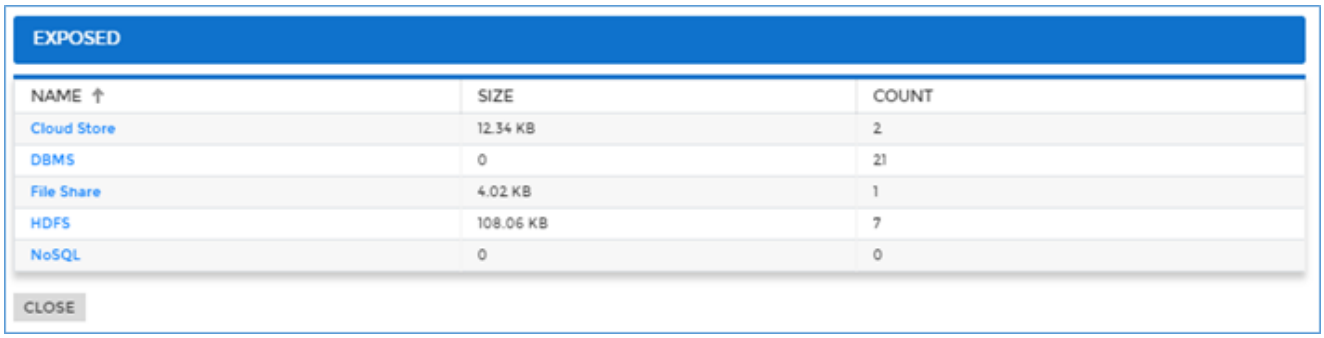
To view reports for DBMS data source, click the **Comphrensive Reports** button. This will display information in form of graphs for various dimensions such as Sensitive Types, Policies, DB Types, etc.

To know more information for **Comphrensive Reports**, visit Comprehensive Reports.

130. The third chart indicates the percentage of the exposed objects that contain sensitive type group. It also displays the total size and the count of the exposed objects.

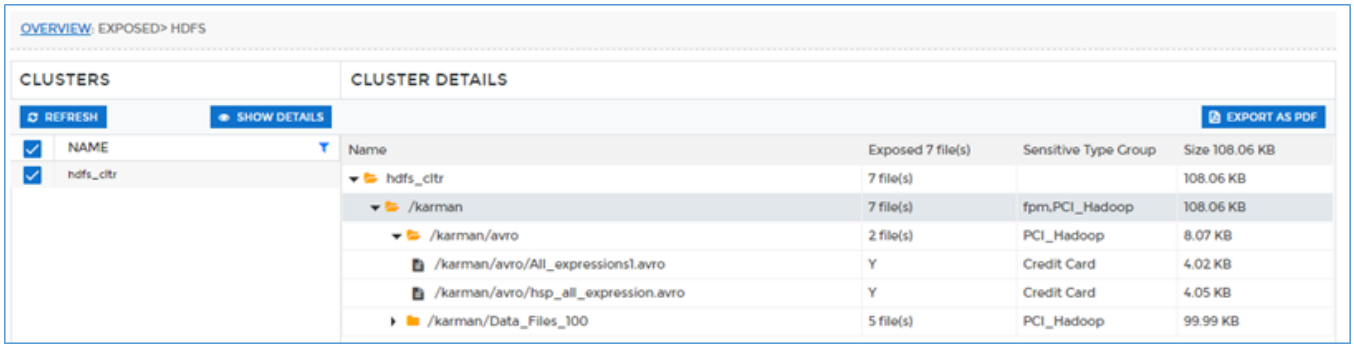


To view the total size and count of the objects for each data source, click the chart and it will display the total size and count of objects containing the exposed data for each data source.



To view the in-depth details for each data source, click the data source name and the

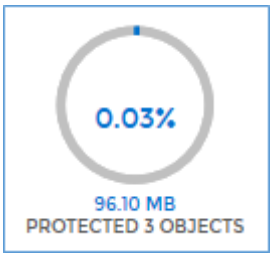
Details screen will appear.



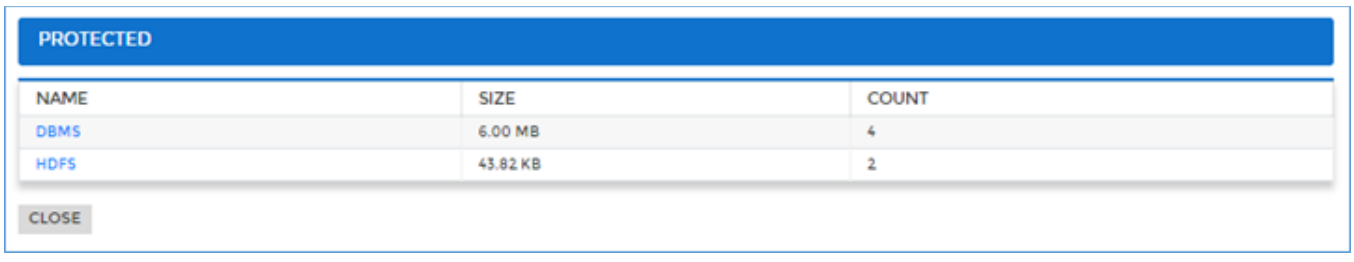
This screen displays the information for the exposed objects along with the sensitive type group in each object for the selected data source.

To download the report in PDF format, visit Export as PDF.

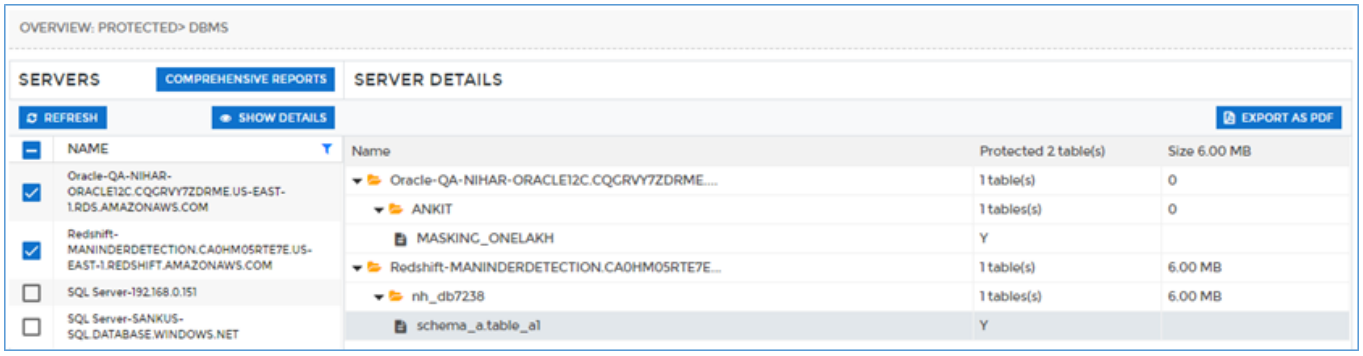
131. The fourth chart indicates the percentage of the protected objects. These objects contain any sensitive type group and is marked as protected using any of the protection options such as FPE Masking, AES Encryption, Random Masking, etc. This chart also displays the total size and the count of objects which are marked as protected.



To view the size and count of protected objects for each data source, click the chart. This screen will display the size and count of objects for each data source.



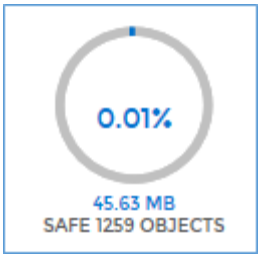
To view the in-depth details for each data source, click the data source name and the **Details** screen will appear.



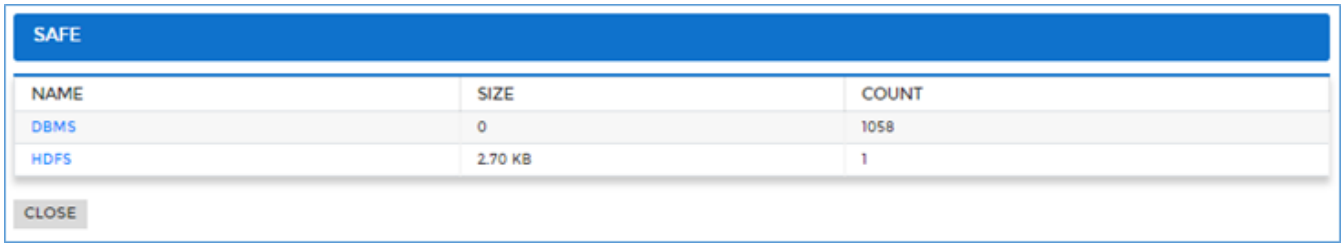
This screen displays the information for the protected objects marked as 'Y' along with the size of each object for the selected data source.

To download the report in PDF format, visit Export as PDF.

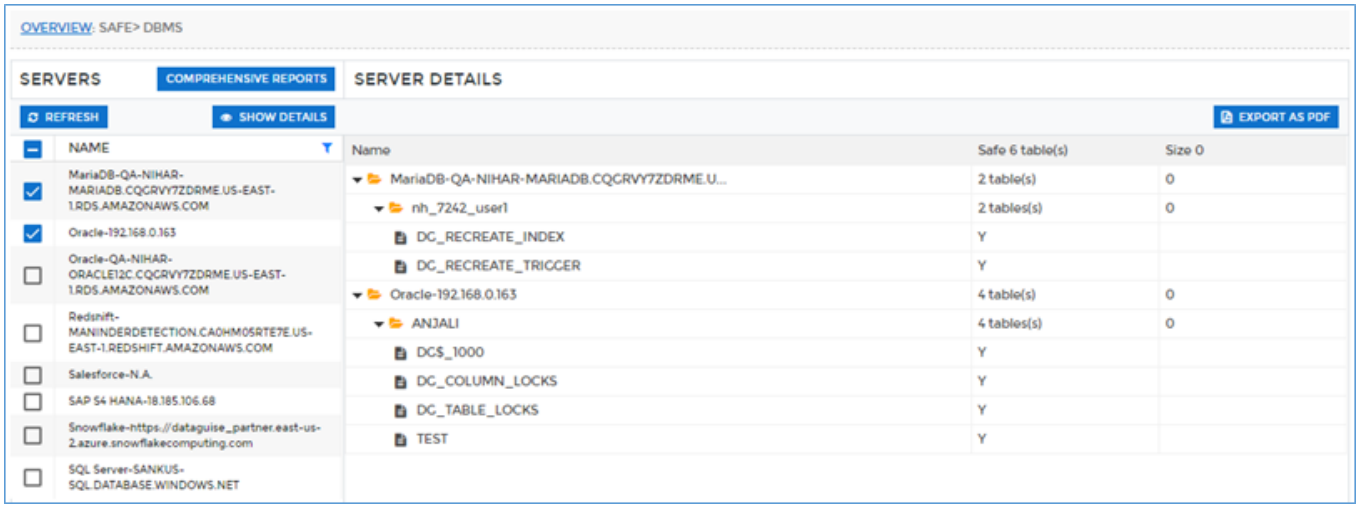
132. The fifth chart indicates the percentage of the safe objects within the data sources. It also displays the count and size of all the objects that are marked as safe.



To view the size and count of the safe objects for each data source, click the chart and the screen will display the total size and count for all objects in each data source in which sensitive type group is marked safe.



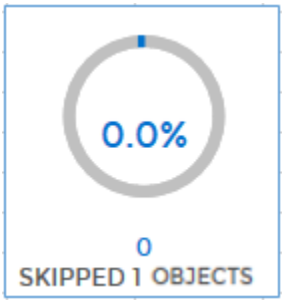
To view the complete details for each data source, click on the data source name and the **Details** screen will appear.



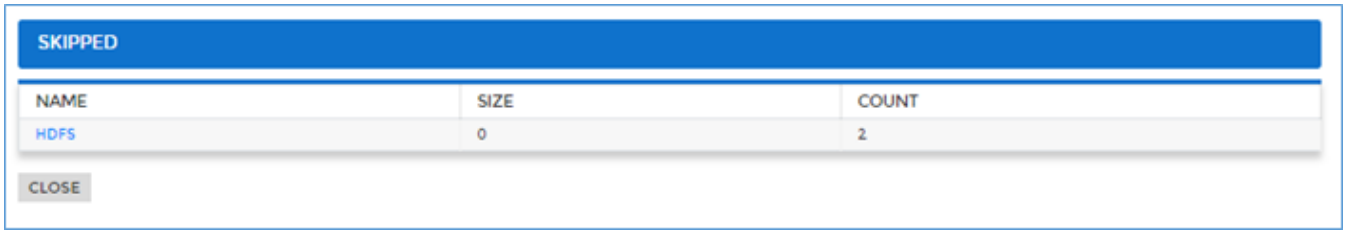
This screen displays the information for the objects which are marked as Safe as 'Y' in Safe column along with the size of each table.

To download the report in PDF format, visit Export as PDF.

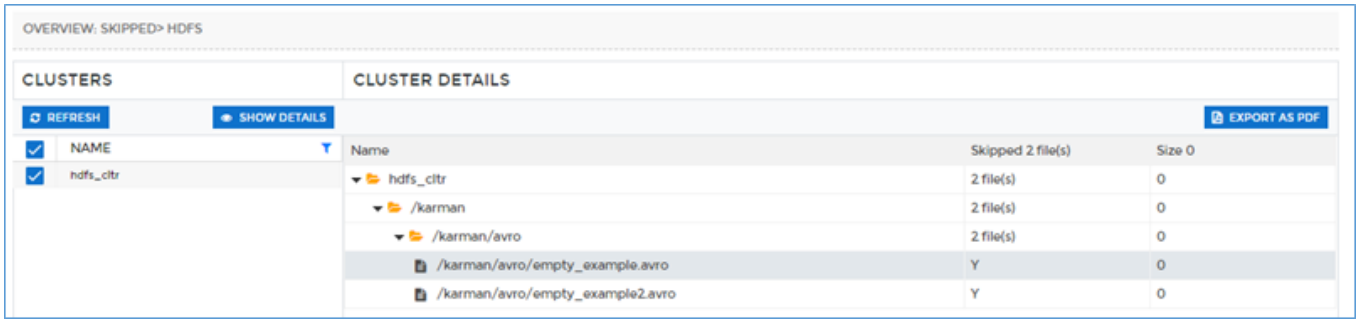
133. The sixth chart indicates the percentage of the skipped objects for each data source. This chart also displays the total size and count of the objects which are skipped.



Click the chart to view the size and count of objects skipped in each data source. The screen will display the size and count for each data source in which objects were skipped.



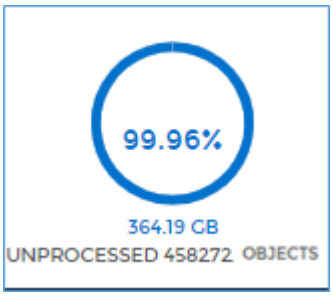
To view the complete details for each data source, click the data source name and **Details** screen will appear.



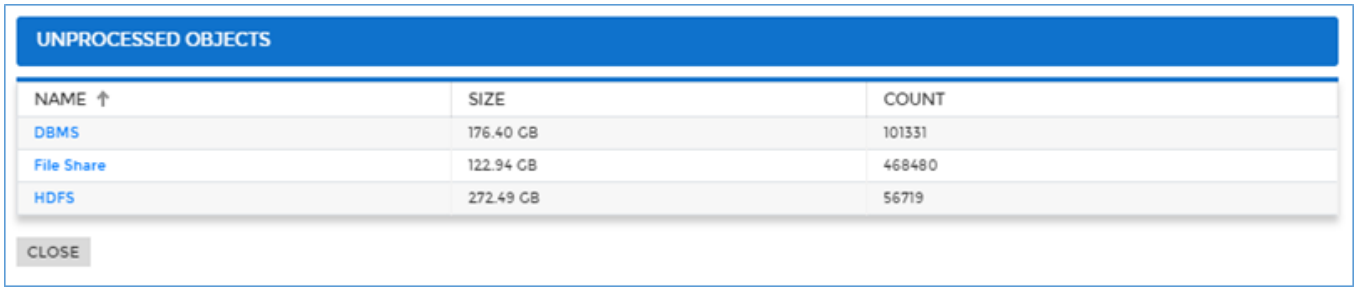
The **Details** screen will display information of the all skipped objects along with the size for the selected data source.

To download the report in PDF format, visit Export as PDF.

134. The seventh chart indicates the percentage of the unprocessed objects. This chart also displays the total size and the count of the objects which are marked as unprocessed.



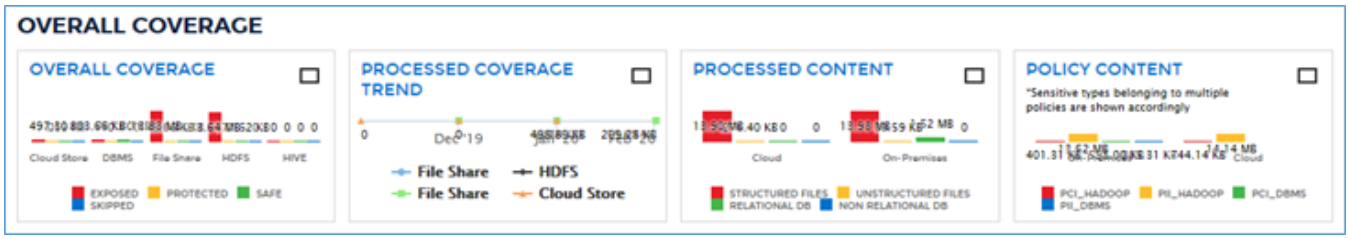
Click the chart to view the details for each data source. This screen will display the total size and count of unprocessed objects for each data source.



To view the in-depth details for each data source, click the data source name and the **Server Details** screen will appear.

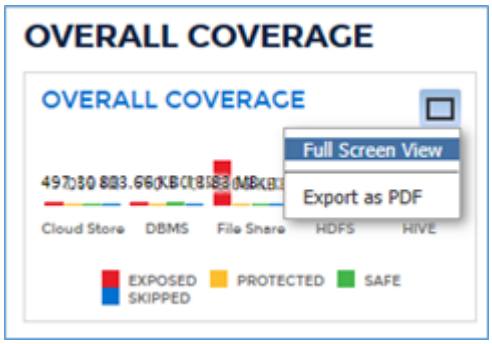
To view the the total size and count of Sensitive Type discovered for the selected server/cluster name, check the checkbox next to the server/cluster name. Click **Show Details** button. This will display the size and count of sensitive type in the **Server/Cluster Details** panel.

Overall Coverage

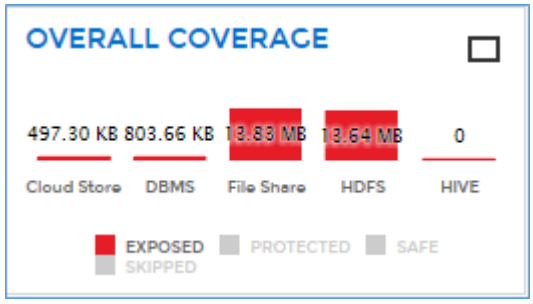


The **Overall Coverage** section displays the information in four different charts. This section offers an insight of the sensitive data based on the different dimension such as Content Type, Policy, Coverage Trend based on the data sources and Overall Coverage graph showing whether data in the objects were Exposed, Protected, Safe or Skipped.

Click on the box provided on the top right corner of each graph, to view it in the full screen as well as to download the graph in PDF format.

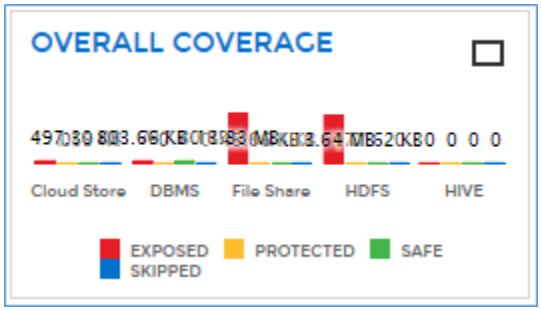


Click on the chart legend mentioned on the bottom of the chart, to view data for specific dimension.

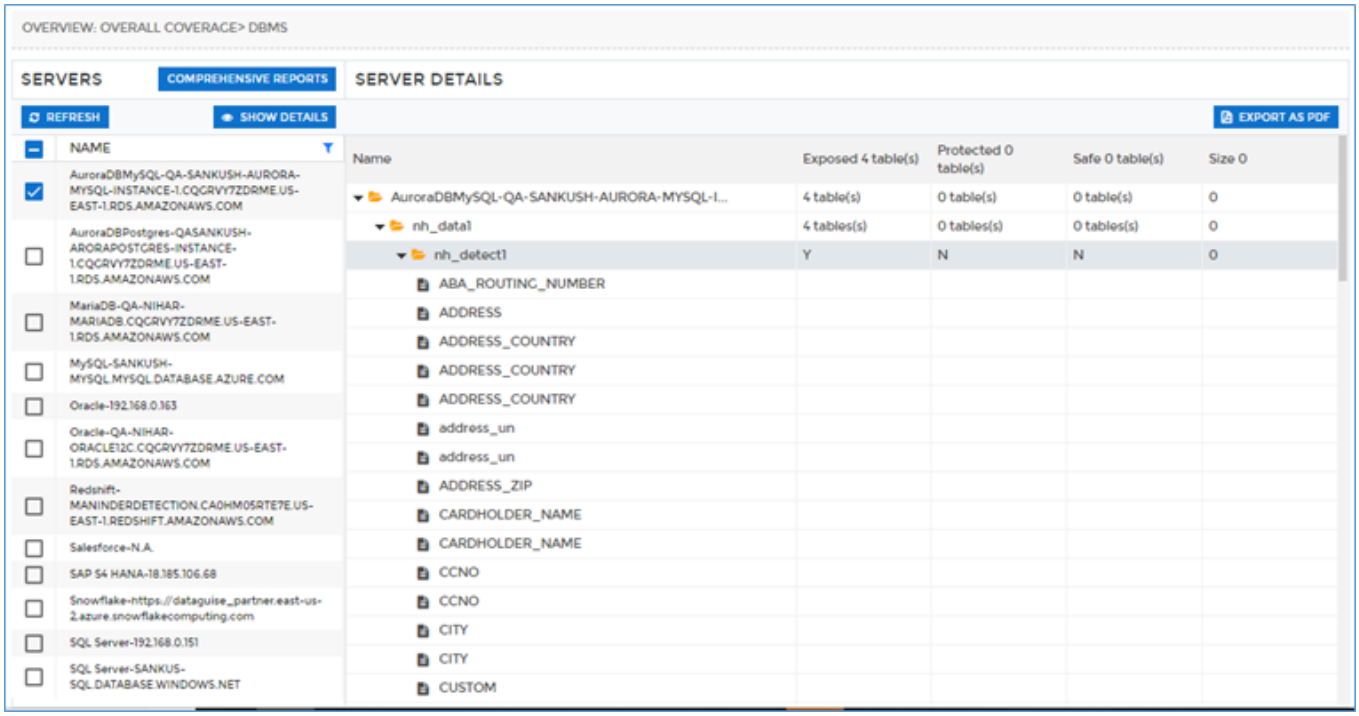


For example, in the above screenshot the you can view data for Exposed chart legend. Since Protected, Safe and Skipped has been hidden.

1. The **Overall Coverage** graph display size of the objects in each data source which are Exposed, Protected, Safe and Skipped.



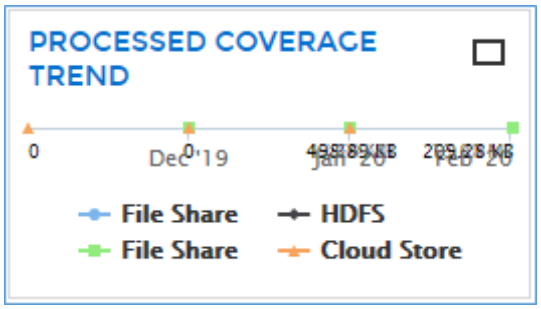
To view the complete details of all the tables/files that are marked as Safe, Protected, Exposed or Skipped, click the chart and the **Details** screen will appear.



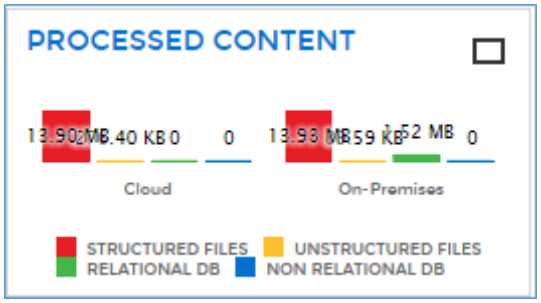
This screen will display the name of all tables/files, size of table/files and the information in form of 'Y' (yes) or 'N' (No) whether the file was marked as Safe, Exposed, Protected or Skipped.

To download the report in the PDF format, visit Export as PDF.

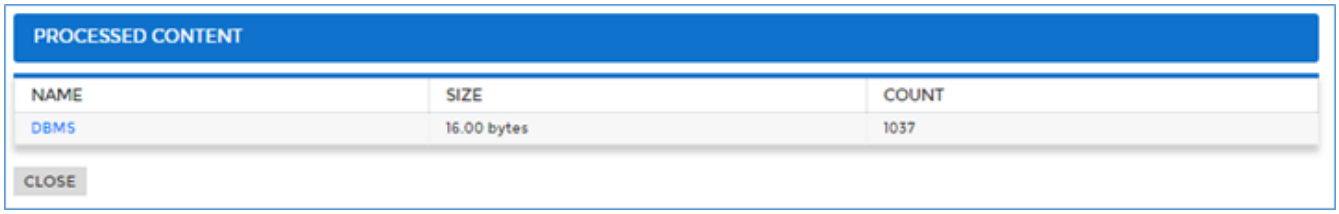
135. The Processed Coverage Trend graph displays the information about the data processed in the specific time i.e. month wise. This chart displays the total size of the tables or files and the month on which the processing was done.



136. The Processed Content graph shows the breakdown of the data processed based on the schema. This chart categorizes the data based on the schema i.e. structured, unstructured files and relational, non-relational databases.



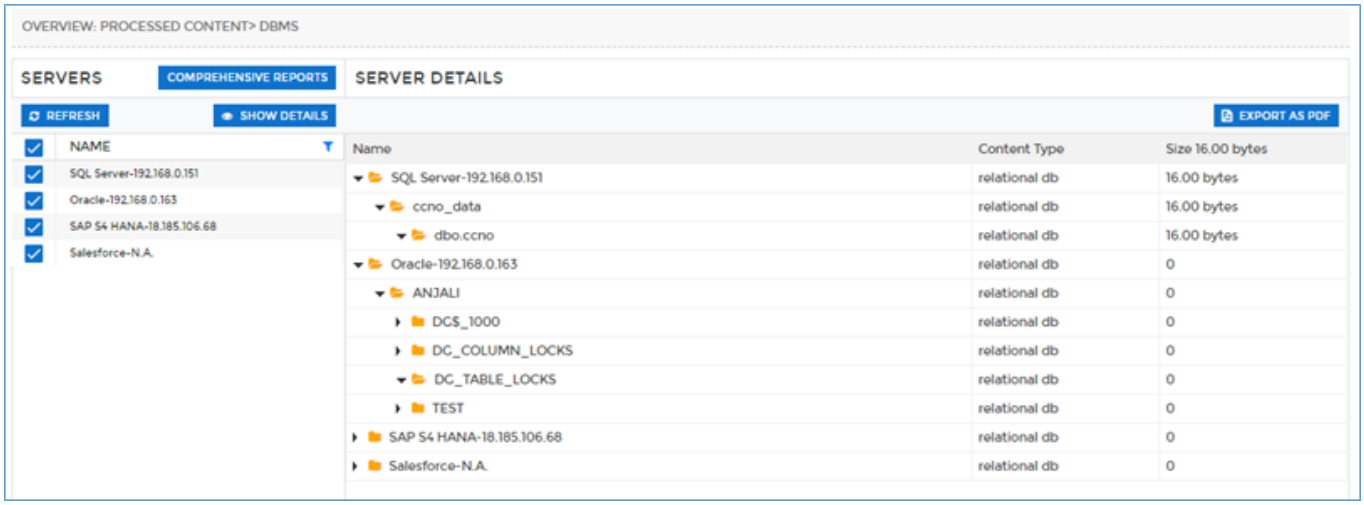
To view the size and count of the processed data based on the schema, click the chart. It will display the information for the processed content based on the selection.



E.g. The above screenshot displays the information of the processed content for structured files in Cloud Store and File Share when clicked on the structured files bar chart.

To view the complete details for each data source, click the data source name. It will display

the **Details** screen.

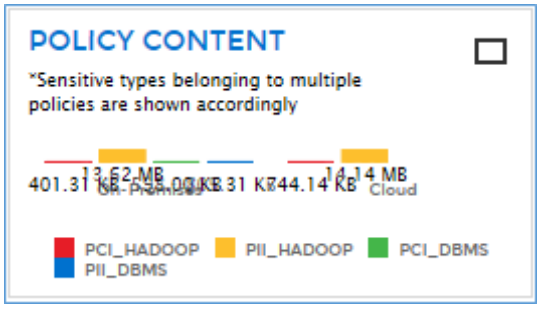


This screen will display information for the selected data source along with the Content Type and Size of the file/table. The **Comphrensive Reports** are available only for DBMS data source. To access **Comprehensive Reports** screen, click the **Comphrensive Reports** button in the left side panel.

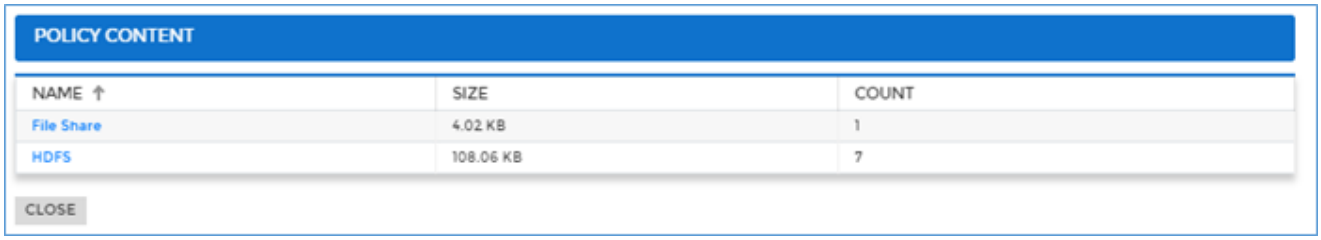
To know more information for **Comphrensive Reports**, visit Comprehensive Reports.

To download the report in the PDF format, visit Export as PDF.

137. The Policy Content graph shows the breakdown of the content based on the different policies. It displays the size of the sensitive types belonging to multiple policies and data sources.

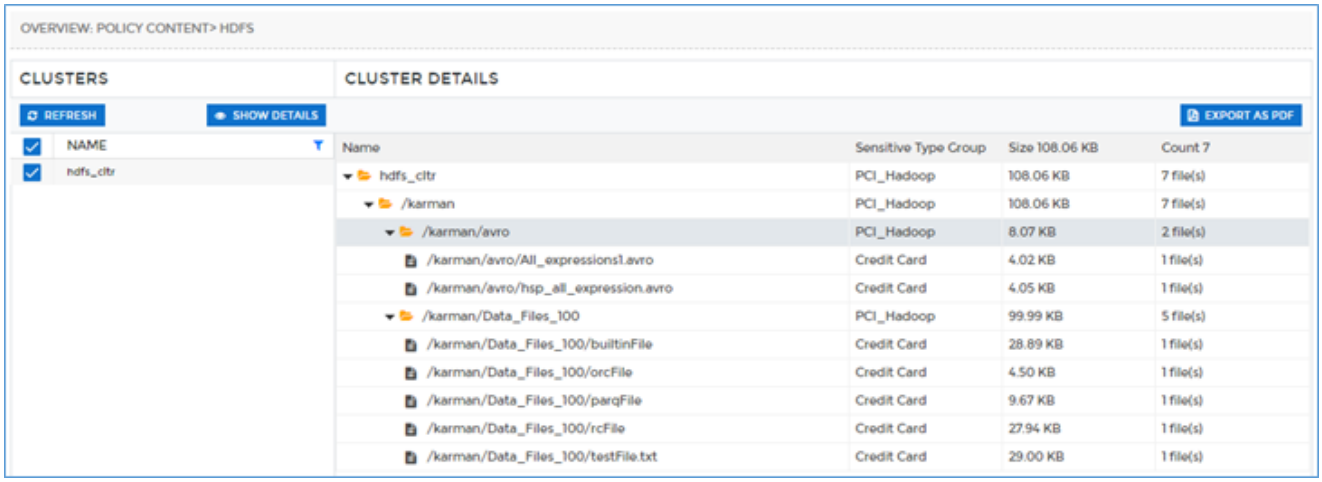


To view the size and count of the Policy Content on the basis of different data sources, click the chart.



The screen displays the total count and size of the tables/files across each data sources name. E.g. in the above screenshot displays the information of the policy content for PII Hadoop in HDFS and File Share.

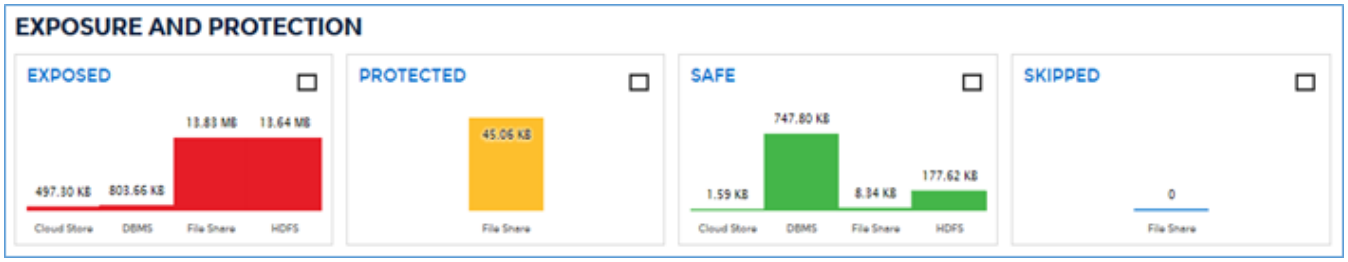
To view the complete details for each data source, click the data source name. It will display the **Details** screen.



This screen will display information for the selected data source along with the content type, size of the file or table and the Sensitive Type group it holds.

To download the report in the PDF format, visit Export as PDF.

EXPOSURE AND PROTECTION



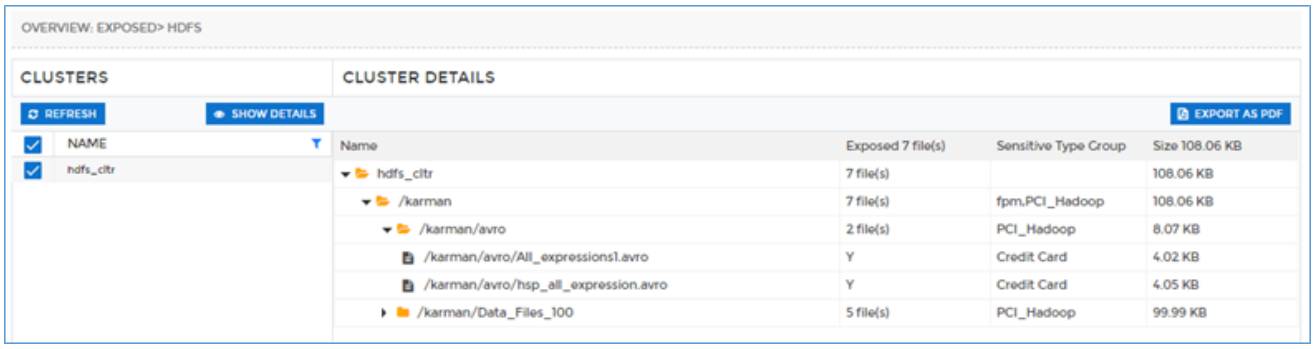
The **Exposure And Protection** graphs break down the objects based on the sensitive data in them. It provides information whether the sensitive data has been **Protected** (masked or encrypted), **Exposed** (detected but unprotected), **Skipped** or marked **Safe** in the objects.

Click on the **Legend** for each chart to hide or unhide the selected data in the graph.

1. The Exposed graph displays the size of the exposed objects. This graph depicts that during the scanning of the data source how much sensitive data has been detected and is exposed.

E.g., in the above screenshot 497.30 KB of Sensitive data in Cloud store is marked as unsafe. Similarly, the data for other three data sources have been displayed in the graph.

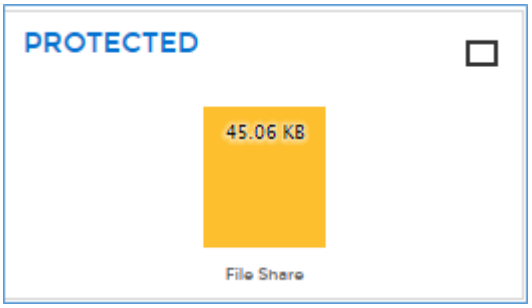
To view the complete details for selected data source, click the data source name. It will display the **Details** screen.



This screen will display the information for the selected data source along with the Exposed File column specifying the number of tables or files exposed and the name of the sensitive type group which is marked as 'Y' for being exposed or unprotected.

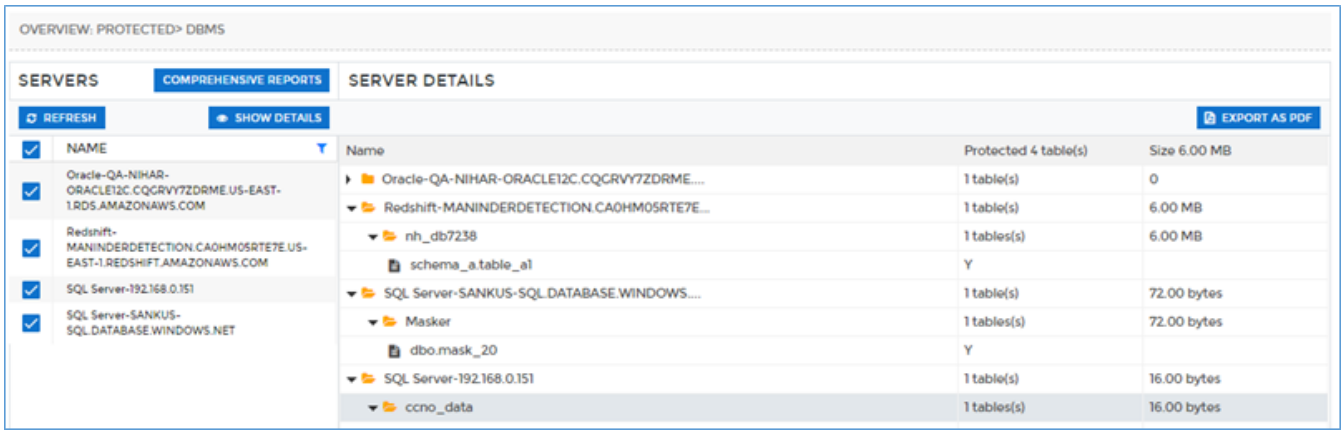
To download the report in the PDF format, visit Export as PDF.

138. The Protected graph will display the total size of the objects which are marked as protected.



E.g., in the above screenshot the total of 45.06 KB of objects is Protected i.e. either masked or encrypted.

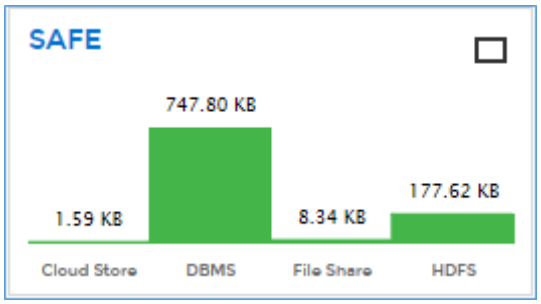
To view the complete details for selected data source, click the data source name. It will display the **Details** screen.



This screen will display the information for the selected data source along with the Protected File column specifying the count of tables/files and the size of each file marked as 'Y' (yes) which depicts that the file is protected.

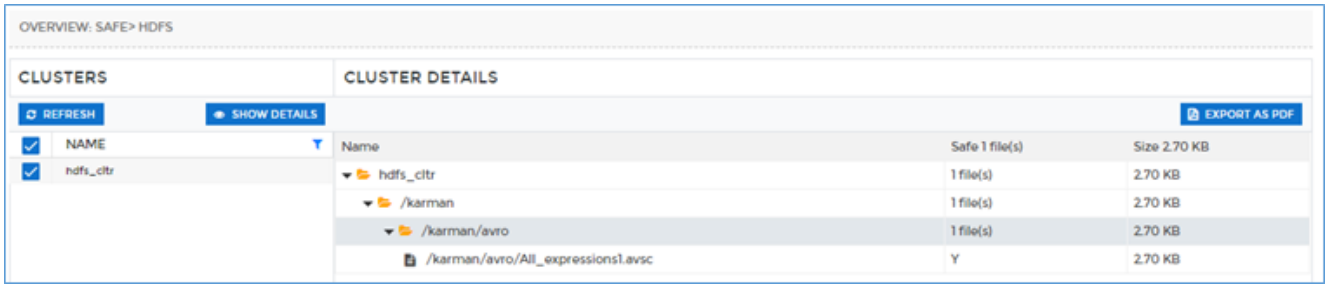
To download the report in the PDF format, visit Export as PDF.

139. The Safe graph will display the total size of the objects which are marked as Safe.



E.g., in the above screenshot the total of 747.80 KB of objects in DBMS is marked as Safe. Similarly, the objects for other three data sources can be seen in the graph such as 1.59 KB for Cloud store, 8.34. KB for File Share and 177.62 KB for HDFS are marked as Safe.

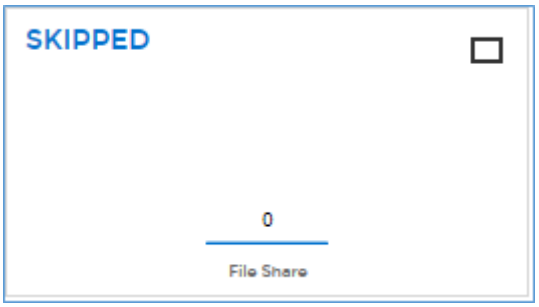
To view the complete details for selected data source, click the data source name. It will display the **Details** screen.



This screen will display the information for the selected data source along with the Safe File column containing the total count of tables/files and the size of each file marked as 'Y' (yes) which depicts that the file is Safe.

To download the report in the PDF format, visit Export as PDF.

140. The Skipped graph display the total size of the objects for each data source that has been skipped. Any files/tables that have not been scanned is shown in the Skipped graph.



To view the complete details for selected data source, click the data source name. It will display the **Details** screen.

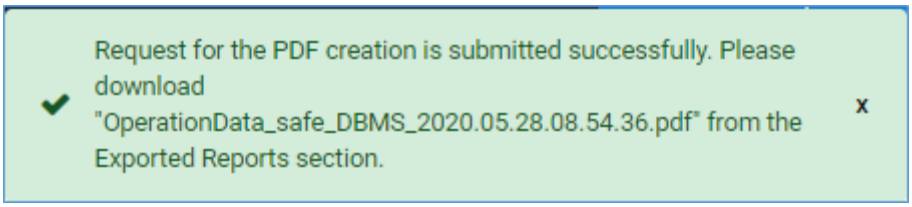
This screen will display the information for the selected data source along with the Skipped File column containing the total count of objects and the size of each file marked as 'Y' (yes) which depicts that the file is not scanned or have been skipped.

To download the report in the PDF format, visit Export as PDF.

10.1.1 Export as PDF

To download the report in PDF format, perform the below steps:

1. Click the **Export as PDF** button. A pop-up with the PDF file name will appear on the screen.



141. To download the generated PDF report, visit Exported Reports.

10.2 Periodic Reports

The **Periodic Reports** provide details about the scanned data sources that how much sensitive data has been exposed, protected, and safe for a specific duration. These reports display the size and count of the sensitive data detected for different source types over a defined period of time.

***Note:** By default, only Admin can access the **Reports** section. You can provide rights to other users for accessing the **Reports** section through, **User Management > Roles > Edit Product Access Permissions** option in DgAdmin.

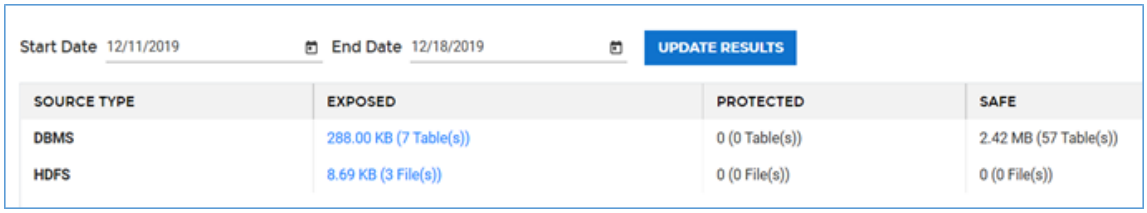
To know more, visit section **6.1.5. Manage Roles and Permissions**.

To access **Periodic Reports**, click **Reports > Periodic Reports.** Perform the following steps to generate a Periodic Report:

1. Enter the **Start Date** and the **End Date**. By default, the **End Date** will be the current date and the **Start Date** will be 7 days prior to it. You can modify both the dates.

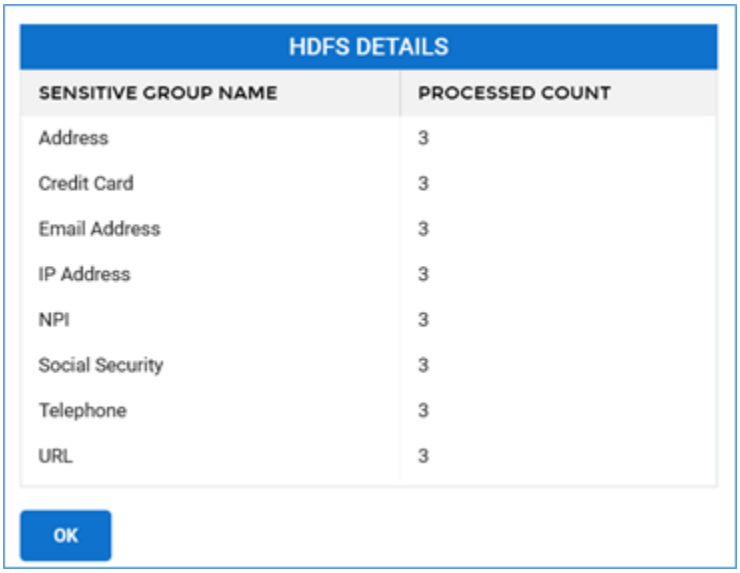
142. Click Update Results .

143. The reports for the specified period of time will display:



To view the sensitive groups that has been detected, perform the steps:

1. Click on the link under the **Exposed** field to view the sensitive group details for the correspondng source type. A popup appears:

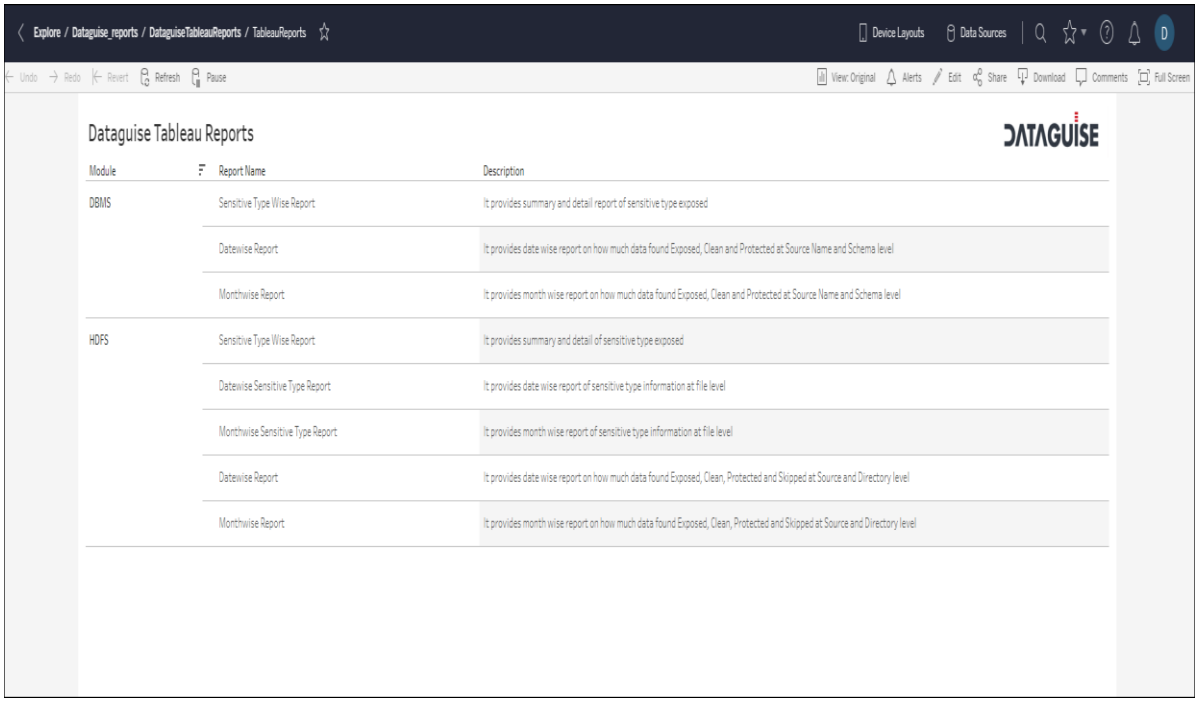


This dialog box lists all the names of the Sensitive Groups and the total count of the sensitive data detected within each group for the selected Source Type.

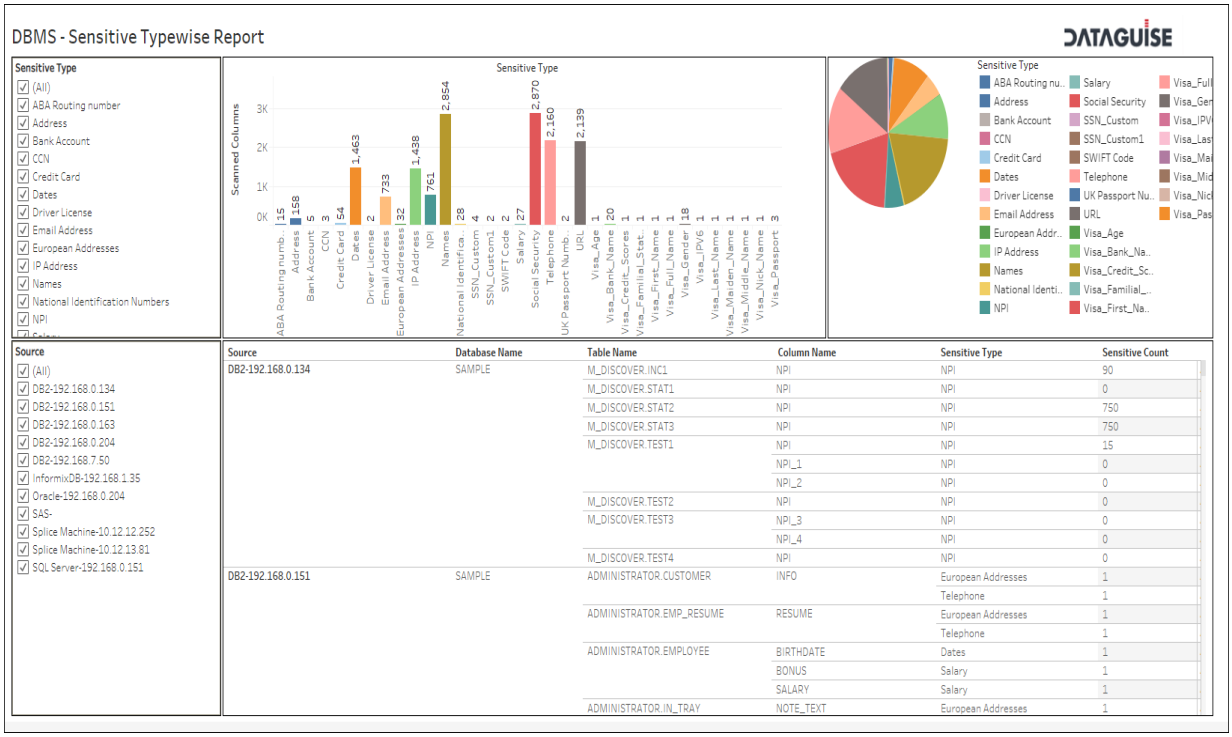
2. Click **OK** to close the pop up.

10.3 Tableau Reports

Go to DgSecure> Reports> Tableau Reports, to view detailed Tableau Reports. You will be logged into Tableau and see the screen below:



Click on the Report Name to view it. For instance, a Sensitive Type Wise Report for DBMS would appear as follows:



A Tableau report offers more flexibility in terms of selecting any number of Sensitive Type or Source System to view detailed graphs in an easily understandable format.

10.4 GDPR View

GDPR View offers insight into the details of the data sources, RoA and RtE request status, and the information related to the alerts and the alert rules.

***Note:** By default, only Admin can access the **Reports** section. You can provide rights to other users for accessing the **Reports** section through, **User Management > Roles > Edit Product Access Permissions** option in DgAdmin.

To know more, visit section **6.1.5. Manage Roles and Permissions**.

Access the **GDPR View** screen from the menu under **Reports > GDPR View**.

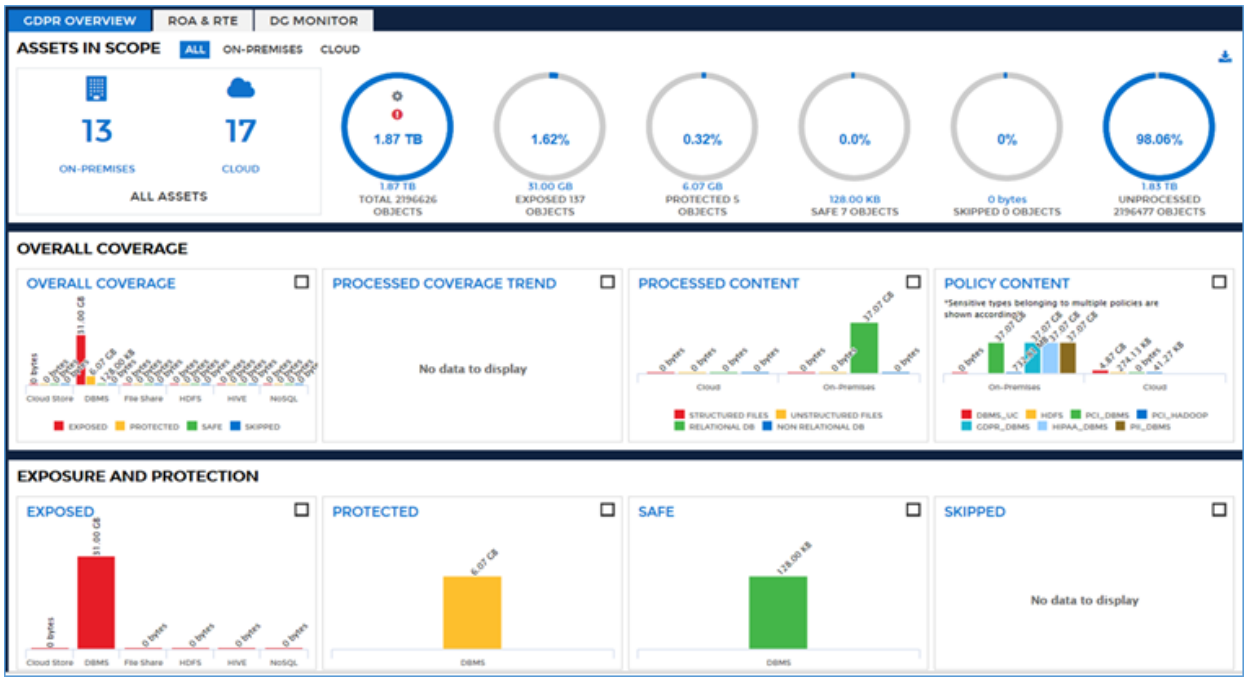
There are three tabs under GDPR View:

1. GDPR Overview
2. RoA (Right of Access) and RtE (Right to Erasure)
3. Dg Monitor

***Note:** If a user checks the **Include GDPR Dashboard View** checkbox on the **Policy> New Policy** tab, only then the data for that policy will be displayed under the **GDPR View** screen.

GDPR Overview

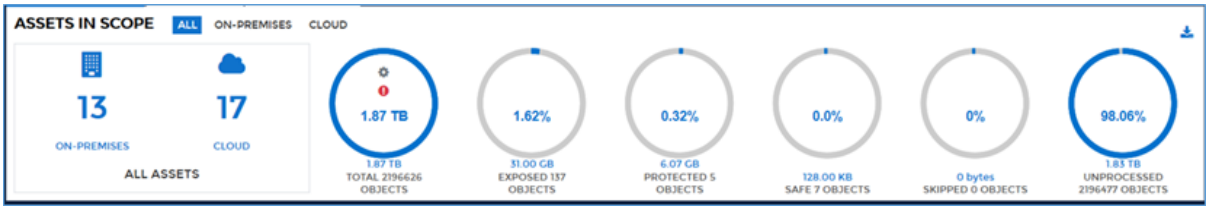
The **GDPR Overview tab** provides the complete details about the data sources.



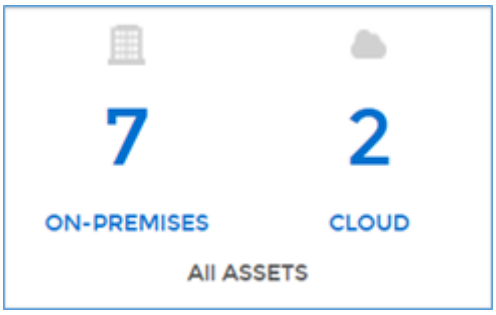
The charts in each row provide insight into the sensitive data status of different data sources. You can segregate the results for **All**, **On-Premises,** or **Cloud** data in the charts, based on the selection made at the top of the screen. Click  to download the **GDPR View** screen.

1. **Assets in Scope**

   This panel provides an overview of the complete data assets.

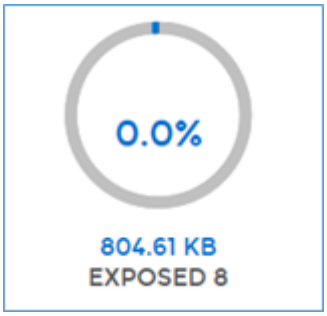


   a) The **All Assets** chart indicates that how many data assets are **On-Premises** and on the **Cloud**. Any AWS and Azure assets are considered in the cloud, while all other Hadoop and RDBMS assets are considered to be on-premises or in the cloud according to their designation. Hadoop location is set when setting up the cluster connection. RDBMS location is set when creating a database connection. One asset is equal to one Hadoop cluster or one database.

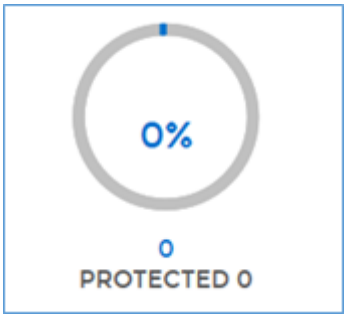


   144. The **Total** chart indicates the total number of the sensitive data discovered across all the data assets.
   To see what will happen on clicking the chart, view Server Details.

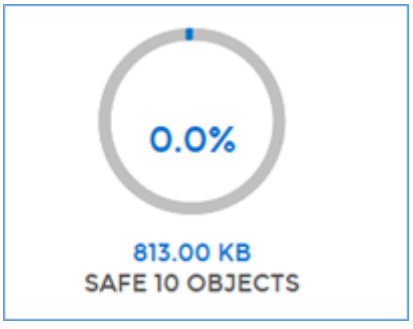
145. The **Exposed** chart indicates the percentage of the exposed files and tables that contain sensitive data.
To see what will happen on clicking the chart, view Server Details.



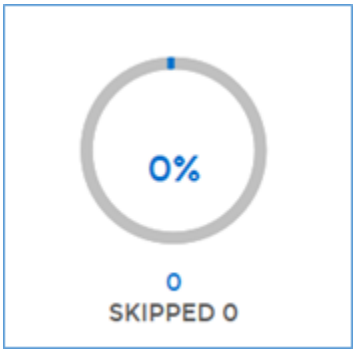
146. The **Protected** chart indicates the percentage of protected sensitive data sources that DgSecure has masked or encrypted.
To see what will happen on clicking the chart, view Server Details.



147. The **Safe** chart indicates the percentage of the safe objects within the assets.
To see what will happen on clicking the chart, view Server Details.

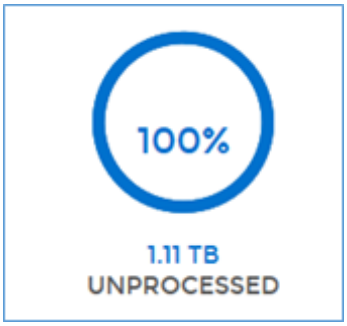


148. The **Skipped** chart indicates the percentage of the skipped objects.
To see what will happen on clicking the chart, view Server Details.



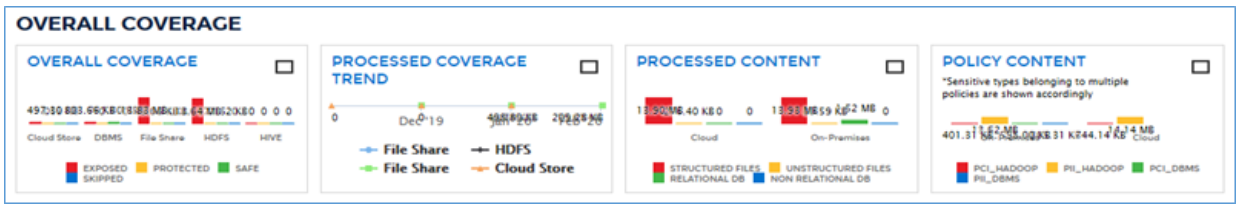
149. The **Unprocessed** chart indicates the percentage of **Unprocessed** objects.

To see what will happen on clicking the chart, view Server Details.

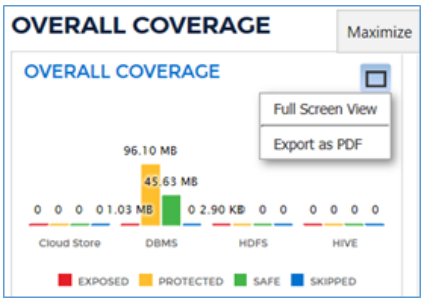


150. **Overall Coverage**

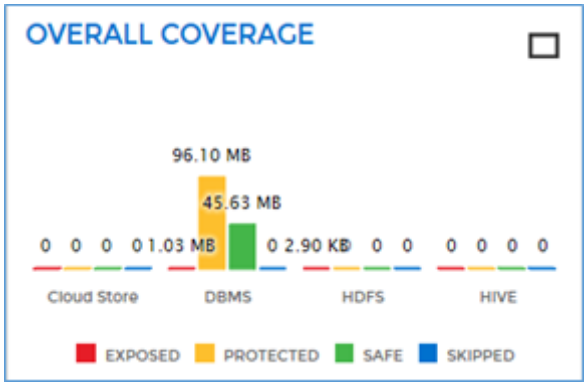
This panel offers insight into the sensitive data coverage across all the data assets.



Click on the rectangular icon shown in the top right corner of each of the graph to view it in the full screen as well as to download it in the PDF format.



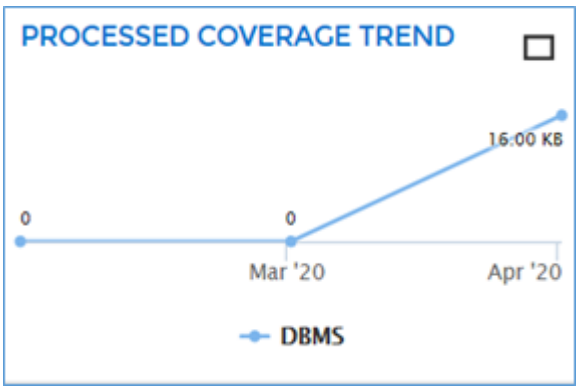
a) The **Overall Coverage** graph shows the number of tables and files involved in the coverage. The Sensitive data can be in any of the state i.e. **Exposed**, **Protected**, **Safe** and **Skipped**.



- **Exposed**: The Sensitive data which is not protected during the processing, is marked as Exposed.
- **Protected**: The Sensitive data which is encrypted or masked while processing, is categorized as Protected.
- **Safe:** The Sensitive data which is marked as safe in the Safelist and the data which is already protected, is marked as Safe.
- **Skipped:** The data which were skipped during the processing, is marked as Skipped.

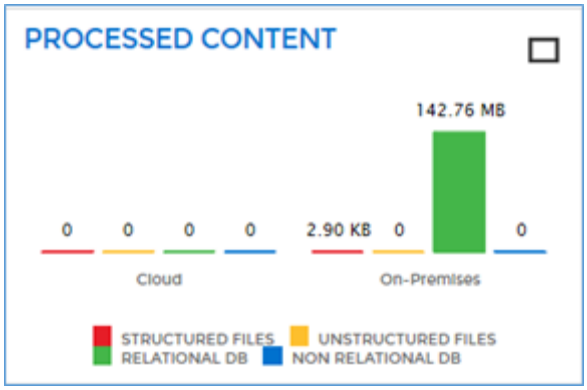
To see what will happen on clicking the graph, view Server Details.

151. The **Processed Coverage** graph shows the coverage trend of the Sensitive Data for different data sources.



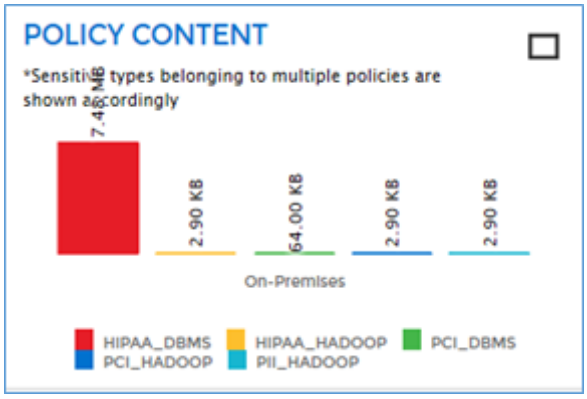
To see what will happen on clicking the graph, view Server Details.

152. The **Processed Content** graph shows the breakdown of the data based on the structured vs unstructured data and relational vs non-relational data sources.



To see what will happen on clicking the graph, view Server Details.

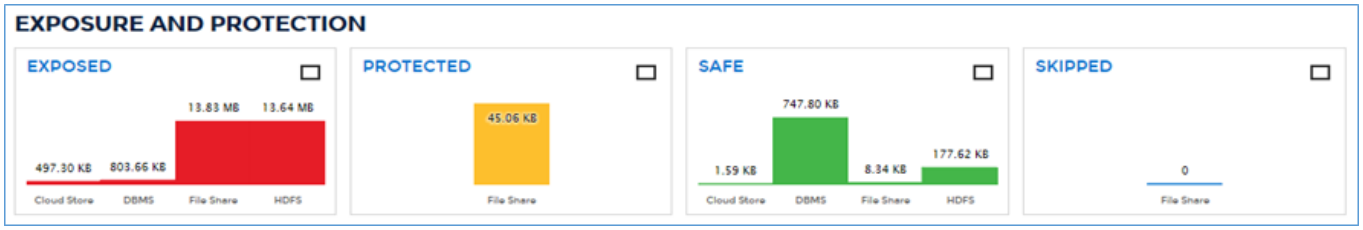
153. The **Policy Content** graph shows the breakdown of the data based on the different policies.



To see what will happen on clicking the graph, view Server Details.

154. **Exposure and Protection**

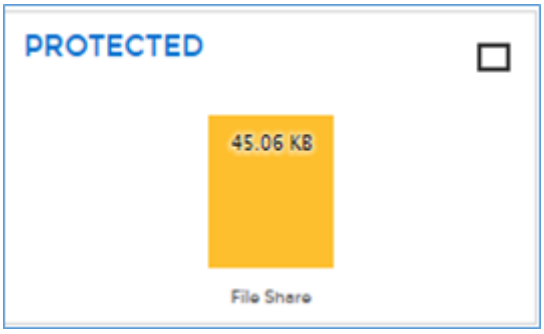
The **Exposure & Protection** graphs break down the data sources based on the Sensitive data in them. It provides information whether the Sensitive data has been **Protected** (masked or encrypted), **Exposed** (detected but unprotected), **Skipped** or **Safe**.



a) The **Exposed** graph displays information for the exposed data, data source-wise. This graph basically depicts that during the processing the sensitive data was detected which falls under the unprotected category i.e. Exposed.

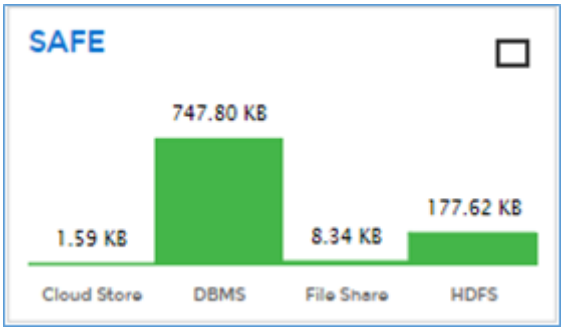
To see what will happen on clicking the graph, view Server Details.

155. The **Protected** graph displays information for the protected data which is either masked or encrypted, data source-wise.



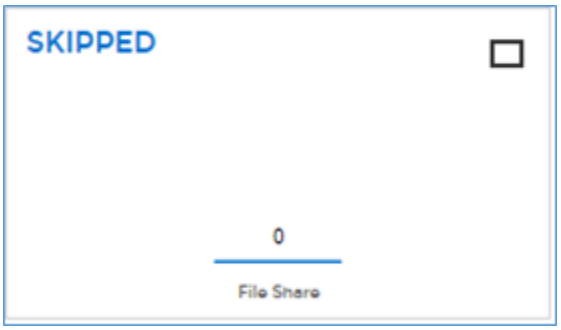
To see what will happen on clicking the graph, view Server Details.

156. The **Safe** graph displays information for the Sensitive data which are marked as Safe, data source-wise.



To see what will happen on clicking the graph, view Server Details.

157. The **Skipped** graph displays information for the Skipped data, data source-wise. Any files or tables that have not been scanned is shown in the Skipped graph.

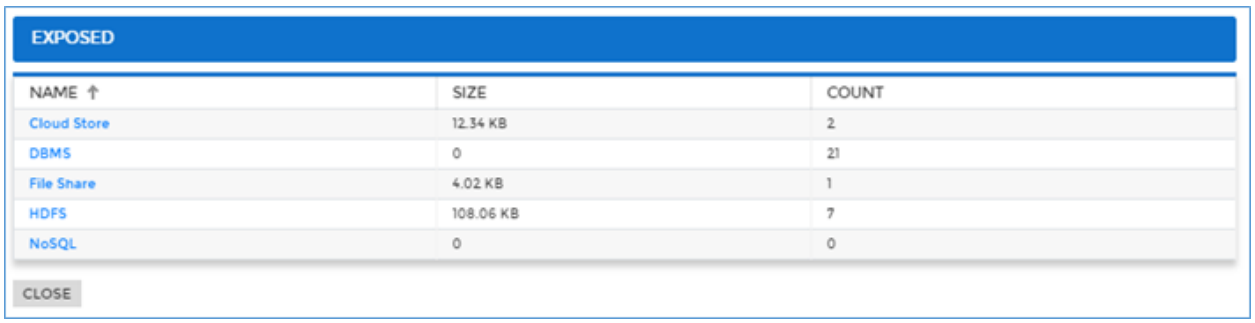


To see what will happen on clicking the graph, view Server Details.

10.4.1 Server Details

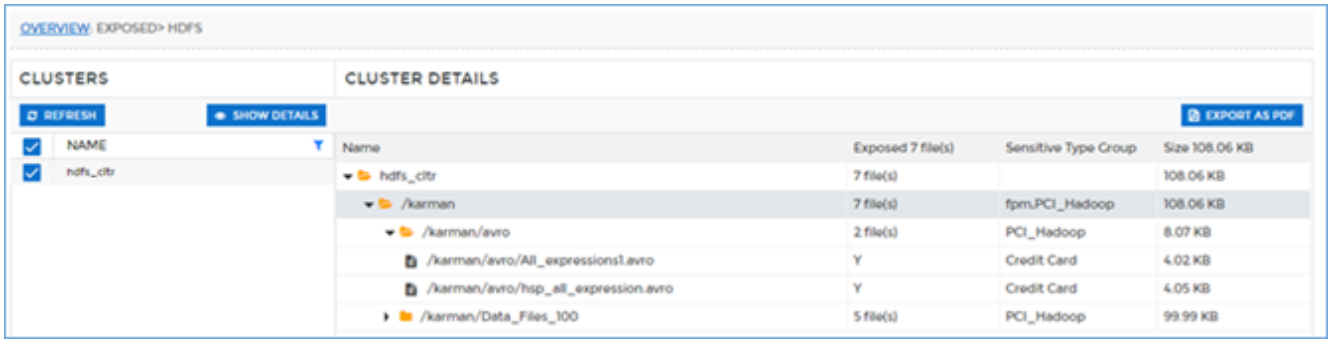
To view the **Server/Cluster Details** and to download the report, perform the following steps:

1. Click on the chart. A pop up will appear that displays total data details in a tabular form, data source-wise.



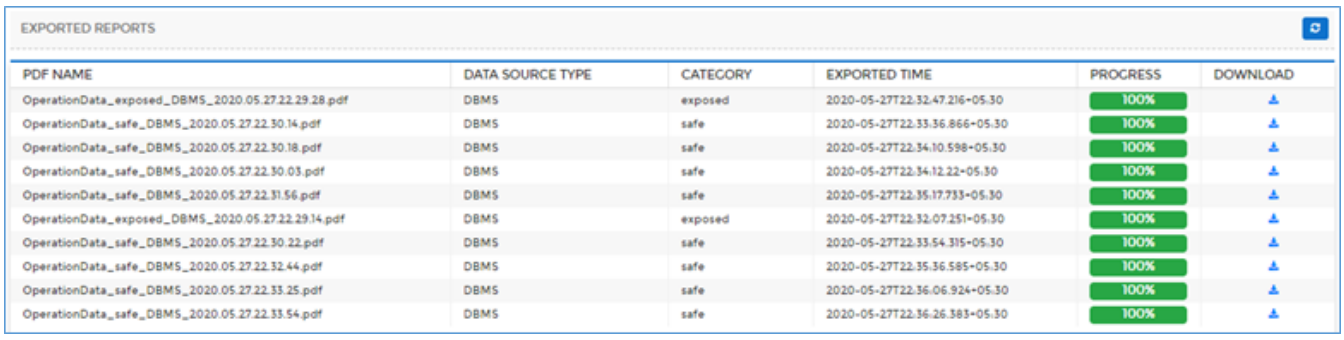
2. Click on the name of the data source to view the **Server Details** for the selected data source.

3. Check the checkboxes in the left panel listing the servers or clusters name to view the in-depth details, and click **Show Details**. The **Server Details** screen will display the server details as well as the table details.



4. Click **Export As PDF** export the report.

5. You can access the **Exported Reports** from the menu under **Reports > Exported Reports**.



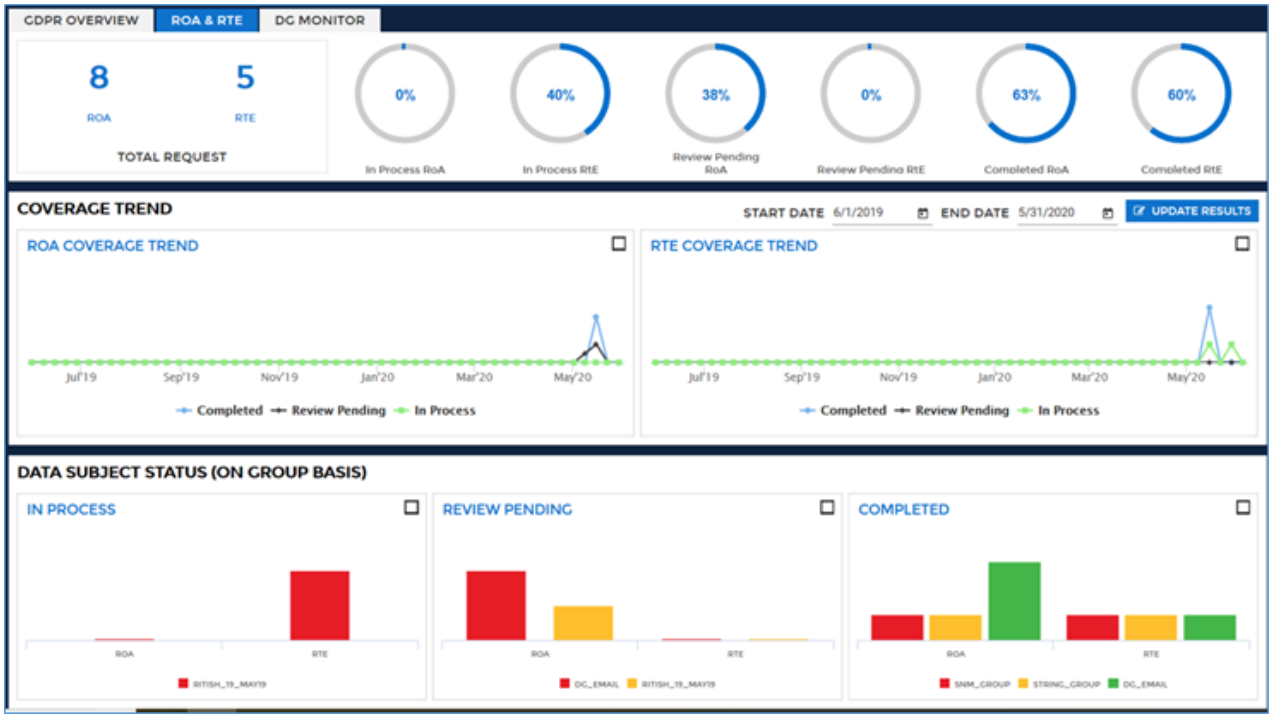
6. Click  in the **Download** column to download the report.

10.5 RoA & RtE

RoA and RtE screen provides insight into RoA and RtE request status. The screen is further divided into three panels:

1. Overview

    158. Coverage Trend
    159. Data Subject Status (On Group Basis)

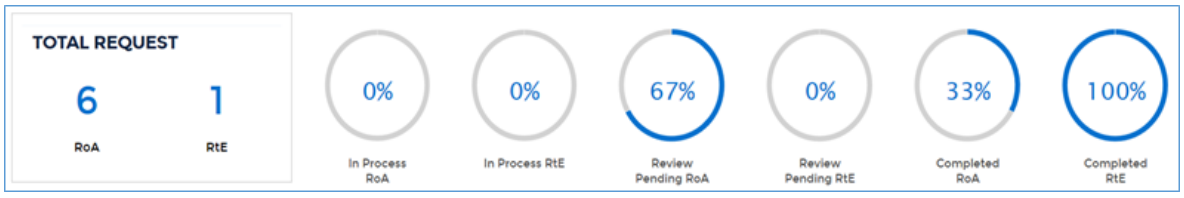


***Note:** By default, only Admin can access the **Reports** section. You can provide rights to other users for accessing the **Reports** section through, **User Management > Roles > Edit Product Access Permissions** option in DgAdmin.

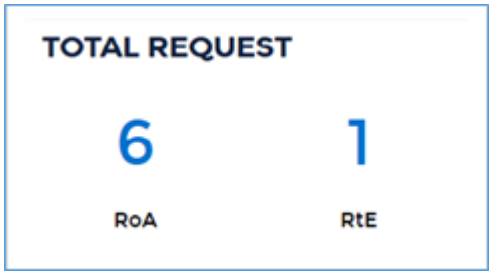
To know more, visit section **6.1.5. Manage Roles and Permissions**.

Click the menu under **Reports > GDPR View > RoA and RtE**.

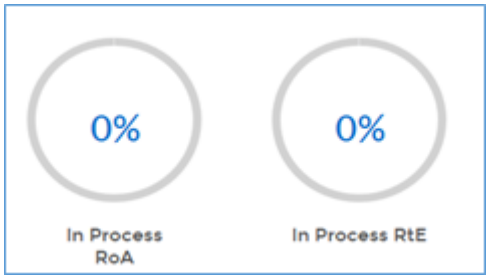
1. **Overview**
   The charts in this panel provide an overview of RoA and RtE requests.



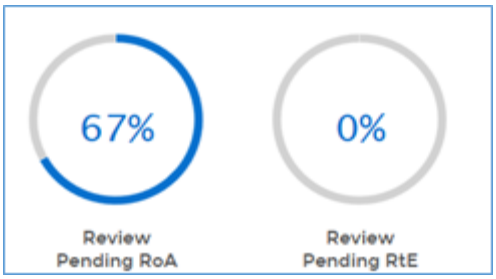
   a) The first chart indicates that how many data subjects have been submitted for RoA/RtE scan. The Right of Access (RoA) allows the data subject to retrieve their personal data, which the controller might have used or processed. The Right to Erasure (RoE) is also known as the Right to be Forgotten under GDPR. It allows the data subject to request the erasure of all their personal data being processed or stored, by a controller.



b) The second and third charts display the total percentage of data subjects are underIncoming status. Whenever a data subject is created and submitted for RoA/RtE scan, the data subject falls under **In Process** status.



c) The fourth and fifth charts display the total percentage of data which are awaiting for manual review.

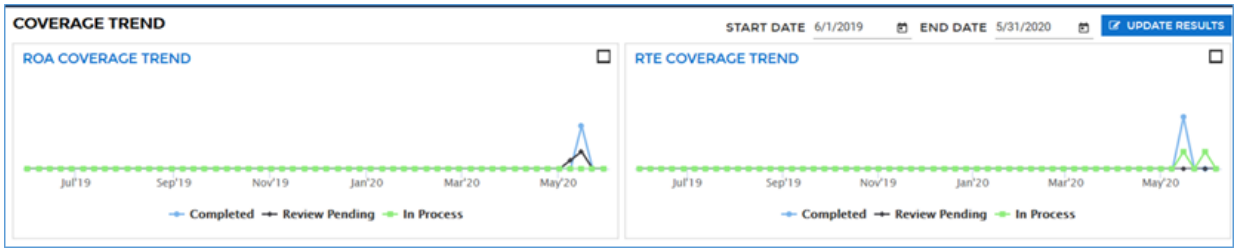


d) The sixth and seventh charts display the total percentage of data subjects under **Completed** status i.e. fulfilled the request.

160. Coverage Trend

The **Coverage Trend** panel offers insight about the number of requests having In Process, Review Pending, and Completed status. The information is displayed on the basis of **Start Date** and **End Date**. By default, the information is displayed for one year. You can modify both the dates. The difference between the start date and end date will remain one year. Click **Update Results** to get the updated result.

The first and second graph shows that how many requests were In Process, Review Pending, and Completed for RoA and RtE respectively for the dates that you have specified.



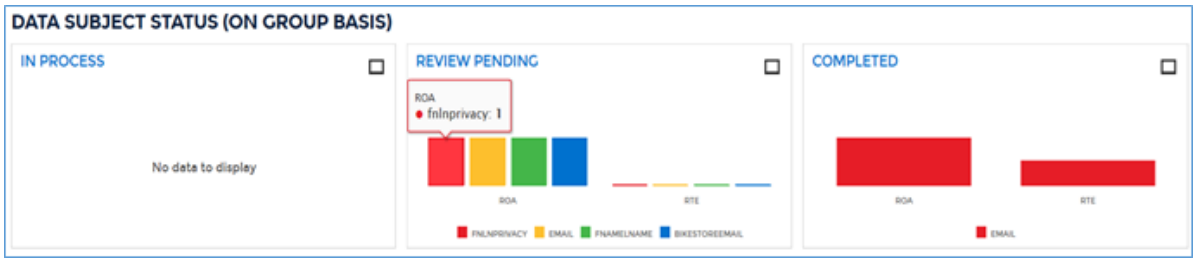
You can also maximize the graph by clicking on the rectangular icon displayed on the extreme right corner of both the graphs.

161. Data Subject Status (On Group Basis)

A data subject belongs to a data group. The rule specified in the group to which a data subject belongs decides the operation that has to be performed.

The graphs in the **Data Subject Status (On Group Basis)** panel show that how many data subjects for a specific data group are, In Process, Review Pending, and Completed status for RoA and RtE.

On hovering over any bar icon, you can see the name of the data group followed by the number of data subjects present in that data group for a specific status. All the data groups for which information is getting displayed, are listed at the bottom of each graph.



You can also maximize the graph by clicking on the rectangular icon displayed on the

extreme right corner of each graph.

10.6 DgMonitor

DgSecure detection tasks need to be run in order to identify where sensitive data resides. After executing the detection tasks, sensitive data can be located and monitored.

***Note:** By default, only Admin can access the **Reports** section. You can provide rights to other users for accessing the **Reports** section through, **User Management > Roles > Edit Product Access Permissions** option in DgAdmin.

To know more, visit section **6.1.5. Manage Roles and Permissions**.

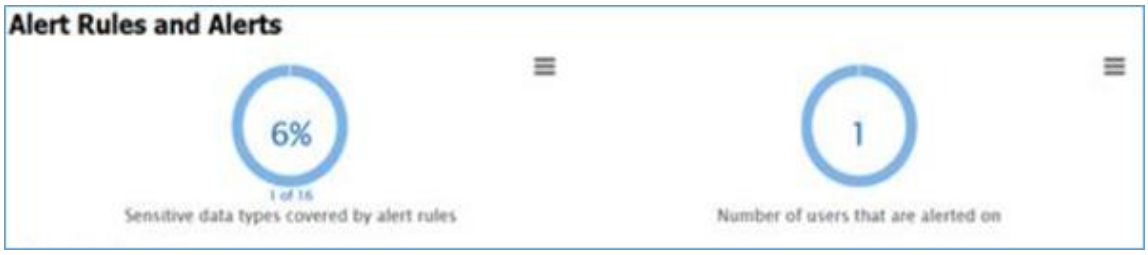
The **Dg Monitor** screen offers a birds-eye view of the current monitoring statuses of known sensitive data.The screen is divided into three panels:

1. Alert Rules and Alerts
    162. Alert Rules
    163. Alert Issued/24HRS

Access the Dg Monitor screen from the menu under **Reports > GDPR View > Dg Monitor**.

1. **Alert Rules and Alerts**

This panel has two graphs. The first graph shows the percentage of sensitive data covered by the alert rules. Whereas, the second graph shows the number of people who trigger alert notifications.



2. **Alert Rules**

This panel contains two graphs. The first graph shows how many alert rules are defined for a specific source system. Whereas, the second graphs shows how many alert rules are defined for a specific compliance policy.

3. **Alert Issued/24HRS**

The panel has three graphs, which shows the number of alerts issued on compliance policies, source systems, and users over the past 24 hours respectively.

10.7 Comprehensive Reports

Comprehensive Reports provide information for various dimensions such as Sensitive Type, Servers, and Policies. An information is displayed in graphical representation. This screen

compares the following aspects of functions on DgSecure:

1. Total Count of Servers and Tables Scanned by DB Type

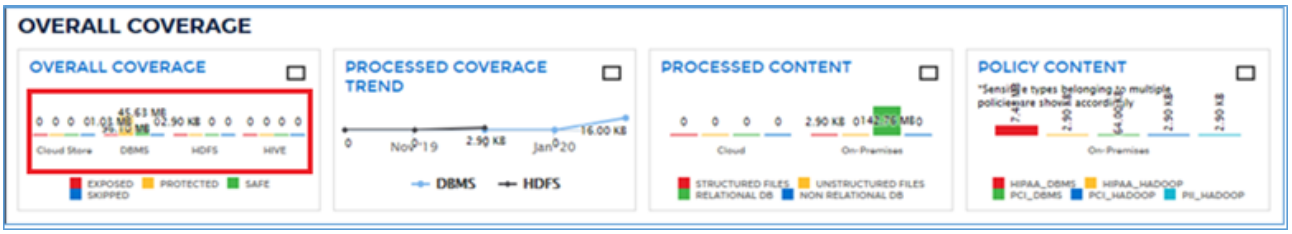
    164. Percentage of Tables Exposed by DB Type
    165. Percentage of Servers Scanned by DB Type
    166. Percentage of Tables Exposed by Sensitive Type
    167. Percentage of Tables Exposed by DB Type by Policy Type

***Note:** By default, only Admin can access the **Reports** section. You can provide rights to other users for accessing the **Reports** section through, **User Management > Roles > Edit Product Access Permissions** option in DgAdmin.

To know more, visit section **6.1.5. Manage Roles and Permissions**.

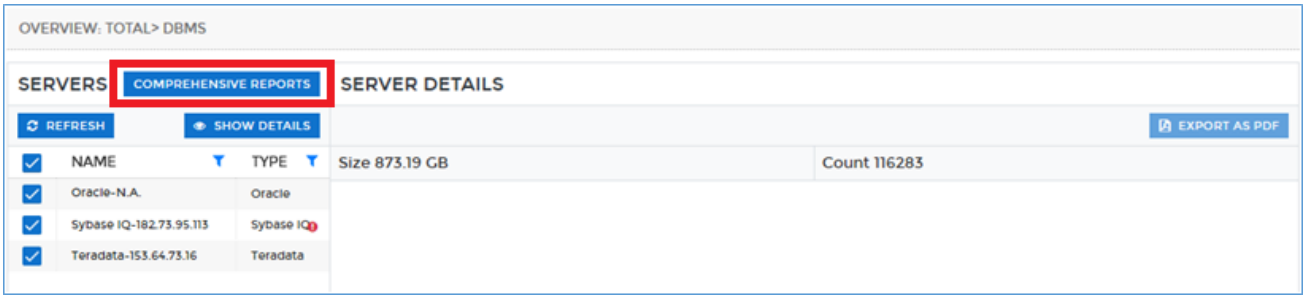
To access **Comprehensive Reports**, click **Reports > Overview**. Perform the following steps:

1. Click on the bar chart of **Overall Coverage** graph displayed on the **Overview** screen.



2. A screen containing information for server will be displayed. Click the **Comprehensive Report** button on top left corner of the screen.

***Note:** The name of the screen will vary depending on the selected data source. For example, Server Details name will be displayed if DBMS chart is selected. Similarly, the name will change to Cluster Details, if Hadoop chart is selected.

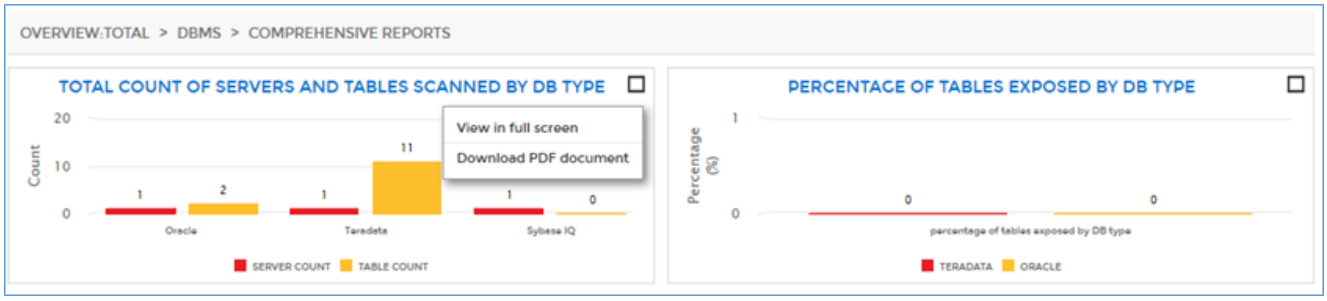


3. Click the **Comprehensive Reports** button and the **Comprehensive Reports** screen will appear.

4. To view a report in full screen or to download a report in PDF format, click Maximize option at the top right cornor of each graph.

   a) Click **Full Screen View** to maximize the selected graph.

   168. Click **Export to PDF** if you want to download the report.



10.8 Audit Reports

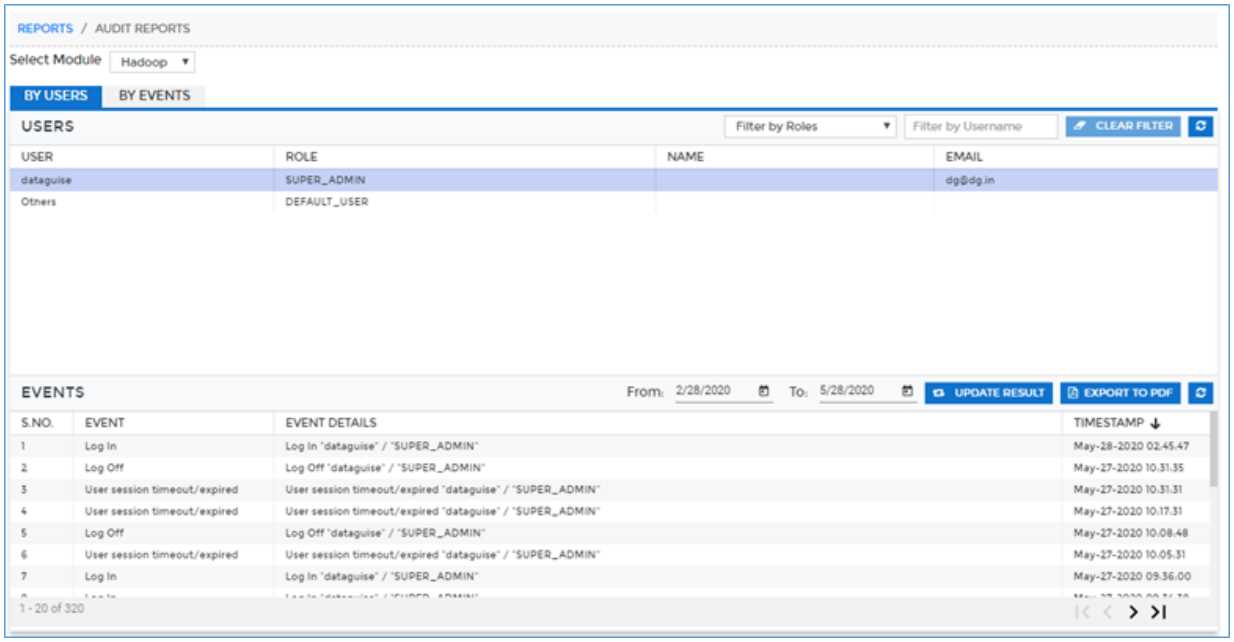
The Dashboard provides extensive reports of DBMS and Hadoop. The **Audit Reports Dashboard** allows you to view additional details based on the operations performed by each user such as who logged into the DgSecure application, which task was executed, when did user log off from the application, etc.

***Note:** By default, only Admin can access the **Reports** section. You can provide rights to other users for accessing the **Reports** section through, **User Management > Roles > Edit Product Access Permissions** option in DgAdmin.

To know more, visit section **6.1.5. Manage Roles and Permissions**.

The report provides extensive information for DBMS and Hadoop data source. The **Audit Reports** maintain a logs of all the accesses to DgSecure and the information based on the operations performed by each user.

Within one screen, you can view information either for DBMS or for the Hadoop based on the selection made in **Select Module** drop-down.



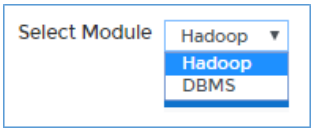
To access **Audit Reports**, click **Reports > Audit Reports** screen.

There are two types of **Audit Reports** based on which you can view information:

1. **By Users**: If you want to view the report for a specific User, click the **Reports > Audit Report > By Users** tab.

169. **By Events**: if you want to view report for any event within a specific date range, click the **Reports > Audit Report > By Events** tab.

Within one screen, you can view information either for DBMS or Hadoop based on the selection made in **Select Module** drop-down.



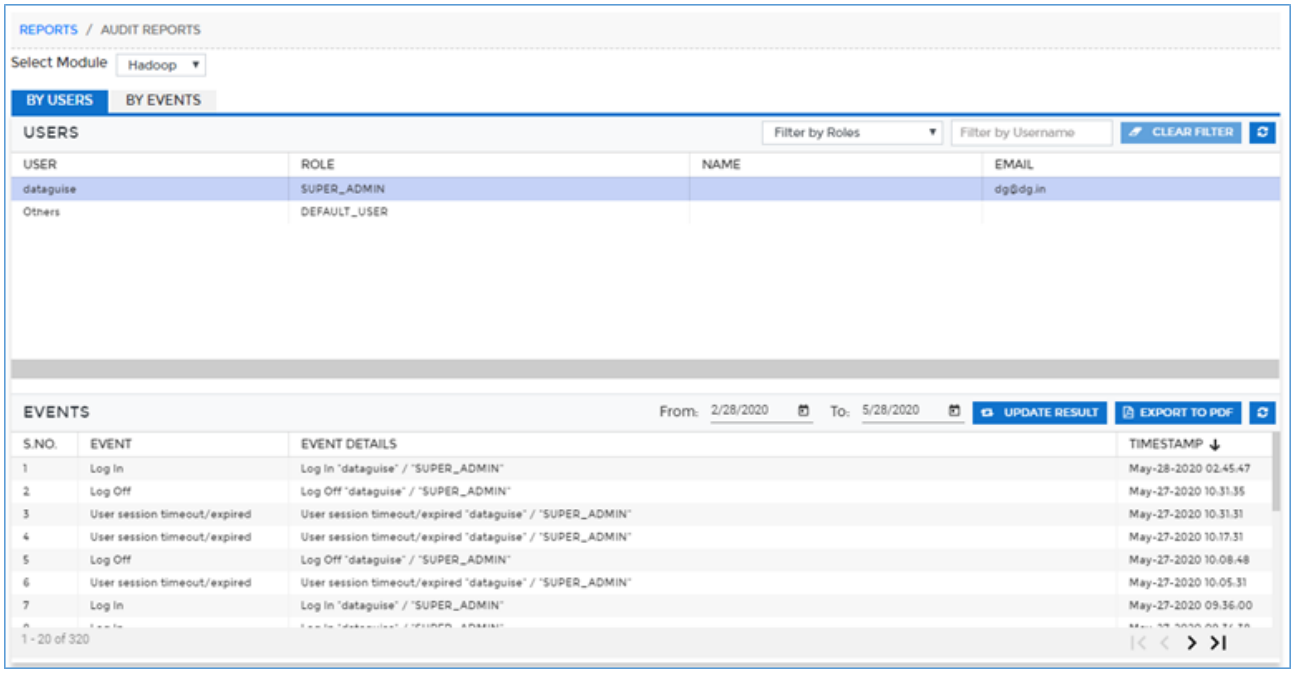
The screens are discussed below:

10.8.1 By Users

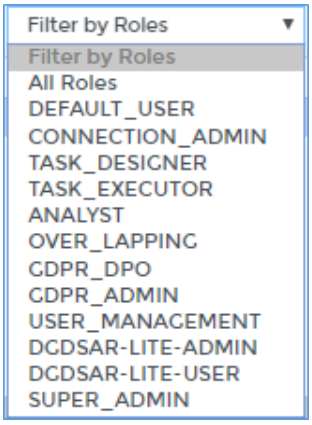
The **Audit Reports – By Users** screen is divided into two panels.

1. **Users** - This panel will display the list of all available user.

170. **Events -** This panel displays the list of all operations performed by a user selected in **Users** panel.

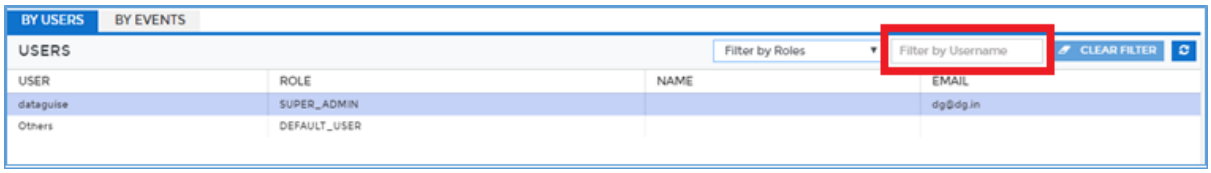


1. **Users**
   The **Users** panel allows you to filter the Events panel data based on the selected the user. This panel displays the information for selected user such as Name, Email and Role assigned to user, etc. The **Filter By Roles** drop-down allows you to select users based on which you can filter the information.



Similarly, you can also filter the **Events** panel by providing the User Name in **Filter by UserName** searchbox. To remove the applied filters, click **Clear Filter** button.

To refresh the **Users** panel with updated records, click  .



Perform following steps to view specific users or usernames:

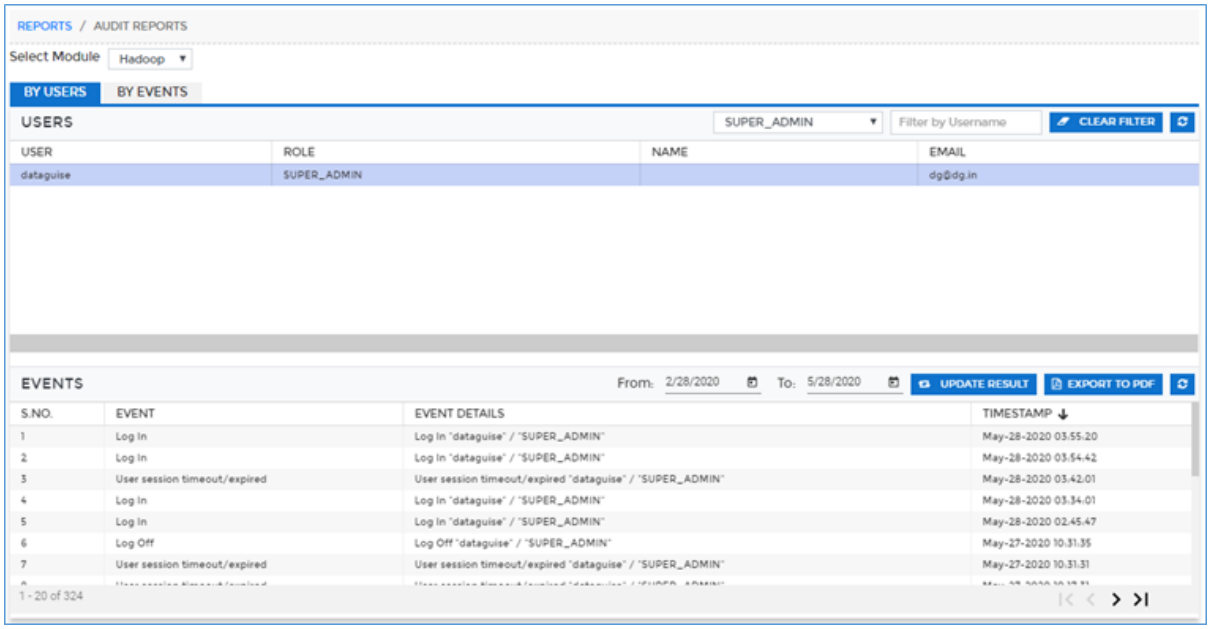
a) When you select the **By Users** tab. The **Users** panel will display the list of users and their role in **DgSecure**.

171. To view report for a specific role or a specific username in the **Users** panel. Select the role in **Filter by Roles** drop-down or enter the username in **Filter by Username** textbox.

The **Filter by Role** will display the result in **User** panel for the selected role. For **Filter by Username**, the **User** panel will display the data for the specific user entered in **Filter by Username**.

172. Select the user in the **Users** panel and the **Events** panel will display events for the selected User.

173. You can also view **Events** for the selected user based on the date range defined in the **Date Filter.** Click  to update the results.



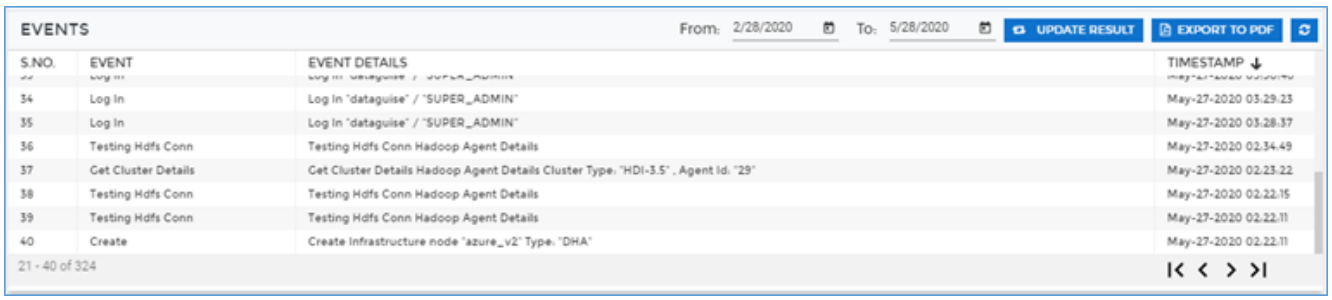
E.g., in the above image when SUPER_ADMIN role is selected in the **Filter by Role** drop-down. The **Events** panel is populated with all the operations performed by the SUPER_ADMIN.

174. Click **Export to PDF** button to generate a PDF format of the report.
175. Click **Clear Filters** to clear the results.

176. Events

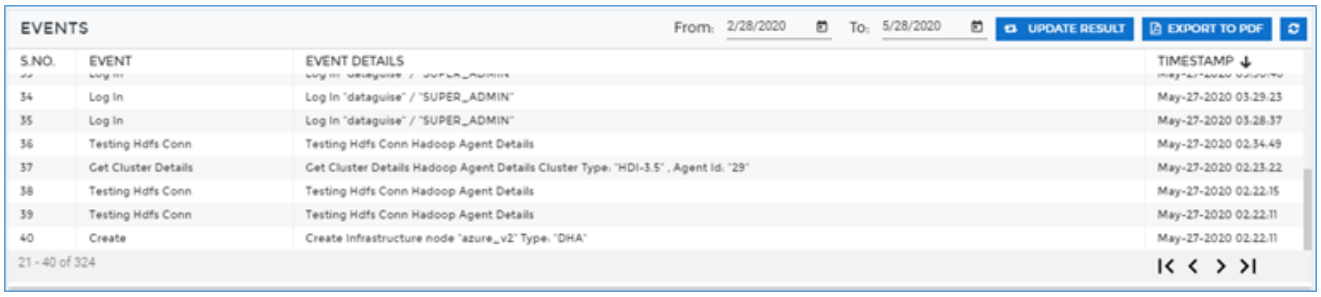
The **Events** panel allows you to filter the data for a defined time period. The **Events** panel will display all the operations performed by the user along with the **Timestamp** and **Event Details**.

Perform following steps to view specific event within a date range:



a) To modify the **Event** panel for any specific date range. Select starting date in **From** and end date in **To** drop-down.

177. Click the **Update Results** button to apply filters.



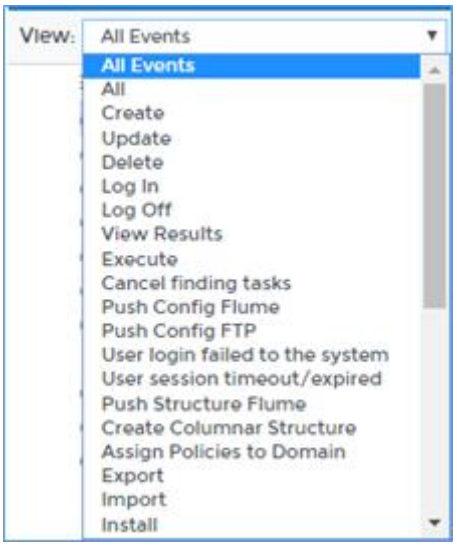
E.g., in the above image the **Events** panel displays the filter results for a given time period.

178. Click  button to update the Events panel with updated data.

179. Click **Export To PDF** button if you want to download the data.

10.8.2 By Events

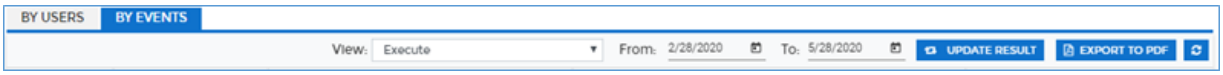
The **Audit Reports – By Events** screen allows you to filter data for a defined time period. The **Events** screen will display all the operations performed by the user along with the **Timestamp** and **Events Details**. You can also filter the data by selecting a specific event in **View** drop-down. There are around 35 pre-defined events for which you can filter out the data.



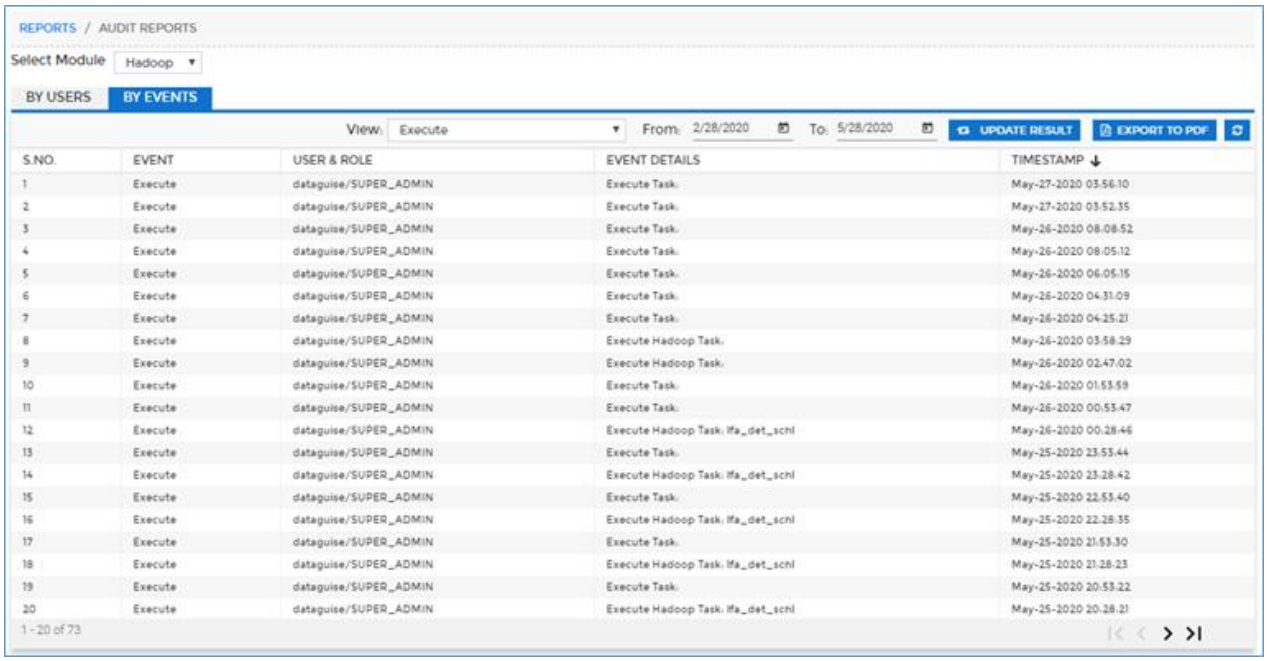
To view reports in **By Events** tab, perform the following steps:

a) Select the event in **View** drop-down.

180. Select the starting date range in **From** and end date in **To** drop-down or events in **View** drop-down. You can select either both the option or just one option from View and Date Range.



181. Click the **Update Result** button to apply the filters.
182. The **Events** panel will be updated for the defined time period or for selected events. It will display all the occurences of operations performed for a defined time period or for selected event specified in the top panel.

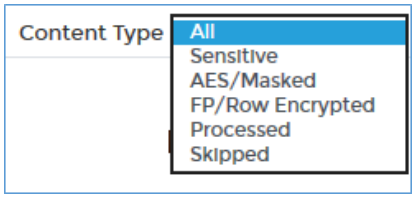


183. Click  button to updated the **By Events** tab with latest records.
184. Click the **Export To PDF** button to download the report in the PDF format.

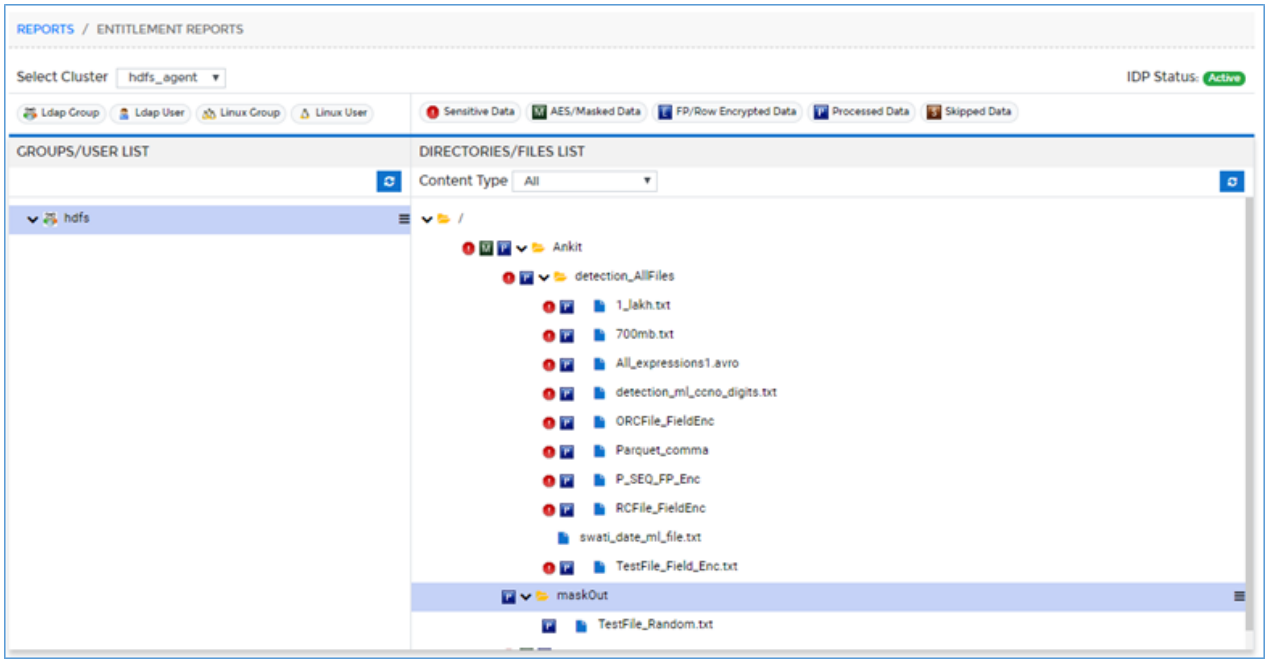
10.9 Hadoop

10.9.1 Entitlement Report

The **Entitlement Report** display the access rights for both specific user / group or directory / file. It also specifies the content type for a data stored in directory/file. A content type for a data stored in a file/directory can be Sensitive, AES/Masked, FP/Row Encrypted, Processed and Skipped.

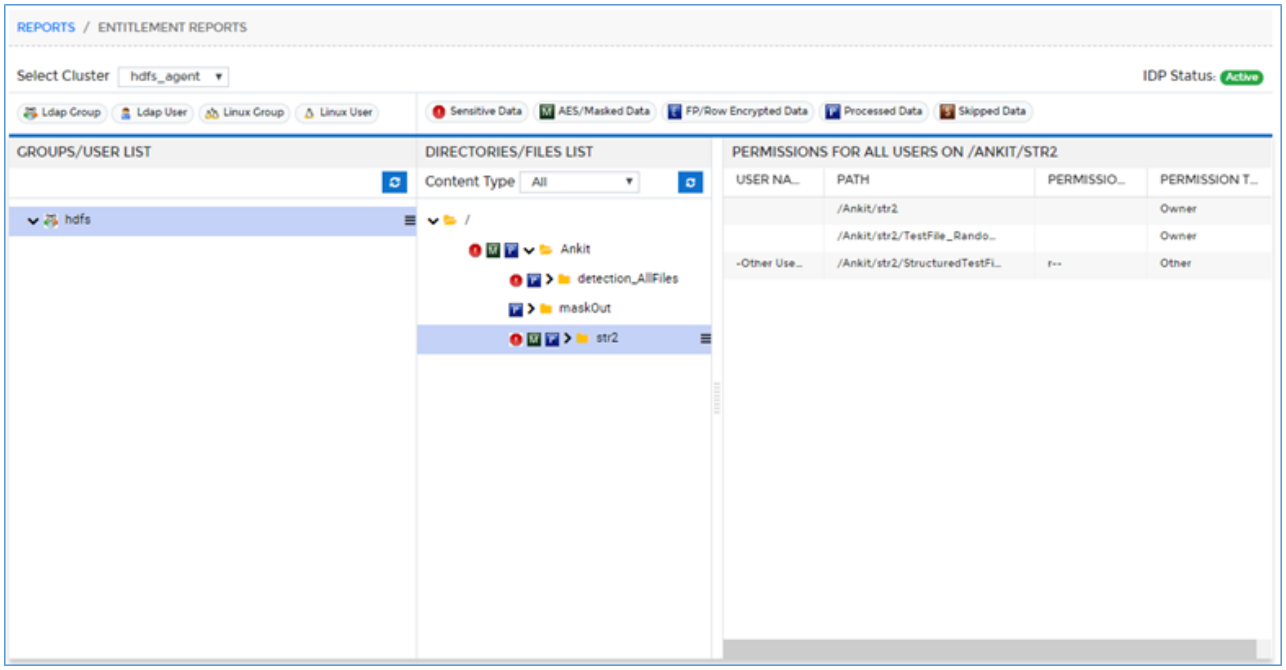


When **Entitlement Report** is processed for a specific user/group, this indicates what their access rights are for a specific file or directory. If it is processed on a directory/file, then it indicates the access rights for a specific user/group.



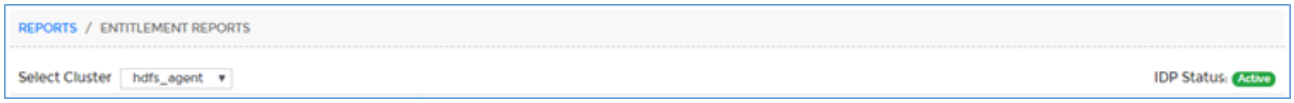
The Entitlement Report screen is divided into four panels

1. Top View
2. Groups/Users List
3. Directories/File List
4. Permission List

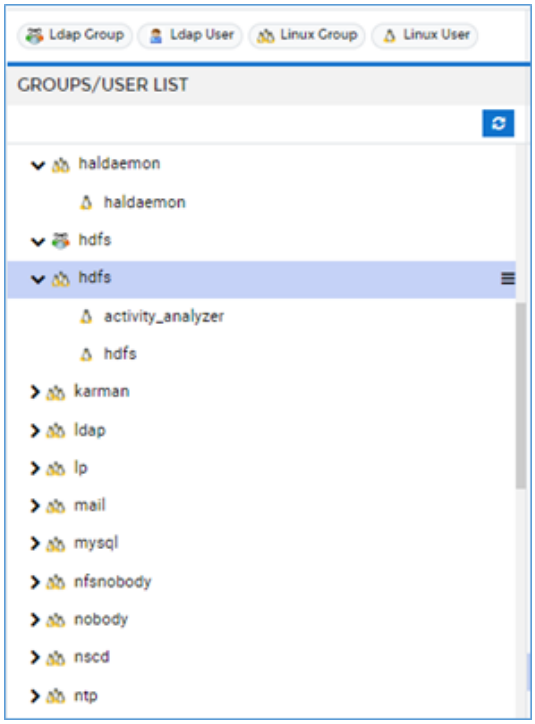


There is one **Entitlement Report** per cluster. To access the **Entitlement Report** screen, click **Reports > Hadoop > Entitlement Report**.

1. **Top View**
   This panel allows you to select the cluster from the Select Cluster drop-down. It also display the status of an IDP i.e. whether it is Active or Inactive.

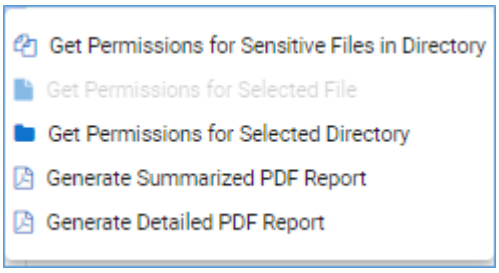


2. **Groups/User List:** This panel display all the **LDAP/Linux Groups** to which **LDAP/Linux User** is associated for a given cluster. The icon next to the name of group specifies whether the group is LDAP group or Linux group. You can also view the icons detail on top of the **Groups/User List** panel.



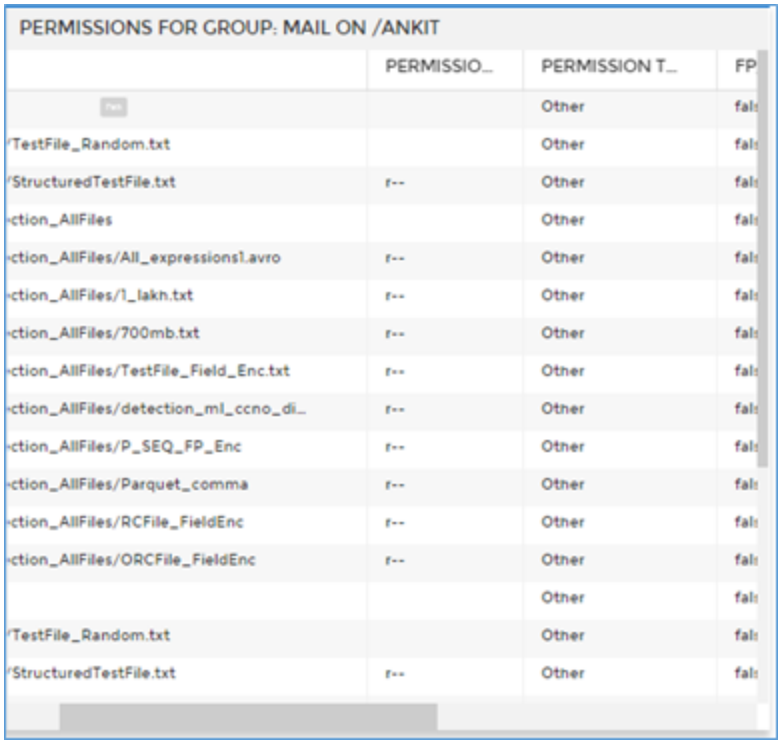
To update the Groups/User List panel, click  button.

To get permission or to generate a report, click  next to the group name. This will display the list of permissions associated with a group or a user.

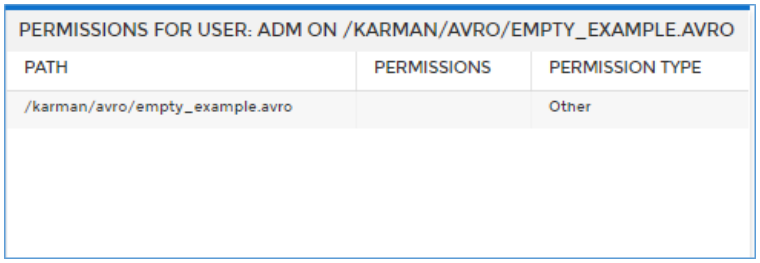


a) The **Get Permissions for Sensitive Files in Directory** will list down all the files name with absolute path. It also displays other information such as Permissions (Read, Write, Execute), Permission Type, FP/Row Encryption, Sensitive Data, etc.

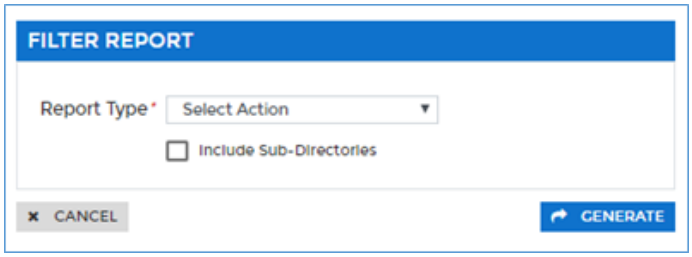
***To view other columns information scroll the bar to the right.**



185. The **Get Permission For Selected File** option will list down all the file names with absolute path for which a user has user permission to read, write and execute. The information includes the path of file, permissions and permission type.

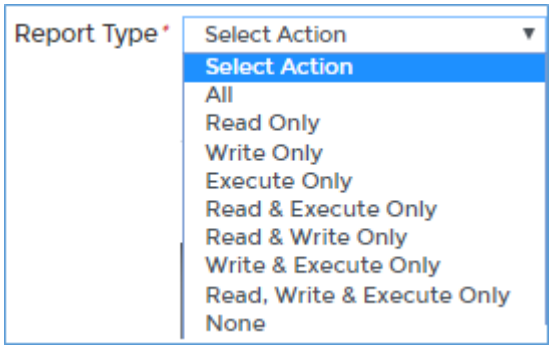


186. The **Generate Summarized PDF Report** option allows you to download the report. Upon selecting the option, a **Filter Report** popup appears.



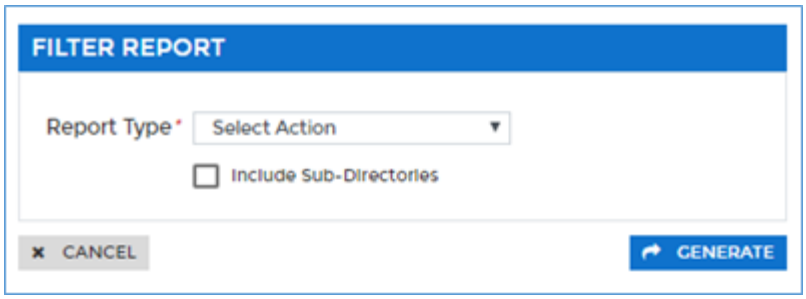
Select the option from the **Report Type** drop-down. To include the sub-directories

in the downloaded report, check the **Inlcude Sub-Directories** checkbox.

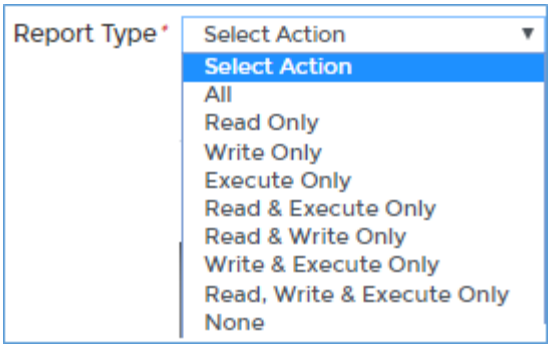


Click **Generate** button. This will download the report based on specified filters.

187. The **Generate Detailed PDF Report** option allows you to download the detailed version of report. Upon selecting the option, a **Filter Report** popup appears.



Select the option from the **Report Type** drop-down. To include the sub-directories in the downloaded report, check the **Inlcude Sub-Directories** checkbox.



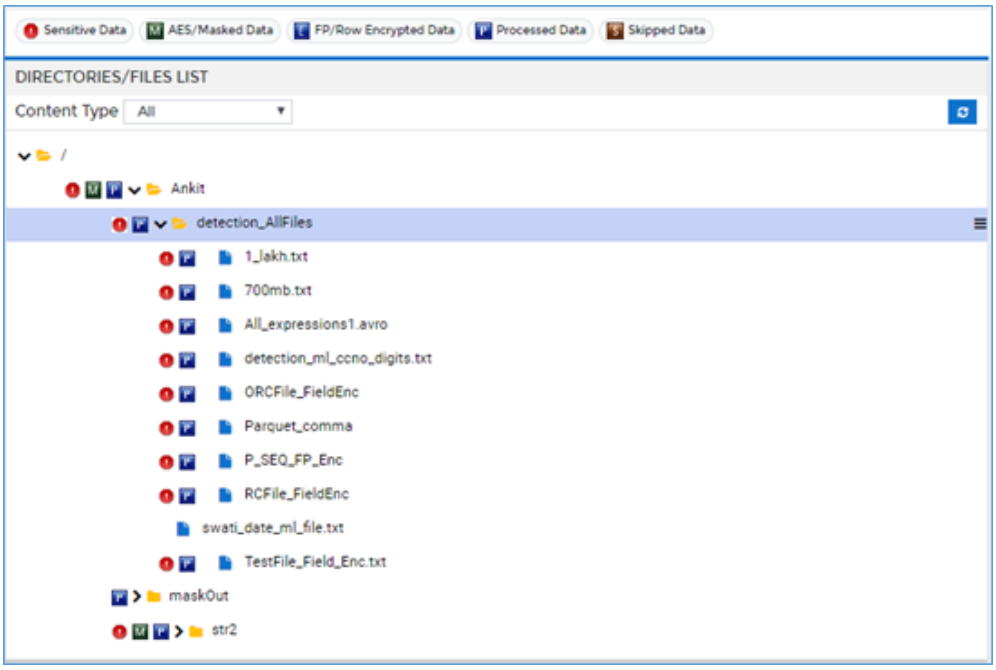
Click **Generate** button. This will download the report based on specified filters.

188. **Directories/Files List**

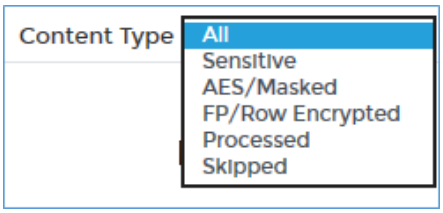
This panel will display the list of all files stored in a directory. The icons next to each file or

folder specify that the folder contains sensitive data which is processed and has been protected by some masking option.

You can view the icons detail on top of the **Directories/Files List** panel.

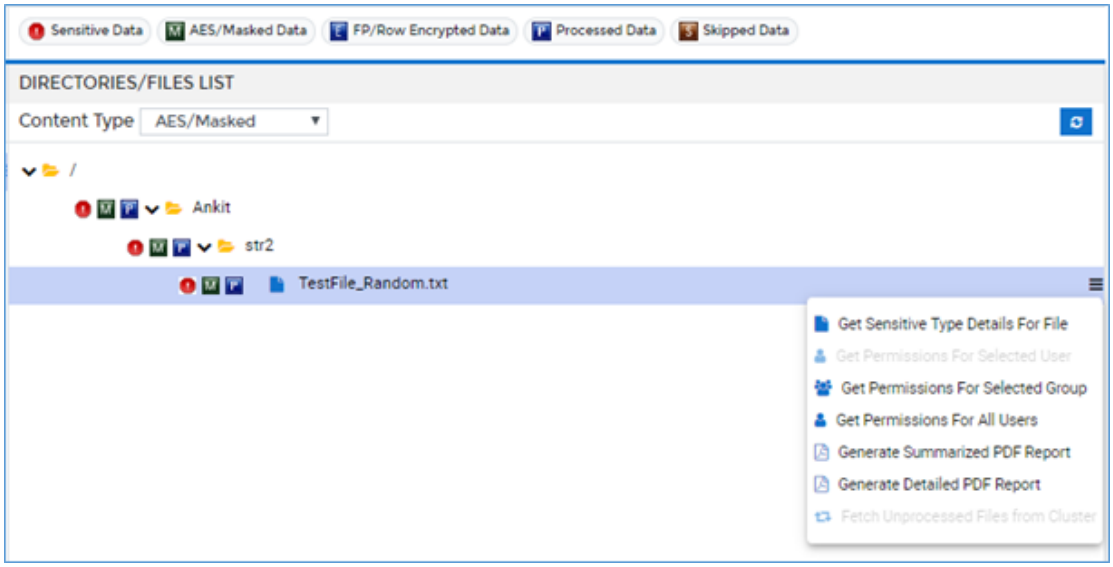


You can also filter out the Directory/File list by specifying the content from Content Type drop-down. A content type for a data stored in a file/directory can be Sensitive, AES/Masked, FP/Row Encrypted, Processed and Skipped.

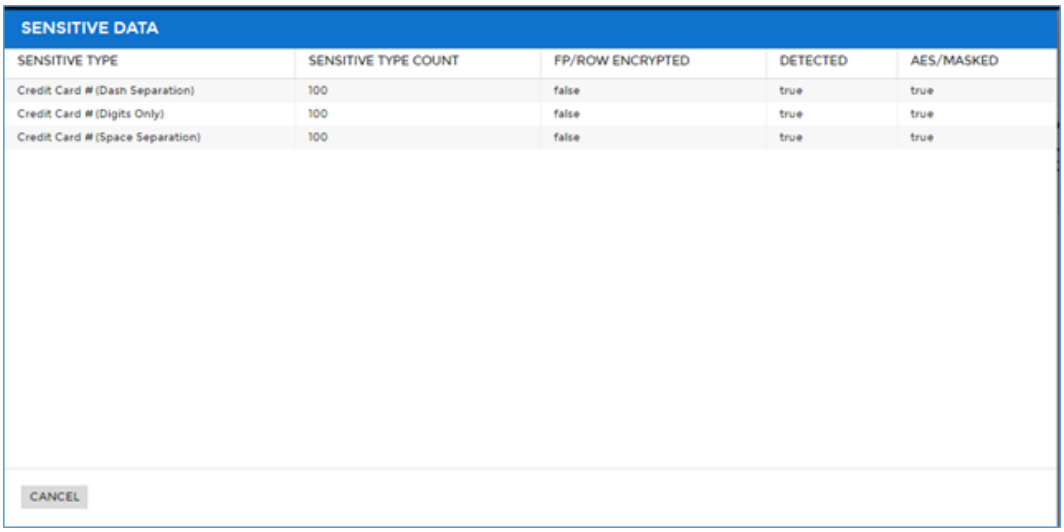


To update the **Directories/Files List** panel, click  button.

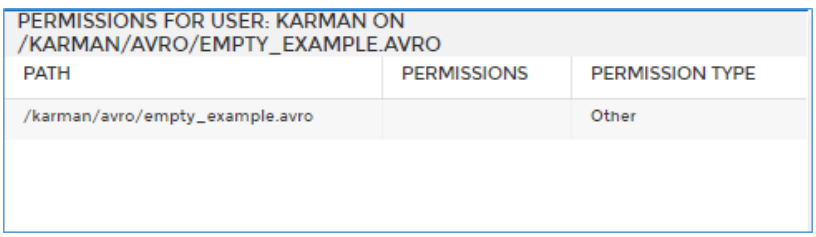
To get permission or to generate a report, click  next to the directory/file name. This will display the list of permissions for the selected directory/file name.



a) The **Get Sensitive Type Details For File** option will display list of sensitive data associated with the selected file. Upon selecting the option, the Sensitive Data popup appears.

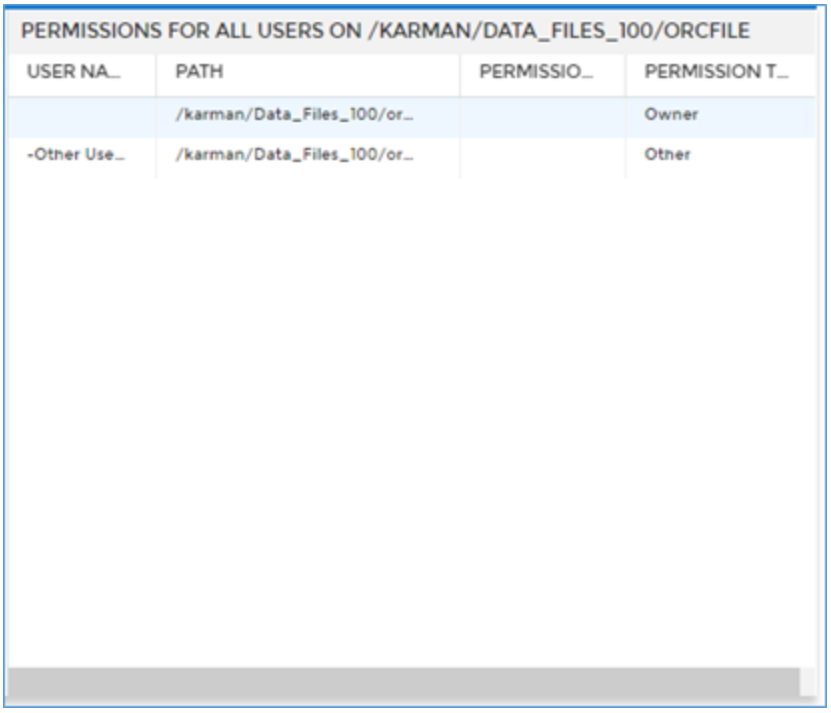


189. The **Get Permission for the Selected User** option will display the list of all files that user can access. The Permission panel displays information such as Path, Permissions and Permission Type for that file.

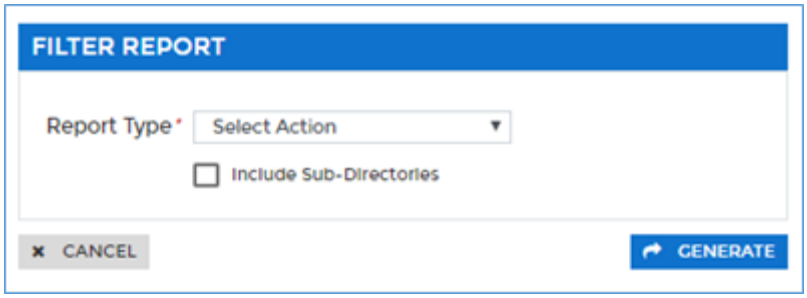


190. The **Get Permission for Selected Group** option will display a list of all files that can be accessed by a group of users. The Permission panel displays information for Path, type of permission for the file and the permission type (Read, Write, Execute).

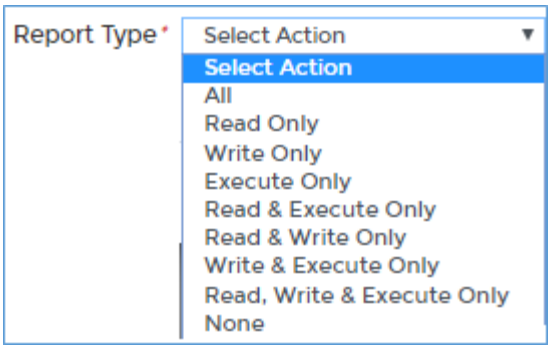
191. The **Get Permission for All Users** option will display the list of all files that all users can access. The **Permission** panel displays information such as User Name, absolute path for all listed files in a directory, Permissions, Permission Type.



192. The **Generate Summarized PDF Report** option allows you to download the report. Upon selecting the option, a **Filter Report** popup appears.

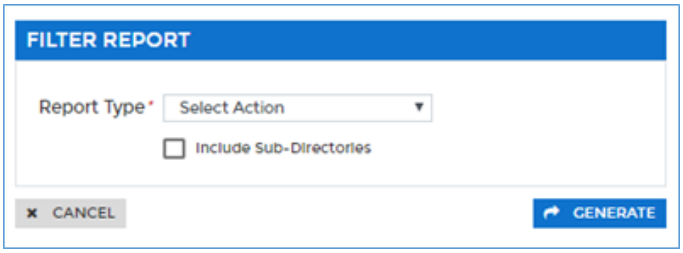


Select the option from the **Report Type** drop-down. To include the sub-directories in the downloaded report, check the **Inlcude Sub-Directories** checkbox.

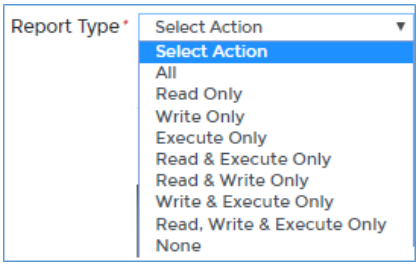


Click **Generate** button. This will download the report based on specified filters.

193. The **Genrate Detailed PDF Report** option allows you to download the detailed version of report. Upon selecting the option, a **Filter Report** popup appears.

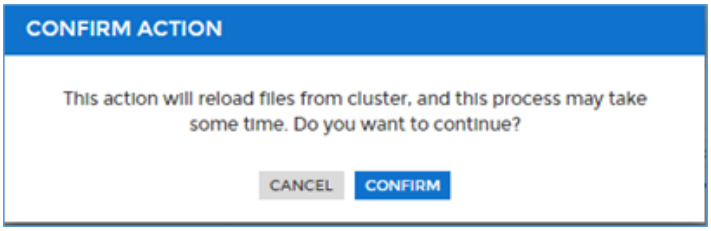


Select the option from the **Report Type** drop-down. To include the sub-directories in the downloaded report, check the **Inlcude Sub-Directories** checkbox.



Click **Generate** button. This will download the report based on specified filters.

194. The **Fetch Unprocessed Files from Cluster** option allows you to re-load the files from cluster. Upon selecting this option, Confirm Action popup appears.

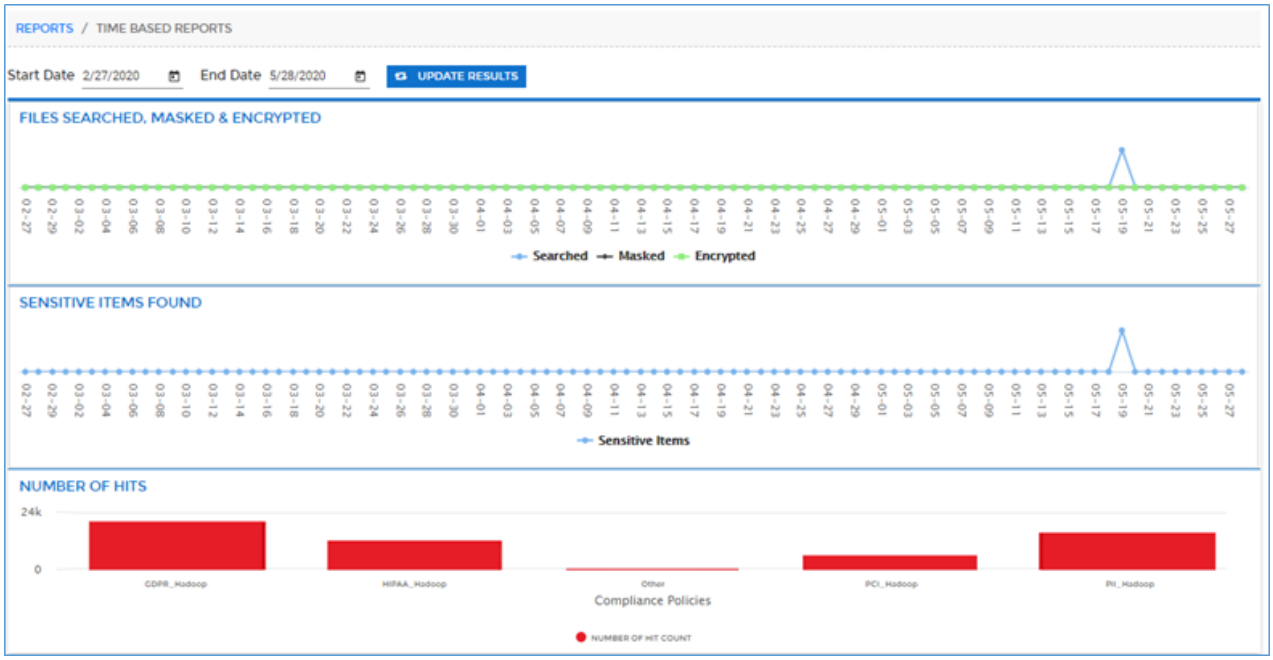


Click **Confirm** to reload the files from cluster.

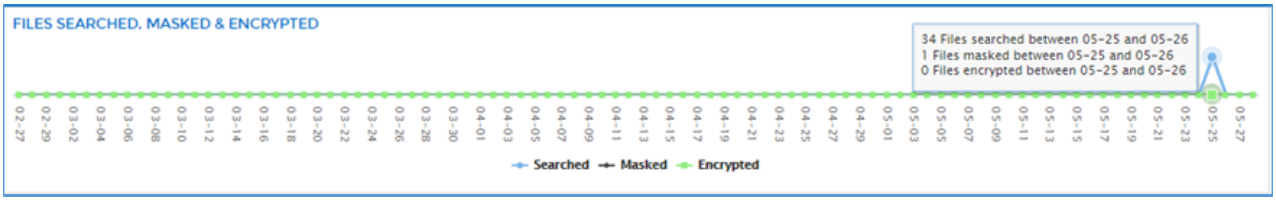
10.9.2Time Based Report

The **Time Based Report** display results in the form of graphs based on the provided date range. This report display results for the Sensitive Data in form of graphs.

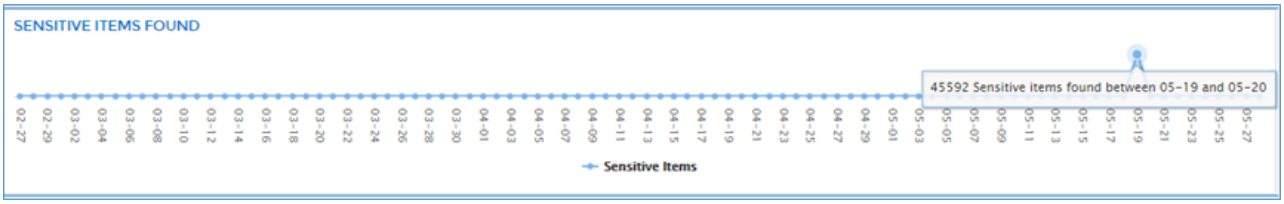
To access **Time Based Report**, click **Reports > Hadoop > Time Based Reports**.



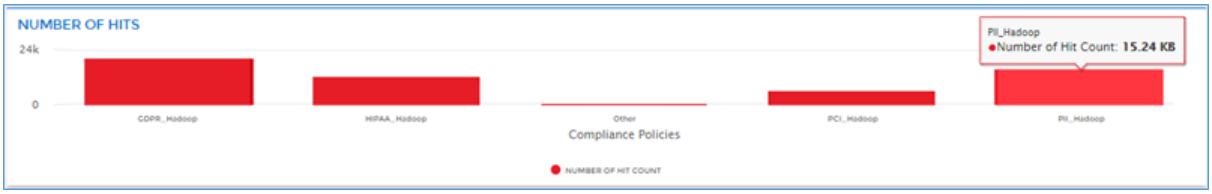
1. The first line chart displays information for the Number of **Files Searched, Masked & Encrypted** within a specified date range.



2. The second line chart display information for the **Number of Sensitive Items** found for searched date range.

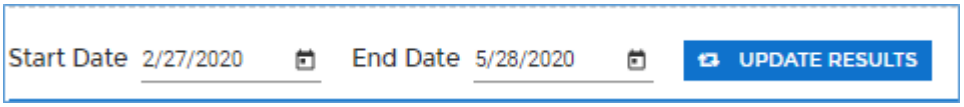


3. The third bar chart display information for the **Number of Hits** found for each **Compliance Group** in Hadoop data source.



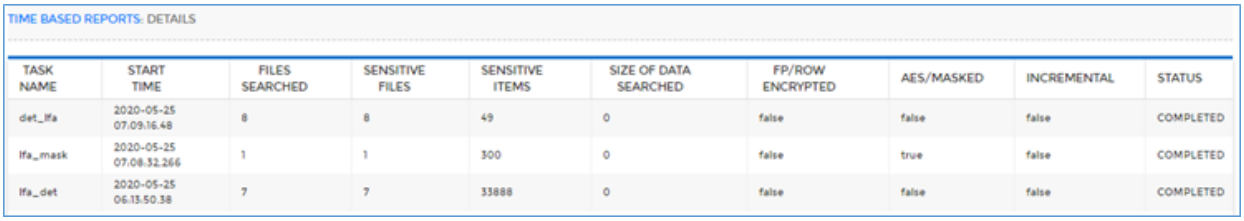
To access the detailed **Time Based Report**, click on the data point of first and second graph to generate the report**.** Perform the below steps to generate the tabular **Time Based Report**:

a) Select the **Start** and **End Date** in date filter.



b) Click the **Update Results** button. This will update the charts based for the given date range.

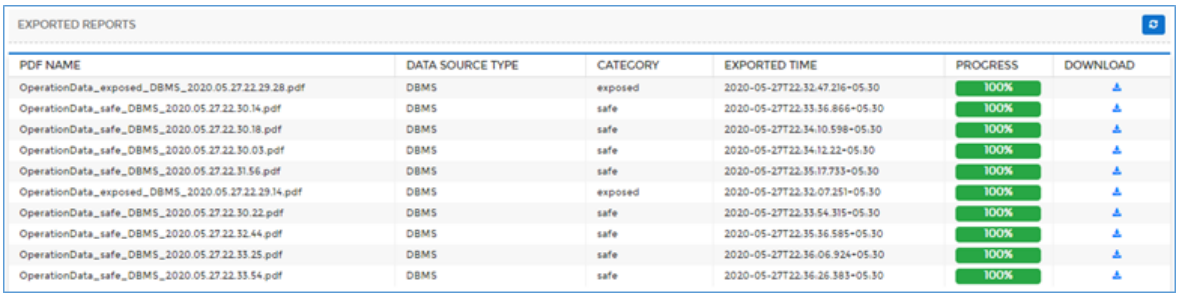
c) Click on the data points of first and second graph to generate detailed **Time Based Report.**


TIME BASED REPORTS: DETAILS

TASK NAME	START TIME	FILES SEARCHED	SENSITIVE FILES	SENSITIVE ITEMS	SIZE OF DATA SEARCHED	FP/ROW ENCRYPTED	AES/MASKED	INCREMENTAL	STATUS
det_lfa	2020-05-25 07.09.16.48	8	8	49	0	false	false	false	COMPLETED
lfa_mask	2020-05-25 07.08.32.266	1	1	300	0	false	true	false	COMPLETED
lfa_det	2020-05-25 06.13.50.38	7	7	33888	0	false	false	false	COMPLETED

10.10 Exported Reports

The **Exported Reports** screen allows you to download the pdf version of the reports generated in the **Overview** and **GDPR** section of the Dashboard.

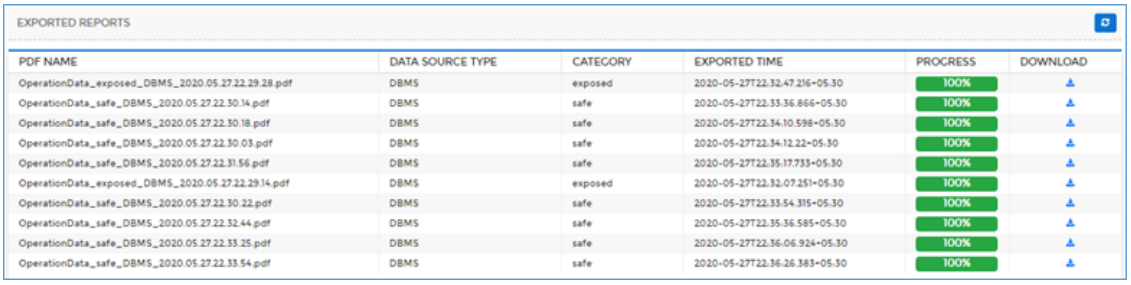

EXPORTED REPORTS

PDF NAME	DATA SOURCE TYPE	CATEGORY	EXPORTED TIME	PROGRESS	DOWNLOAD
OperationData_exposed_DBMS_2020.05.27.22.29.28.pdf	DBMS	exposed	2020-05-27T22.32.47.216+05.30	100%	
OperationData_safe_DBMS_2020.05.27.22.30.14.pdf	DBMS	safe	2020-05-27T22.33.36.866+05.30	100%	
OperationData_safe_DBMS_2020.05.27.22.30.18.pdf	DBMS	safe	2020-05-27T22.34.10.598+05.30	100%	
OperationData_safe_DBMS_2020.05.27.22.30.03.pdf	DBMS	safe	2020-05-27T22.34.12.22+05.30	100%	
OperationData_safe_DBMS_2020.05.27.22.31.56.pdf	DBMS	safe	2020-05-27T22.35.17.733+05.30	100%	
OperationData_exposed_DBMS_2020.05.27.22.29.14.pdf	DBMS	exposed	2020-05-27T22.32.07.251+05.30	100%	
OperationData_safe_DBMS_2020.05.27.22.30.22.pdf	DBMS	safe	2020-05-27T22.33.54.315+05.30	100%	
OperationData_safe_DBMS_2020.05.27.22.32.44.pdf	DBMS	safe	2020-05-27T22.35.36.585+05.30	100%	
OperationData_safe_DBMS_2020.05.27.22.33.25.pdf	DBMS	safe	2020-05-27T22.36.06.924+05.30	100%	
OperationData_safe_DBMS_2020.05.27.22.33.54.pdf	DBMS	safe	2020-05-27T22.36.26.383+05.30	100%	

This screen will display the information for the reports such as PDF Name, Data Source Type, Category, Export Time, Progress of the report, and  button in the **Download** column. To refresh the **Exported Reports** screen, click  .

To download the reports, perform the below steps:

1. To access the Exported Reports section, click Reports > Exported Reports.


EXPORTED REPORTS

PDF NAME	DATA SOURCE TYPE	CATEGORY	EXPORTED TIME	PROGRESS	DOWNLOAD
OperationData_exposed_DBMS_2020.05.27.22.29.28.pdf	DBMS	exposed	2020-05-27T22.32.47.216+05.30	100%	
OperationData_safe_DBMS_2020.05.27.22.30.14.pdf	DBMS	safe	2020-05-27T22.33.36.866+05.30	100%	
OperationData_safe_DBMS_2020.05.27.22.30.18.pdf	DBMS	safe	2020-05-27T22.34.10.598+05.30	100%	
OperationData_safe_DBMS_2020.05.27.22.30.03.pdf	DBMS	safe	2020-05-27T22.34.12.22+05.30	100%	
OperationData_safe_DBMS_2020.05.27.22.31.56.pdf	DBMS	safe	2020-05-27T22.35.17.733+05.30	100%	
OperationData_exposed_DBMS_2020.05.27.22.29.14.pdf	DBMS	exposed	2020-05-27T22.32.07.251+05.30	100%	
OperationData_safe_DBMS_2020.05.27.22.30.22.pdf	DBMS	safe	2020-05-27T22.33.54.315+05.30	100%	
OperationData_safe_DBMS_2020.05.27.22.32.44.pdf	DBMS	safe	2020-05-27T22.35.36.585+05.30	100%	
OperationData_safe_DBMS_2020.05.27.22.33.25.pdf	DBMS	safe	2020-05-27T22.36.06.924+05.30	100%	
OperationData_safe_DBMS_2020.05.27.22.33.54.pdf	DBMS	safe	2020-05-27T22.36.26.383+05.30	100%	

2. Click  in **Download** column to download the report in PDF format.

11 Monitor

DgSecure Monitor allows users to set alerts around data handling and/or data access in HFDS, S3, MapR-FS, Hive, Oracle, or Teradata. Rules can be set around several conditions including specific users, specific data type groups, specific systems, a specific command, source path, or destination path. Rules can be set using one or all of these conditions.

The alerts are based off the targeted platform's log files. Set alert rules on the **Alert Rules** page. Review triggered alerts on the **Alerts** page. The **Monitor Overview** page provides a comprehensive overview. In order to most effectively utilize DgSecure Monitor, DgSecure detection tasks need to be run in order to identify where sensitive data resides.

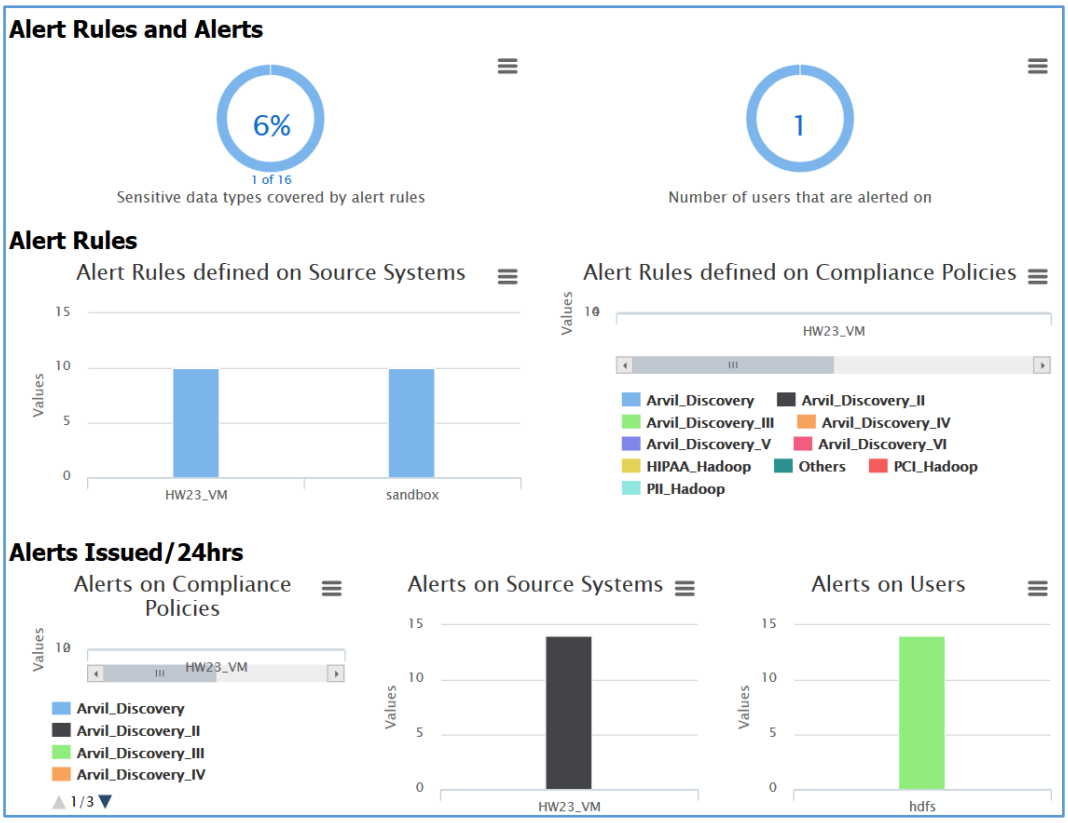
The Monitor Overview page provides a centralized location to track the monitoring status of known sensitive data. Monitoring capabilities are broken down according to the percentage of sensitive types covered by alert rules, the number of people who receive alert notifications, source systems, related DgSecure policies, and alerts issued over the past 24 hours.

11.1 Overview

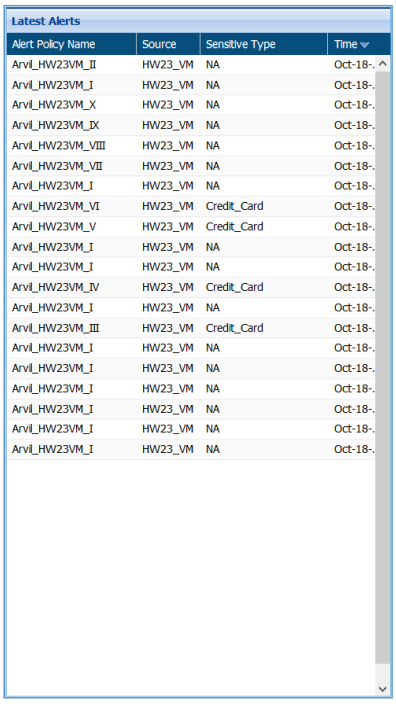
The **Overview** page offers a birds-eye view of the current monitoring statuses of known sensitive data.

Access the **Overview** page from the menu under **Monitor > Overview.** The **Overview** page is divided into two panels which are described below.

The Monitor Overview page provides a centralized location to track the monitoring status of known sensitive data. The majority of the page is a series of graphs showing the percentage of sensitive types covered by alert rules, the number of people who trigger alert notifications, source systems, and related DgSecure policies.



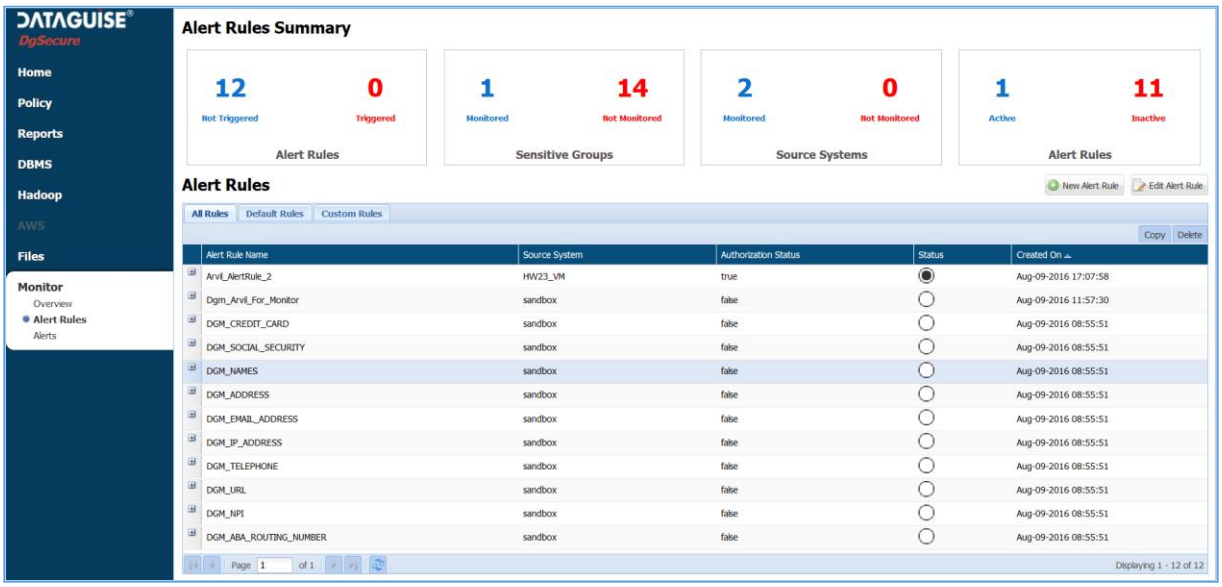
A panel on the right side of the page shows the most recently triggered alerts.



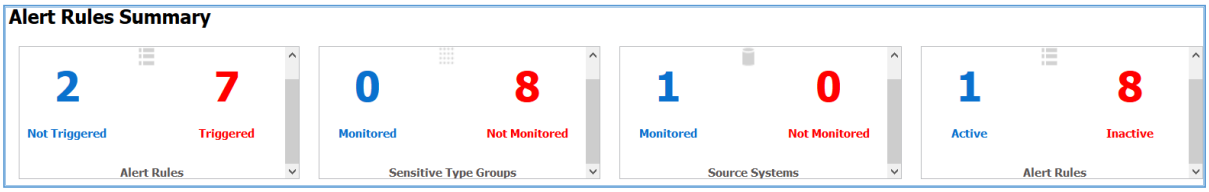
11.2 Alert Rules

The **Alert Rules** page offers in-depth details about existing alert rules that the user has permission to see.

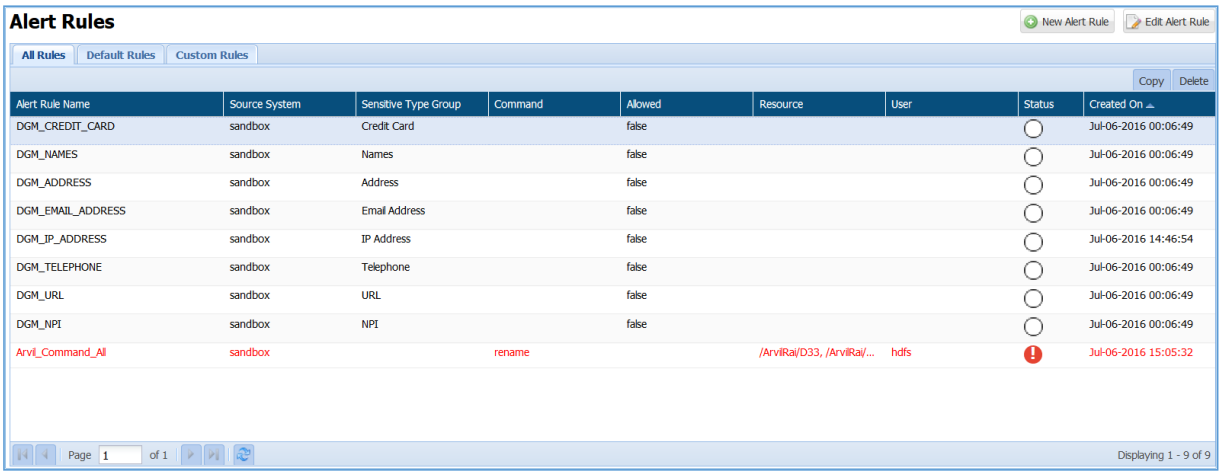
Access the **Alert Rules** page from the menu under **Monitor > Alert Rules.** The **Alert Rules** page is divided into two panels which are described below.



The top panel shows four number sets: alerts triggered, sensitive type groups actively monitored, source systems monitored, and active alerts.

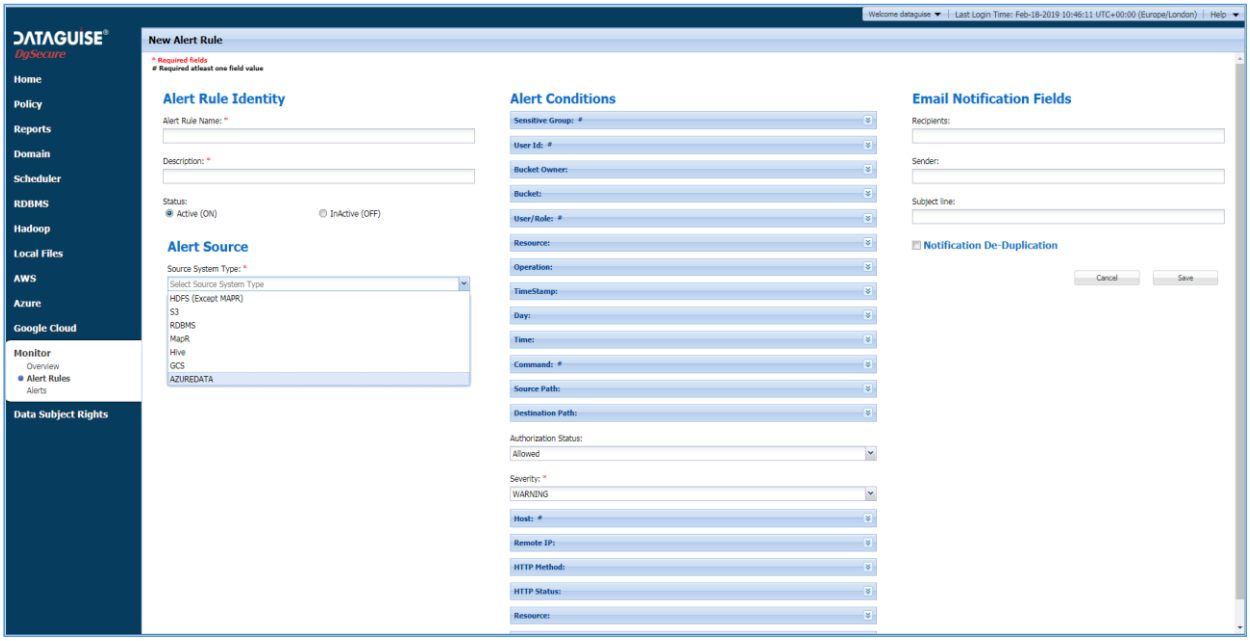


The bottom panel shows either all alert rules, default alert rules, or custom alert rules. Whichever table displays, the details of the selected alert rule type (custom, default, or all) are shown. To create a new alert rule, click the **New Alert Rule** button. To edit an existing alert rule, select the desired rule and click **Edit Alert Rule**. The status column shows either a white circle, black circle, or red circle with an exclamation point. A black circle indicates the alert rule is on. A white circle indicates the alert rule is off. A red circle with exclamation point indicates the alert rule is on and has been triggered.



When the **New Alert Rule** button is clicked, a new page displays. Fill out the information as needed. Only fields marked with a red asterisk are mandatory. Multiple values per condition type can be set. Related DgSecure policies are automatically calculated based on the selected sensitive types. Selecting the “Notification De-Duplication” checkbox displays another field that allows the user to select a timeframe in minutes. When selected, only one rule is generated if an alert condition is met multiple times within the timeframe.

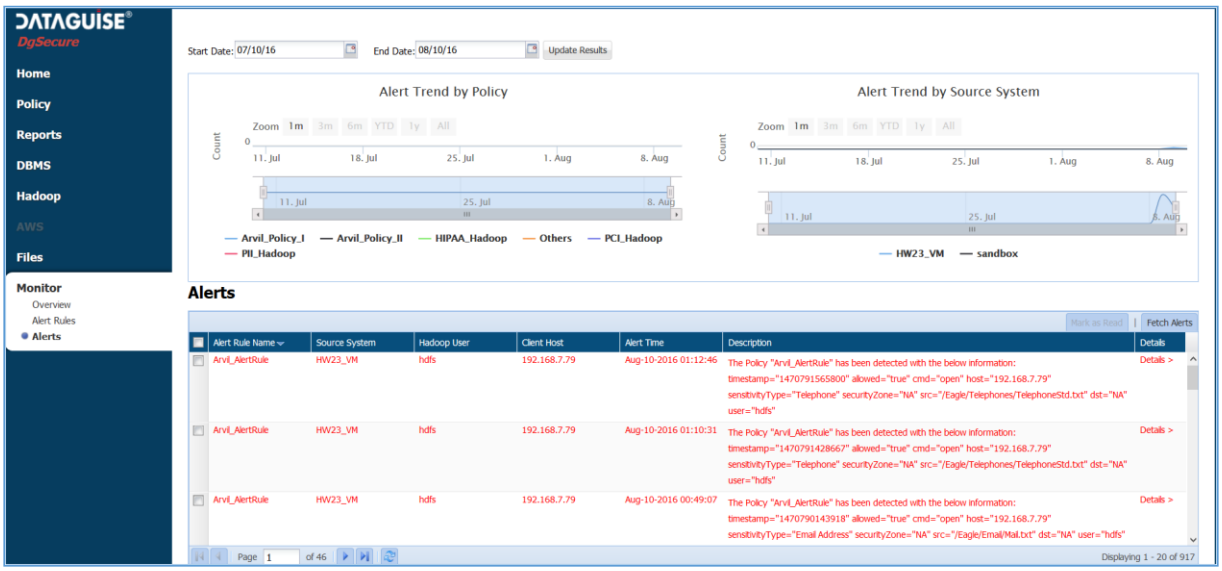
***Note**: When using “regex” as an operator for an alert rule, the regex pattern must follow standard regex patterns.



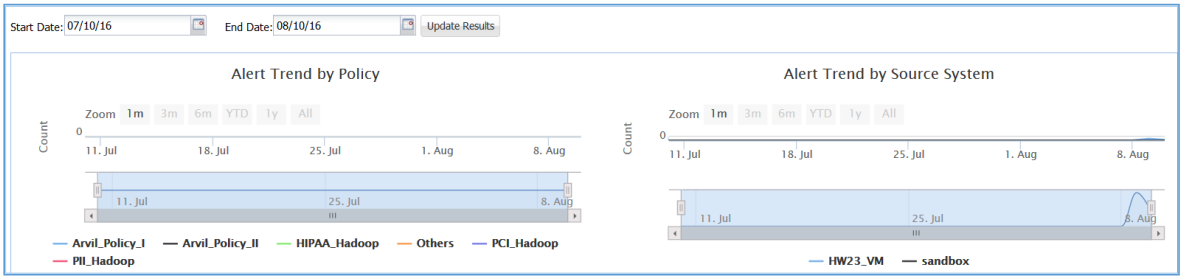
11.3 Alerts

The **Alerts** page offers in-depth details about triggered alerts that the user has permission to see.

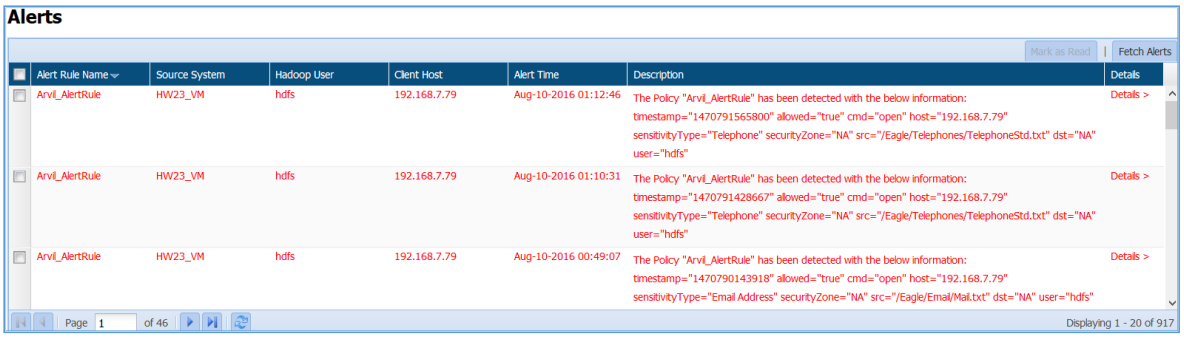
Access the **Alerts** page from the menu under **Monitor > Alerts.** The **Alerts** page is divided into two panels which are described below.



The top panel shows two graphs. The first graph displays the number of triggered alerts by policy. Hover the cursor over a policy plot point to see how many times an alert associated with the policy has been triggered. The second graph displays the number of alerts by source system. Hover the cursor over a plot point to see how many times alerts for a specific system have been triggered.



The bottom panel shows the details of triggered alerts including source system, Hadoop user, time, and description of the violated rule.


Alerts
Mark as Read
Fetch Alerts
Alert Rule Name
Source System
Hadoop User
Client Host
Alert Time
Description
Details
Arvil_AlertRule
HW23_VM
hdfs
192.168.7.79
Aug-10-2016 01:12:46
The Policy "Arvil_AlertRule" has been detected with the below information: timestamp="1470791565800" allowed="true" cmd="open" host="192.168.7.79" sensitivityType="Telephone" securityZone="NA" src="/Eagle/Telephones/TelephoneStd.txt" dst="NA" user="hdfs"
Details >
Arvil_AlertRule
HW23_VM
hdfs
192.168.7.79
Aug-10-2016 01:10:31
The Policy "Arvil_AlertRule" has been detected with the below information: timestamp="1470791428667" allowed="true" cmd="open" host="192.168.7.79" sensitivityType="Telephone" securityZone="NA" src="/Eagle/Telephones/TelephoneStd.txt" dst="NA" user="hdfs"
Details >
Arvil_AlertRule
HW23_VM
hdfs
192.168.7.79
Aug-10-2016 00:49:07
The Policy "Arvil_AlertRule" has been detected with the below information: timestamp="1470790143918" allowed="true" cmd="open" host="192.168.7.79" sensitivityType="Email Address" securityZone="NA" src="/Eagle/Email/Mail.txt" dst="NA" user="hdfs"
Details >
Page 1 of 46
Displaying 1 - 20 of 917

12 Attributes

12.1 Concept

Attributes classify databases on a network allowing for quicker identification and enhanced insights in the DBMS and Hadoop & Files Dashboard. The Attribute page displays all attribute groups and the attributes that compose them. Once attribute is created, you can assign the attributes using Attribute Assignment section in the DgSecure.

The below sections explains the process of creating, editing an attribute in the Attribute section and assigning attribute in the Attribute Assignment section.

12.2 Attribute

This section will explain the process of creating, editing and deleting an Attribute in DBMS and Hadoop & Files section.

12.2.1 Create an Attribute

12.2.1.1 DBMS

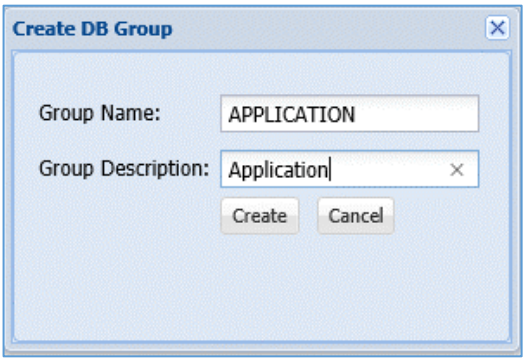
In DBMS, attribute classify databases on a network allowing for a quicker identification and enhanced insights in the DBMS dashboard.

To access the Attribute page. Click **Policy > DBMS > Attribute**.

12.2.1.1.1 Create an Attribute Group

To create an Attribute, you need to first create an Attribute Group.

The below image shows the user interface for creating an Attribute Group.

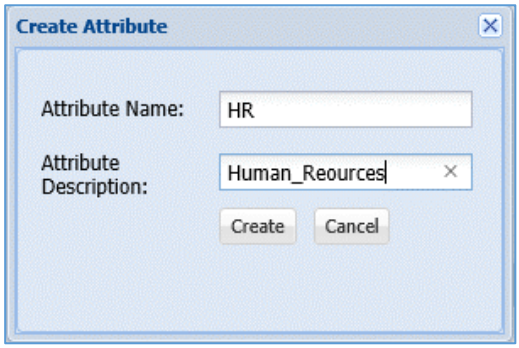


- **Add Group**: Click the Add Group button to create DB group.
- **Group Name**: Enter the unique name for the group.
- **Group Description**: Enter the description for the group.
- **Create**: Click the Create button, if you want to create the DB group.
- **Cancel**: Click the Cancel button, if you do not want to save the changes.

12.2.1.1.2 Create an Attribute

To create an Attribute, follow the below steps.

The below image shows the user interface for creating an Attribute.



- **Add Attribute**: Click the Add Attribute button to define the Attribute Name and Attribute Description.
- **Attribute Name:** Enter the unique name for the attribute.
- **Attribute Description**: Enter the description for the attribute.
- **Create**: Click the Create button, if you want to save the changes.
- **Cancel**: Click the Cancel button, if you do not want to save the changes.

12.2.1.2 Hadoop & Files

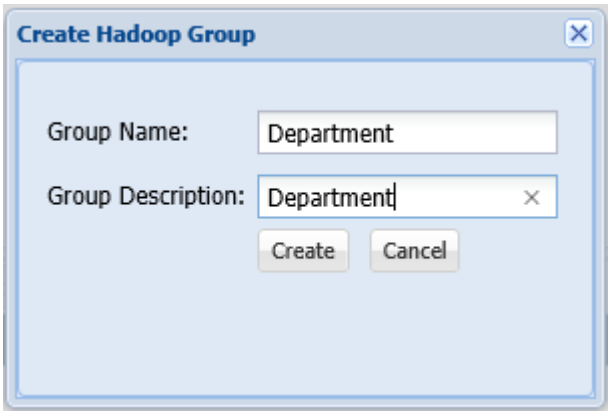
In Hadoop & Files, attribute classify databases on a network allowing for a quicker identification and enhanced insights in the Hadoop dashboard.

To access the Attribute page. Click **Policy > Hadoop & Files > Attribute**.

12.2.1.2.1 Create an Attribute Group

To create an Attribute, you need to first create an Attribute Group.

The below image shows the user interface for creating an Attribute.

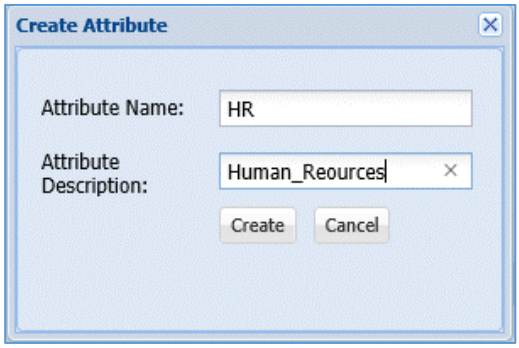


- **Add Group**: Click the Add Group button to create DB group.
- **Group Name**: Enter the unique name for the group.
- **Group Description**: Enter the description for the group.
- **Create**: Click the Create button, if you want to create the DB group.
- **Cancel**: Click the Cancel button, if you do not want to save the changes.

12.2.1.2.2 Create an Attribute

To create an Attribute, follow the below steps.

The below image shows the user interface for creating an Attribute.



- **Add Attribute**: Click the Add Attribute button to define the Attribute Name and Attribute Description.
- **Attribute Name:** Enter the unique name for the attribute.
- **Attribute Description**: Enter the description for the attribute.
- **Create**: Click the Create button, if you want to save the changes.
- **Cancel**: Click the Cancel button, if you do not want to save the changes.

12.2.2 Edit an Attribute

12.2.2.1 DBMS

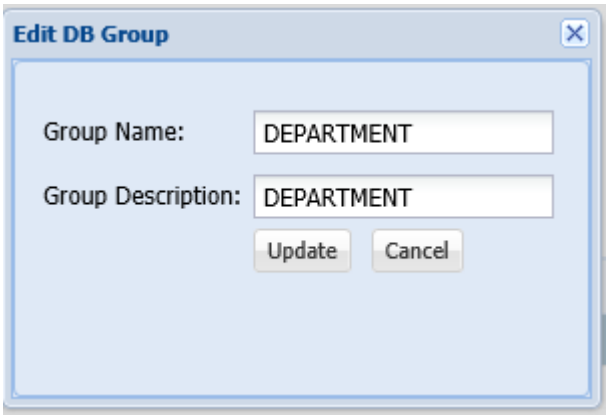
To edit an Attribute. Select the attribute which you wish to edit.

Click POLICY > **DBMS > Attribute> Edit Group**.

12.2.2.1.1 Edit an Attribute Group

To edit an Attribute Group, follow the below steps.

The below image shows the user interface for editing the information.

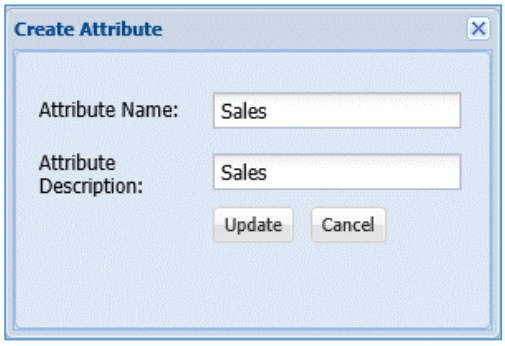


- **Edit Group**: Click the Edit Group button, if you want to edit the group name and description.
- **Group Name**: Edit the name of the group.
- **Group Description**: Edit the description for the Group Name.
- **Update**: Click the Update button, if you want to save the changes with new Group Name.
- **Cancel**: Click the Cancel button, if you do want to save the changes.

12.2.2.1.2 Edit an Attribute

To edit an Attribute, follow the below steps.

The below image shows the user interface for editing an attribute.



- Edit Attribute: Click the Edit Attribute button to edit the Attribute Name and Attribute Description.
- Attribute Name: Edit the name of the attribute.
- Attribute Description: Edit the description for the attribute.
- Update: Click the Update button, if you want to save the changes.
- Cancel: Click the Cancel button, if you do not want to save the changes.

12.2.2.2 Hadoop & Files

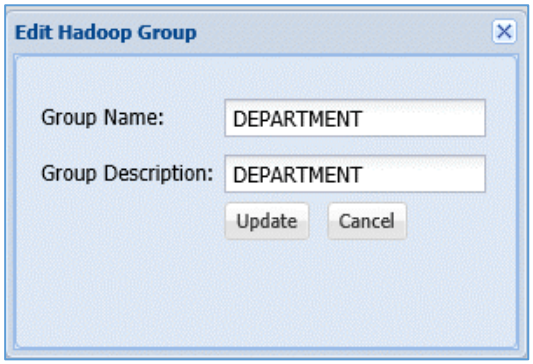
To edit an Attribute. Select the attribute which you wish to edit.

Click POLICY > **DBMS > Attribute> Edit Group**.

12.2.2.2.1 Edit an Attribute Group

To edit an Attribute Group, follow the below steps.

The below image shows the user interface for editing the information.

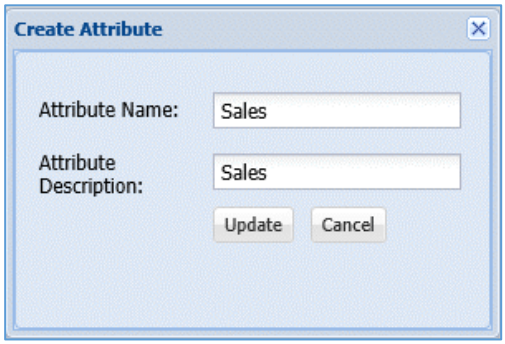


- **Edit Group**: Click the Edit Group button, if you want to edit the group name and description.
- **Group Name**: Edit the name of the group.
- **Group Description**: Edit the description for the Group Name.
- **Update**: Click the Update button, if you want to save the changes with new Group Name.
- **Cancel**: Click the Cancel button, if you do want to save the changes.

12.2.2.2.2 Edit an Attribute

To edit an Attribute, follow the below steps.

The below image shows the user interface for editing an attribute.



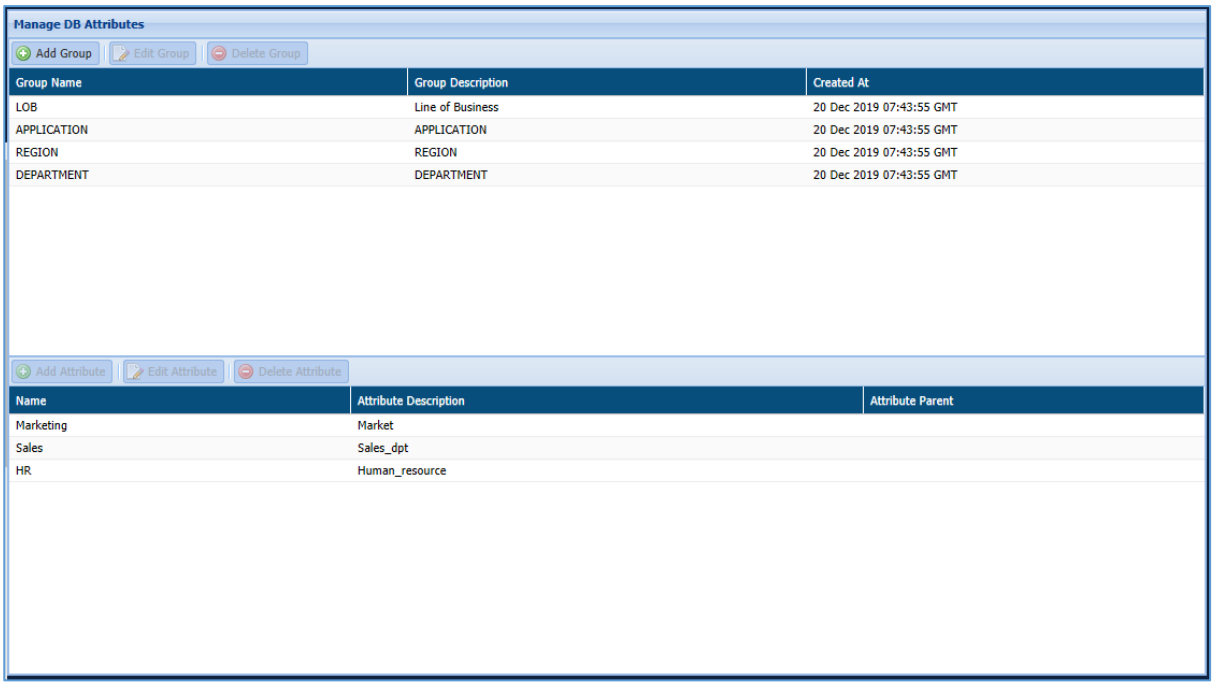
- Edit Attribute: Click the Edit Attribute button to edit the Attribute Name and Attribute Description.
- Attribute Name: Edit the name of the attribute.
- Attribute Description: Edit the description for the attribute.
- Update: Click the Update button, if you want to save the changes.
- Cancel: Click the Cancel button, if you do not want to save the changes.

12.2.3 List an Attribute

12.2.3.1 DBMS

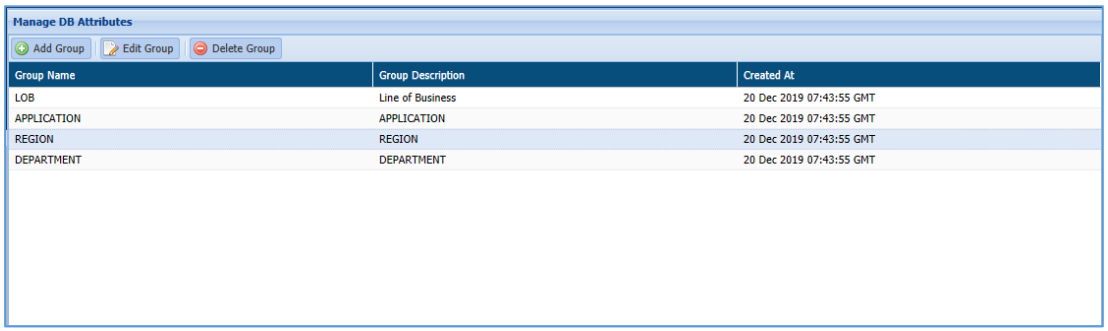
In DBMS, this page displays all attribute groups and the attributes associated with the groups.

The below image shows the user interface of the Attribute page.



- **Manage DB Attribute**: This pane displays all the existing attribute groups. These groups organize the attributes but cannot themselves be used as a filter. It displays the Group Name, Description and the Creation Date.

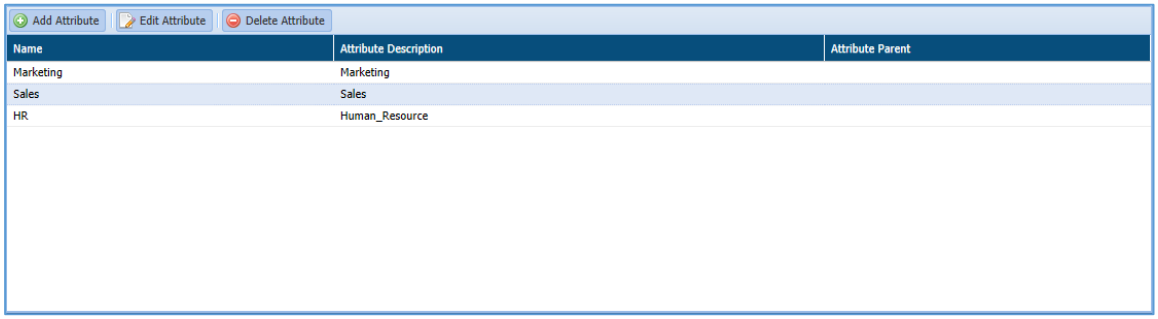
  You can also view the list of all attributes associated to the Group.



  - ❖ **Add Group**: Click the Add Group button to define the Group Name and Description.
  - ❖ **Edit Group**: Click the Edit Group button to edit the information.

- **Delete Group**: Select the Attribute Group which you want to delete. Click the Delete Group button.

- **Attribute List**: The Attribute list is the bottom pane in the Attribute Page. It will list down all attributes which are associated with the selected Attribute Group. It displays the information such as Name of the Attribute, Attribute Description, Attribute Parent.

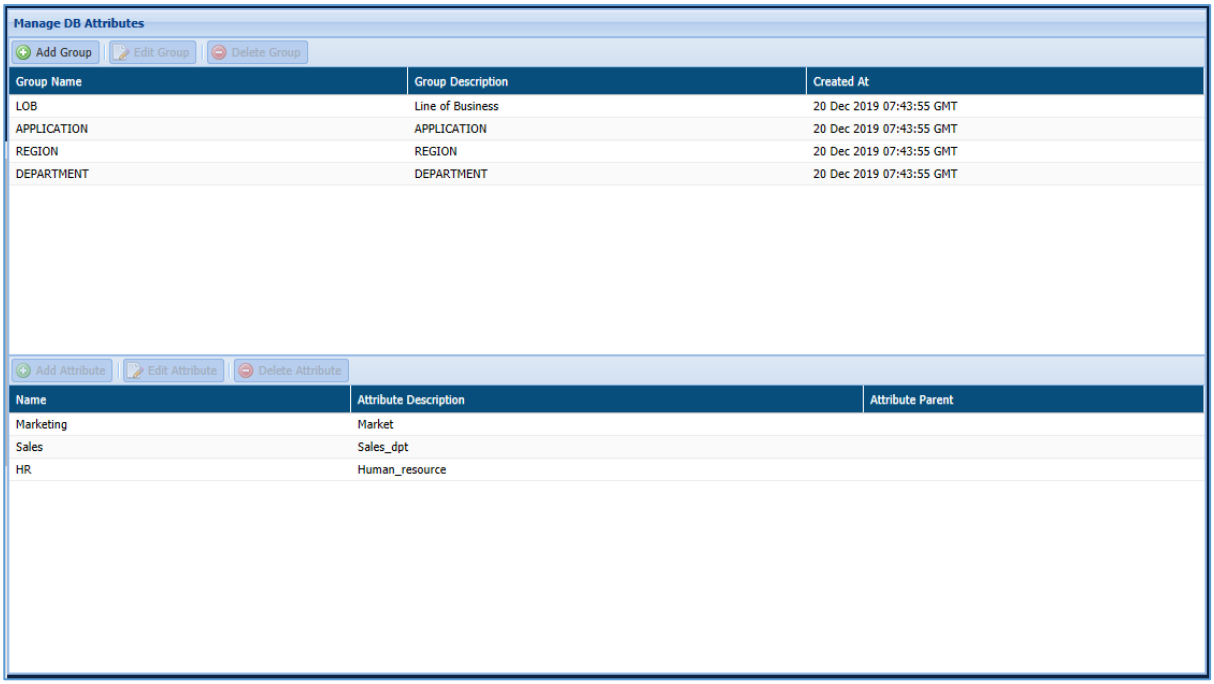


- Add Attribute: Click the Add Attribute button to define the Attribute Name and Attribute Description.
- Edit Attribute: Click the Edit Attribute button to edit the information.
- Delete Attribute: Select the Attribute which you want to delete. Click the Delete Attribute button.

12.2.3.2 Hadoop & Files

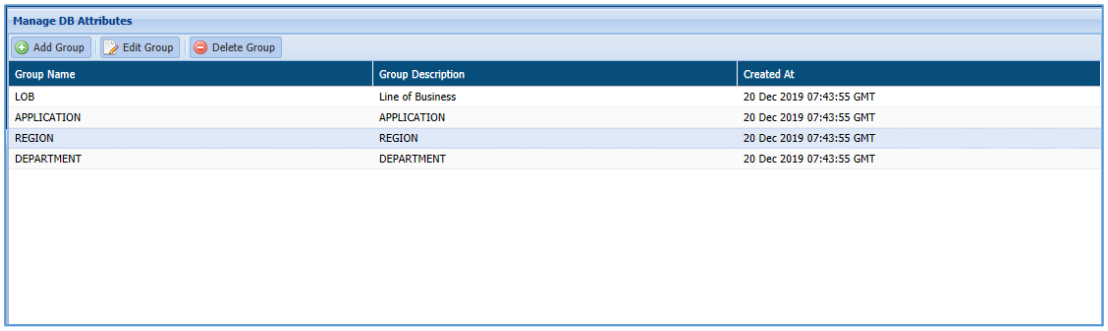
In DBMS, this page displays all attribute groups and the attributes associated with the groups.

The below image shows the user interface of the Attribute page.



- **Manage DB Attribute**: This pane displays all the existing attribute groups. These groups organize the attributes but cannot themselves be used as a filter. It displays the Group Name, Description and the Creation Date.

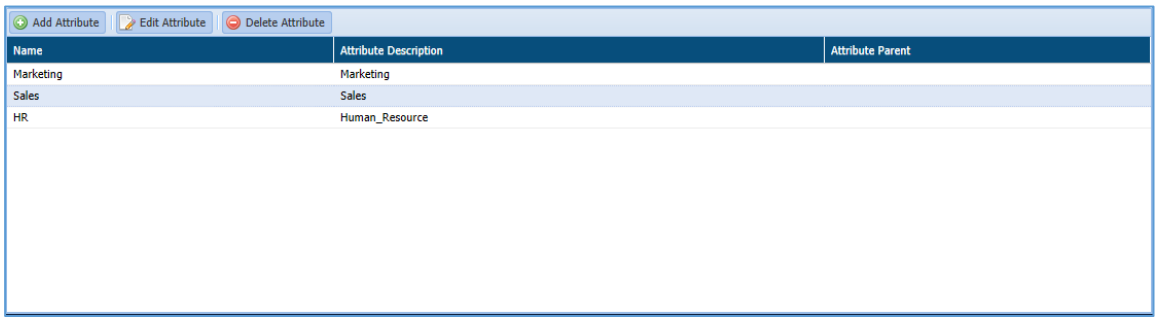
  You can also view the list of all attributes associated to the Group.



  - **Add Group**: Click the Add Group button to define the Group Name and Description.
  - **Edit Group**: Click the Edit Group button to edit the information.
  - **Delete Group**: Select the Attribute Group which you want to delete. Click the Delete Group button.

- **Attribute List**: The Attribute list is the bottom pane in the Attribute Page. It will list down all attributes which are associated with the selected Attribute Group. It displays

the information such as Name of the Attribute, Attribute Description, Attribute Parent.



- **Add Attribute**: Click the Add Attribute button to define the Attribute Name and Attribute Description.
- **Edit Attribute**: Click the Edit Attribute button to edit the information.
- **Delete Attribute**: Select the Attribute which you want to delete. Click the Delete Attribute button.

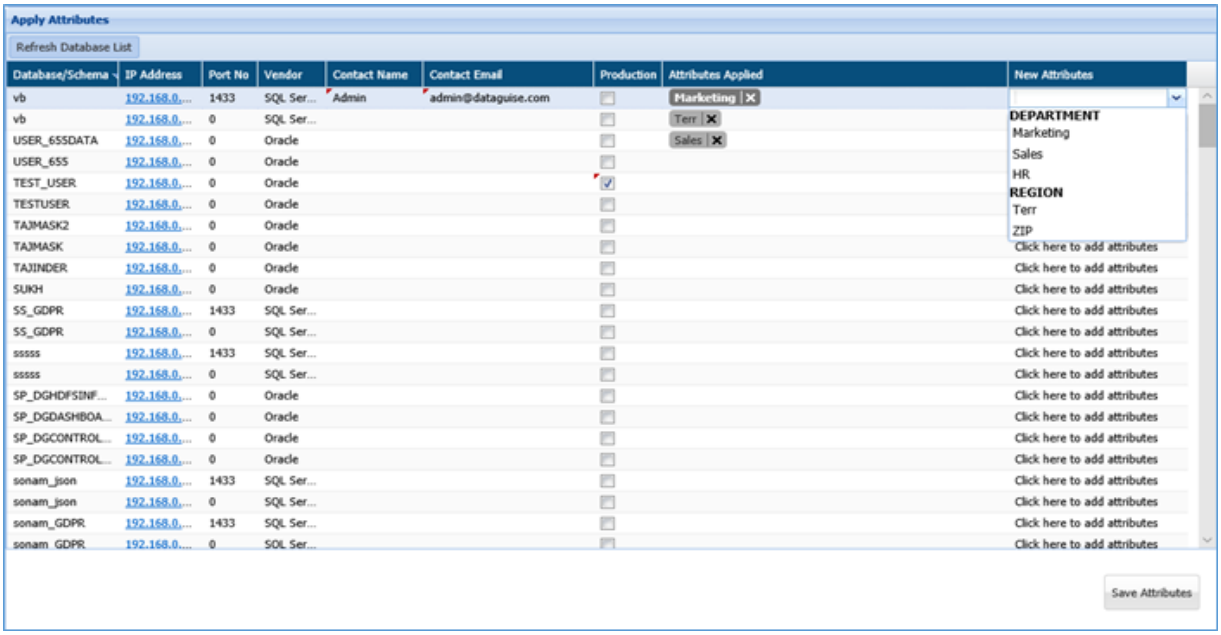
12.3 Attribute Assignment

Attributes group databases on a network to allow for quicker identification and enhanced reporting. The Attribute Assignment page is where the user can apply attributes to the desired databases.

12.3.1 RDBMS

To assign an attribute to Database/Schema, follow the below steps.

The below image shows the user interface of the Apply Attribute page.

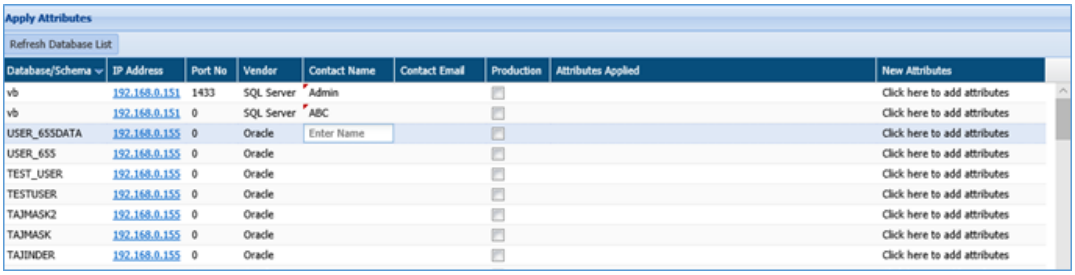


- **New Attributes**: select the attribute name from the New Attribute drop-down. This functionality allows you to add tags in the Attributes Applied column.

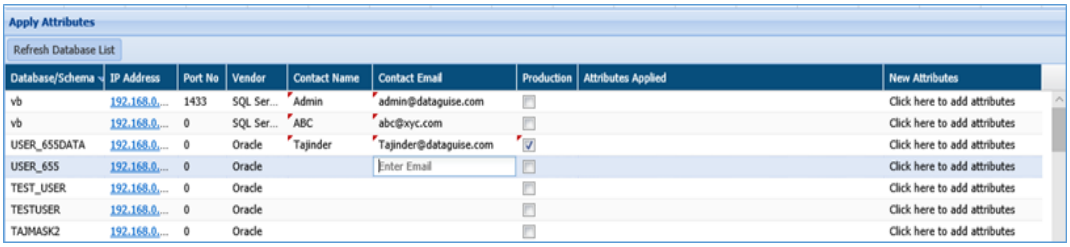
  To remove tag, click the 'x' next to the tag name.

  To create an Attribute Group and Attribute, click section 1.2 Attribute

- **Contact Name**: Enter the name of the person next to the database under the Contact Name column.

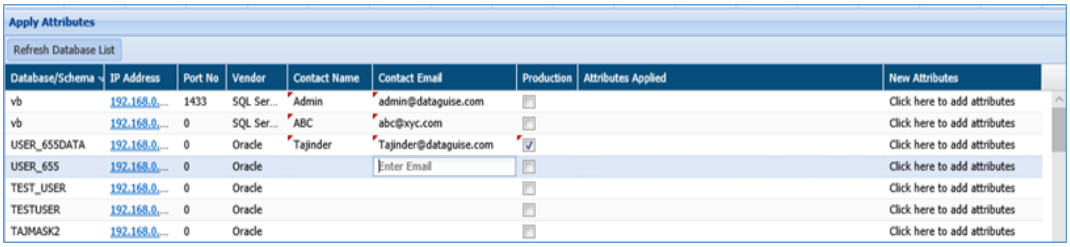


- **Contact Email**: Enter the email address next to the database under the Contact Email Column.



- **Save Attributes**: Click the Save Attribute button, if you want to save the changes.

- **Production:** Check the Production checkbox to specify that the selected database/schema is the production database.



- **Apply Attributes**: Use the Apply Attribute pane to assign tags or descriptors to database/schema. You can also use these tags to organize DBMS scan reports. This pane will display basic information such as Database/Schema name, IP

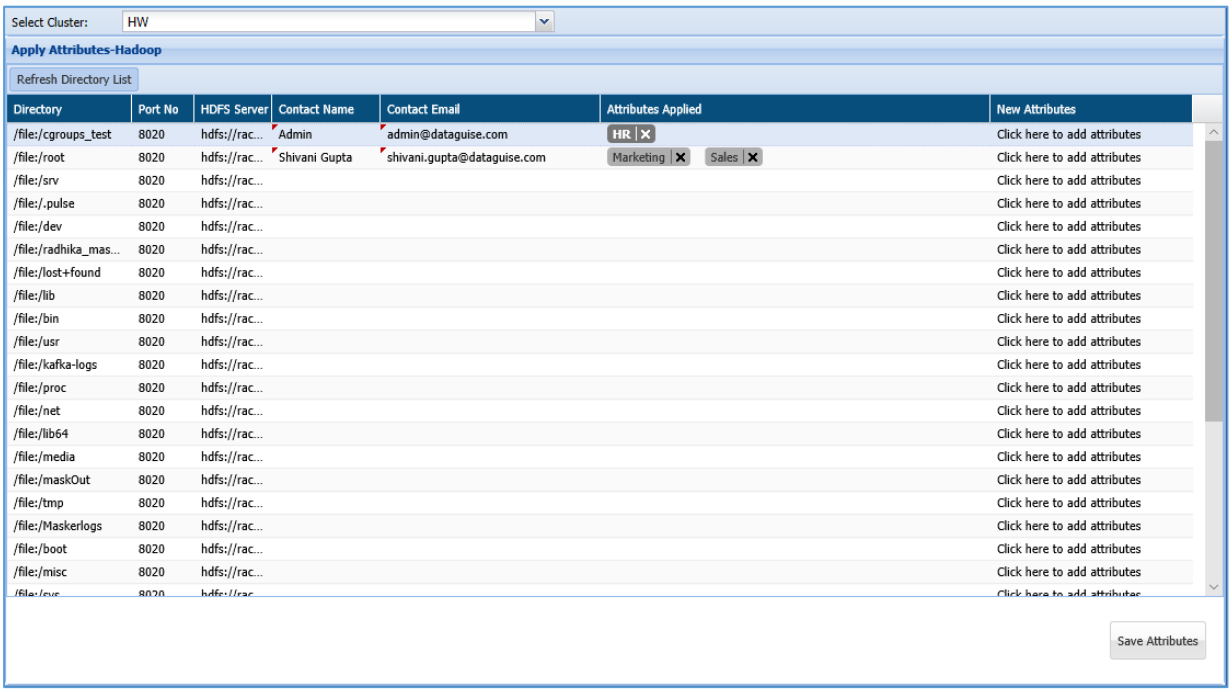
Address, Port No, Vendor, Contact Name, Contact Email, Production, Attributes Applied, New Attributes.

- **Refresh Database List**: Click the Refresh Database List button. It will update the current page with new information.

12.3.2 Hadoop

To assign an attribute to Database/Schema, follow the below steps.

The below image shows the user interface of the Apply Attribute page.

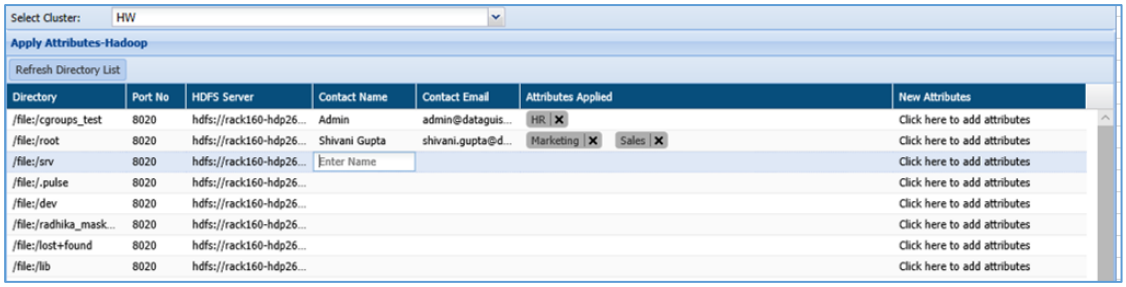


- **New Attributes**: select the attribute name from the New Attribute drop-down. This functionality allows you to add tags in the Attributes Applied column.

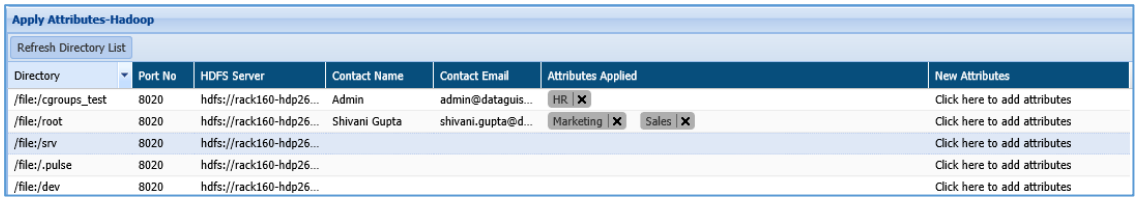
  To remove tag, click the 'x' next to the tag name.

  To create an Attribute Group and Attribute, click section 1.2 Attribute

- **Contact Name**: Enter the name of the person next to the database under the Contact Name column.



- **Contact Email**: Enter the email address next to the database under the Contact Email Column.



- **Save Attributes**: Click the Save Attribute button, if you want to save the changes.

- **Apply Attributes - Hadoop**: Use the Apply Attribute pane to assign tags or descriptors to database/schema. You can also use these tags to organize DBMS scan reports. This pane will display basic information such as Database/Schema name, IP Address, Port No, Vendor, Contact Name, Contact Email, Production, Attributes Applied, New Attributes.

- **Refresh Database List**: Click the Refresh Database List button. It will update the current page with new information.

13 Structure Management

13.1 Concept

This feature enables user to apply masking on a database without employing detection to find sensitive data. If you know which specific column within a database contain sensitive data, then you can define a structure based on which masking is deployed.

Currently, DgSecure supports structure definitions for Text, Sequence, Avro, RC/ORC and Parquet Files. For RC/ORC files, DgSecure also supports masking/encryption within unstructured columns.

13.2 Create a Structure

This section will explain the process of creating a structure.

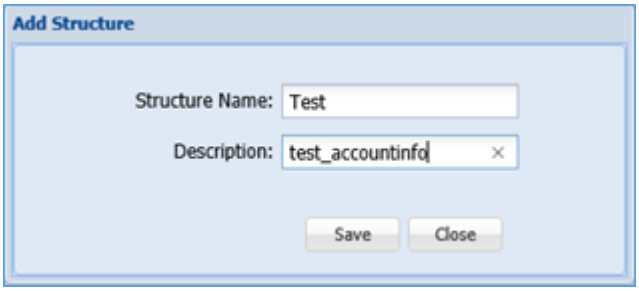
13.2.1 RDBMS

In RDBMS, first you need to create a structure and then you can add the column for a masking. You can also add new databases, edit or delete the existing databases.

13.2.1.1 Create a Structure

To create a structure. Click **RDBMS > Structure Management > Add Structure**.

The below image shows the user interface for creating a structure.

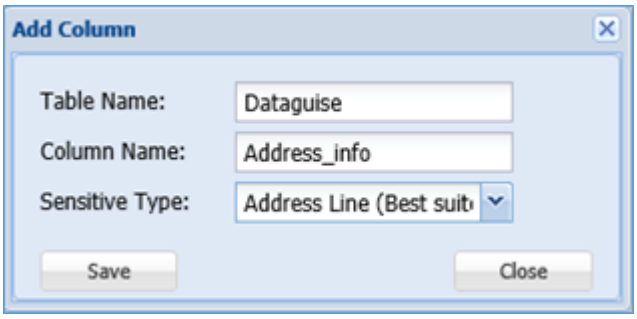


- **Add Structure**: Click the Add Structure button to define the Structure Name and Description.
- **Structure Name:** Enter the name of the structure.
- **Description:** Enter the description for the structure name.
- **Save:** Click the Save button, if you want to save the changes.
- **Close:** Click the Close button, if you do not want to save the changes.

13.2.1.2 Add Column info for a Structure

To add a column for masking. Click **RDBMS > Structure Management > Add Column**.

The below image shows the user interface for adding a column for masking.

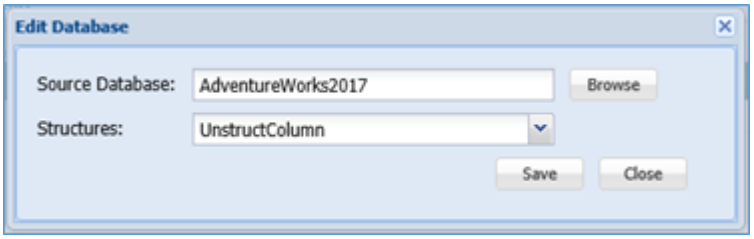


- **Add Column**: Click the Add Column button to specify the Table Name, Column Name and Sensitive Type for masking.
- **Table Name**: Enter the name of the table.
- **Column Name**: Enter the name of the column which need to be masked.
- **Sensitive Type**: Select the Sensitive Type from the drop-down.
- **Save**: Click the Save button, if you want to save the changes.
- **Close**: Click the Close button, if you do not want to save the changes.

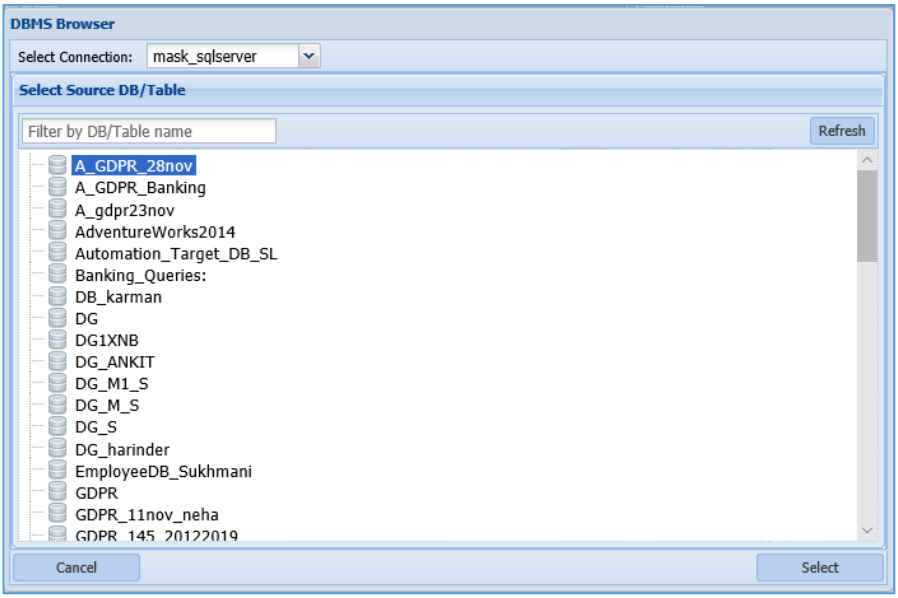
13.2.1.3 Create a Databases

To create a database. Click **RDBMS > Structure Management > Add Database**.

The below image shows the user interface of the creating a database.



- **Add Database**: Click the Add Database button to specify the Source Database Name and the Structure.
- **Source Database**: Enter the name of the database or you can click the Browse button to search for database.
- **Structures**: Select the structure from the Structure drop-down.
- **Browse**: Click the Browse button to search for the database or you can manually enter the name of the database.



1. **Select Connection**: Select the connection from the Select Connection drop-down.
2. Select the DB/Table from the Select Source DB/Table pane.
3. **Refresh**: Click the Refresh button to update the current page with updated information.
4. **Cancel**: Click the Cancel button, if you do not want to save the changes.
5. **Select**: Click the Select button, if you want to save the changes.

- **Save**: Click the Save button, if you want to save the changes.
- **Close**: Click the Close button, if you do not want to save the changes.

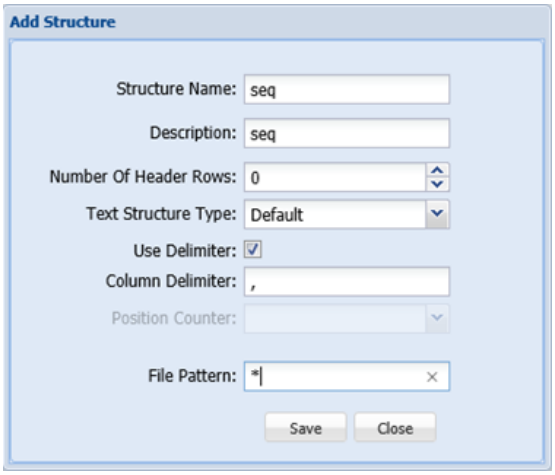
13.2.2 Hadoop

Hadoop currently runs against text files (and compressed text files), Sequence files, RC/ORC and Avro files

13.2.2.1 Text Structure

Create a Structure

To create a structure. Click **Hadoop > Structure Management > Text Files > Add Structure**. The below image shows the user interface for creating a structure.



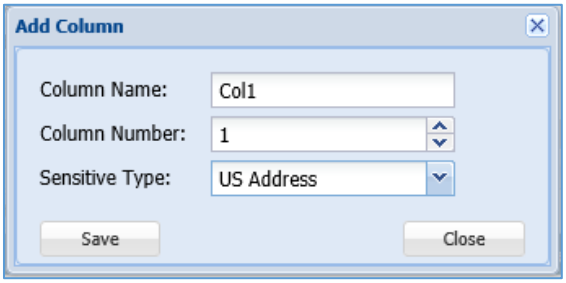
- **Structure Name**: Enter the name of the structure. The structure name accepts letters, numbers and symbols. The name must be unique to each individual structure.
- **Description**: Enter the description for the structure name.
- **Number of Header Rows**: Select the numeric value from the list box.
- **Text Structure Type**: You can select the **Text Structure Type** from the drop-down. The available options are: **Default, HiveArray, HiveStruct,** and **HiveMap.**
- **Use Delimiter**: This field will appear, when you select **Default** as the **Text Structure Type.** Check this checkbox to identify different columns from the text file, on the basis of the provided delimiter.
- **Column Delimiter**: This field will appear, when you select **Default** or **HiveStruct** as the **Text Structure Type.** Enter the Column Delimiter. The Column Delimiter field accepts several character types such as: Comma, Semicolon, Pipe, Space etc.
- **Position Counter**: This field will appear, when you select **Default** as the **Text Structure Type.** This field will appear only when you will uncheck the **Use Delimiter** checkbox. Select the value of the position counter from the drop-down. Enter the position values at the time of adding a column.
- **Array Delimiter**: This field will appear, when you select **HiveArray** as the **Text Structure Type**. Enter the delimiter for the Array.
- **Select Sensitive Type:** This field will appear, when you select **HiveArray** as the **Text Structure Type**. Select the Sensitive Type from the drop-down.
- **Kay-Value Delimiter:** This field will appear, when you select **HiveMap** as the **Text Structure Type**. Enter the key value delimiter.

- **Element Delimiter**: This field will appear, when you select **HiveMap** as the **Text Structure Type**. Enter the element delimiter.
- **Select Sensitive Type for Key:** This field will appear, when you select **HiveMap** as the **Text Structure Type**. Select the Sensitive Type for the key.
- **Select Sensitive Type for Value**: This field will appear, when you select **HiveMap** as the **Text Structure Type**. Select the Sensitive Type for the value.
- **Add Keys:** Check this checkbox to add a new key.
    - **:** Click this button to add a new key.
    - **:** Click this button to delete a key.
    - **Select Sensitive Type for Key:** Select the Sensitive Type for the key.
    - **Select Sensitive Type for Value**: Select the Sensitive Type for the value.
- **File Pattern**: Enter the File Pattern in the text box. The File Pattern accepts all supported file types, for example, .txt, .xml, .csv

Add column info for a Structure

To add a column for masking. Click **Hadoop > Structure Management > Add Column**.

The below image shows the user interface for adding a column for masking.



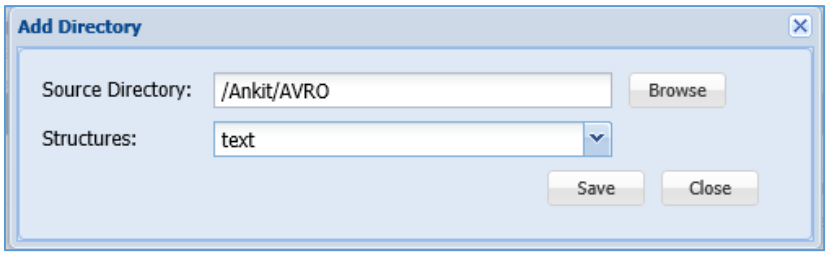
- **Column Name**: Enter the name of the column which need to be masked. The column name accepts letters, numbers and symbols.
- **Column Number**: Select the numeric value for the column from Column Number list box.
- **Offset:** This option will appear when you select **Position Counter** value in the Create Structure pop-up. Enter the starting position of the cell.
- **Length:** This option will appear when you select **Position Counter** value in the Create Structure pop-up. Enter the length of the cell.
- **Sensitive Type**: Select the Sensitive Type from the drop-down.
- **Save**: Click the Save button, if you want to save the changes.

- **Close**: Click the Close button, if you do not want to save the changes.

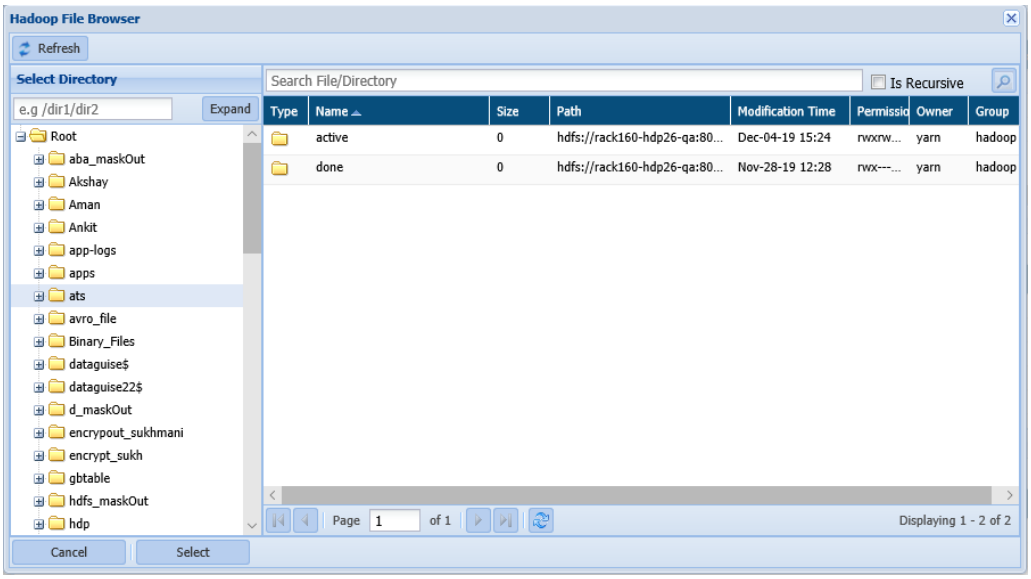
Create a Directory

To create a database. Click **RDBMS > Structure Management > Add Directory**.

The below image shows the user interface of the creating a database.



- **Source Database**: Enter the name of the directory or you can click the Browse button to search for directory.
- **Structures**: Select the structure from the Structures drop-down.
- **Browse**: Click the Browse button to search for the directory or you can manually enter the name of the database.



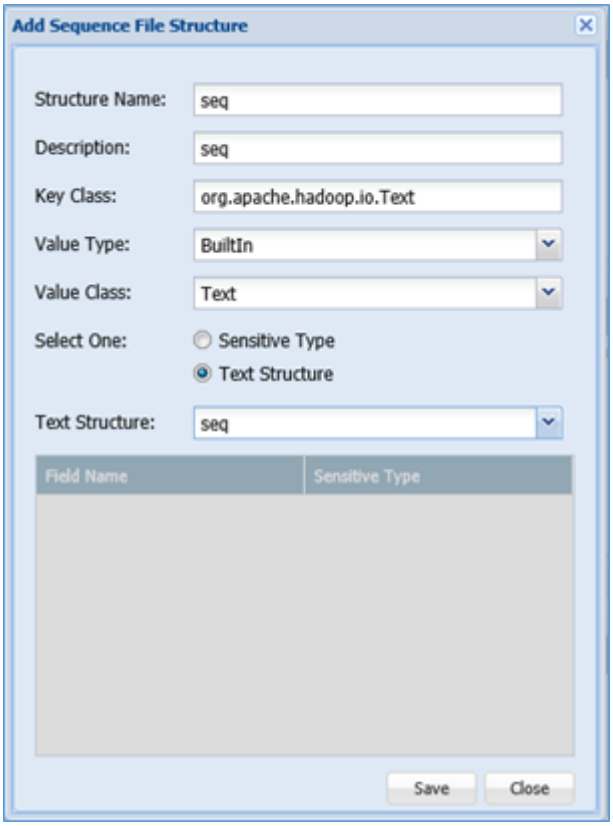
1. **Select Directory**: Select the directory from the Select directory pane. The right pane next to Select Directory pane will display the list of all Files and Folders.
2. Select the File/Directory from the right pane.
3. Select: Click the Select button, if you want to include the file or directory.
4. **Refresh**: Click the Refresh button to update the current page with updated information.
5. **Cancel**: Click the Cancel button, if you do not want to save the changes.

- **Save**: Click the Save button, if you want to save the changes.
- **Close**: Click the Close button, if you do not want to save the changes.

13.2.2.2 Sequence Files

Create a Structure

To create a structure. Click **Hadoop > Structure Management > Sequence Files > Add Structure**. The below image shows the user interface for creating a structure.



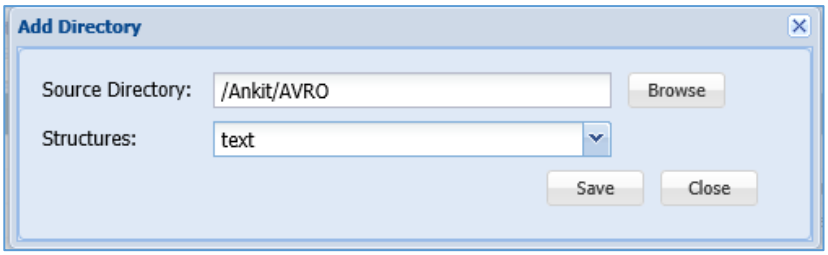
- **Structure Name**: Enter the name of the structure. This field structure accepts numbers, symbols and letters.
- **Description**: Enter the description for the structure name.
- **Key Class**: Enter the Key Class.
- **Value Type**: Select the Value Type from the drop-down. You can select either 'Built-In' or 'SelfDefined'.
    - ❖ **Value Class**: Choose appropriate Value Class from the drop-down.
    - ❖ **Select One**: You can choose either 'Sensitive Type' or 'Text Structure'.
- **Save**: Click the Save button, if you want to save the changes.

- **Close**: Click the Close button, if you do not want to save the changes.

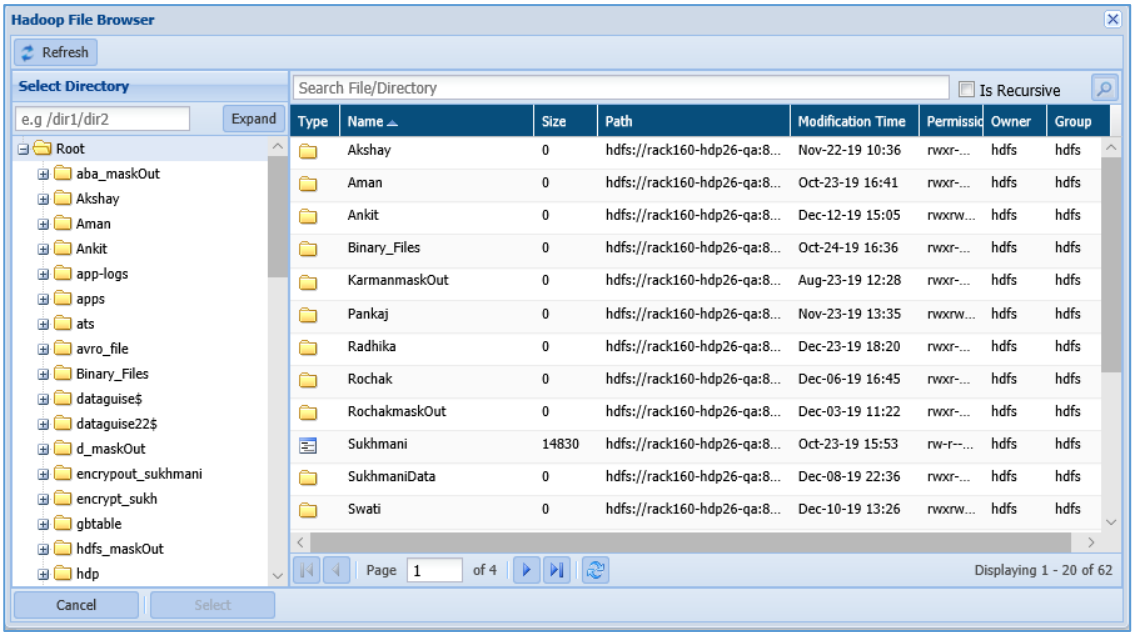
Create a Directories

To create a database. Click **RDBMS > Structure Management > Add Directory**.

The below image shows the user interface of the creating a database.



- **Source Database**: Enter the name of the directory or you can click the Browse button to search for directory.
- **Structures**: Select the structure from the Structures drop-down.
- **Browse**: Click the Browse button to search for the directory or you can manually enter the name of the database.



1. **Select Directory**: Select the directory from the Select directory pane. The right pane next to Select Directory pane will display the list of all Files and Folders.
2. Select the File/Directory from the right pane.
3. Select: Click the Select button, if you want to include the file or directory.

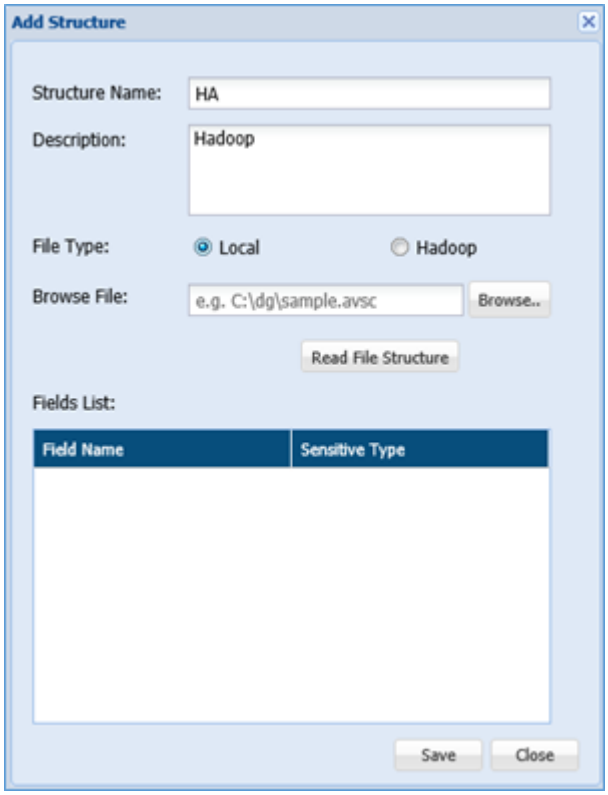
4. **Refresh**: Click the Refresh button to update the current page with updated information.
5. **Cancel**: Click the Cancel button, if you do not want to save the changes.

- **Save**: Click the Save button, if you want to save the changes.
- **Close**: Click the Close button, if you do not want to save the changes.

13.2.2.3 AVRO Files

Create a Structure

To create a structure. Click **Hadoop > Structure Management > AVRO Files > Add Structure**. The below image shows the user interface for creating a structure.



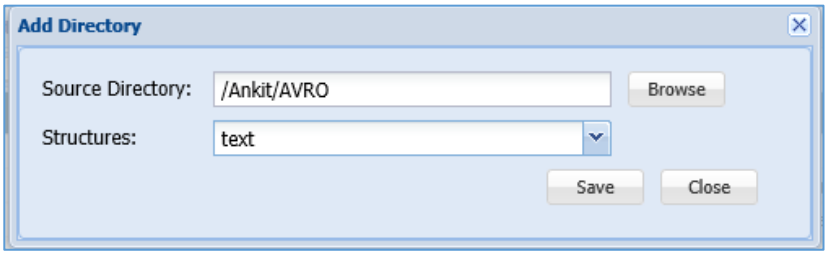
- **Structure Name**: Enter the name of the structure. This field accepts symbols, letters.
- **Description**: Enter the description for the structure name.
- **File Type**: Select either 'Local' or 'Azure Cloud' from the File Type options.
- **Browse File**: Click the 'Browse' button to include the file from your local machine if 'Local' is selected in the File Type option.
- **Read File Structure**: To read the structure of the file, click the Read File Structure.

- **Save**: Click the Save button, if you want to save the changes.
- **Close**: Click the Close button, if you do not want to save the changes.

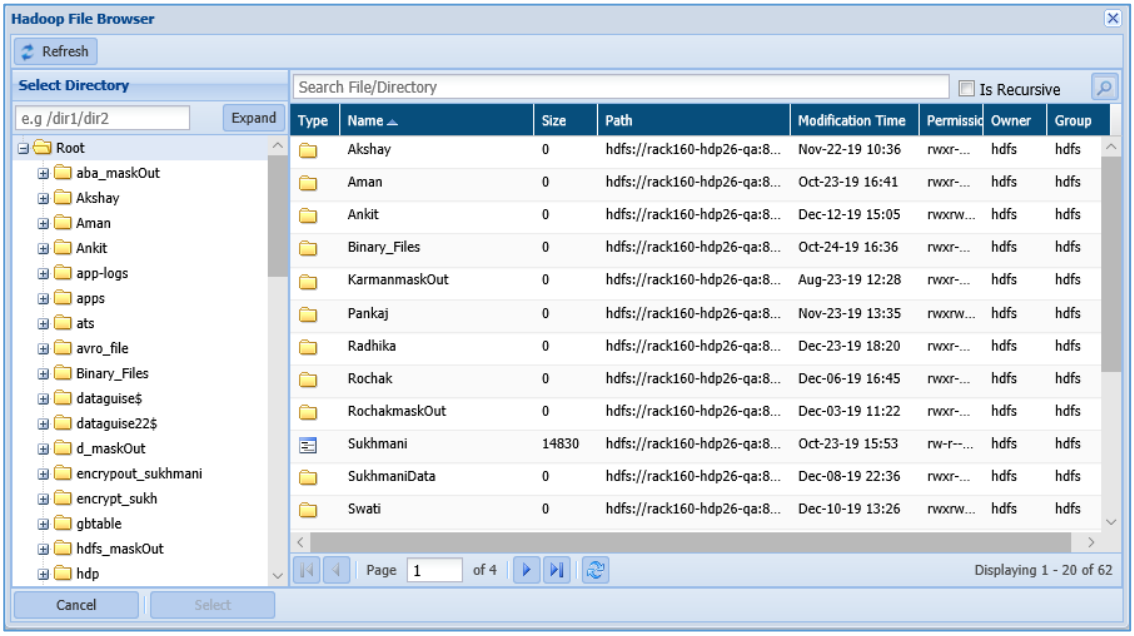
Create a Directories

To create a database. Click **RDBMS > Structure Management > Add Directory**.

The below image shows the user interface of the creating a database.



- **Source Database**: Enter the name of the directory or you can click the Browse button to search for directory.
- **Structures**: Select the structure from the Structures drop-down.
- **Browse**: Click the Browse button to search for the directory or you can manually enter the name of the database.



1. **Select Directory**: Select the directory from the Select directory pane. The right pane next to Select Directory pane will display the list of all Files and Folders.
2. Select the File/Directory from the right pane.
3. Select: Click the Select button, if you want to include the file or directory.

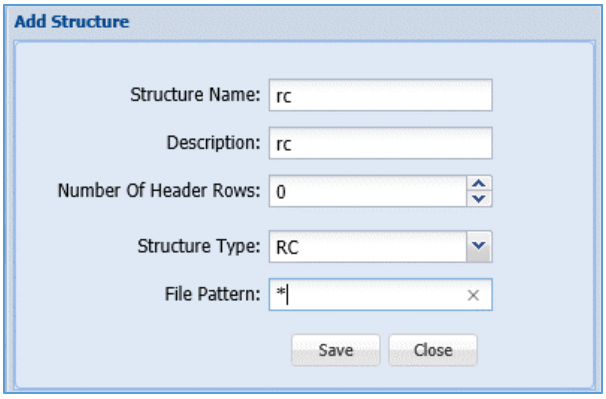
4. **Refresh**: Click the Refresh button to update the current page with updated information.
5. **Cancel**: Click the Cancel button, if you do not want to save the changes.

- **Save**: Click the Save button, if you want to save the changes.
- **Close**: Click the Close button, if you do not want to save the changes.

13.2.2.4 RC/ORC Files

Create a Structure

To create a structure. Click **Hadoop > Structure Management > RC/ORC Files > Add Structure**.
The below image shows the user interface for creating a structure.

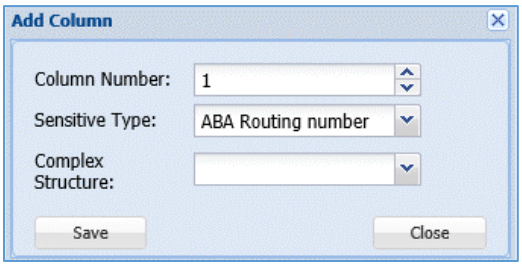


- **Structure Name:** Enter the name of the structure. This field accepts letters, symbols and numbers. The structure name should be unique.
- **Description:** Enter the description for the structure name.
- **Number of Header Rows:** Select the numeric value from the list box.
- **Structure Type:** Select the structure type from the given options.
- **File Pattern:** Enter the File Pattern in the text box.
- **Save:** Click the Save button, if you want to save the changes.
- **Close:** Click the Close button, if you do not want to save the changes.

Add Column info for a Structure

To add a column for masking. Click **Hadoop > Structure Management > RC/ORC Files > Add Column**.

The below image shows the user interface for adding a column for masking.

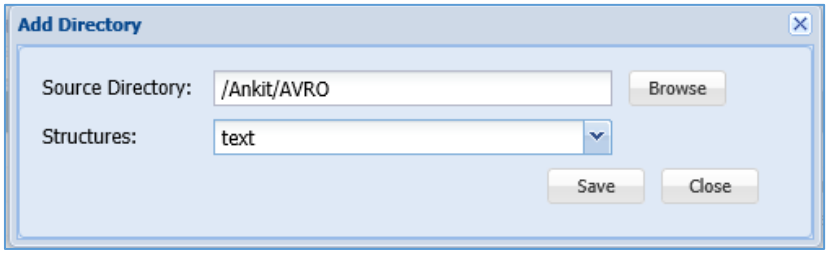


- **Column Number**: Select the column number from the Column Number list box.
- **Sensitive Type**: Select the Sensitive Type from the drop-down.
- **Complex Structure**: Select the option from the Complex Structure drop-down.
- **Save**: Click the Save button, if you want to save the changes.
- **Close**: Click the Close button, if you do not want to save the changes.

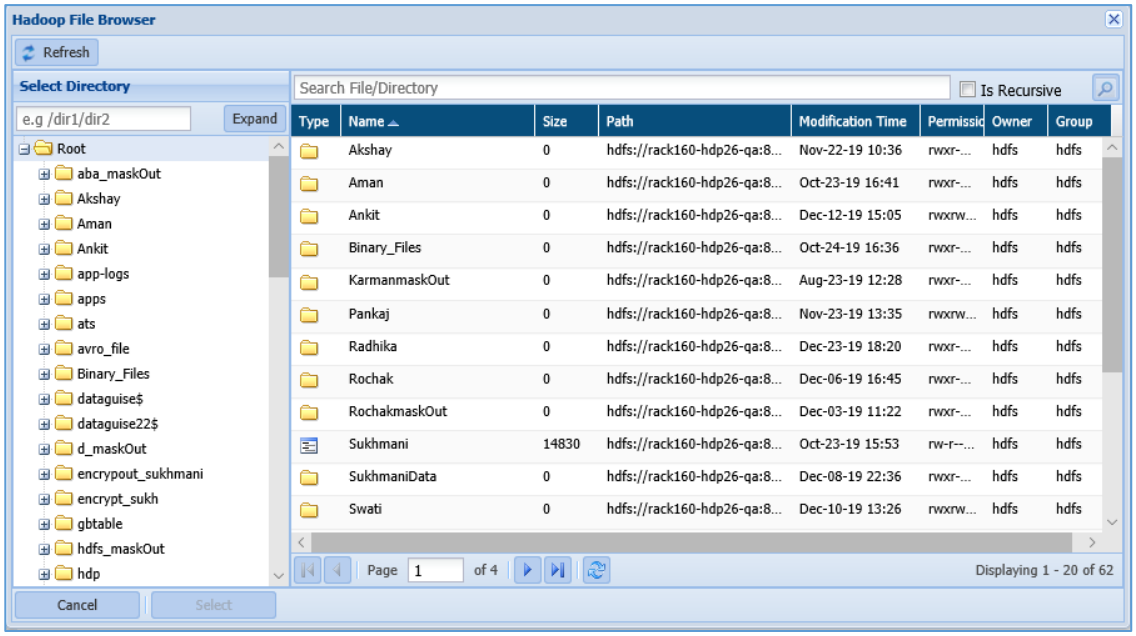
Create a Directories

To create a database. Click **Hadoop > Structure Management > RC/ORC Files > Add Directory**.

The below image shows the user interface of the creating a database.



- **Source Database**: Enter the name of the directory or you can click the Browse button to search for directory.
- **Structures**: Select the structure from the Structures drop-down.
- **Browse**: Click the Browse button to search for the directory or you can manually enter the name of the database.



1. **Select Directory**: Select the directory from the Select directory pane. The right pane next to Select Directory pane will display the list of all Files and Folders.
2. Select the File/Directory from the right pane.
3. Select: Click the Select button, if you want to include the file or directory.
4. **Refresh**: Click the Refresh button to update the current page with updated information.
5. **Cancel**: Click the Cancel button, if you do not want to save the changes.

- **Save**: Click the Save button, if you want to save the changes.
- **Close**: Click the Close button, if you do not want to save the changes.

13.2.3Files

To access Structure Management in Files. Click **Files > Structure Management.**

To know the process of creating a structure for Text, Sequence, AVRO, RC/ORC and Parquet Files, refer to section Hadoop.

13.2.4AWS

To access Structure Management in Files. Click **AWS > Structure Management.**

To know the process of creating a structure for Text, Sequence, AVRO, RC/ORC and Parquet Files, refer to section Hadoop.

13.2.5 Azure

To access Structure Management in Files. Click **Azure > Structure Management.**

To know the process of creating a structure for Text, Sequence, AVRO, RC/ORC and Parquet Files, refer to section Hadoop.

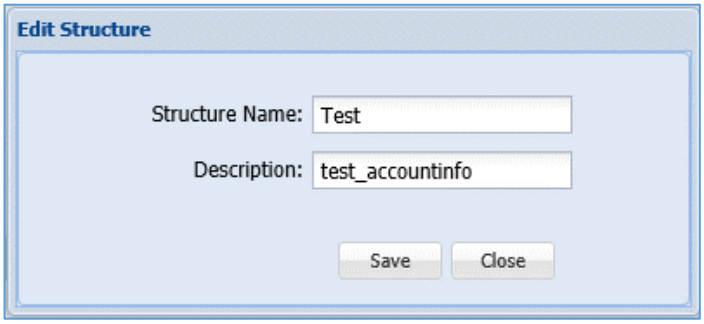
13.3 Edit a Structure

13.3.1 RDBMS

13.3.1.1 Edit a Structure

To edit a structure. Click **RDBMS > Structure Management > Edit Structure**.

The below image shows the user interface for creating a structure.

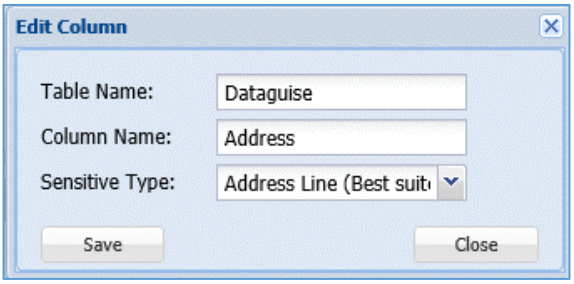


- **Structure Name:** Edit the name of the structure.
- **Description:** Edit the description for the structure name.
- **Save:** Click the Save button, if you want to save the changes.
- **Close:** Click the Close button, if you do not want to save the changes.

13.3.1.2 Edit Column info for a Structure

To edit a column for masking. Click **RDBMS > Structure Management > Edit Column**.

The below image shows the user interface for adding a column for masking.



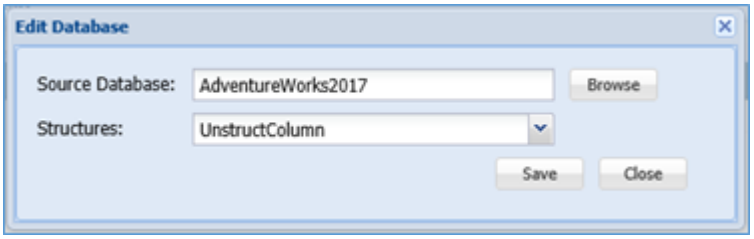
- **Table Name**: Edit the name of the table.

- **Column Name**: Edit the name of the column which need to be masked.
- **Sensitive Type**: Select the Sensitive Type from the drop-down.
- **Save**: Click the Save button, if you want to save the changes.
- **Close**: Click the Close button, if you do not want to save the changes.

13.3.1.3 Edit a Databases

To edit a database. Click **RDBMS > Structure Management > Edit Database**.

The below image shows the user interface of the creating a database.



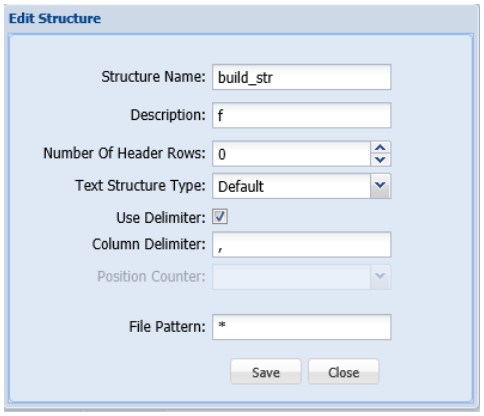
- **Source Database**: Edit the name of the database or you can click the Browse button to search for database.
- **Structures**: Select the structure from the Structure drop-down.
- **Browse**: Click the Browse button to search for the database or you can manually enter the name of the database.
- **Save**: Click the Save button, if you want to save the changes.
- **Close**: Click the Close button, if you do not want to save the changes.

13.3.2 Hadoop

13.3.2.1 Text Structure

Edit a Structure

To Edit a structure. Click **Hadoop > Structure Management > Text Files > Edit Structure**.
The below image shows the user interface for creating a structure.



- **Structure Name**: Edit the name of the structure. The structure name accepts letters, numbers and symbols. The name must be unique to each individual structure.
- **Description**: Edit the description for the structure name.
- **Number of Header Rows**: Select the numeric value from the list box.
- **Text Structure Type**: You can select the Text Structure Type from the drop-down.
- **Use Delimiter**: Check the Delimiter checkbox, if you want to use this option.
- **Column Delimiter**: Edit the Column Delimiter. The Column Delimiter field accepts several character types such as:
  - Comma
  - Semicolon
  - Pipe
- **Element Delimiter**: Edit the Element Delimiter.
- **Select Sensitive Type for Key:** Select the Sensitive Type from the Select Sensitive Type for Key drop-down.
- **Select Sensitive Type for Value**: Select the given option from the drop-down.
- **Add Keys**
- **File Pattern**: Edit the File Pattern in the text box. The File Pattern accepts all supported file types, for example, .txt, .xml, .csv

---

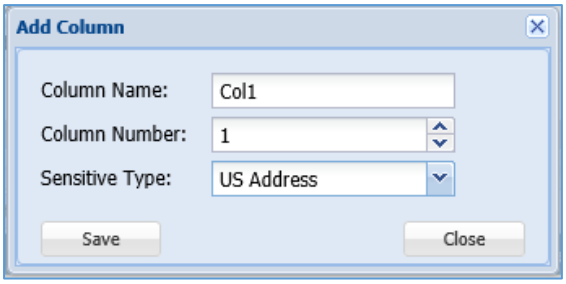
Note:

- The Element Delimiter, Select Sensitive Type for Key, Select Sensitive Type for Value, Add Keys options are available when HiveMap is selected in Text Structure Type drop-down.
- Array Delimiter option will be available when HiveArray is selected in the Text Structure Type drop-down.
- Position Counter and Use Delimiter option will be available when Default is selected in the Text Structure Type drop-down.

Edit column info for a Structure

To edit a column for masking. Click **RDBMS > Structure Management > Edit Column**.

The below image shows the user interface for adding a column for masking.

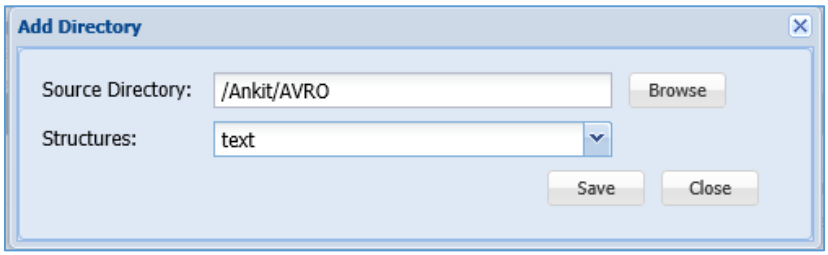


- **Column Name**: Edit the name of the column which need to be masked. The column name accepts letters, numbers and symbols.
- **Column Number**: Select the numeric value for the column from Column Number list box.
- **Sensitive Type**: Select the Sensitive Type from the drop-down.
- **Save**: Click the Save button, if you want to save the changes.
- **Close**: Click the Close button, if you do not want to save the changes.

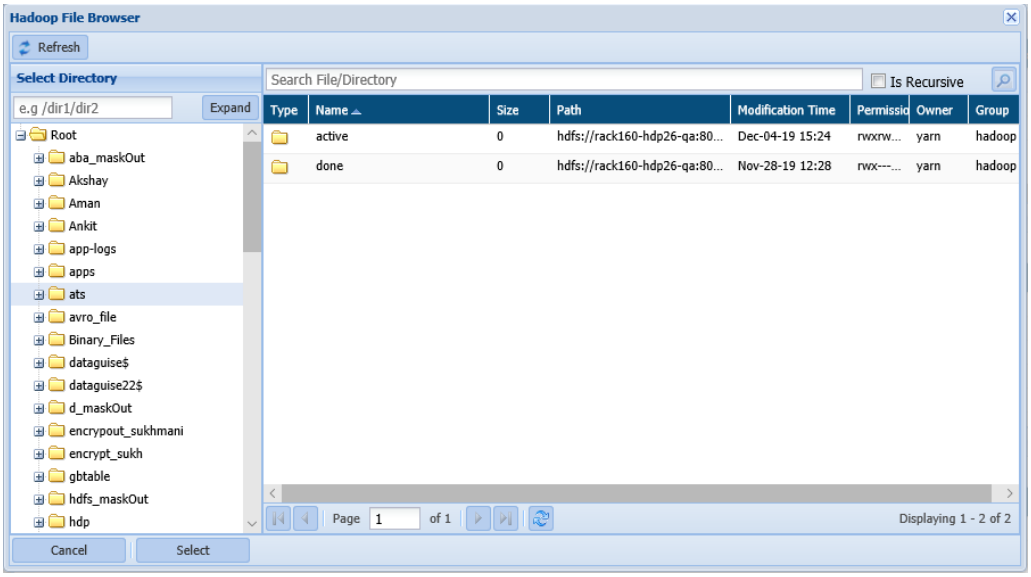
Edit a Directory

To edit a database. Click **RDBMS > Structure Management > Edit Directory**.

The below image shows the user interface of the creating a database.



- **Source Database**: Edit the name of the directory or you can click the Browse button to search for directory.
- **Structures**: Select the structure from the Structures drop-down.
- **Browse**: Click the Browse button to search for the directory or you can manually enter the name of the database.



1. **Select Directory**: Select the directory from the Select directory pane. The right pane next to Select Directory pane will display the list of all Files and Folders.
2. Select the File/Directory from the right pane.
3. Select: Click the Select button, if you want to include the file or directory.
4. **Refresh**: Click the Refresh button to update the current page with updated information.
5. **Cancel**: Click the Cancel button, if you do not want to save the changes.

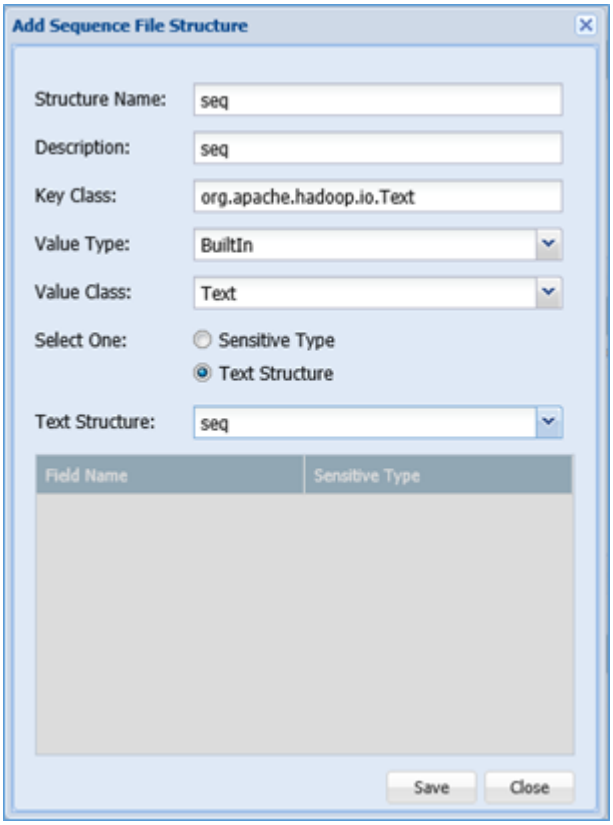
- **Save**: Click the Save button, if you want to save the changes.
- **Close**: Click the Close button, if you do not want to save the changes.

13.3.2.2 Sequence Files

Edit a Structure

To edit a structure. Click **Hadoop > Structure Management > Sequence Files > Edit Structure**.

The below image shows the user interface for creating a structure.

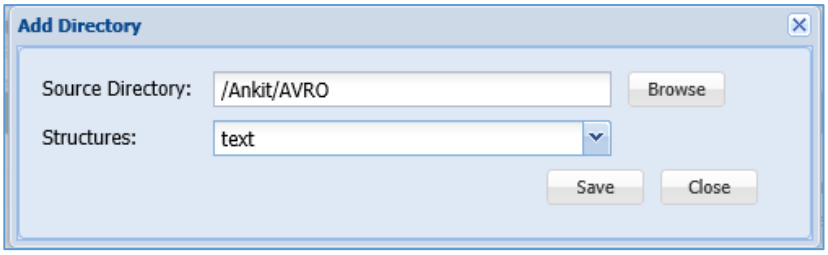


- **Structure Name**: Edit the name of the structure. This field structure accepts numbers, symbols and letters.
- **Description**: Edit the description for the structure name.
- **Key Class**: Edit the Key Class.
- **Value Type**: Select the Value Type from the drop-down. You can select either 'Built-In' or 'SelfDefined'.
    - **Value Class**: Choose appropriate Value Class from the drop-down.
    - **Select One**: You can choose either 'Sensitive Type' or 'Text Structure'.
- **Save**: Click the Save button, if you want to save the changes.
- **Close**: Click the Close button, if you do not want to save the changes.

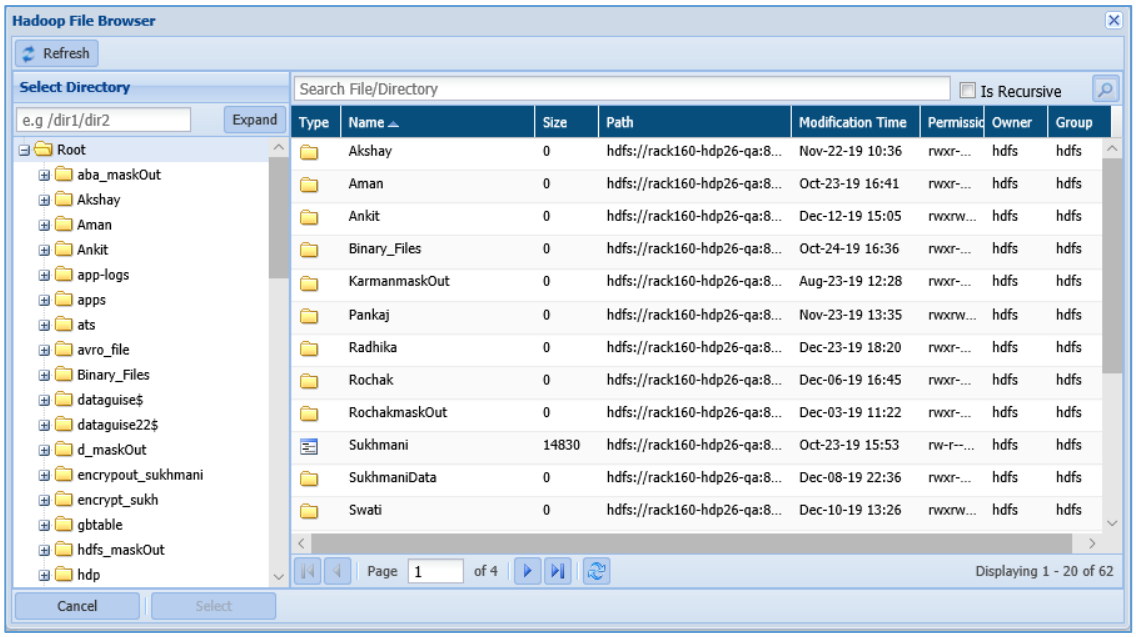
Edit a Directories

To edit a database. Click **RDBMS > Structure Management > Edit Directory**.

The below image shows the user interface of the creating a database.



- **Source Database**: Edit the name of the directory or you can click the Browse button to search for directory.
- **Structures**: Select the structure from the Structures drop-down.
- **Browse**: Click the Browse button to search for the directory or you can manually enter the name of the database.



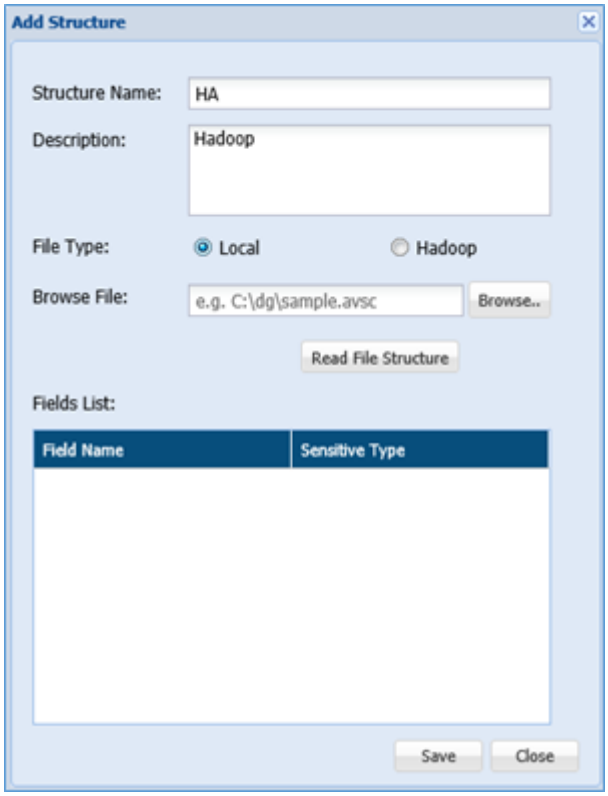
1. **Select Directory**: Select the directory from the Select directory pane. The right pane next to Select Directory pane will display the list of all Files and Folders.
2. Select the File/Directory from the right pane.
3. Select: Click the Select button, if you want to include the file or directory.
4. **Refresh**: Click the Refresh button to update the current page with updated information.
5. **Cancel**: Click the Cancel button, if you do not want to save the changes.

- **Save**: Click the Save button, if you want to save the changes.
- **Close**: Click the Close button, if you do not want to save the changes.

13.3.2.3 AVRO Files

Edit a Structure

To edit a structure. Click **Hadoop > Structure Management > AVRO Files > Edit Structure**. The below image shows the user interface for creating a structure.

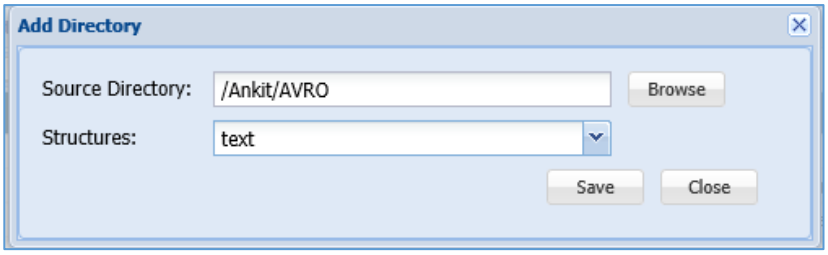


- **Structure Name**: Edit the name of the structure. This field accepts symbols, letters.
- **Description**: Edit the description for the structure name.
- **File Type**: Select either 'Local' or 'Azure Cloud' from the File Type options.
- **Browse File**: Click the 'Browse' button to include the file from your local machine if 'Local' is selected in the File Type option.
- **Read File Structure**: To read the structure of the file, click the Read File Structure.
- **Save**: Click the Save button, if you want to save the changes.
- **Close**: Click the Close button, if you do not want to save the changes.

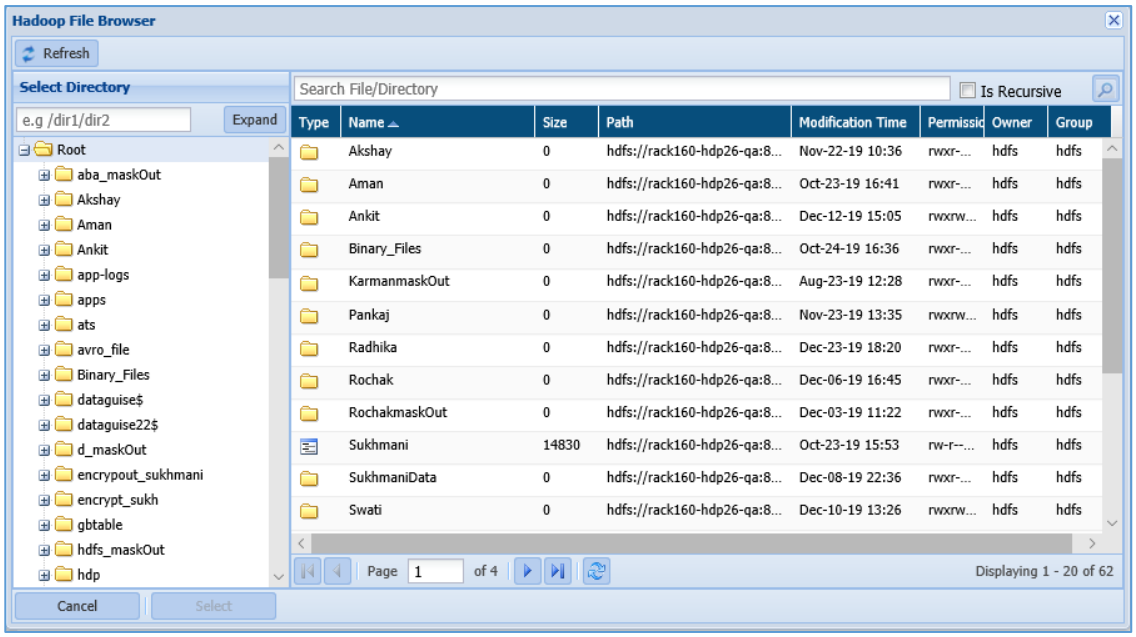
Edit a Directories

To edit a database. Click **Hadoop > Structure Management > AVRO Files > Add Directory**.

The below image shows the user interface of the creating a database.



- **Source Database**: Edit the name of the directory or you can click the Browse button to search for directory.
- **Structures**: Select the structure from the Structures drop-down.
- **Browse**: Click the Browse button to search for the directory or you can manually enter the name of the database.



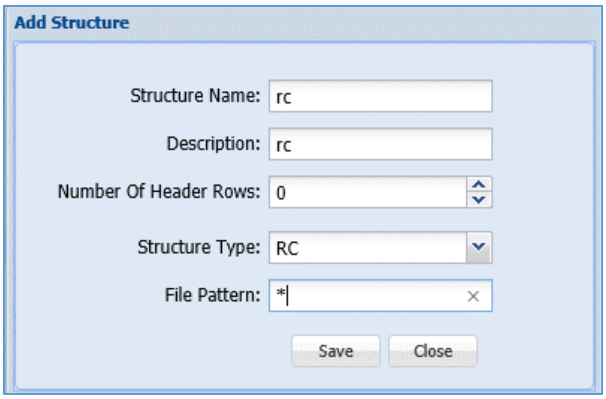
1. **Select Directory**: Select the directory from the Select directory pane. The right pane next to Select Directory pane will display the list of all Files and Folders.
2. Select the File/Directory from the right pane.
3. Select: Click the Select button, if you want to include the file or directory.
4. **Refresh**: Click the Refresh button to update the current page with updated information.
5. **Cancel**: Click the Cancel button, if you do not want to save the changes.

- **Save**: Click the Save button, if you want to save the changes.
- **Close**: Click the Close button, if you do not want to save the changes.

13.3.2.4 RC/ORC Files

Edit a Structure

To edit a structure. Click **Hadoop > Structure Management > RC/ORC Files > Edit Structure**. The below image shows the user interface for creating a structure.



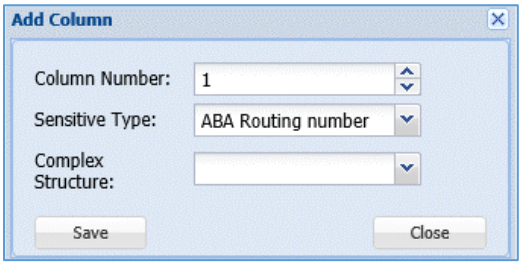
- **Structure Name:** Edit the name of the structure. This field accepts letters, symbols and numbers. The structure name should be unique.
- **Description:** Edit the description for the structure name.
- **Number of Header Rows:** Select the numeric value from the list box.
- **Structure Type:** Select the structure type from the given options.
- **File Pattern:** Edit the File Pattern in the text box.
- **Save:** Click the Save button, if you want to save the changes.
- **Close:** Click the Close button, if you do not want to save the changes.

Edit Column info for a Structure

To edit a column for masking.

Click **Hadoop > Structure Management > RC/ORC Files > Edit Column**.

The below image shows the user interface for adding a column for masking.



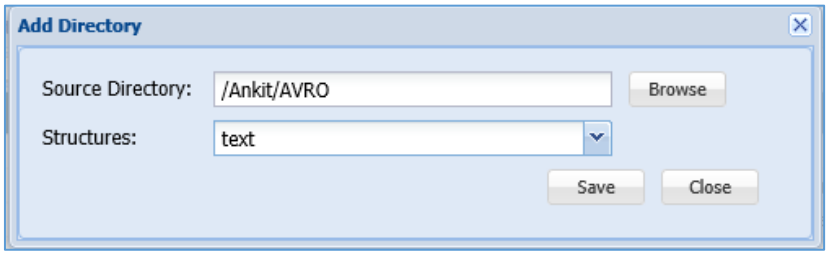
- **Column Number**: Select the column number from the Column Number list box.
- **Sensitive Type**: Select the Sensitive Type from the drop-down.
- **Complex Structure**: Select the option from the Complex Structure drop-down.

- **Save**: Click the Save button, if you want to save the changes.
- **Close**: Click the Close button, if you do not want to save the changes.

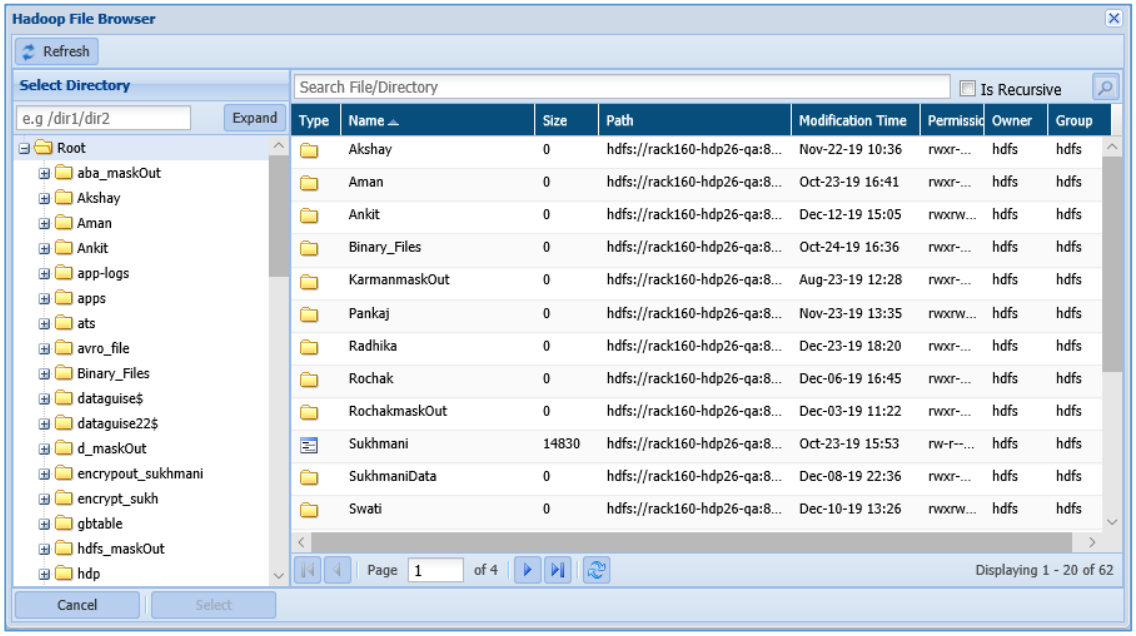
Edit a Directories

To edit a database. Click **Hadoop > Structure Management > RC/ORC Files > Edit Directory**.

The below image shows the user interface of the creating a database.



- **Source Database**: Edit the name of the directory or you can click the Browse button to search for directory.
- **Structures**: Select the structure from the Structures drop-down.
- **Browse**: Click the Browse button to search for the directory or you can manually enter the name of the database.



1. **Select Directory**: Select the directory from the Select directory pane. The right pane next to Select Directory pane will display the list of all Files and Folders.
2. Select the File/Directory from the right pane.
3. Select: Click the Select button, if you want to include the file or directory.

4. **Refresh**: Click the Refresh button to update the current page with updated information.
5. **Cancel**: Click the Cancel button, if you do not want to save the changes.

- **Save**: Click the Save button, if you want to save the changes.
- **Close**: Click the Close button, if you do not want to save the changes.

13.3.3 Files

To access Structure Management in Files. Click **Files > Structure Management.**

To know the process of editing a structure for Text, Sequence, AVRO, RC/ORC and Parquet Files, click Hadoop .

13.3.4 AWS

To access Structure Management in Files. Click **AWS > Structure Management.**

To know the process of editing a structure for Text, Sequence, AVRO, RC/ORC and Parquet Files, click Hadoop.

13.3.5 Azure

To access Structure Management in Files. Click **Azure > Structure Management.**

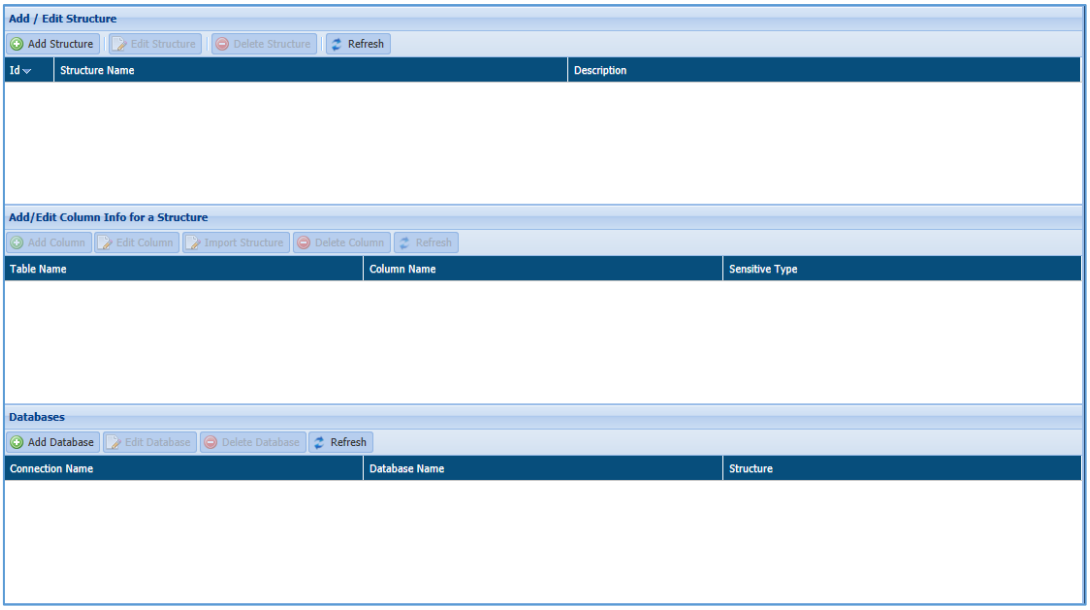
To know the process of editing a structure for Text, Sequence, AVRO, RC/ORC and Parquet Files, click Hadoop.

13.4 List a Structure

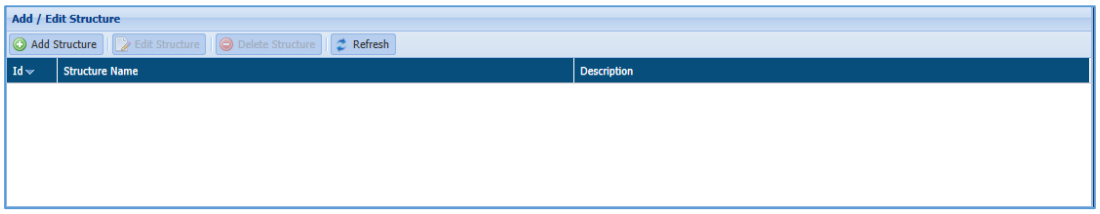
13.4.1 RDBMS

This section will explain the screen of the Structure Management.

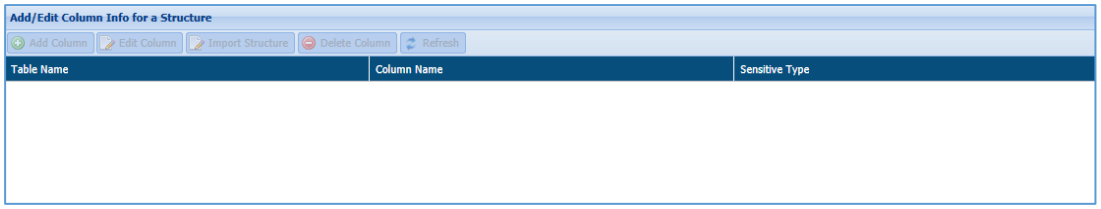
The below screenshot shows the user interface for Structure screen.



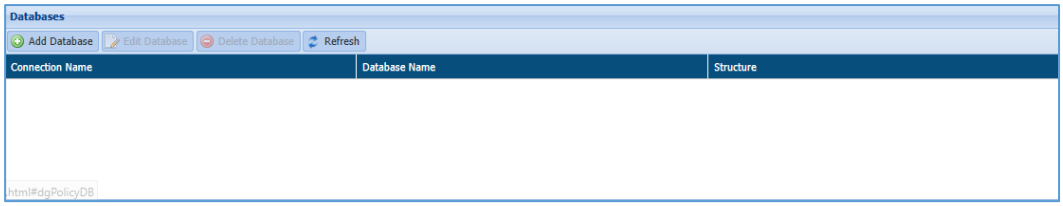
- **Add/Edit Structure:**
  The Add/Edit Structure will display the list of all structure that you have created. It includes information about structure like ID (system generated), Structure Name, Description of the structure.



- **Add/Edit Column Info for a Column:**
  The Add/Edit Column Info for a Column will display the list masked column list. It will display the information such as Task Name, Column Name and Sensitive Type.



- **Databases:**
  The Database pane will display the list all databases that you have added. The details include Connection Name, Database Name and Structure.

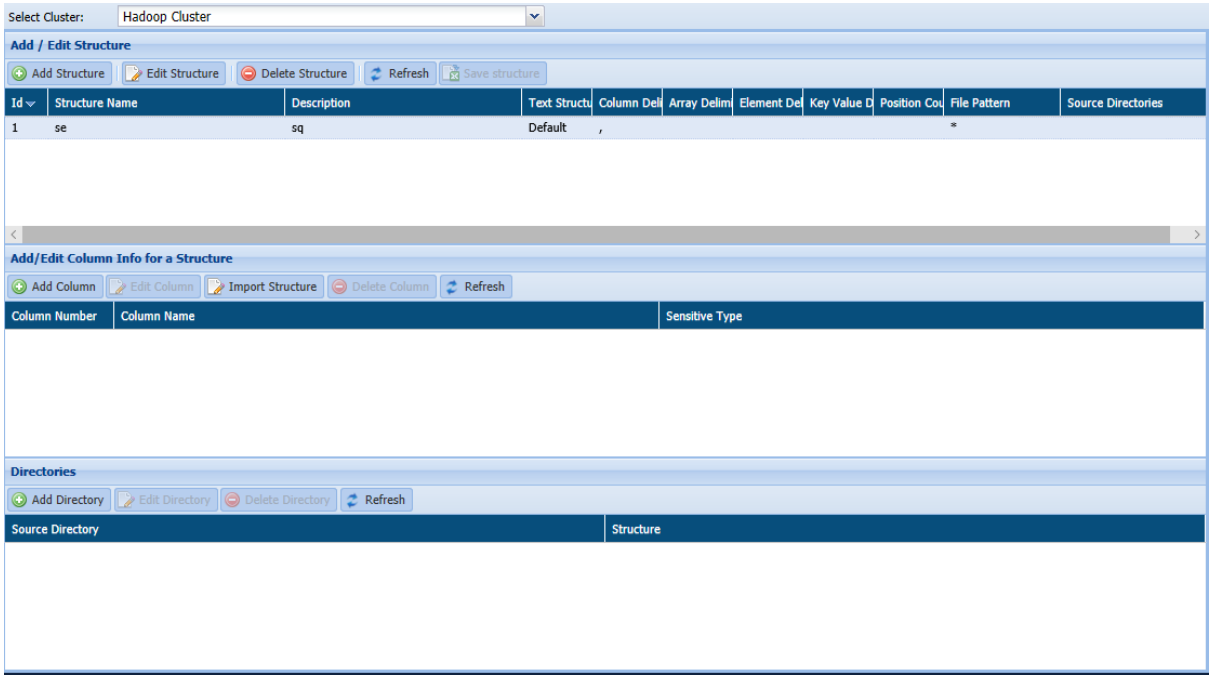


13.4.2 Hadoop

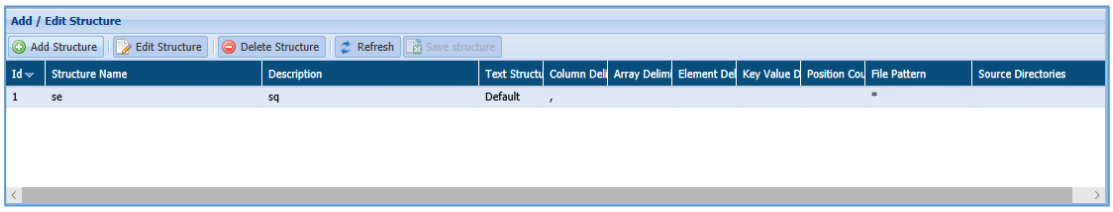
This section will explain the screen of the Structure Management for Text, Sequence, Avro, RC/ORC and Parquet Files.

13.4.2.1 Text Files

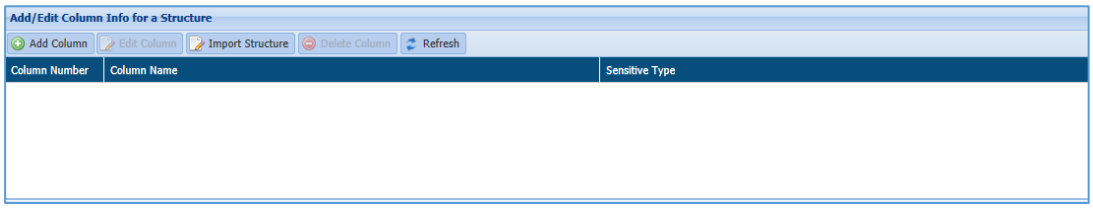
The below image shows the user interface of the Text File section.



- **Add/Edit Structure:**
  The Add/Edit Structure will display the list of all structure that you have created. It includes information about structure like ID (system generated), Structure Name, Description of the structure, Text Structure, Column Delimiter, Array Delimiter, etc.



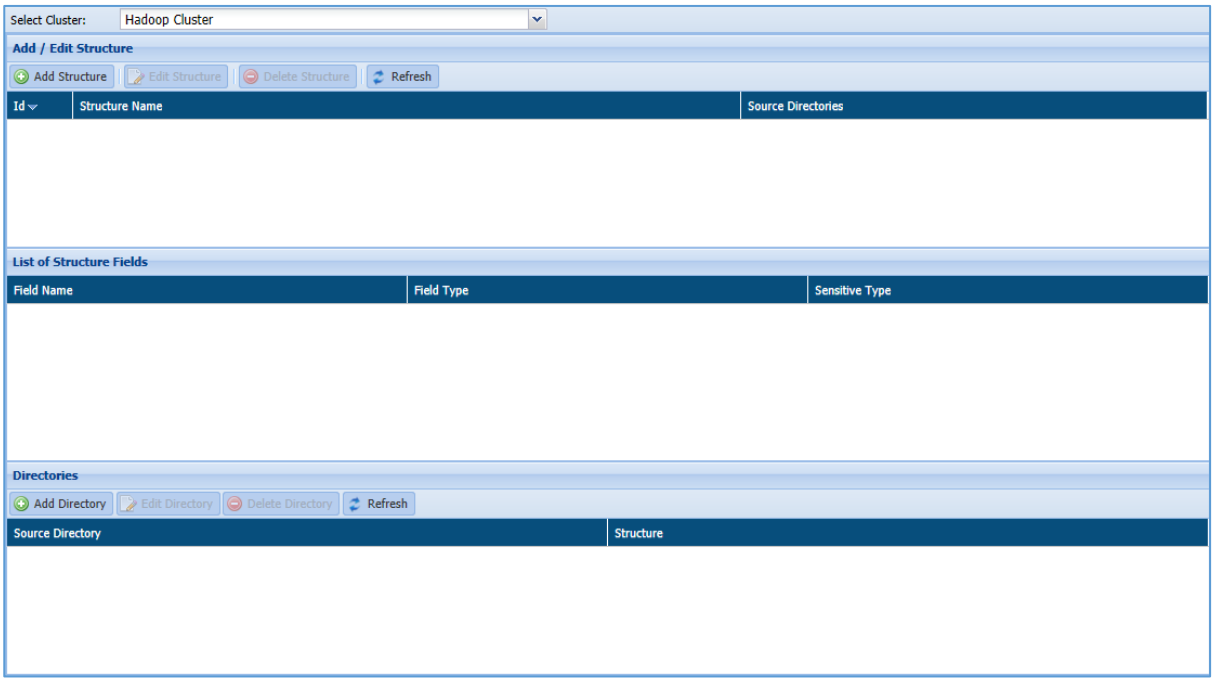
- **Add/Edit Column Info for a Column:**
  The Add/Edit Column Info for a Column will display the list masked column list. It will display the information such as Column Number, Column Name and Sensitive Type.



- **Directories:**
  The Directories pane will display the list all databases that you have added. The details include Source Directory and Structure.

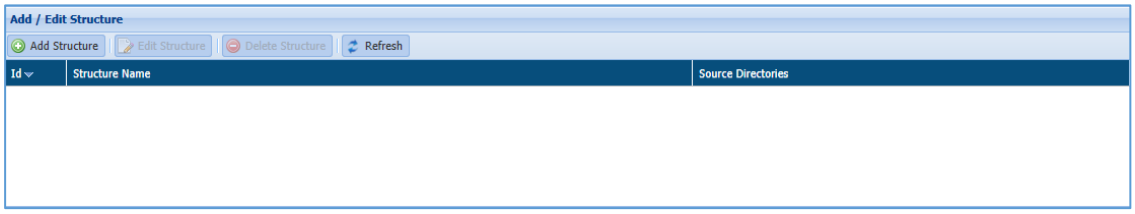
13.4.2.2 Sequence Files

The below image shows the user interface of the Sequence File section.

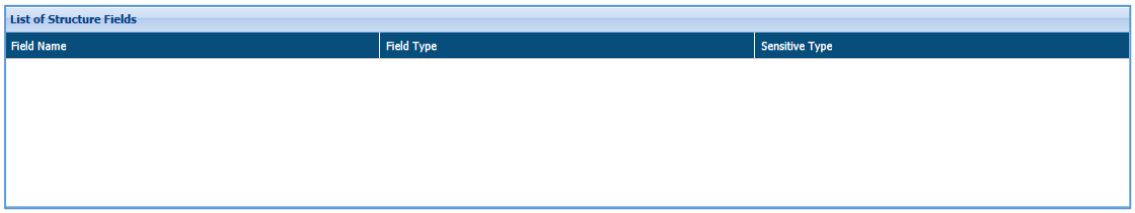


- **Add/Edit Structure:**
  The Add/Edit Structure will display the list of all structure that you have created. It includes information about structure like ID (system generated), Structure Name,

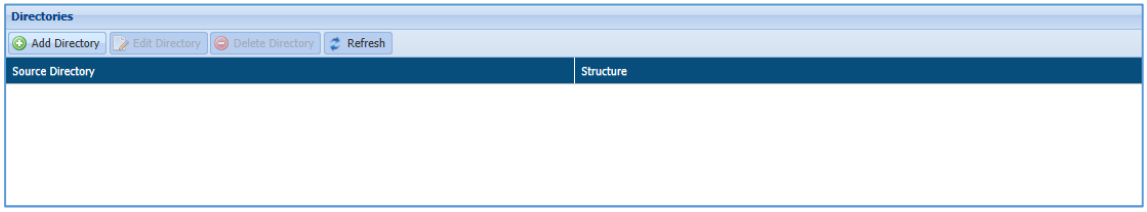
Source Directory.



- **List of Structure Fields:**
  The List of Structure Fields will display all list of fields name which you have defined while creating a structure. The panel displays information such as Field Name, Field Type and Sensitive Type.

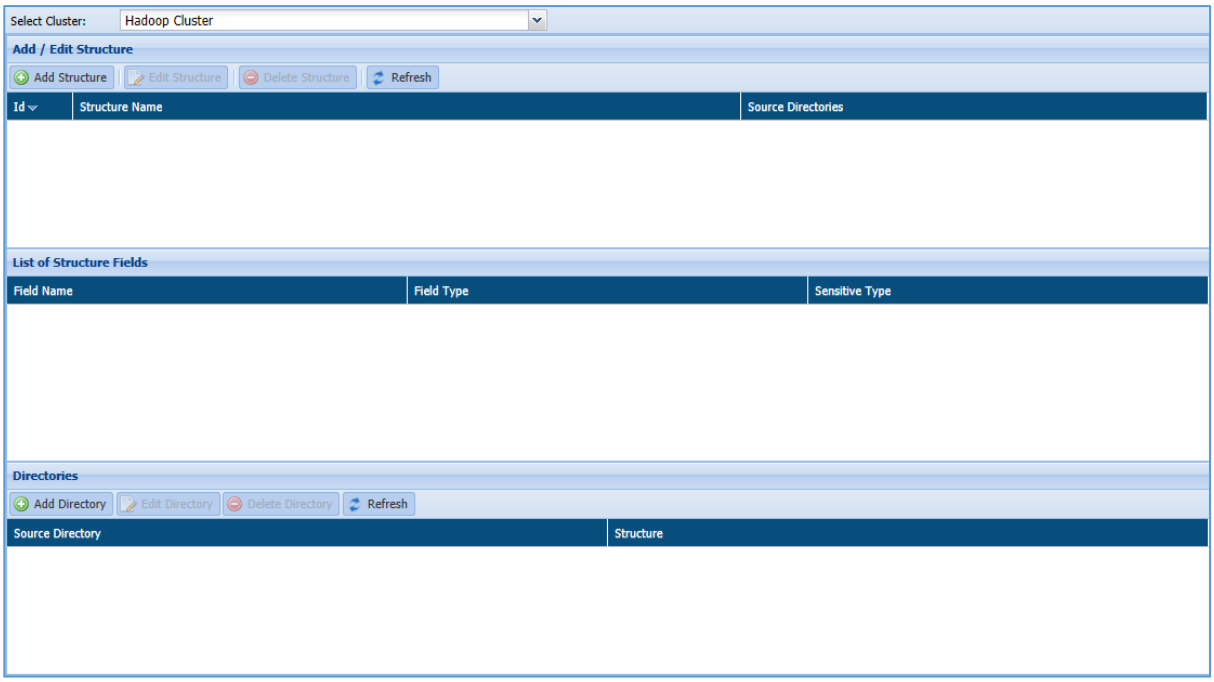


- **Directories:**
  The Directories pane will display the list all databases that you have added. The details include Source Directory and Structure.

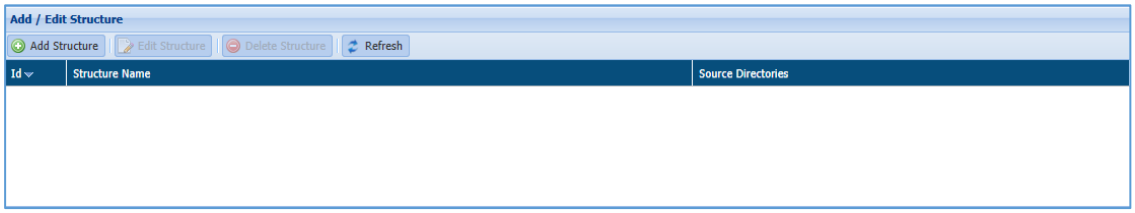


13.4.2.3 Avro Files

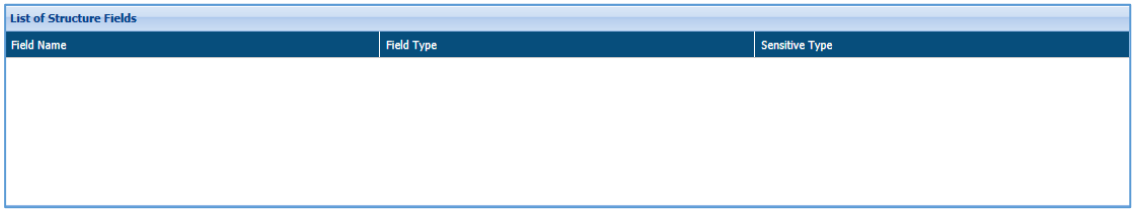
The below image shows the user interface of the Sequence File section.



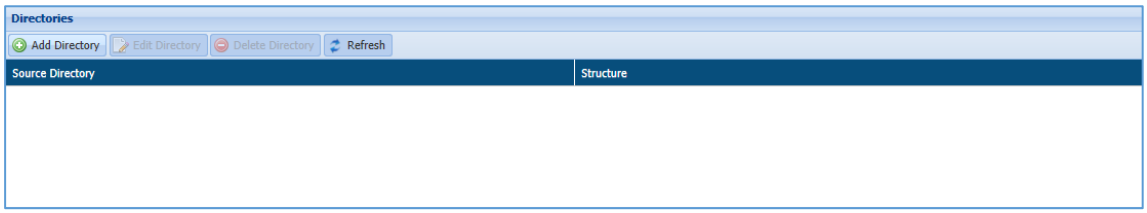
- **Add/Edit Structure:**
  The Add/Edit Structure will display the list of all structure that you have created. It includes information about structure like ID (system generated), Structure Name, Source Directory.



- **List of Structure Fields:**
  The List of Structure Fields will display all list of fields name which you have defined while creating a structure. This pane displays information such as Field Name, Field Type and Sensitive Type.

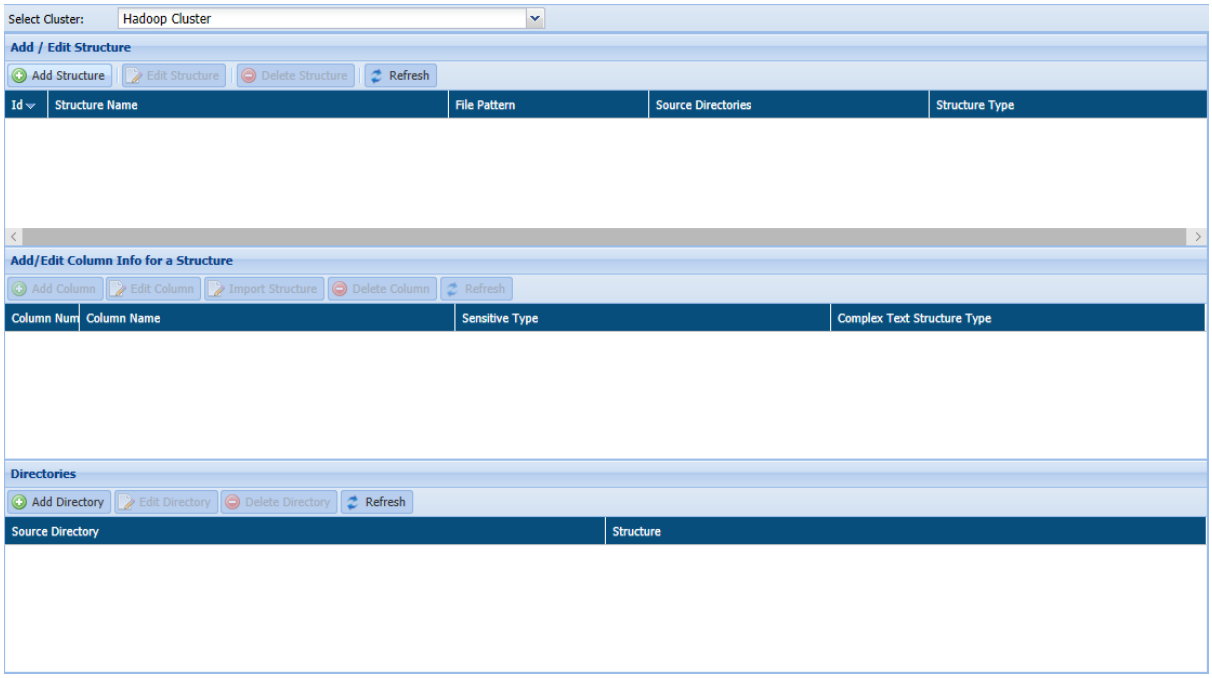


- **Directories:**
  The Directories pane will display the list all databases that you have added. The details include Source Directory and Structure.

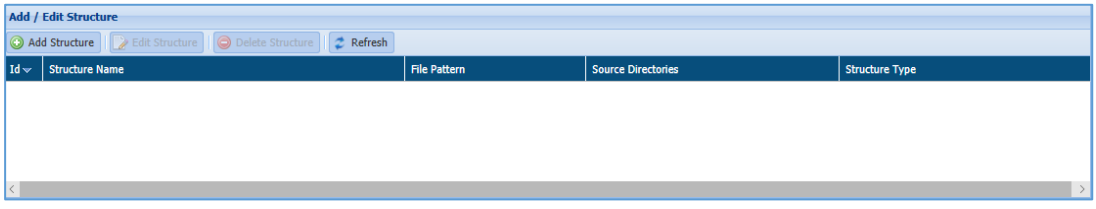


13.4.2.4 RC/ORC Files

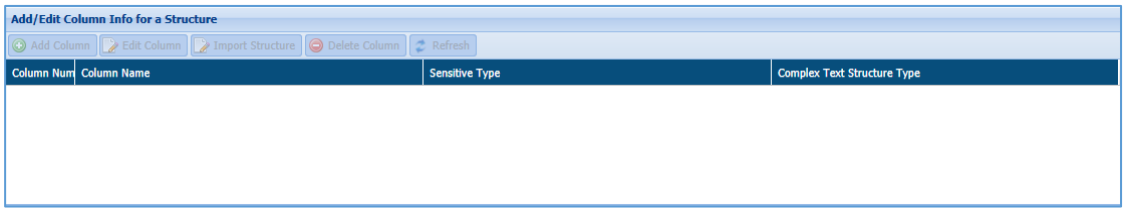
The below image shows the user interface of the RC/ORC screen.



- **Add/Edit Structure:**
  The Add/Edit Structure will display the list of all structure that you have created. It includes information about structure like ID (system generated), Structure Name, File Pattern, Source Directories and Structure Type



- **Add/Edit Column Info for a Column:**
  The Add/Edit Column Info for a Column will display the list masked column list. It will display the information such as Column Number, Column Name, Sensitive Type and Complex Text Structure Type.



- **Directories:**
  The Directories pane will display the list all databases that you have added. The details include Source Directory and Structure.

13.4.3Files

This section will explain the screen of the Structure Management for Text, Sequence, Avro, RC/ORC and Parquet Files.

To know more about this screen, refer to section Hadoop.

13.4.4AWS

This section will explain the screen of the Structure Management for Text, Sequence, Avro, RC/ORC and Parquet Files.

To know more about this screen, refer to section Hadoop.

13.4.5Azure

This section will explain the screen of the Structure Management for Text, Sequence, Avro, RC/ORC and Parquet Files.

To know more about this screen, refer to section Hadoop.

14 Output Directory

14.1 Concept

The Output Directory page is used to define the output directory for masking results. This page shows the source and destination directories to which each have been mapped.

The user can designate a new destination directory or edit an existing one by clicking the appropriate button on the screen.

If no destination directory is defined, then DgSecure will create a sub-directory for the masked values.

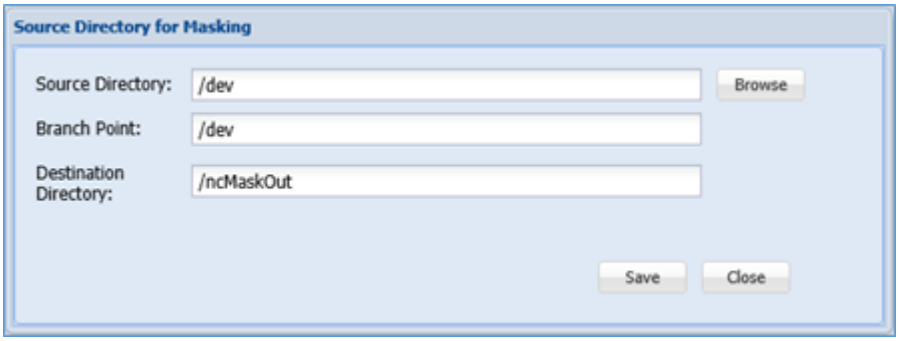
14.2 Create a Source Directory

This section will explain the process of creating, editing and deleting a source directory.

14.2.1 Hadoop

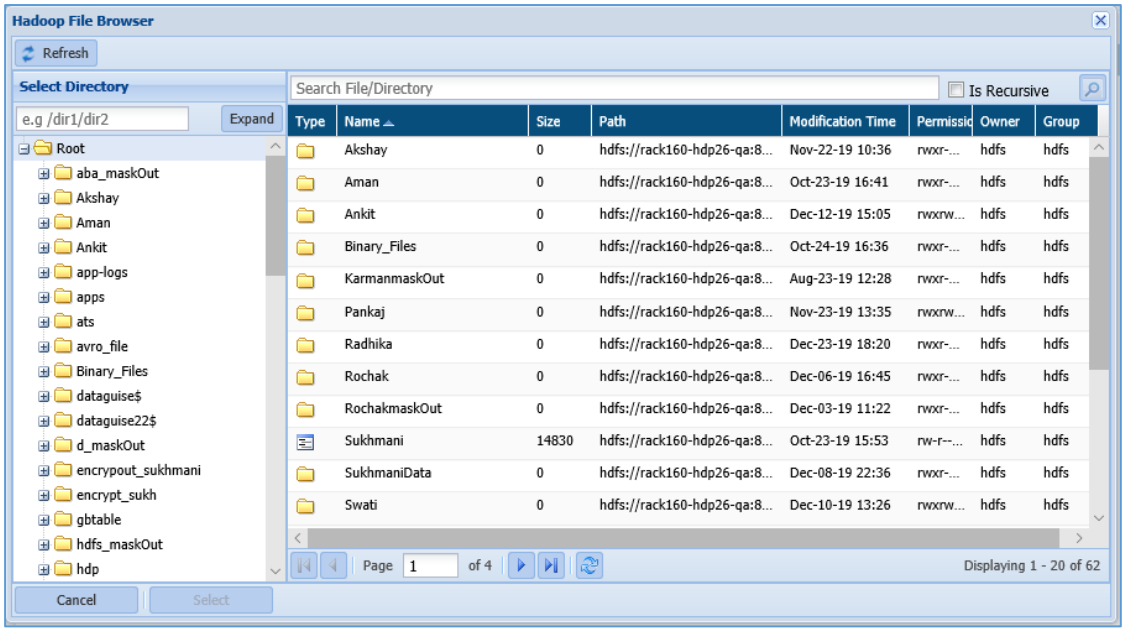
To create a source directory. Click **Hadoop > Output Directory > Add Source Directory**.

The below image shows the user interface for creating a source directory.



- **Add Source Directory**: Click the Add Source Directory button to select the directory from the Hadoop File Browser.

- **Browse**: Click the Browse button to select the directory for masking.



- **Refresh:** Click the Refresh button to update the Hadoop File Browse dialog box with updated information.

- **Select Directory:** The Select Directory pane will list down all the available directories. The right pane will display list of all Files and Folder for the selected directory.

- **Cancel:** Click the Cancel button, if you do not want to save the changes.

- **Select:** Click the Select button, if you want to include the selected directory for masking.

- **Branch Point:** The Branch point will display the selected directory name.

- **Destination Directory:** The Destination Directory will display the name of the destination folder name.

- **Save:** Click the Save button, if you want to save the changes.

- **Cancel:** Click the Cancel button, if you do not want to save the changes.

14.2.2 Files

To create a source directory in Files. Click **Files > Output Directory > Add Source Directory**.

To know the process of creating a source directory, refer to section Hadoop.

14.2.3 AWS

To create a source directory in Files. Click **AWS > Output Directory > Add Source Directory**.

To know the process of creating a source directory, refer to section Hadoop.

14.2.4 Azure

To create a source directory in Files. Click **AWS > Output Directory > Add Source Directory**.

To know the process of creating a source directory, refer to section Hadoop.

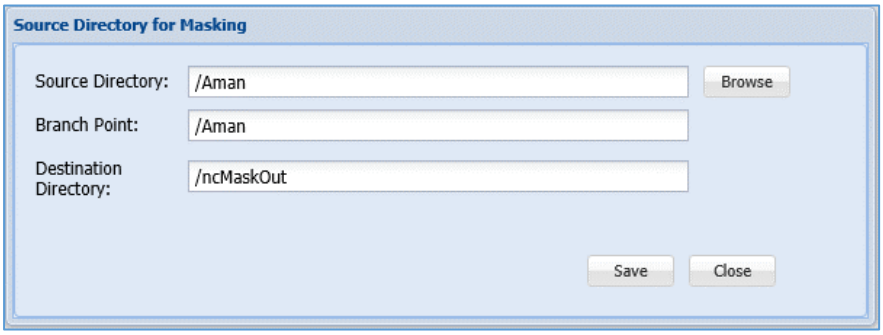
14.3 Edit a Source Directory

14.3.1 Hadoop

To edit a Source Directory. Select the Source Directory which you wish to edit.

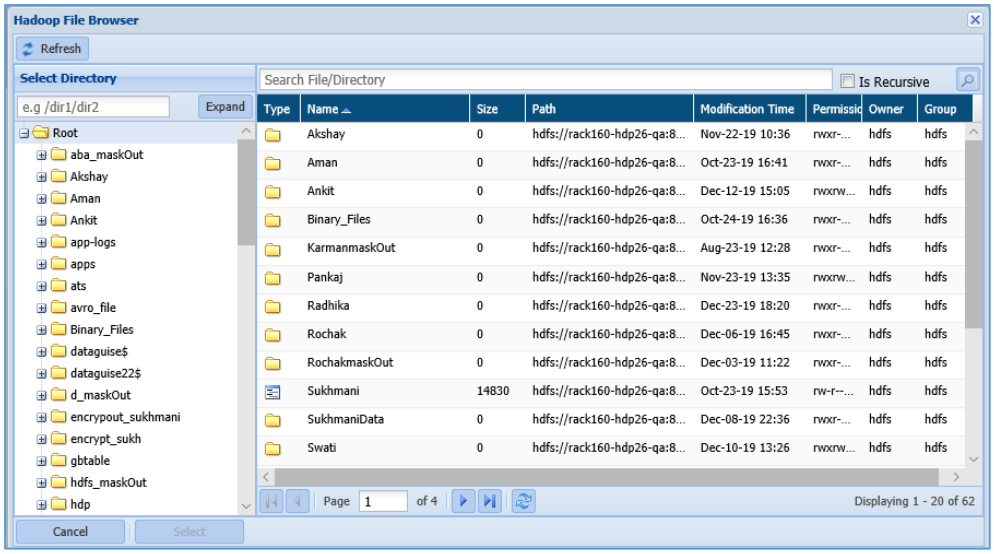
Click Hadoop > **Output Directory > Edit Source Directory**.

The below image shows the user interface for editing a Source directory.



- **Source Directory**: To Edit the Source Directory, click Browse button to select a new source directory.

- **Browse**: Click the Browse button to select the directory from the Hadoop File Browser.



- ❖ Select: Click the Select button, if you want to save the changes.
- ❖ Cancel: Click the Cancel button, if you do not want to save the changes.

- **Branch Point**: The Branch Point text box will be updated with the updated selected directory name.
- **Destination Directory**: The Destination directory name will be updated accordingly to the selected directory name.

14.3.2 Files

To edit a Source Directory. Select the Source Directory which you wish to edit.

Click **Files > Output Directory > Edit Source Directory**.

To know the process of editing a source directory, refer to section Hadoop.

14.3.3 AWS

To edit a Source Directory. Select the Source Directory which you wish to edit.

Click **AWS > Output Directory > Edit Source Directory**.

To know the process of editing a source directory, refer to section Hadoop.

14.3.4Azure

To edit a Source Directory. Select the Source Directory which you wish to edit.

Click **Azure > Output Directory > Edit Source Directory**.

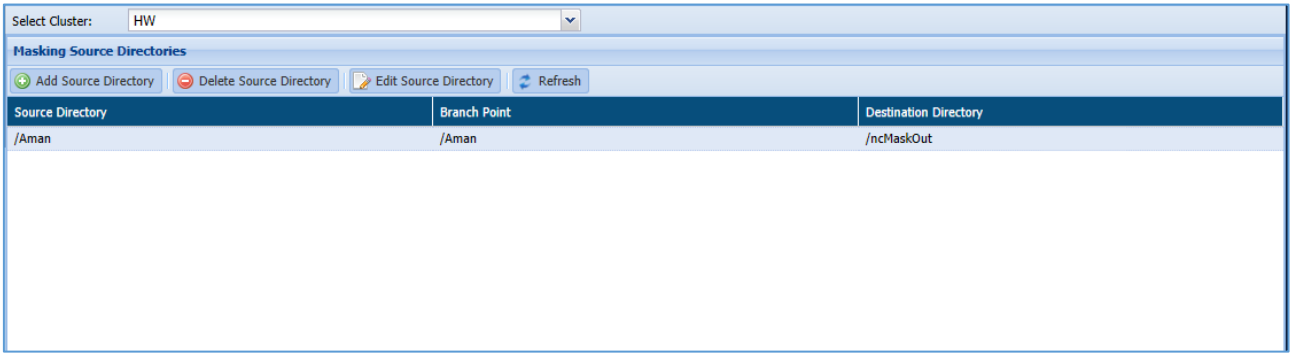
To know the process of editing a source directory, refer to section Hadoop.

14.4 List an Output Directory

14.4.1Hadoop

This section will explain the screen of the Output Directory.

The below screenshot shows the user interface for Output Directory.



- **Masking Source Directories**: This pane displays the list of all the source directory and the basic details such as the Branch Point and Destination Directory.

  You can add, delete, edit the source directory by clicking an appropriate button.

  - **Add Source Directory**: Click the Add Source Directory button to select the source directory from the Browse button.

  - **Edit Source Directory**: Click the Edit Source Directory button to edit the information of Source Directory by updating the selected directory from browser window.

  - **Delete Source Directory**: Select the Source Directory which you want to delete. Click the Delete Source Directory button.

14.4.2Files

This section will explain the screen of the Output Directory for Files section.

To know the process of editing a source directory, refer to section Hadoop.

14.4.3AWS

This section will explain the screen of the Output Directory for AWS section.

To know the process of editing a source directory, refer to section Hadoop.

14.4.4Azure

This section will explain the screen of the Output Directory for AWS section.

To know the process of editing a source directory, refer to section Hadoop.

15 Access Control

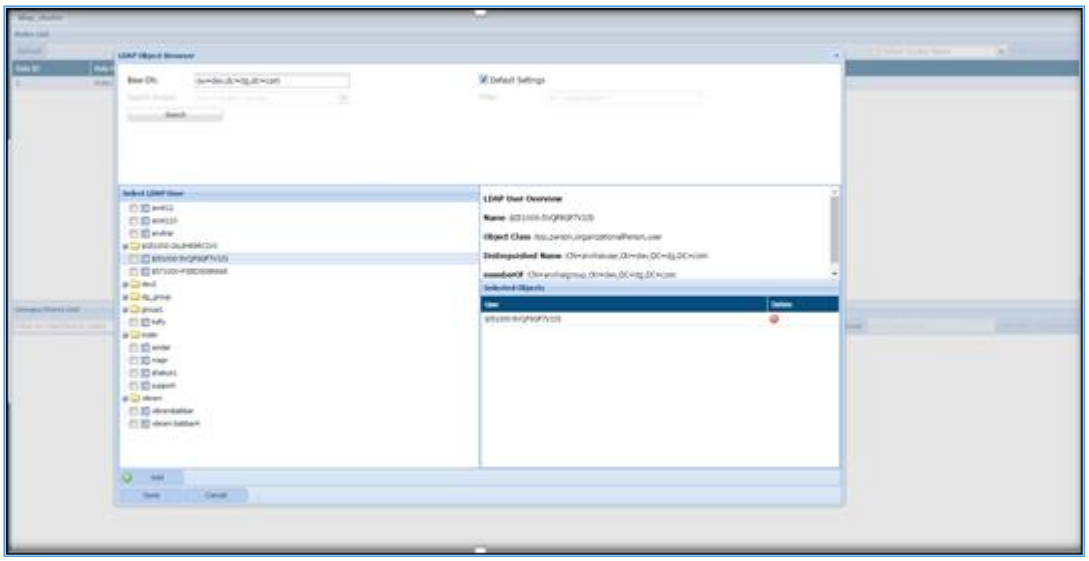
15.1 ACL Management

An access control list (ACL) manages user access to encrypted data. DgSecure's ACL Management function controls which users can run decryption tasks. The **ACL Management** page displays the available roles and users. The groups/users can be entered manually, chosen with the LDAP browser, or it can come from the Hadoop Control IDP.

Roles are created and managed on the **Role Management** page.

If using Hive Decryption, the contents of the file will be stored in the Hive DB table after decryption.

Access the **ACL Management** page from the menu under **Access Control > ACL Management.** The **ACL Management** page is described below.



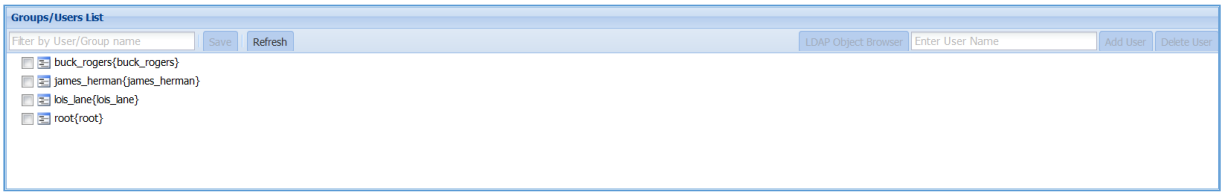
The top panel displays roles that have been created as well as their ID description. Select a role in order to view or edit which users are assigned to it. To copy the current ACL to another cluster, select the desired cluster from the dropdown on the left side of the screen. Once the cluster is selected, click the **Copy ACL to Cluster** button. In order for the operation to be successful, the clusters must have the same Groups/Users List.

The bottom panel lists the users that compose the access control list. There are three different ways, this list is populated.

LDAP/LDAPS: When the cluster is configured with LDAP or LDAPS on the Hadoop Clusters page, the users list is generated by selecting groups/users from the LDAP Object Viewer. To access the LDAP Object Viewer, click the LDAP Object Viewer button. The LDAP Object Viewer uses object classes defined in DgAdmin on the LDAP Object Class Management page to internally search the tree. Object viewer behaviour is determined in DgAdmin on the Settings page. When both LDAP/LDAPS and the Hadoop Control IDP are configured on a cluster, priority is given to LDAP/LDAPS users.

Hadoop Control IDP: When DgSecure's Hadoop Control IDP is installed on the cluster, the ACL user list shows all Linux users with permissions on the cluster.

Manual Entry: Users can be added manually in addition to - or independent of - LDAP and the Hadoop Control IDP. A user that is added manually must already exist on the cluster.

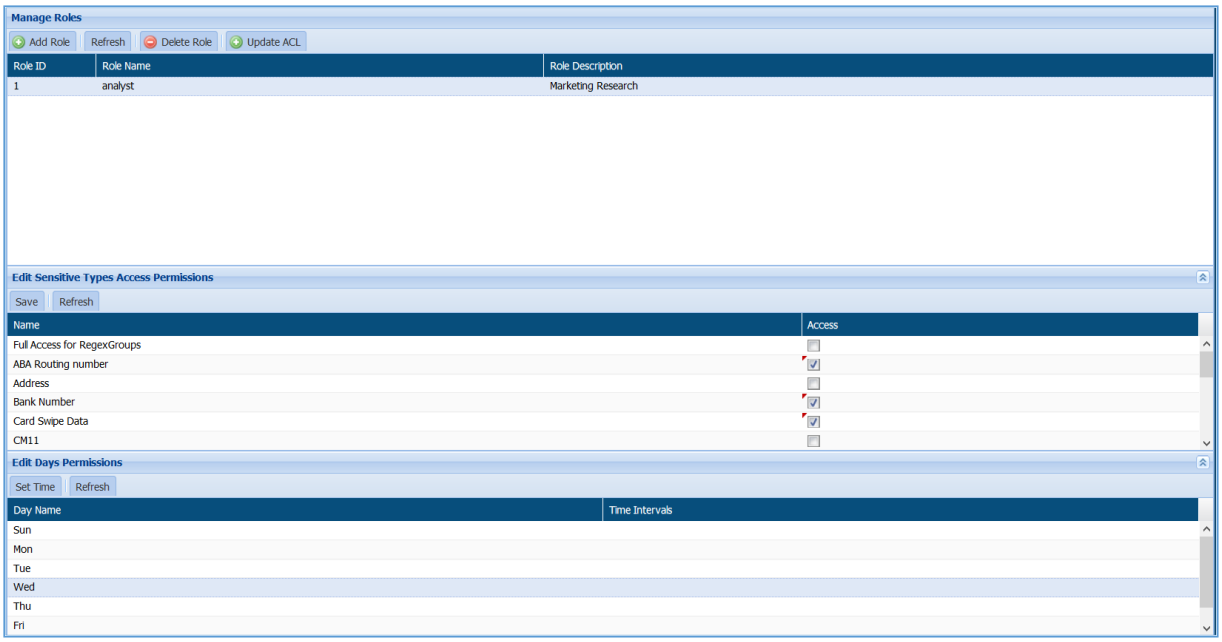


15.2 Role Management

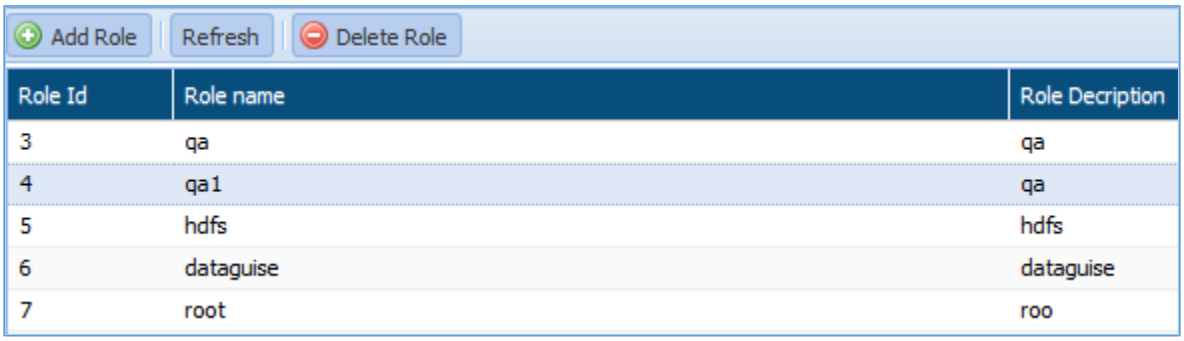
A role defines a user's ability to run both dynamic and bulk decryption tasks in DgSecure. A user with a role missing appropriate permissions that attempts to decrypt a HDFS file cannot successfully decrypt the data in that file. Once a role is created, users can be assigned to that role on the ACL Management page. A user can have multiple roles.

There are two parameters that can be used to restrict a role's permissions: sensitive type, and day/time.

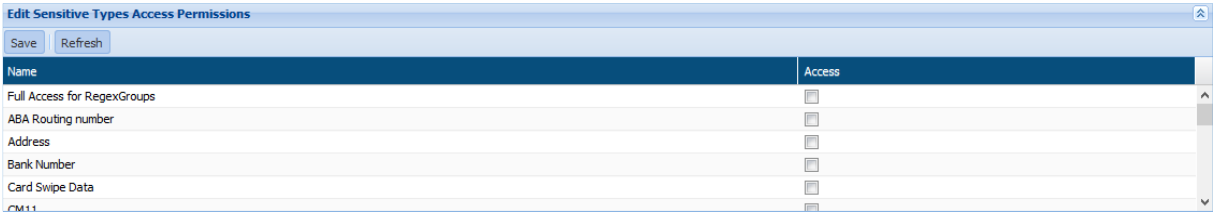
Access the **Role Management** page from the menu under **Access Control > Role Management.** The **Role Management** page is described below.



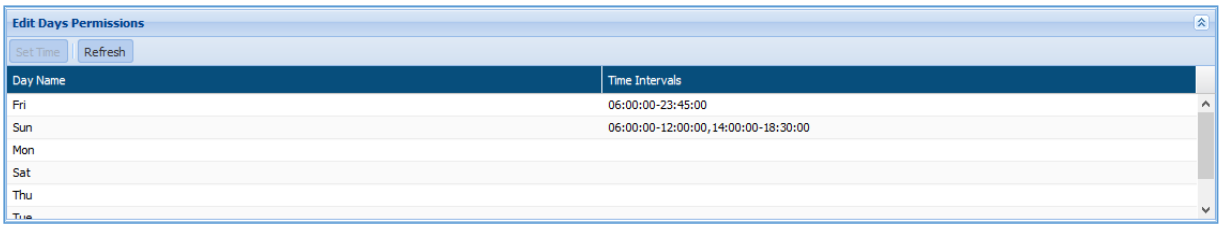
The top panel is where roles are created or deleted. Once a role is created, it is listed in the top panel along with its ID and description. Select a role to view or edit its details in the panels below.



Use the **Edit Sensitive Type Access Permissions** panel to identify which sensitive types a user has permissions to decrypt.



Use the **Edit Days Permissions** panel to identify the days and times when a role is allowed to decrypt. When no time restrictions are set, a role is able to decrypt at any time.


Edit Days Permissions
Set Time
Refresh
Day Name
Time Intervals
Fri
06:00:00-23:45:00
Sun
06:00:00-12:00:00,14:00:00-18:30:00
Mon
Sat
Thu
Tue

16 Privacy

16.1 Concept

Regulations such as the European Union's General Data Protection Regulation (GDPR) and California's Consumer Privacy Act (CCPA) are forcing organizations worldwide, to revisit their Data Privacy policies and practices. Other privacy regulations around the world are likely to have data subject rights as their core principles. While there are minor variations in the specific types of information involved and the conditions under which these rights are to be respected, the fundamental requirements are similar.

Dataguise has the following features within the Privacy module of the DgSecure product, to scan, process and retrieve information related to Data Subjects from source systems and to generate useful DSAR reports.

Privacy – The Privacy Screens combine information about Data Subjects with information about systems and users to show the various situations including exposure to third party user risk, and cross border transfer risk. There is also a "Subject Search" screen where an individual Data Subject's data can be retrieved. This is an interactive, ad-hoc retrieval of Data Subject information which can be used as a manual DSAR data retrieval mechanism. However, in this document, we describe the automated DSAR capability in DgSecure. The Privacy Screens are described in more detail in the Privacy section of the DgSecure User Guide.

Automated DSAR Capability – The European Union's General Data Protection Regulations (GDPR), give an individual the right to request access to his/her personal information that an organization is handling, and the purposes for which this information is being used. This right is called the Right of Access (RoA). Similarly, an individual can also request the erasure (RtE) of his/her personal information being stored in the organization's repositories, subject to applicable laws.

i. **RoA (Right of Access): Right of Access** allows the Data Subject to retrieve their personal data which the organization has obtained or processed. The organization must provide information about the Data Subject that it has processed, collected or that has been transmitted to a third party. In RoA, the organization must provide a copy of the data being stored about the Data Subject in their repositories.

ii. **RtE (Right to Erasure):** The **Right to Erasure** is also known as the Right to be Forgotten under GDPR. It allows the Data Subject to request the erasure of all their personal data which is being processed or stored by the organization. The scope of the erasure will be subject to other applicable laws.

The Automated DSAR capability in DgSecure enables DSAR requests to be processed in an automated fashion at pre-determined schedules, while still allowing for a manual inspection and approval/rejection by a Data Protection Officer (DPO).

16.2 Components of DSAR and Privacy

i. **Data Group**

DgSecure uses the notion of Data Groups or Data Source Groups to provide isolation between different sub-organizations within an organization. It is a form of multi-tenancy, just for the DSAR capability. **Data Group**, **Data Source Group** and **Groups** are synonymous under the Privacy module.

For example, an organization might be a conglomerate which has two businesses, one selling Toys and another selling Medicines. The Data Subjects pertaining to these two businesses are different, and so are the systems that contain the Data Subject information. In this case, the administrator would create two Data Source Groups, one for Toys and the other for Medicines. Systems containing Data Subject information for the Toys business will be added to the Toys Data Source Group. The list of Data Subjects for the Toys business will also be associated with the Toys Data Source Group. Identifiers will be associated with the Data Subjects in this Data Source Group and rules for searching for these identifiers will also be associated with this Data Source Group. A similar set of associations will be made for the Medicines business. Note that any overlaps in systems or Data Subjects can be handled by associating them with both Data Source Groups.

Most organizations will just need one Data Source Group to be defined, and all the systems, Data Subjects and rules will be assigned to that single Data Source Group.

ii. **Data Subjects**

A Data Subject is an entity that has identifying information such as name, address, email ID, SSNO, and CCNO. These pieces of identifying information are called Identifiers. The name and datatype of an identifier are specified while creating an the identifier in DgSecure. The values of identifiers for a given Data Subject are entered while adding that Data Subject to the system. The rules defined in Data Group helps in identifying the Data Subject's entries in the source systems while retrieving the data in response to a DSAR request.

For example, in the below table, Jane Doe, John Doe and John Douglas are the Data Subjects. These Data Subjects have identifying information such as the Name, SSNO, Region in which they reside, and Email IDs.

Name	SSNO	Region	email_id
Jane Doe	09867537	California	jane.doe@gmail.com
John Doe	03567812	New Jersey	john.doe@gmail.com
John Douglas	05648975	New Jersey	john.doe.90@gmail.com

In DgSecure, there are three ways to add the Data Subjects:

a. Manual Entry
b. By uploading a file containing data subject details, with known format
c. By uploading a file containing data subject details, with unknown format

iii. **Identifiers**

To establish an identity for a Data Subject, we need to know its identifying attributes or features. Name, Phone, SSNO, CCNO, Email, Phone Number, etc. are examples for identifying features of a Data Subject. Such attributes are known as Identifiers. The values for identifiers are provided at the time of adding the Data Subject. Identifiers serve as the basic building block in finding Data Subjects. There are 21 predefined Identifiers.

There are three types of Identifiers within DgSecure.

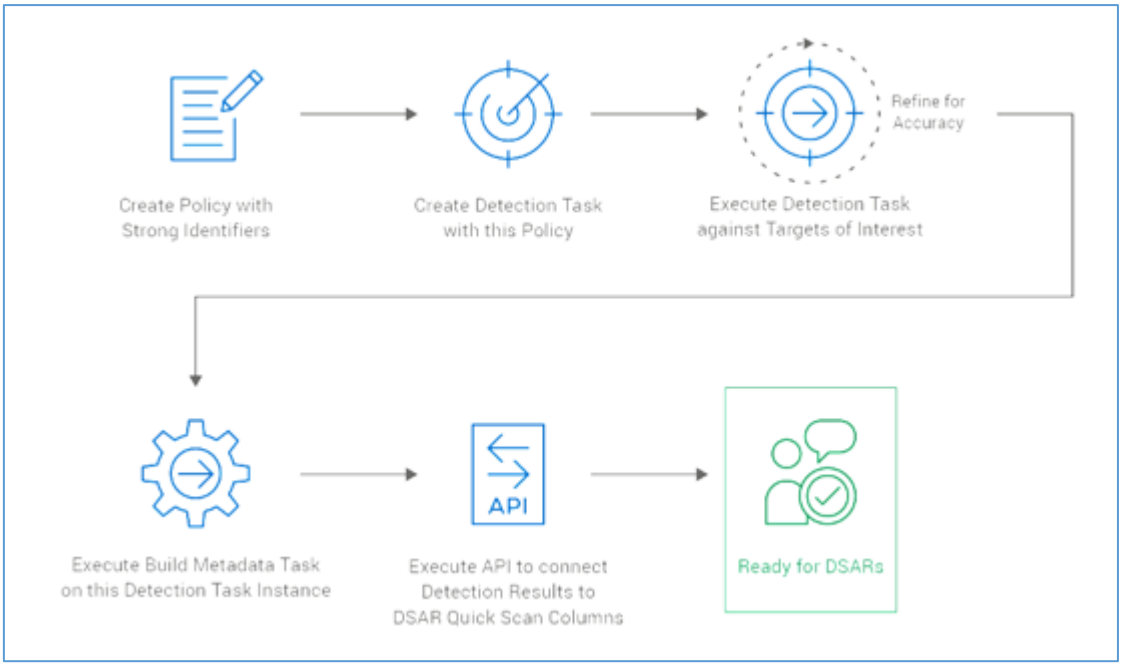
1. **Strong Identifiers:** These identifiers help in identifying a Data Subject uniquely. These strong Identifiers are also the ones required to retrieve information related to the Data Subject multiple sets of systems. Examples of strong identifiers are Credit Card Number, Social Security, and Email Address.
2. Weak Identifiers: These identifiers help in further defining a Data Subject but are not by themselves enough to uniquely identify a Data Subject. Examples are Region, Zip Code, and Name.
3. Mandatory Identifiers: Mandatory identifiers are mandatory only for the Privacy Screens and not for the Automated DSAR flow. They are used for slicing and dicing the Data Subject information in the Privacy Screens. Mandatory identifiers can be either Strong or Weak. Examples are Region, Country, Zip Code, Department, and Organization.

Name	SSNO	Region	email_id
Jane Doe	09867537	California	jane.doe@gmail.com
John Doe	03567812	New Jersey	john.doe@gmail.com
John Douglas	05648975	New Jersey	john.doe.90@gmail.com

E.g., in the above table Jane Doe, John Doe and John Douglas are the Data Subjects. The attributes of the Data Subjects i.e. their Name, SSNO, Region and email_id are the Identifiers. The email_id and SSNO are the Strong Identifiers since they uniquely identify each Data Subject. The Region is a Weak as well as Mandatory Identifier.

16.3 DSAR Workflow - Overview

The DSAR Workflow diagram provides an overall view of the process to be followed while generating DSAR reports using the Automated DSAR flow.



When a DSAR request comes in to DgSecure, the system has two ways to scan the Data Subject's data:

1. **Quick Scan**: With this option, the user performs a standard detection with a policy consisting of strong identifiers (as the diagram depicts above). When a DSAR request is processed, only those columns in the tables where strong identifiers are found, will be searched. This is far more efficient and accurate than the alternative, namely, Full Scan, described below.

2. **Full Scan**: Here, based on the strong identifiers specified, DgSecure will scan every column in all relevant Data Sources (see below for a discussion of Data Groups) purely based on the values passed in, and return with the information.

***Note:** The Full Scan option will be deprecated in version 7.2 and will be discontinued in future releases of the DgSecure.

The DSAR workflow diagram above summarizes the process which need to be followed for generating a DSAR report, using Quick Scan. The following are the pre-requisites to configure DSAR:

- Add Identifiers
- Add Connections
- Add Data Groups

These pre-requisite steps are covered in detail in sections 4.2 to 4.4 below.

Based on the above diagram the methodology is as follows:

4. **Create Policy with Strong Identifiers**: The initial step is to create a policy with the Strong Identifiers used for Data Subjects in the Data Group. The

Strong Identifiers are added by including the corresponding Sensitive Types while creating a Policy.

5. **Create Detection Task with the Policy**: Once policy has been defined, the next step is to create a detection task with this policy.

6. **Execute Detection Task**: The columns containing the Strong Identifiers will be detected when we execute the detection task. The results can be refined by tweaking confidence factor parameters, using the remediation workflow to eliminate common false-positive situations, and setting up the threshold for the confidence factor. These topics are covered in the Detection Task section of the DgSecure User Guide.

7. **Execute Build Metadata Task**: After the detection results for the target of interest have been generated, we will schedule and execute the "Build Metadata" task on the detection task instance that was just executed. The "Build Metadata" task copies the list of columns containing the strong identifiers to the database associated with the Privacy IDP.

8. **Execute API**: The last step is to connect the detection results with the Quick Scan columns. This is done by executing a REST API call on the Privacy IDP.

Now, the system is ready to accept DSAR requests and process them efficiently. The above steps are the overall flow for executing DSARs. In the following sections we will go into one-time setup of the Privacy IDP, Data Source Group, Identifiers, and Rules, which are necessary to process DSARs.

16.4 DSAR

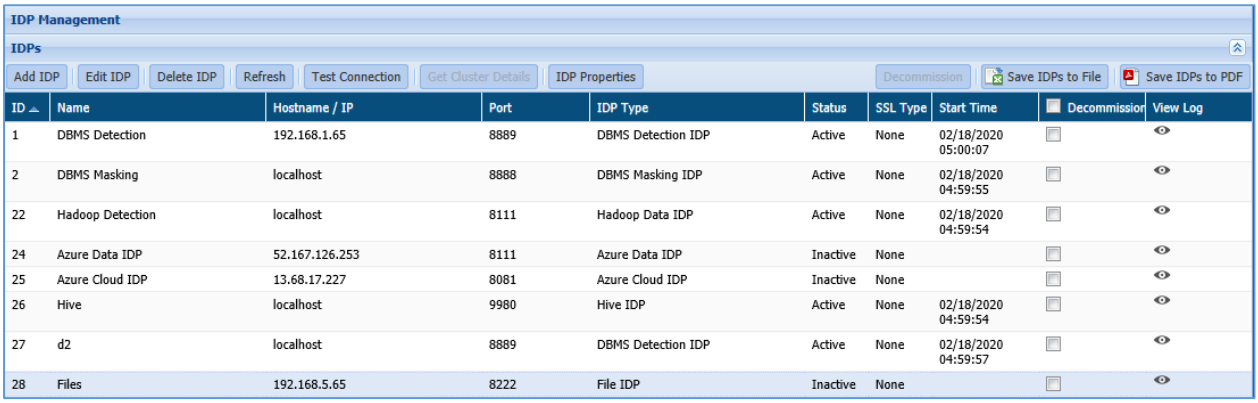
Perform the following steps to configure DSAR in DgSecure.

***Note** – Steps 1 to 7 are one-time configuration steps, last 2 steps, Request RoA/RtE and View Report are the ones that will be performed repeatedly as DSAR requests come in.

1. Add IDPs
2. Add/Edit Identifier
3. Add Data Group
4. Create Connection - DSAR
5. Add Data Subject
6. Create Task
7. Build Metadata and Use API to Populate Quick Scan Columns
8. Schedule RoA/RtE
9. Request RoA/RtE
10. View Report

16.4.1 Add IDPs

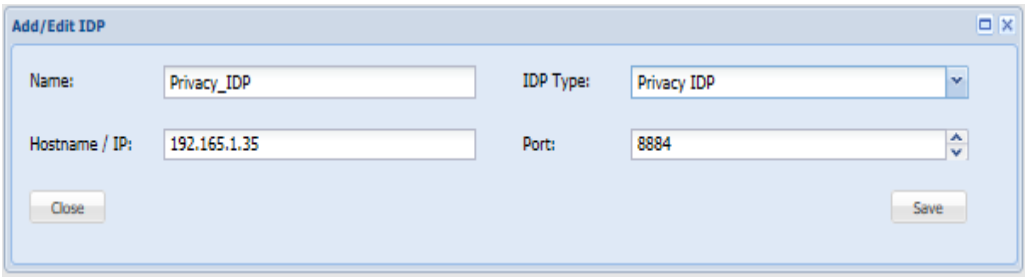
To add an **IDP**, login into the **DgAdmin**. To Access the **IDP** screen, click **IDP Management > IDPs > Add IDP**. The **IDP Management** panel will appear.



ID	Name	Hostname / IP	Port	IDP Type	Status	SSL Type	Start Time	Decommission	View Log
1	DBMS Detection	192.168.1.65	8889	DBMS Detection IDP	Active	None	02/18/2020 05:00:07		
2	DBMS Masking	localhost	8888	DBMS Masking IDP	Active	None	02/18/2020 04:59:55		
22	Hadoop Detection	localhost	8111	Hadoop Data IDP	Active	None	02/18/2020 04:59:54		
24	Azure Data IDP	52.167.126.253	8111	Azure Data IDP	Inactive	None			
25	Azure Cloud IDP	13.68.17.227	8081	Azure Cloud IDP	Inactive	None			
26	Hive	localhost	9980	Hive IDP	Active	None	02/18/2020 04:59:54		
27	d2	localhost	8889	DBMS Detection IDP	Active	None	02/18/2020 04:59:57		
28	Files	192.168.5.65	8222	File IDP	Inactive	None			

Follow the below steps to add an IDP:

1. Click the **Add IDP** button. The **Add / Edit IDP** dialog box will appear.

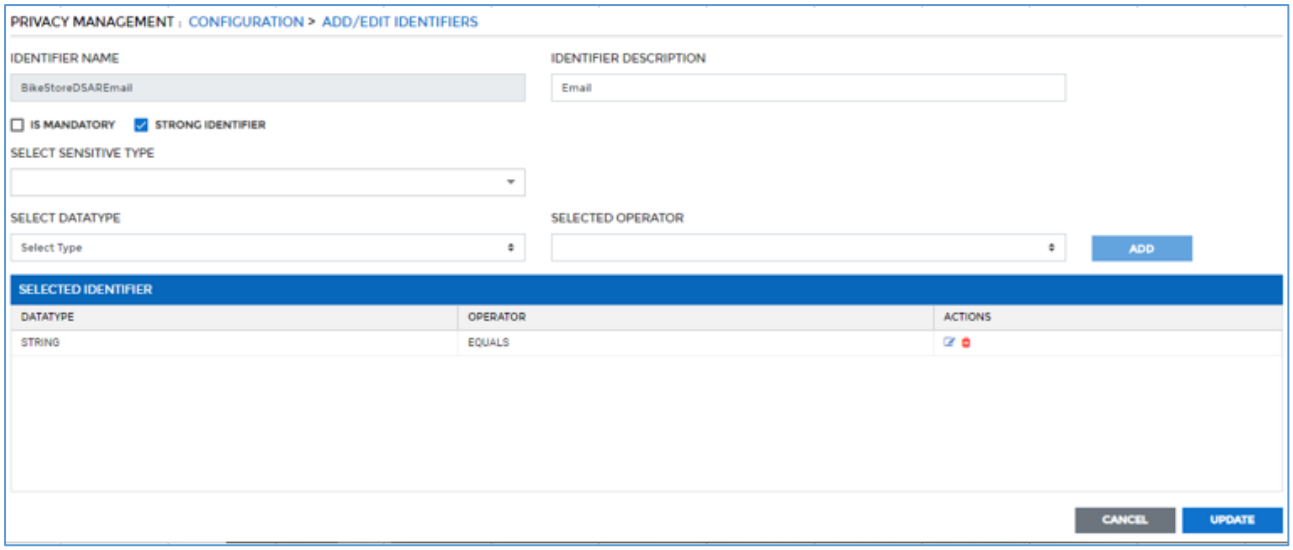


   I. Enter the descriptive name for the IDP in the **Name** textbox.
   II. Enter the **hostname or IP** address of the IDP's host machine in the **Hostname/IP** textbox.
   III. Select the **Privacy IDP** as the IDP Type from the drop-down.
   IV. Enter the **port number** which the IDP will use to send and receive information.

2. Click **Save**.

16.4.2 Add/Edit Identifier

To access the Identifiers screen, log into the **DgSecure** Application. Click **Privacy > Configuration > Identifiers > Add Identifier** button. The **Add/Edit Identifier** panel will appear.



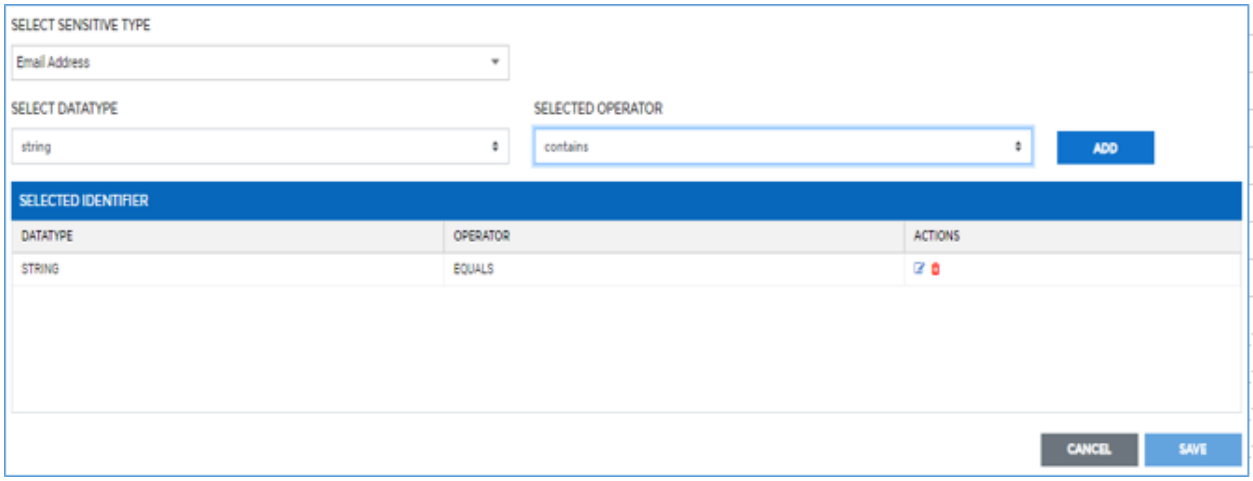
There are 21 pre-defined Identifiers. Below are their names:

First_Name	Driver_License_Number	Home_Address_Street
Middle_Name	Passport_Number	Home_Address_City
Last_Name	Cell_Number	Purchase_Date
NationalID	Home_Phone_Number	Home_Address_State
Username	Product_Purchased	Home_Address_Zip_Code
Other_Info	Country	CustomerID
Email	Credit_Card_Number	Home_Address_County/Province

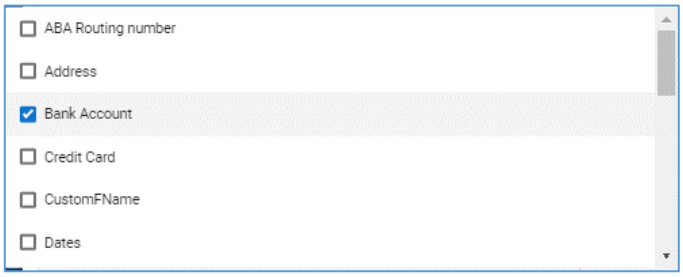
To add a new identifier, follow the below steps.

1. Enter the name of the identifier in the **Identifier Name** text box.
2. Enter the description of the identifier in the **Identifier Description** text box.
3. If the identifier is mandatory, check the **Is Mandatory** checkbox. At the time of creating a Data Subject, value for these Identifiers must be provided.
4. If the identifier is a strong identifier, check the **Strong Identifier** checkbox. **Strong identifier** is the identifier that value must be present at the time of scanning.

   When the **Strong Identifier** checkbox is selected, the **Select Sensitive Type**, **Select DataType**, **Selected Operator** fields and **Selected Identifier** pane will be visible.

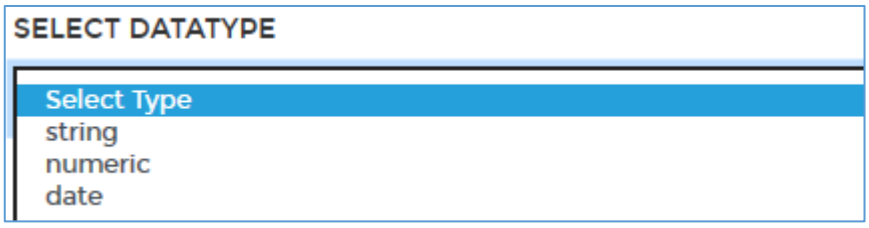


5. The **Sensitive Type** field will appear only if you have checked the **Strong Identifier** checkbox. Select the sensitive type in the **Select Sensitive Type** drop-down.



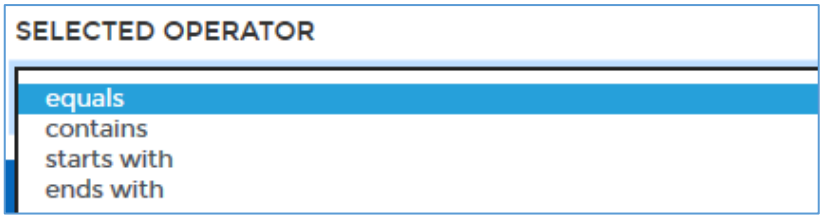
6. The **DataType** field will appear only if you have checked the **Strong Identifier** checkbox. Select the data type in the Select **Datatype** drop-down.

   The available data types are: **String**, **Numeric** and **Date**.



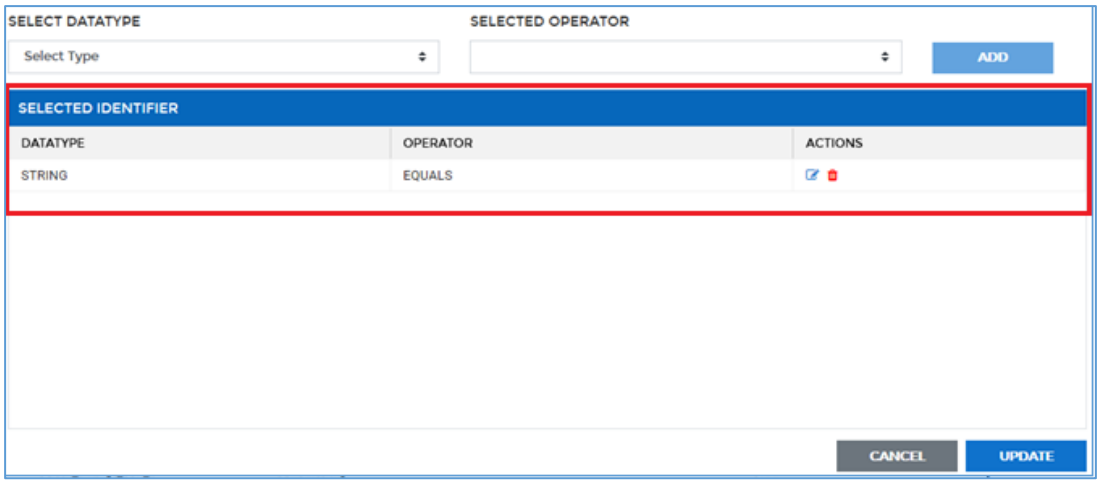
7. The **Selected Operator** field will appear only if you have checked the **Strong Identifier** checkbox. Select the operator in the **Selected Operator** drop-down.

   The list will display the available operators based on the selected **DataType**.



In the above screenshot, the listed operators are displayed when **DataType = 'String'** is selected.

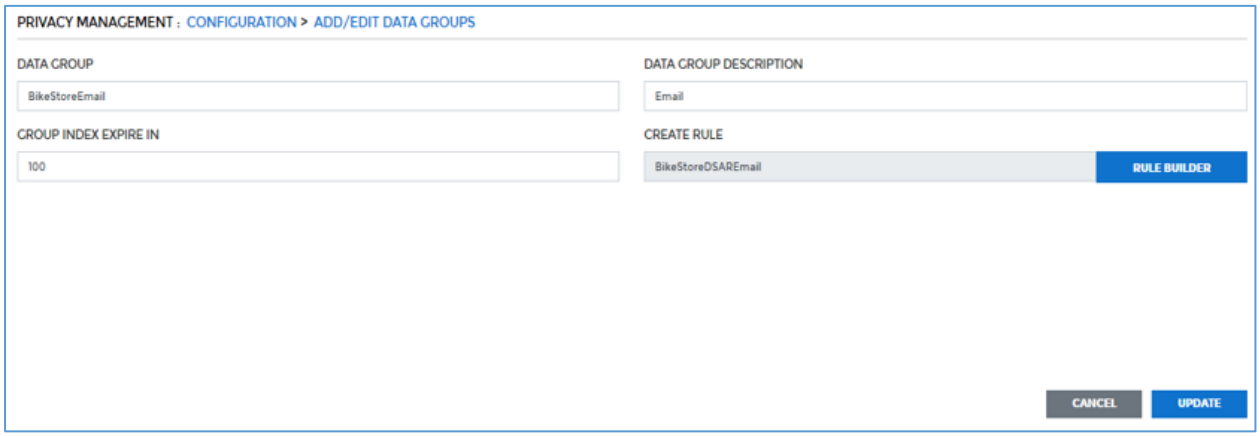
8. Click the **Add** button to add the datatype. The added datatypes will be available in the **Selected Identifier** panel.
9. Click **Save**.



To edit a Datatype or Operator, click . To delete a DataType or Operator, click .

16.4.3 Add Data Group

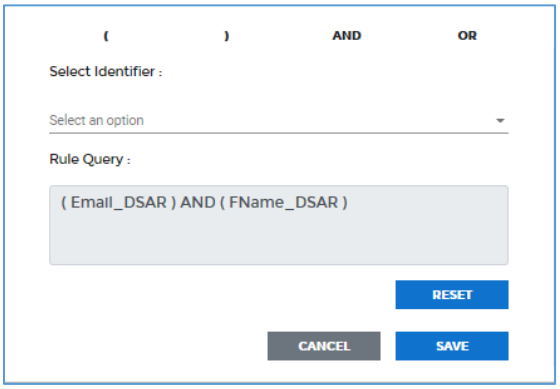
To access the **Data Groups** screen, click **Privacy > Configuration > Groups > Add Group** button. The **Add/Edit Data Group** screen will appear.



To add a new **Data Group**, perform the following steps:

1. Enter the name of the Data Group in the **Data Group** text box.
2. Enter description of the Data Group in the **Data Group Description** text box.
3. Enter the expiry days of the Data Group in the **Group Index Expire In** text box. The **Group Index Expire In** is the expiration time (in days) of this group's Data Subject-related information (including transactional data), stored in the Privacy IDP's database.

   If a Group's data expires, then existing scan results (which have not yet been approved by the DPO) for Data Subjects in that Group become invalid and the status of these Data Subjects changes to **Incoming** state.
4. To create the rule for the Data Group in the **Create Rule** text box. Click **Rule Builder** button.

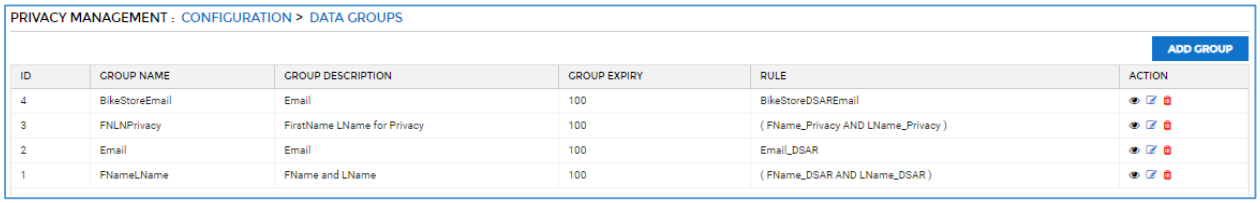


   i. Select at least one strong identifier in the **Select Identifier** drop-down.

   ii. The query will be displayed in the **Rule Query** text box.

   iii. Click **Save**.

5. Click the **Save** button. This will save the Data Group and it will be available on the **Data Group** screen.



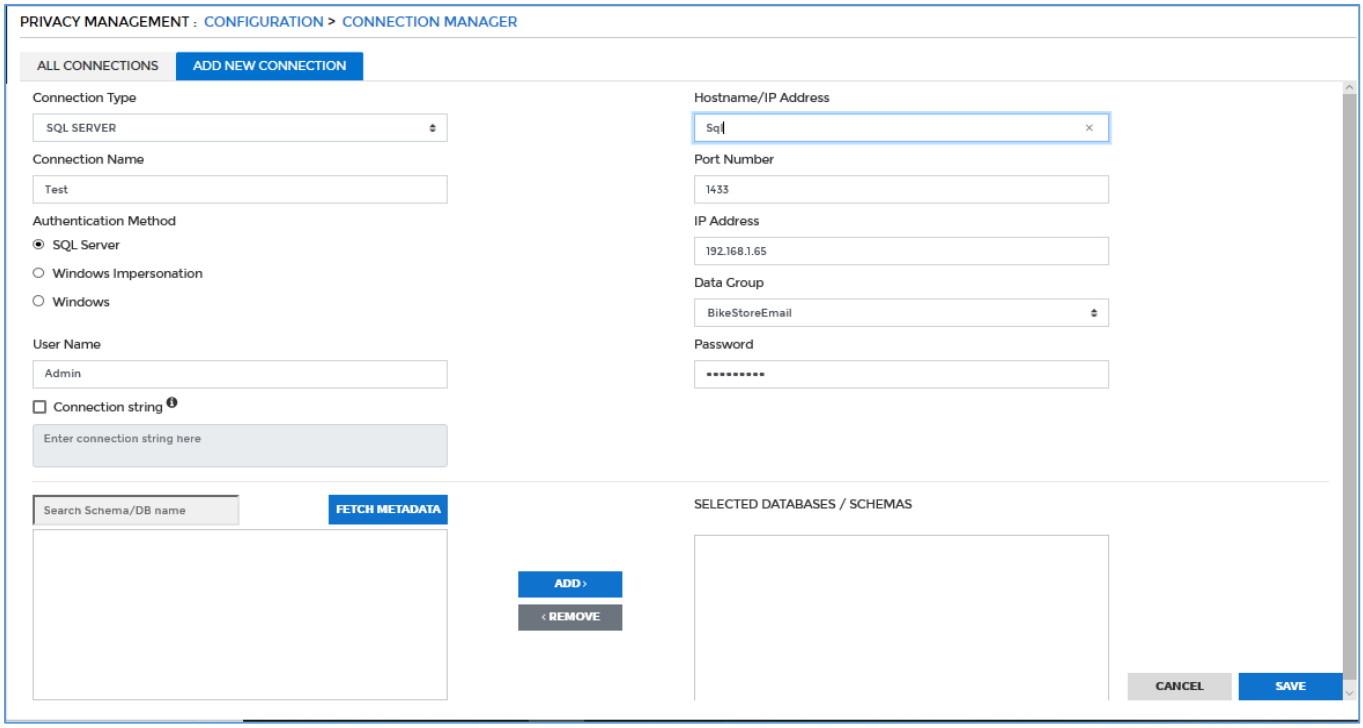
To view the details of a Data Group, click . To edit a Data Group, click . To delete a Data Group, click .

The Rules are used when a search for identities is being executed on the target data stores, in response to a DSAR request.

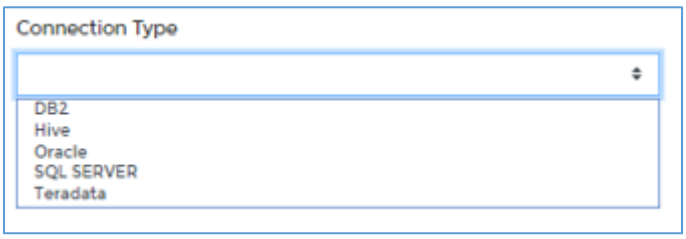
16.4.4 Create Connection - DSAR

For each **Group** created as described in the above sections, create **Connections** to all databases within which the **RoA** and/or **RtE** scans have to be executed.

To add a connection, click **Privacy > Configuration > Connection Manager > Add New Connection** tab.



1. Select the connection type from the **Connection Type** drop-down. It displays all the supported database types: Oracle, DB2, Hive, Oracle, Teradata and SQL.



2. Enter the **Connection Name.** This field accepts letters, numbers, symbols, and holds up to 256 characters. The name must be unique for each individual connection.

***Note** – The **Connection Type** and **Connection Name** cannot be edited once created.

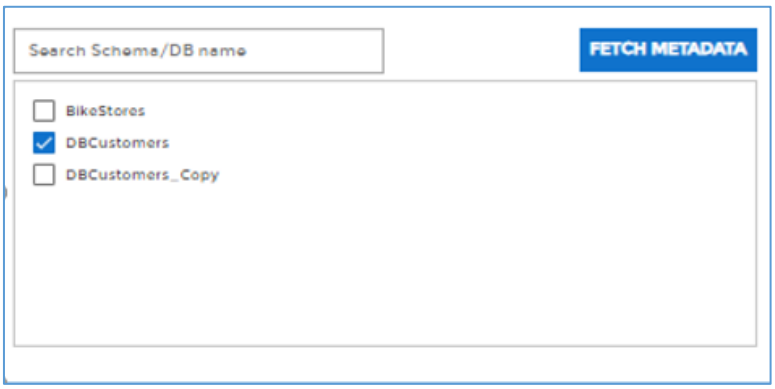
3. Enter the **Hostnames** and **IP address** of the database.
4. Enter the **Port Number**.
5. Select the **Data Group**.
6. Enter the database **User Name**.
7. Enter the database **Password**.
8. Enter the **IP address**.
9. Select the **Authentication Method** according to the Connection Type.

***Note** – The **SQL Server**, **Windows Impersonation** and **Windows** authentication method are available when **SQL server** is selected as **Connection Type**.

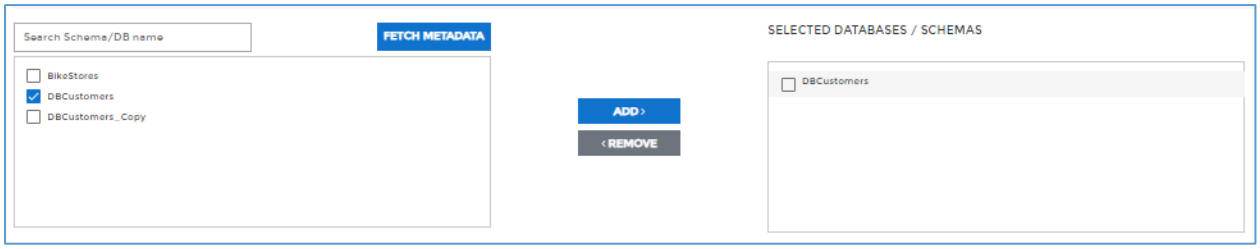
Following are the available authentication methods:

- **SQL Server**
- **Windows Impersonation**
- **Windows**

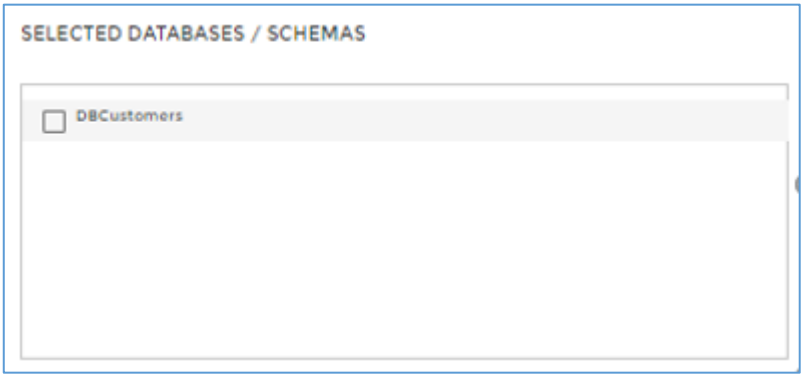
10. Enter the **URL**.
11. Select the **Type** either 'Basic' or 'TNS'.
12. Enter the **Service ID**.
13. Enter the **Service Name**.
14. After completing all entries, click **Fetch Metadata**. A list of all databases on the server will appear under the **Filter by Database** pane.



15. Check the checkbox next to the database name to select it. Click the **Add** button to add the databases in **Selected Database/Schemas panel**.



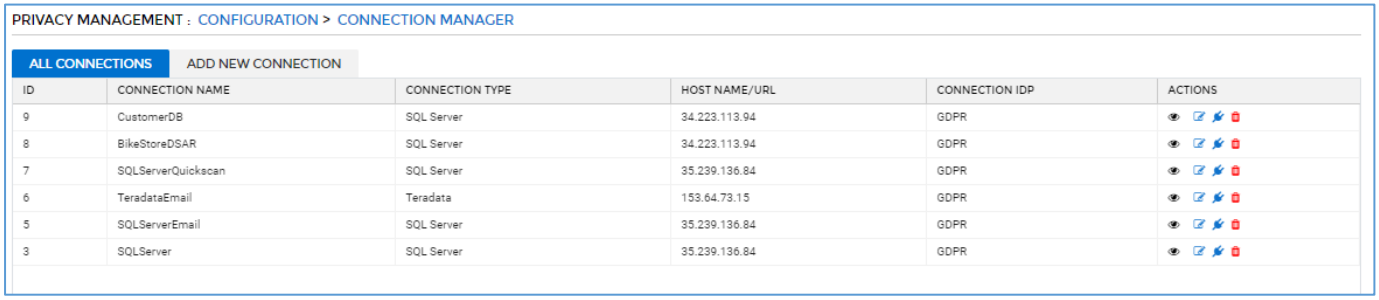
16. The selected databases will be added to the **Selected Databases/Schemas** list.



17. Click **Remove** if you wish to remove any selected Databases from the **Selected Database/Schemas** panel.

18. Click the **Save** button to save the changes.

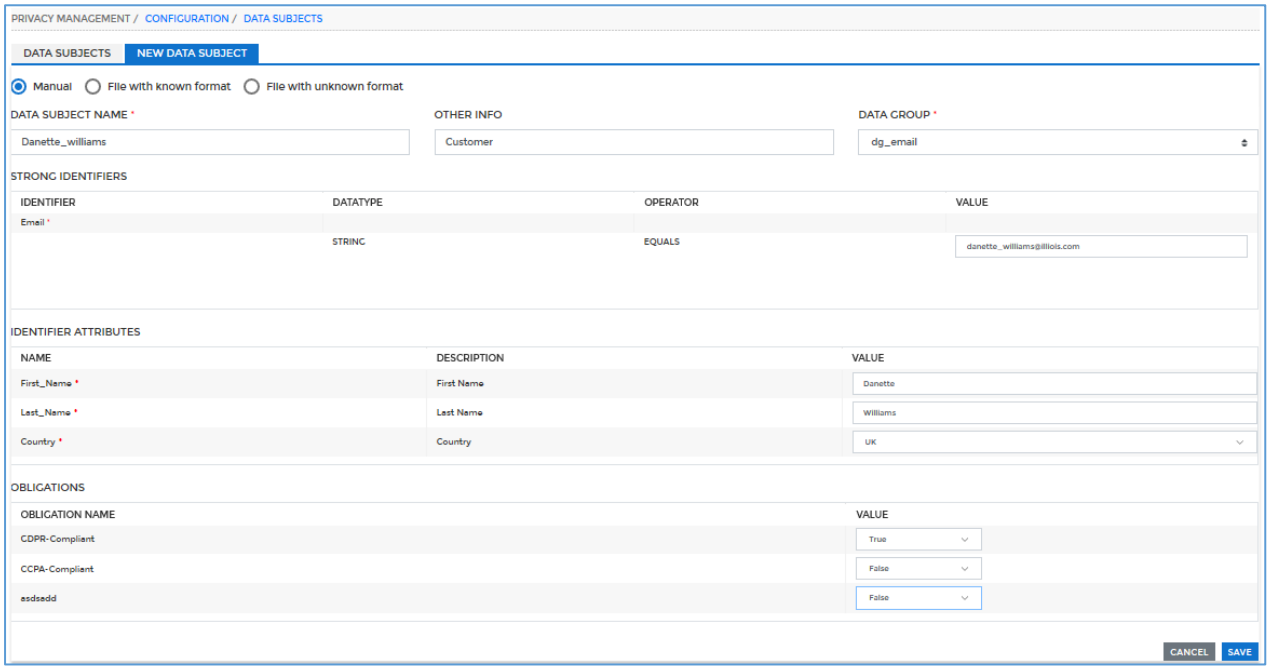
19. The **Connection** is now ready. You can view the list of all connections in **Connection Manager** screen.



To view the Connection details, click . To edit a Connection, click . To delete a Connection, click .

16.4.5 Add Data Subject

To access **Data Subjects** screen, click **Privacy > Configuration > Data Subjects > New Data Subject** tab. The **New Data Subject** panel will appear.



There are three ways in which you can add new **Data Subject**. These are:

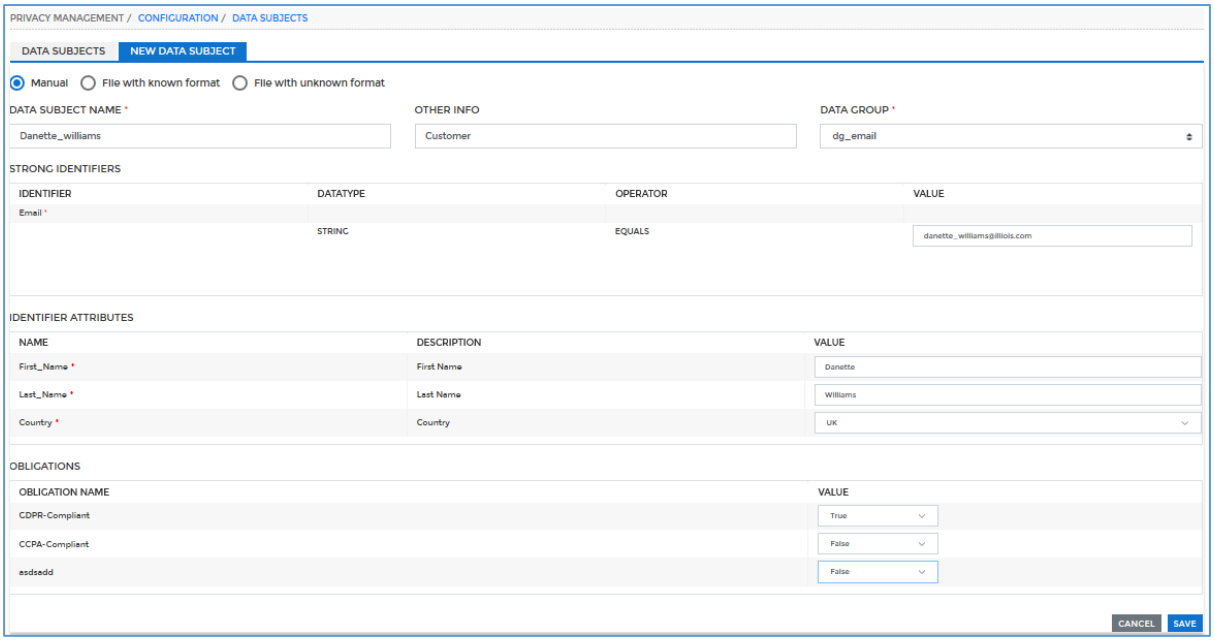
1. **Manual**

2. **Upload File with Known Format** – Files with Known Format are files that conform to the standard (or sample) format for Data Subjects supported by DgSecure. Format here refers to the sequence of identifiers in the file. XLS, XLSX, and CSV files of Known Format are supported.

3. **Upload File with Unknown Format** – Files with Unknown Format may have the identifiers in any sequence. They do not conform to the standard (or sample) format supported by DgSecure. The association between the headers in the file and identifiers is made after the upload. Only CSV files of Unknown format are supported.

To add a new Data Subject, follow the below steps:

1. **Manual**: Select the **Manual** option to provide all the required information manually. Perform the following steps to create a Data subject manually:

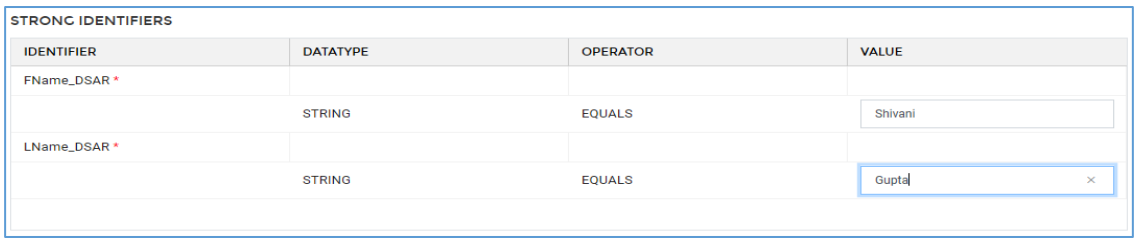


I. Enter the name of the Data Subject in the **Data Subject Name** text box.

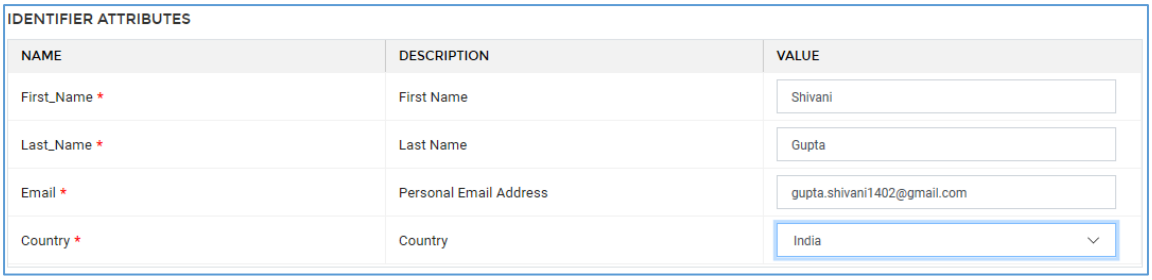
II. Enter extra information of the Data Subject in the **Other Info** text box, if any.

III. Select the Data Group from the **Data Group** drop-down. This will display the list of **Strong Identifier** and **Identifier Attributes** associated with the selected Data Group.

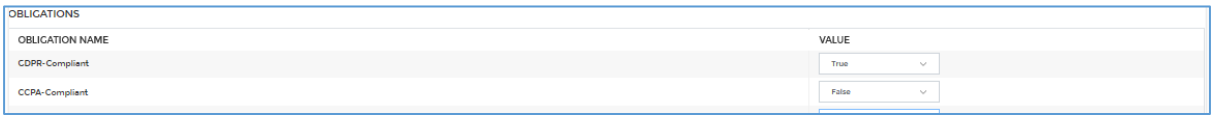
IV. Enter the values of the **Strong Identifiers**. This field will appear only if you are creating the Data Subject manually.



V. Enter the value of the mandatory Identifiers in the **Identifier Attribute** list.



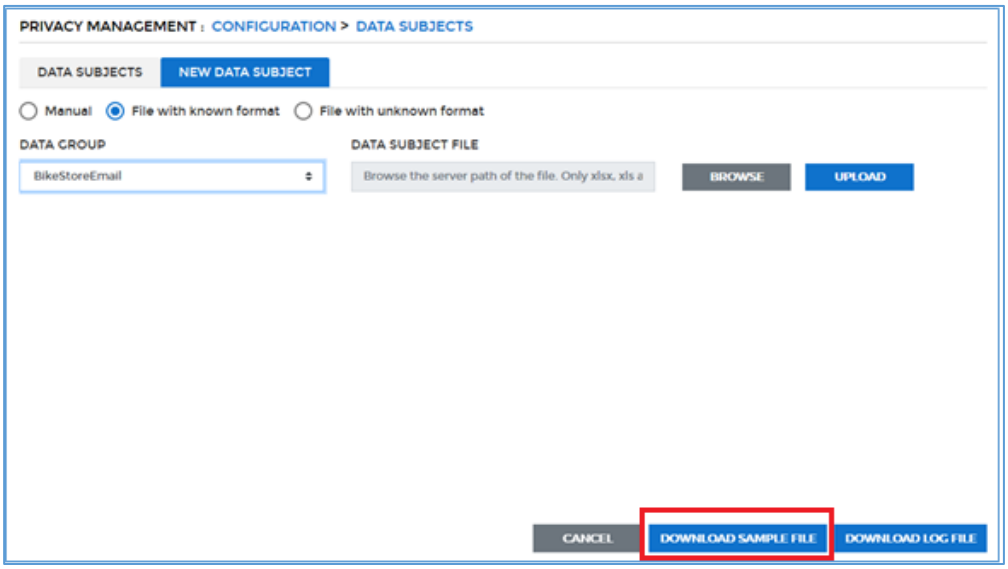
VI. Select the value for Obligation from either **TRUE** or **FALSE.**



VII. Click **Save**.

2. **Upload File with Known Format**: Select the **File with Known Format** option to upload the information from the file.

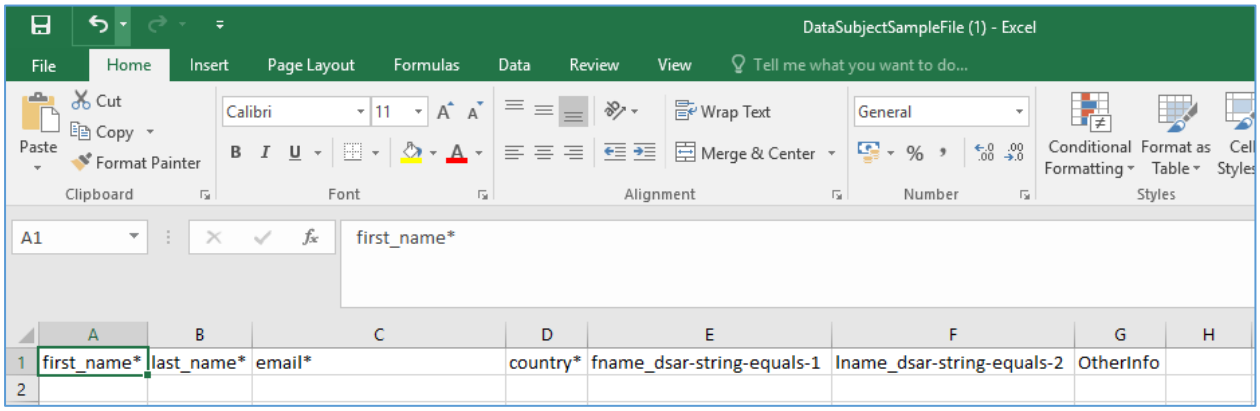
Perform the below steps to create the Data Subject by uploading a file.



I. Select the Data Group from the **Data Group** drop-down.

II. To download a sample file, click the **Download Sample File** button in the bottom of the screen. This file contains the column headers for the selected Data Group, based on which you will enter the data.

***Note** – The **Download Sample File** button will be enabled only when you select a Data Group from the **Data Group** drop-down.

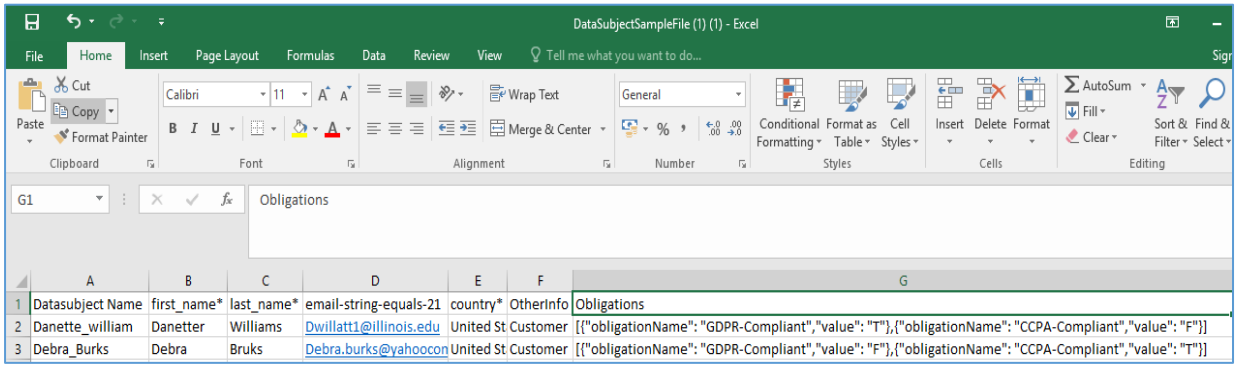


III. Fill the data in the downloaded sample file as per the specified format and save it on your local machine.

While uploading the Data Subject information through file, specify the Obligation format as defined below:

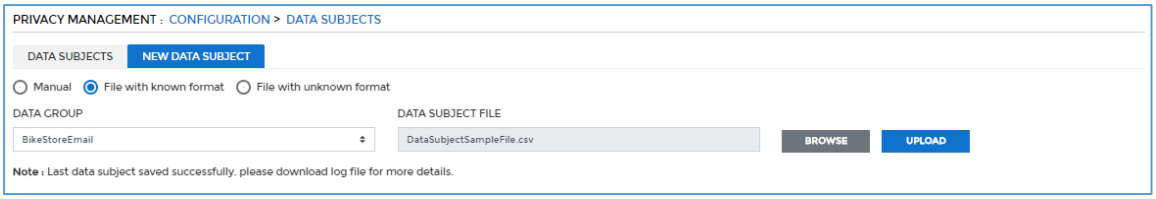
[{"obligationName":"GDPR-Compliant","value":"F"},
{"obligationName": "CCPA-Compliant","value": "T"}]

Where '**T**' stands for True and 'F' for false

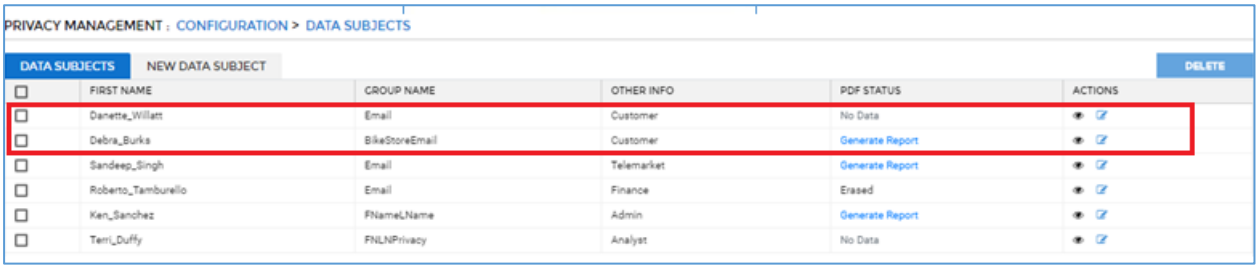


IV. Click the **Browse** button to upload the saved file from your local machine.

***Note** – Only xlsx, xls and csv file are allowed.

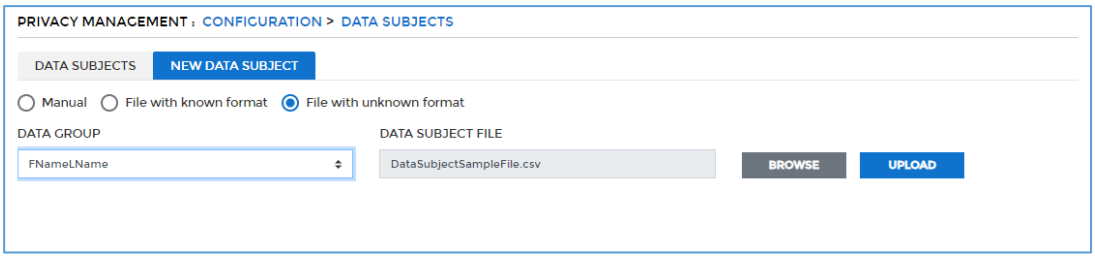


V. Click the **Upload** button. The data for **Data Subject** will be available on the **Data Subjects** tab.



3. **Upload File with Unknown Format**: Select the **File with Unknown Format** option to upload information from an unknown file format.

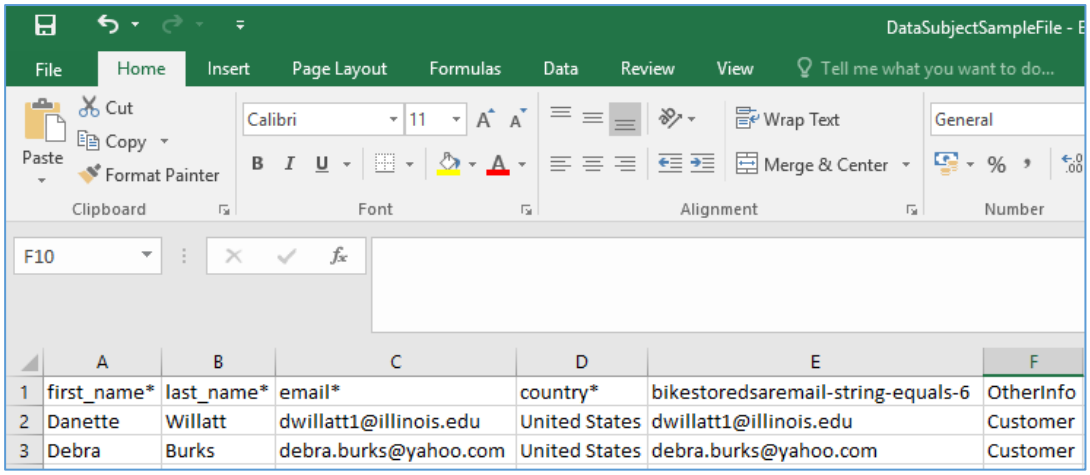
   Perform the below steps to create Data Subject by uploading a file format.



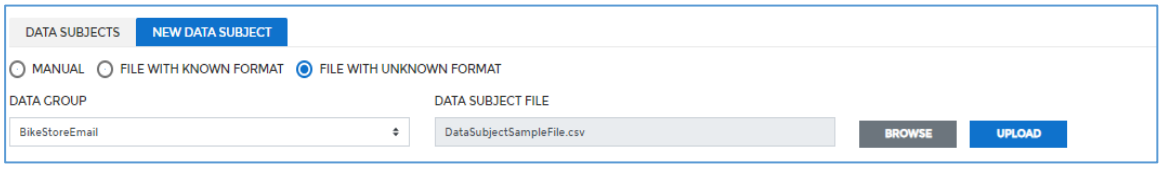
I. Select the Data Group from the **Data Group** drop-down.

II. Create a csv file on your local machine which will contain the details of **Data Subject.**

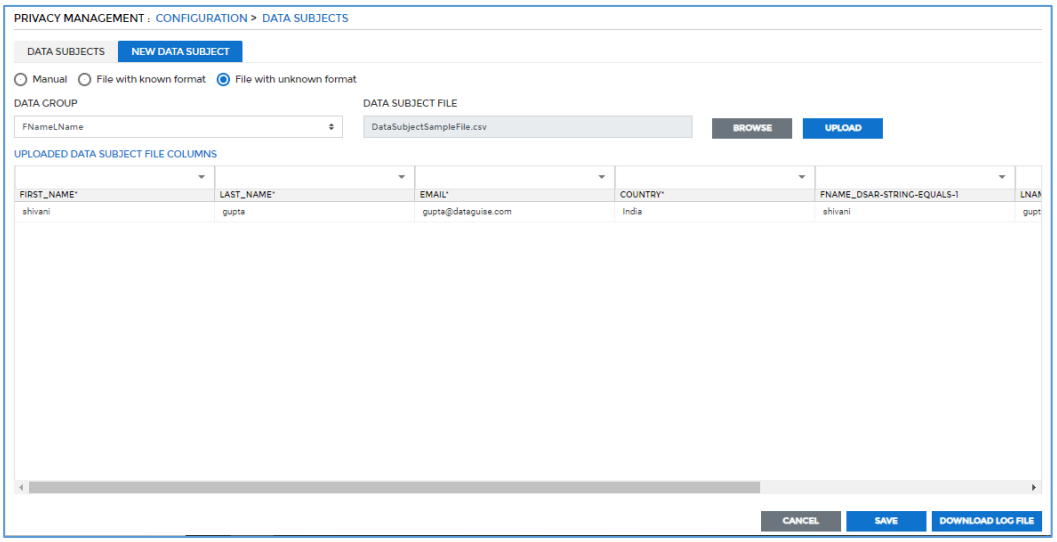
***Note** – Only csv file is allowed.



III. Click the **Browse** button to search the file from your local machine.



IV. Click the **Upload** button to the csv file. The uploaded data will appear in the **Uploaded Data Subject File Columns** panel.

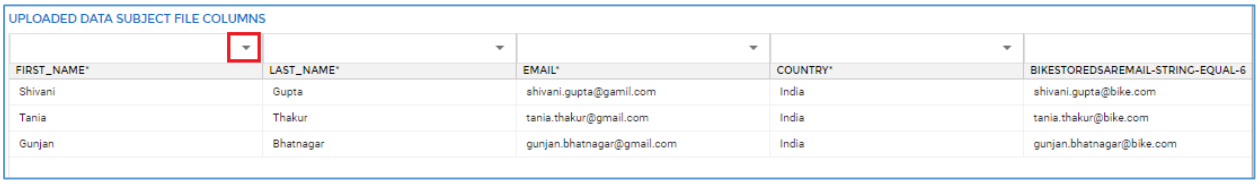


V. Once the file is uploaded then tag the file columns headers with the **Strong Identifiers**.

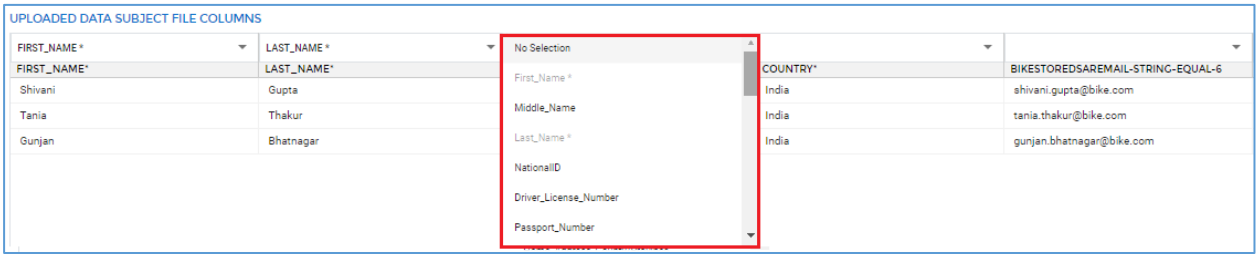
***Note** - Identifiers in '**bold**' are strong Identifiers. Identifiers with '*' are mandatory Identifiers. Identifiers in '**bold**' with '*' are both strong and mandatory Identifiers.

To tag file columns with the **Strong Identifiers.**

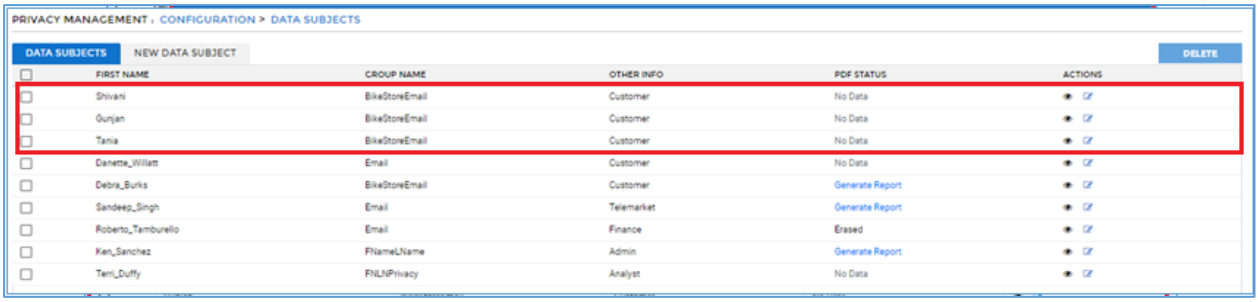
a. Click on the drop-down above of the column headers.



b. Select the **Strong Identifier** from the given list.

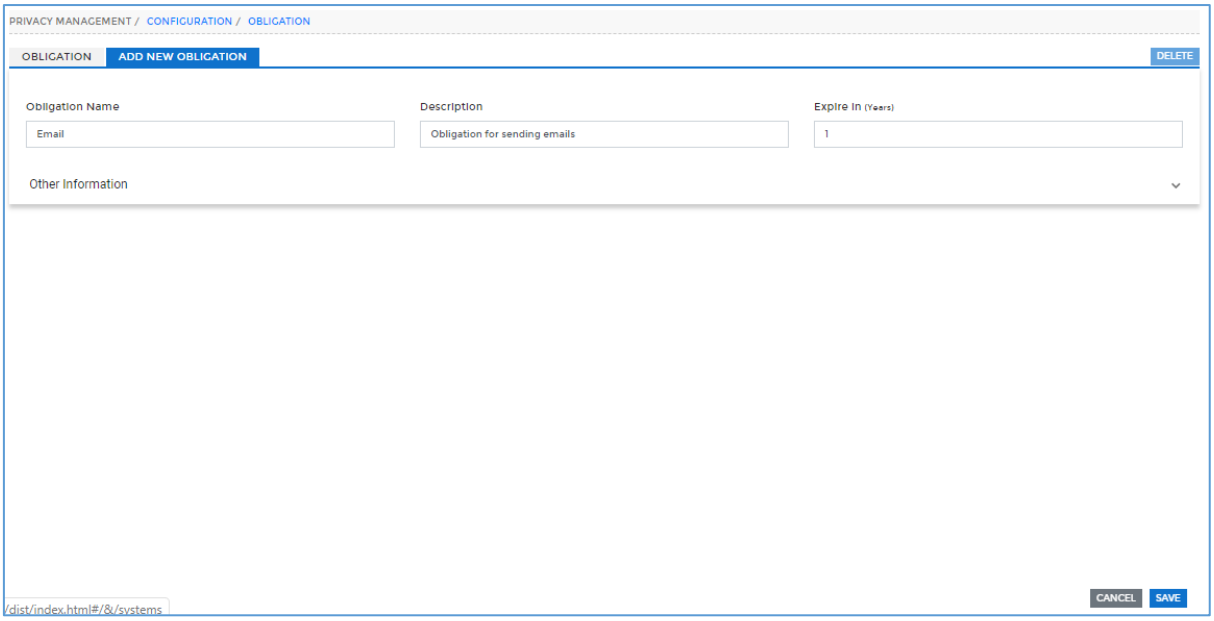


VI. Click the **Save** button to save the changes. The saved Data Subjects will be displayed on the **Data Subjects** tab.



16.4.5.1 Add Obligation

To access **Add New Obligation** screen, click **Privacy > Configuration > Obligations > Add New Obligation** tab. The **Add New Obligation** panel will appear.



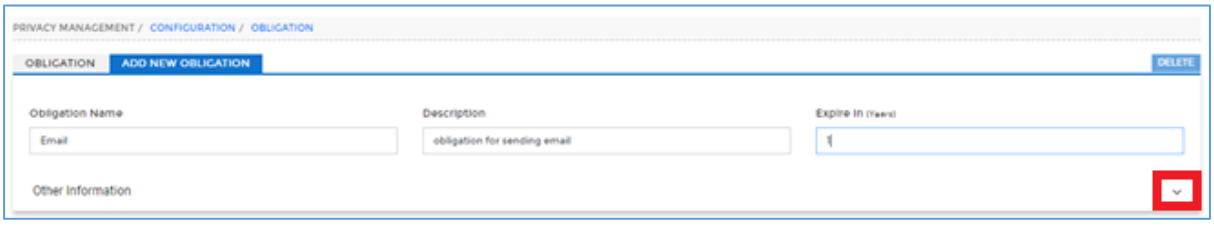
To add Obligation, follow the below steps:

1. Enter a unique name for Obligation. This field supports both the numeric and character values.

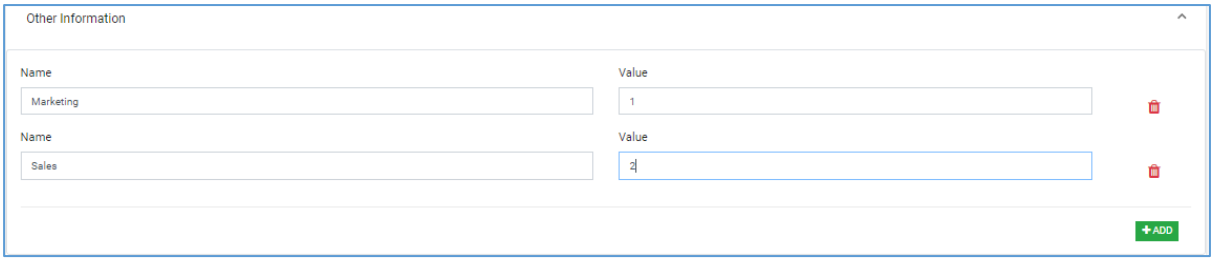
195. Enter the description for the Obligation.

196. Enter the numeric value for **Expire In (years)**. Once Obligation expires then you will not be able to send any notification to the user.

197. To enter **Other Information**, click the  next to the heading on right side of the screen. This will open the Other Information panel.



Enter the information for the **Name** and **Value** field under **Other Information** panel.



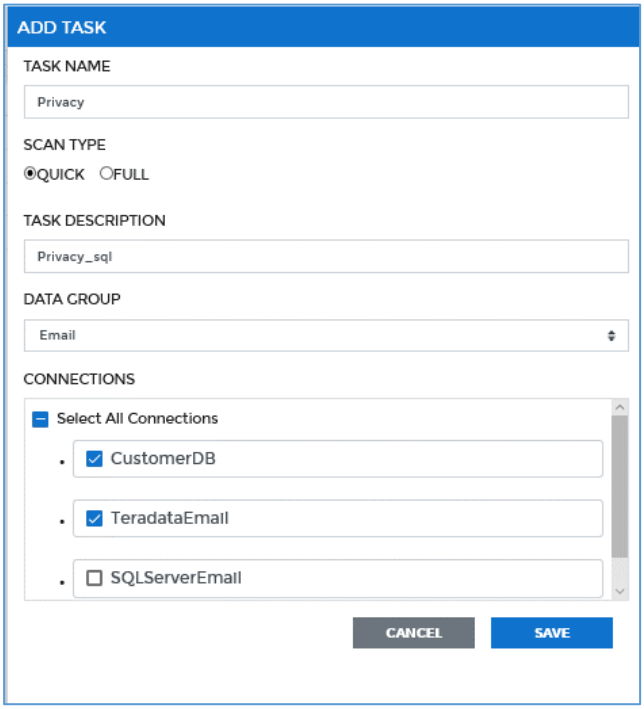
i. To delete Name and Value field, click button.
ii. To add more fields for Name and Value, click **Add** button.

198. Click **Save** to make the changes effective.
199. Click **Cancel,** if you do not want to save the changes.

16.4.6 Create Task

The next step is to create a task for scanning the data.

To access the **Task** screen, click **Privacy > Configuration > Task > Add Task** button.



1. Enter the **Task Name** and **Task Description**. The Task Name accepts both numeric and character value.
2. Select the **Scan Type**. There are two ways in which scanning can be done.
    1. **Quick Scan**: This option results in only the columns in the Quick Scan column list being scanned. The Quick Scan columns are populated from

the discovered columns during either a Detection Task execution (described in the beginning of this document) or during a **Full Scan** execution. You can also manually add columns to the list of Quick Scan columns. This feature reduces the scan time.

***Note:** To create the Quick Scan columns from the Detection Task results, visit Section 18.4.7, Build Metadata and Use API to Populate Quick Scan Columns.

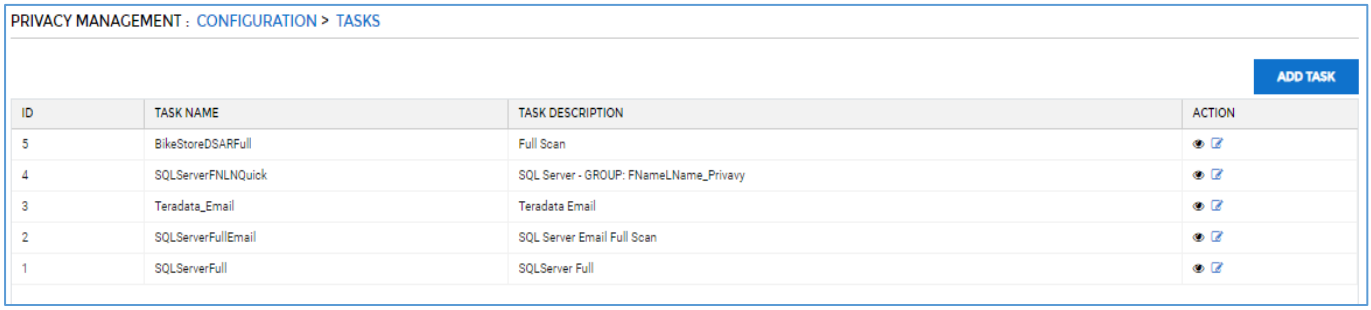
2. **Full Scan**: This option scans the entire database irrespective of the user selection.

3. Select the **Data Group** from the drop-down. The list of all the Data Groups will appear in the drop down.

4. Connections for the selected Data Group will be displayed in the **Connection** panel. Select the required connections.

5. **Save** the Task. The target data sources will be the ones that are included via the connections in this task.

6. The task will now be listed in the list of tasks under the **Tasks** screen.



To view the Task Details, click . To edit details of a Task, click

16.4.7 Build Metadata and Use API to Populate Quick Scan Columns

This step populates the IDP's repository with detected results metadata using the Build Metadata Task, and then subsequently uses a REST API call to connect the metadata to Quick Scan columns

Before executing this API, perform the following steps:

1. Create Detection Connection
2. Create and execute the Detection Task

To populate the Quick Scan columns, perform the below steps:

16.4.7.1 Add System (Optional Step)

System Information adds metadata about each target system. This an optional step for Automated DSARs, whereas it is mandatory for the Privacy Screens. This is addressed

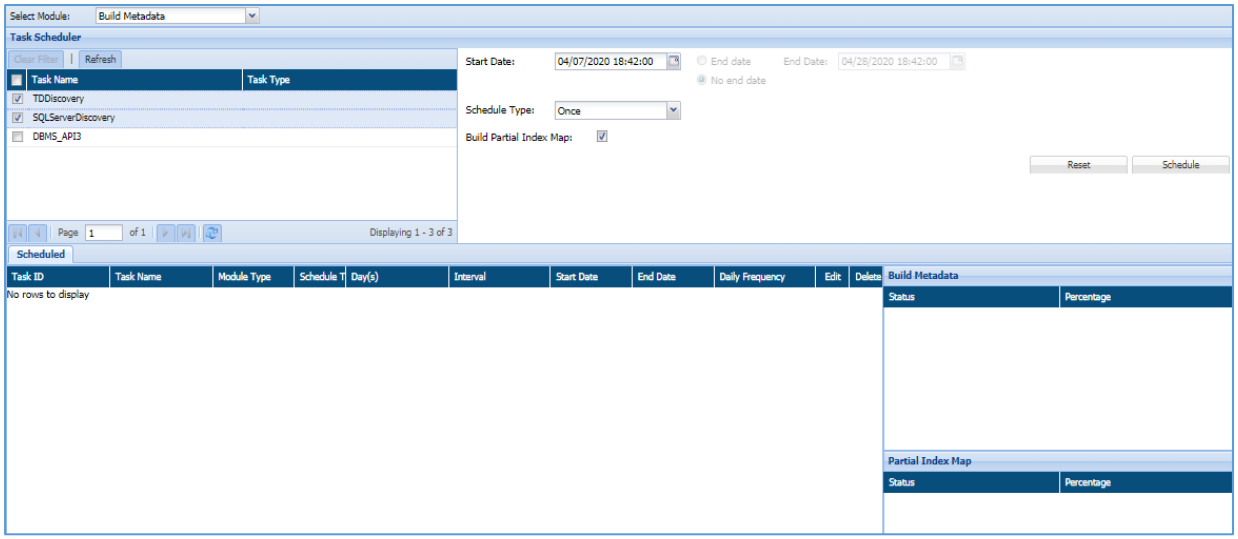
in detail in the Privacy section of the DgSecure User Manual.

16.4.7.2 *Create and Execute the Build Metadata Task*

The Build Metadata task is used to push the DBMS discovery results from the controller to the IDP's repository.

To create a **Metadata**:

1. Go to the **Scheduler** and select the module **Build Metadata** from the **Select Module** drop-down.



2. Select the required task.
3. Select the task schedule start date.
4. Select the **end date** for a task. If the task is scheduled forever, select **no end date**.
5. Select the schedule type. The available options are:

    3. **Weekly**: Select this option to perform the task on the selected days of the week.

        I. Select the days of the week to perform the task.
        II. Select the daily frequency of the task. Select **Occurs once at** and mention the time**,** if you want to perform the task once in a day.
        III. Select **Occurs every** and mention the hours, start time and end time, if you want to perform the task in every few hours.

    4. **Hourly**: Select this option to perform the task in every few hours.

        1. Select the time interval.
        2. Monthly: Select this option to perform the task on the selected days of the month.
        3. Select days of one or more months to perform the task.

4. Select a specific weekday of one or more months to perform the task.
5. Select the frequency of the task. Select **Occurs once at** and mention the time**,** if you want to perform the task once in a day.
6. Select **Occurs every** and mention the hours, start time and end time, if you want to perform the task in every few hours.

5. **Daily**: Select this option to perform the task daily.

7. Select the frequency of the task in the **Recurs.**

IV. Select **Occurs once at** and mention the time**,** if you want to perform the task once in a day.

V. Select **Occurs every** and mention the hours, start time and end time, if you want to perform the task in every few hours.

6. **Once**: Select this option to perform the task only once.

6. Click the **Schedule** button to complete the action.
7. Scheduled tasks will appear in the bottom panel. You can reschedule a task by editing them from this screen. You can delete a task also.

16.4.7.3 Populate the Quick Scan columns

Use the below API to populate Quick Scan columns from the detection results which are copied by Build Metadata. This API will create the Quick Scan columns internally.

URL:
http://hostname:port/GDPRAgent/services/GDPRAgent/buildDsarQuickScanColumns?controllerid=controllerId

The “controllerId” is generated while installing DgSecure.

Sample Call:

http://localhost:8080/GDPRAgent/services/GDPRAgent/buildDsarQuickScanColumns?controllerid=dataguise

***Note:** Host and port should be of Privacy IDP.

Request Body:

```
[{
                "discoverConnId":3,
                "privacyConnId":12,
                "privacyDataGroupName":"Customer_1"
},
```

```
{
                "discoverConnId":16,
                "privacyConnId":12,
                "privacyDataGroupName":"Human_Resource"
}]
```

CURL Command:

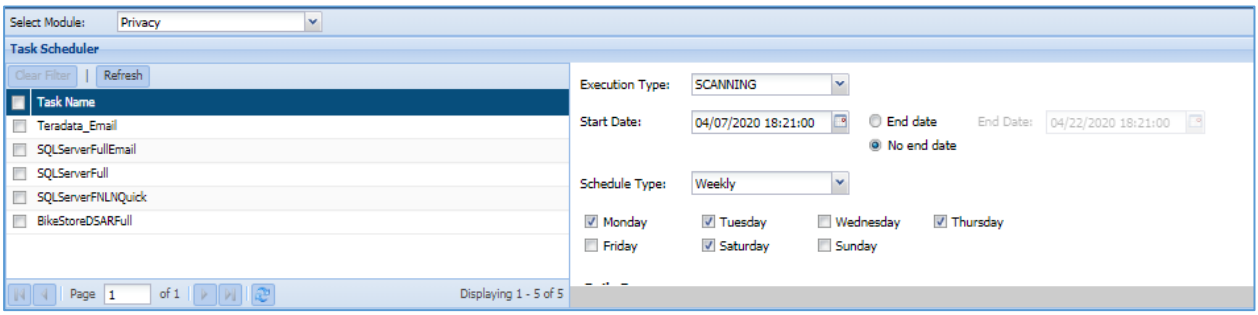
```
[root@azuredataguise-VM dataguise]# curl --location --request POST
'http://localhost:8884/GDPRAgent/services/GDPRAgent/buildDsarQuickScan
Columns?controllerid=dataguise' --header 'Content-Type: application/json'
--data
'[{"discoverConnId":7,"privacyConnId":8,"privacyDataGroupName":"grp1"}]'
{"message":"Quick Sacn Columns updated
sucessfully","response":null,"result":"SUCCESS","resultCode":null}
```

16.4.8 Schedule RoA/RtE

Once the **task** and the **request** are ready the next step is to schedule the task.

To schedule a task in **DSAR**, access the **Schedule**r screen. Click **Scheduler** from the side menu.

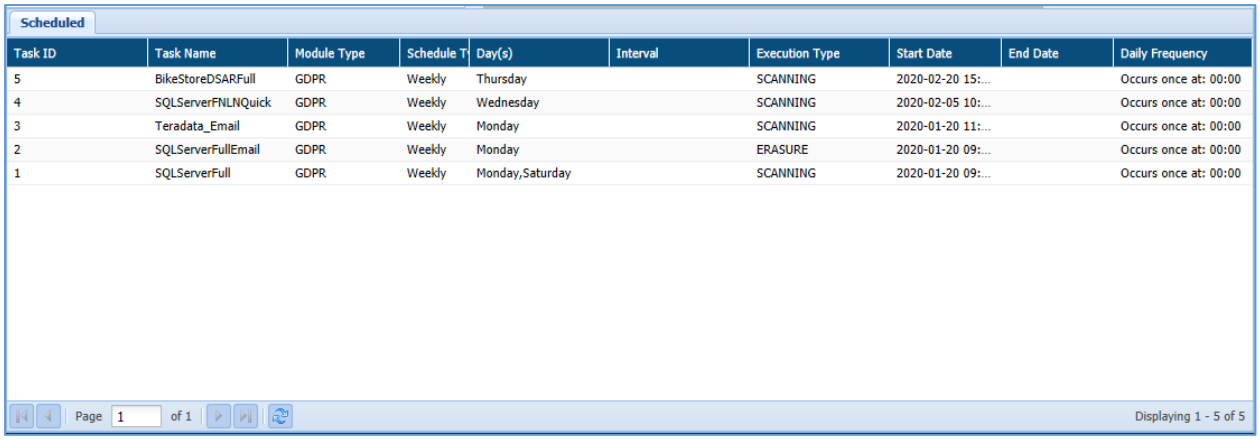
1. Go to the **Scheduler** Screen.
2. Select **Privacy** from the **Select Module** drop-down.



3. Select the required **Task**.
4. Select the **Execution Type** either **Scanning** or **Erasure**. For **RoA**, select **Scanning** as the **Execution Type**. For **RtE**, select **Erasure** as **Execution Type**.

5. Select the **Start Date** and the **End Date**.

6. Select the **Schedule Type** from the drop-down. The available options are:
    7. **Weekly**: Select this option to perform the task on the selected days of the week.
        i. Select the days of the week to perform the task on specific days.
        ii. Select the daily frequency of the task. Select **Occurs Once at** and mention the time, if you want to perform the task once in a day.
        iii. Select **Occurs every** and mention the hours, start time and end time, if you want to perform the task in every few hours.
    8. **Hourly**: Select this option to perform the task in every few hours.
        i. Select the time interval.
    9. **Monthly**: Select this option to perform the task on the selected days of the month.
        i. Select days of one or more months to perform the task.
        ii. Select a specific weekday of one or more months to perform the task.
        iii. Select the frequency of the task. Select **Occurs once at** and mention the time**,** if you want to perform the task once in a day.
        iv. Select **Occurs every** and mention the hours, start time and end time, if you want to perform the task in every few hours.
    10. **Daily**: Select this option to perform the task daily.
        i. Select the frequency of the task in the **Recurs.**
        ii. Select **Occurs once at** and mention the time**,** if you want to perform the task once in a day.
        iii. Select **Occurs every** and mention the hours, start time and end time, if you want to perform the task in every few hours.
    11. **Once**: Select this option to perform the task only once.
7. Click on the **Schedule** button to complete the action.
8. The list of scheduled tasks will appear in the **Scheduler** tab in the bottom panel.



At this point, the system is ready to receive DSAR requests.

16.4.9 Request RoA/RtE

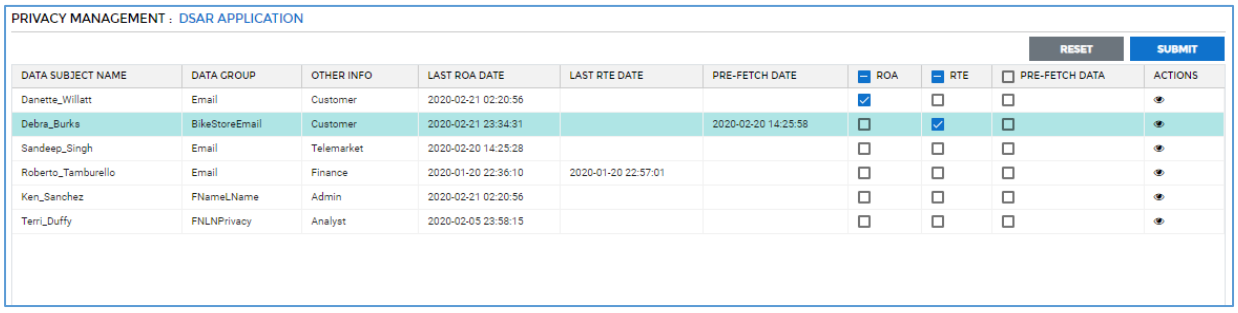
RoA and RtE Requests can be either manually entered or can be generated via the API, which in turn will be called by a front-end intake UI. The front-end intake UI will typically be designed by the organization implementing the automated DSAR flow, and will be embedded in an authenticated customer- or employee-facing portal.

To generate a request for RoA/RtE, perform the below steps.

16.4.9.1 Submit the Request Manually

To request RoA/RtE manually, click **Privacy > DSAR Workflow > DSAR Applications** screen.

1. Click the **DSAR Application** screen.



2. Select the **RoA** or **RtE** checkbox corresponding to the Data Subjects for which you want to perform **RoA/RtE**. Click the **Save** button.
3. On saving the request, the **Status** of the Data Subjects will be in **Incoming** state in **RoA/RtE** screen under **DSAR Workflow**. This screen is typically visible to the DPO.

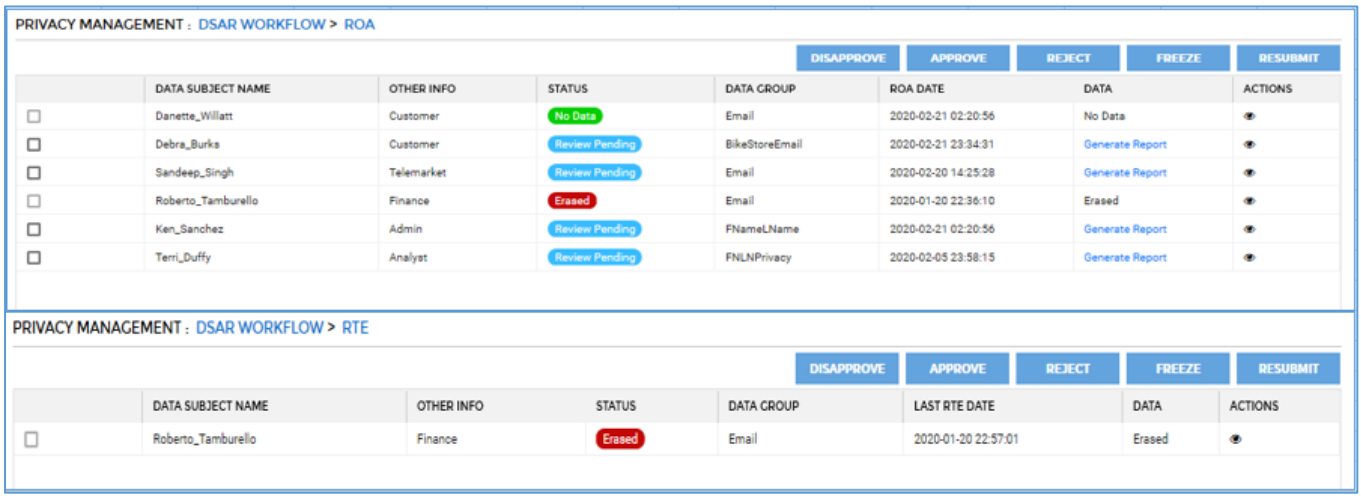
4. The **Status** of Data Subject in **RoA/RtE** are:

    i. **No Data**: If the status is **No Data**, it means that no data was found in the target database when scanning was completed.

200. **Erased**: If the status is **Erased**, it means that the data of selected Data Subject has been deleted in the target data stores.

201. **Review Pending**: If status is **Review Pending**, it means DPO or Admin have to review the data after report has been generated. Once reviewed, they can approve it.

202. **Incoming**: If status is **Incoming**, it means the Data Subject is scheduled for processing. When the scheduled task gets triggered, the status of Data Subject will change to Incoming state.



5. The DPO has rights to approve, disapprove, reject, freeze, or resubmit a frozen request, by clicking the buttons provided on the top of the screen.

    1. **Disapprove**: Click the **Disapprove** button, if RoA/RtE report is approved mistakenly. A DPO can disapprove a report. The Data Subject's status will change to **Review Pending**, once it has been disapproved.

    2. **Approve**: Click the **Approve** button, if the RoA report is valid. The DPO approves the scanned data. For **RtE**, approve means ready to be erased. The step after this is that i) in the case of an RoA, a report (which could be custom modified) will be sent back to the source (typically the same portal where the web intake page was

located) or ii) in the case of an RtE, the data found is deleted from the target data stores.

Note on final report format served to end user:
If the incoming requests are generated via the intake API which is integrated with a web intake portal, custom coding and interfacing with the web intake portal will be required for step i) above, because the final format of the report is typically different for each organization.

3. **Reject**: Click the **Reject** button to reject the RoA/RtE request. Data Subject Requests with status as **Review Pending** can be rejected.

4. **Freeze**: Click the **Freeze** button, if the RoA/RtE report contains false positive results. The DPO can freeze the request. Downstream processing will not take place in this case.

5. **Resubmit**: Click the **Resubmit** button, if the Data Subject's report status is **Frozen** or **In-Error.**

   i. In **RoA**, when the **Resubmit** button is clicked the status of the Data Subject will change to **Incoming** state i.e. ready to be scanned, if it was in **Frozen** or **In-Error** state.

   ii. In **RtE,** when the **Resubmit** button is clicked the status of the Data Subject will change to **Review Pending** i.e. ready to be approved in order to be erased, if it was in **In-Error** state.

16.4.9.2 Submit the Request via API (integration with Intake Web Page)

A request for RoA/RtE using can be submitted using the API described below. This API will submit a request for RoA or RtE. This API is typically called by an Intake button on an authenticated web page from where a logged in Data Subject can make an RoA or RtE request.

Endpoint URL:
http://host:port /dgcontroller/services/v1/products/Privacy/request/

Sample Call:
http://localhost:8088/dgcontroller/services/v1/products/Privacy/request/

Header Parameters:
sessionId

Request Body:
{

```
    "requestType":"ROA",
    "identifierValues":["rob0@adventure-works.com"]
}
```

Here “requestType” can be either RoA or RtE.
“identifierValues” are the values of Strong Identifiers.

Response Body:
It will provide a request ID which user can use for generating and downloading the report.

16.4.10 View Report

The last step is to view the report. The report can be generated or downloaded either manually or via API.

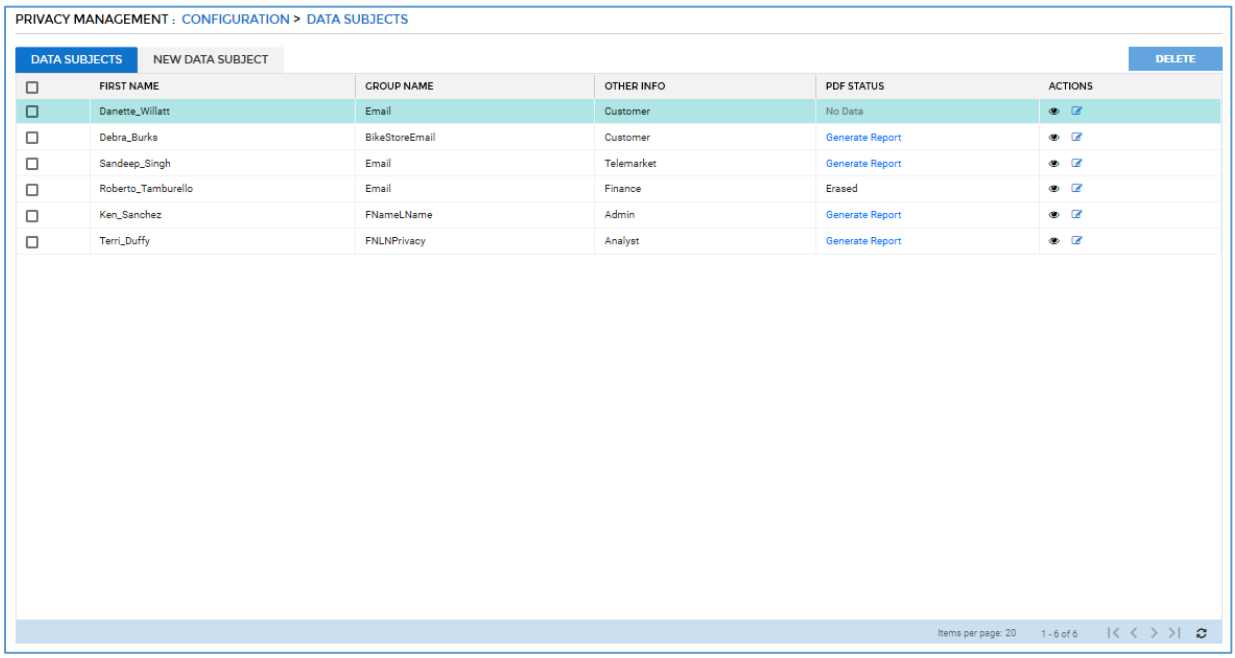
16.4.10.1 View the Report Manually

You can view the processed report in:

1. Data Subject
2. RoA (Request of Access)

1. **Data Subject:**

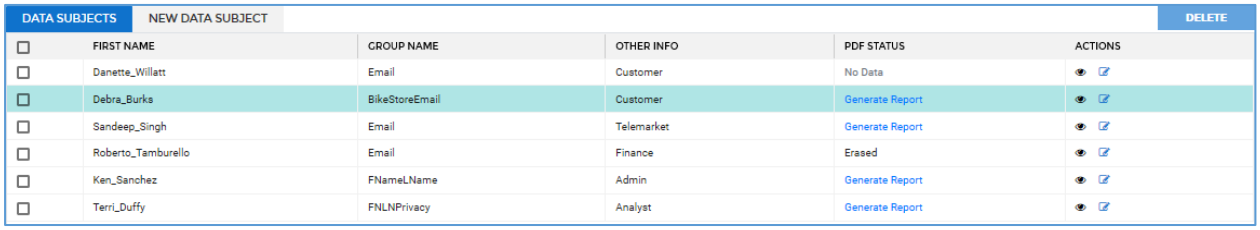
   To view the report in the Data Subject screen, click **Privacy > Configurations > Data Subjects** tab.



This screen will display the basic details of the Data Subject such as **First Name, Group Name, Other Information of the Data Subject, PDF Status**.

To view the details of a Data Subject, click . To edit a Data Subject, click .

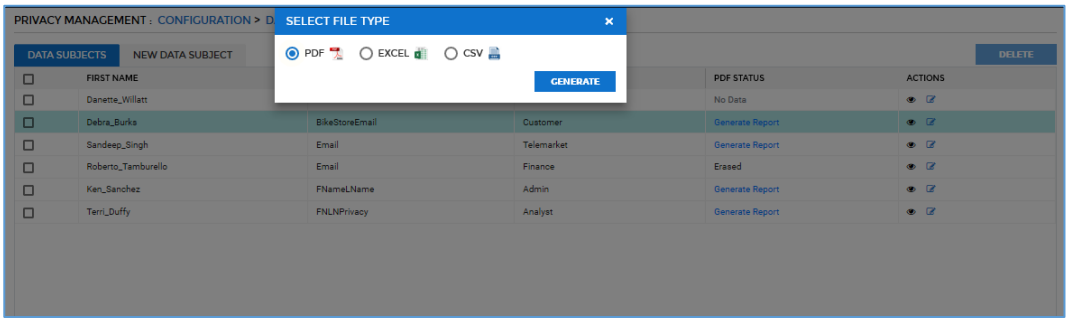
You can also generate report for each of the Data Subject by clicking on the **Generate Report** in the PDF Status column. Perform the following steps to generate a report for the Data Subject.



i. Go to the **Data Subjects** screen. Click on the **Generate Report** hyperlink in **PDF Status** Column.

ii. Select the **File Type** from the given option. Click **Generate** button.

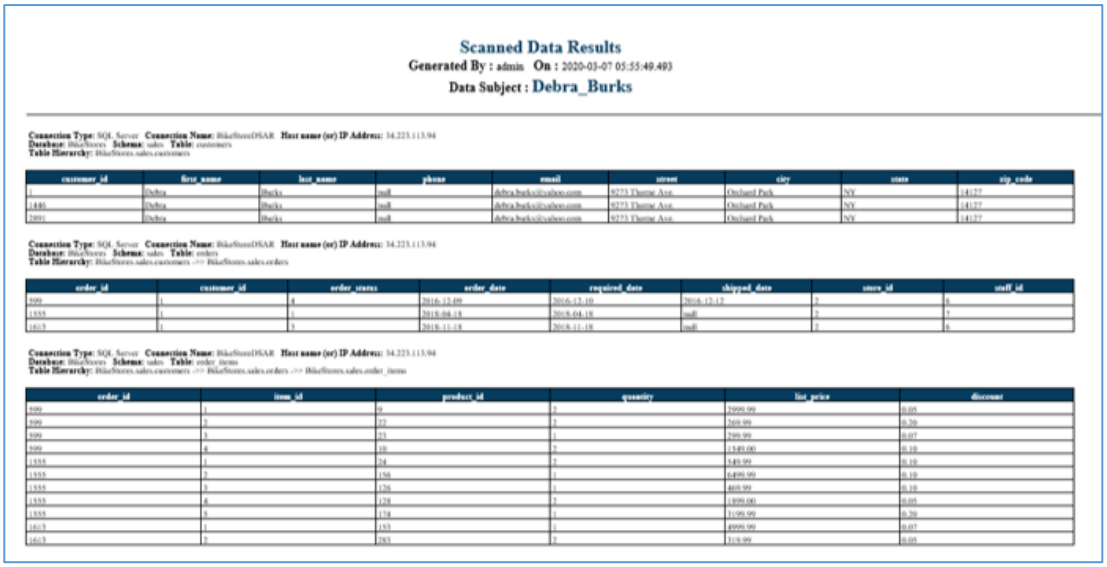
   a. PDF
   b. Excel
   c. CSV



iii. The status in the **PDF Status** column will change from **Generate Report** to **Download Report**.

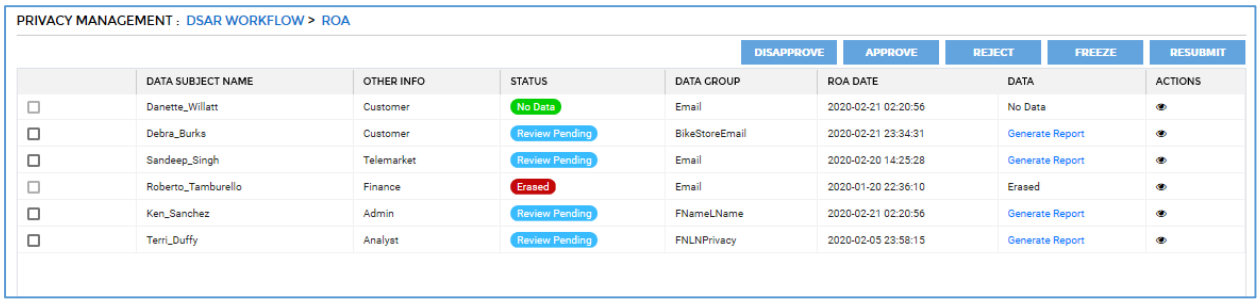
iv. Click on the **Download Report** and specify a location where the report need to be saved.

v. The Final report will provide the scanned results.



2. **RoA**

To view report in the **Data Subject** screen, click **Privacy > DSAR Workflow > RoA**.

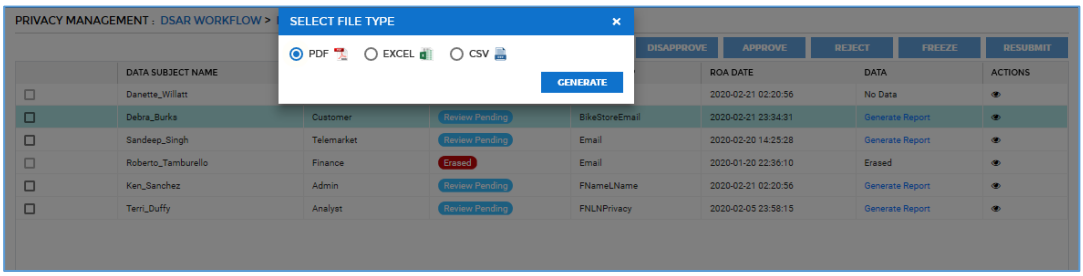


You can also generate a report for each of the Data Subject. Perform the following steps to generate the report for Data Subject.

i. Click on the **Generate Report** hyperlink in **Data** column.

ii. Select the **File Type** from the given option. Click **Generate** button.

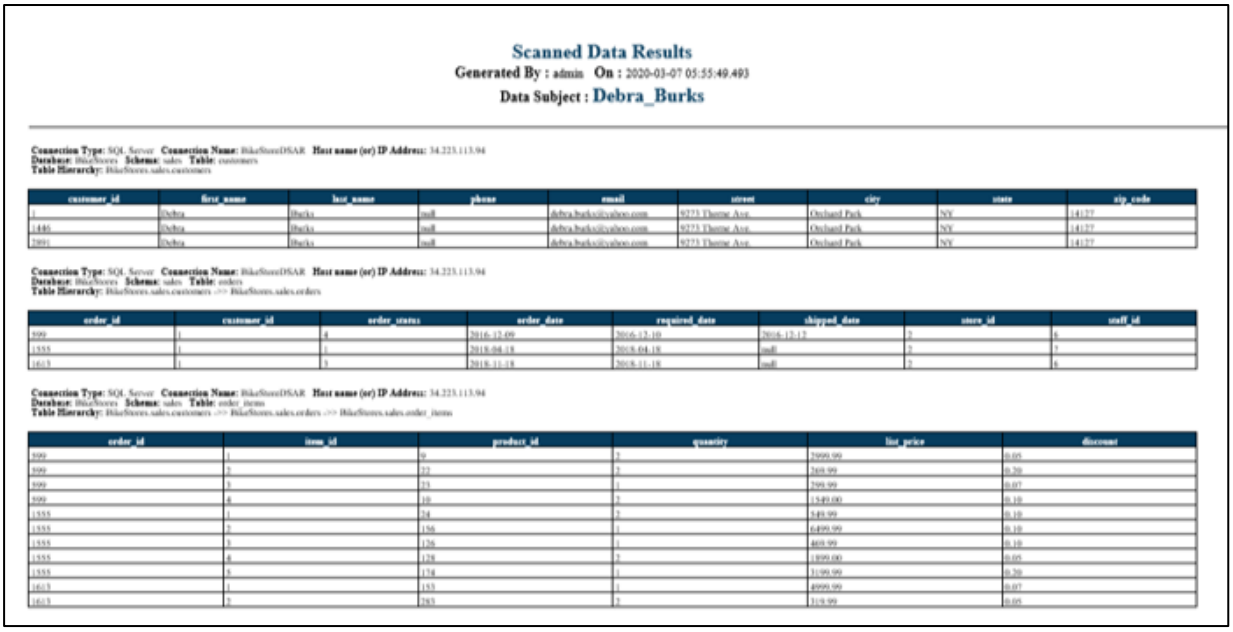
1. PDF
2. Excel
3. CSV



iii. The status of the **Data Subject Name** in the **Data** column will change from **Generate Report** to **Download Report**.

iv. Click on **Download Report** and **s**pecify the location where the report needs to be saved.

v. The Final report will provide the scanned results.



Scanned Data Results

Generated By : admin On : 2020-03-07 05:55:49.493

Data Subject : Debra_Burks

Connection Type: SQL Server Connection Name: BikeStoreDSAR Host name (or) IP Address: 34.223.113.94
Database: BikeStores Schema: sales Table: customers
Table Hierarchy: BikeStores.sales.customers

customer_id	first_name	last_name	phone	email	street	city	state	zip_code
1	Debra	Burks	null	debra.burks@yahoo.com	9273 Thorne Ave.	Orchard Park	NY	14127
1446	Debra	Burks	null	debra.burks@yahoo.com	9273 Thorne Ave.	Orchard Park	NY	14127
1991	Debra	Burks	null	debra.burks@yahoo.com	9273 Thorne Ave.	Orchard Park	NY	14127

Connection Type: SQL Server Connection Name: BikeStoreDSAR Host name (or) IP Address: 34.223.113.94
Database: BikeStores Schema: sales Table: orders
Table Hierarchy: BikeStores.sales.customers -> BikeStores.sales.orders

order_id	customer_id	order_status	order_date	required_date	shipped_date	store_id	staff_id
999	1	4	2016-12-09	2016-12-10	2016-12-13	2	6
1555	1	3	2018-04-18	2018-04-18	null	2	3
1613	1	3	2018-11-18	2018-11-18	null	2	6

Connection Type: SQL Server Connection Name: BikeStoreDSAR Host name (or) IP Address: 34.223.113.94
Database: BikeStores Schema: sales Table: order_items
Table Hierarchy: BikeStores.sales.customers -> BikeStores.sales.orders -> BikeStores.sales.order_items

order_id	item_id	product_id	quantity	list_price	discount
999	1	6	2	2999.99	0.05
999	2	22	2	369.99	0.20
999	3	23	1	599.99	0.07
999	4	10	2	1549.00	0.10
1555	1	24	2	549.99	0.10
1555	2	156	1	6499.99	0.10
1555	3	126	1	469.99	0.10
1555	4	128	2	1899.00	0.05
1555	5	174	1	3199.99	0.20
1613	1	153	1	4999.99	0.07
1613	2	283	2	319.99	0.05

16.4.10.2 Accessing the Reports via API

The reports can also be generated and downloaded via the APIs.

1. **Generate a report**
   This API will submit a request to generate report. A report can be generated in three file formats i.e. PDF, Excel and CSV.

   URL:
   http://host:port/dgcontroller/services/v1/products/Privacy/report/generae

   Sample Call:
   http://localhost:8088/dgcontroller/services/v1/products/Privacy/report/generate

   Header Parameters:
   sessionId

   Request Body:
   {
   "requestId":5,
   "format":"PDF"

}

The "requestId" is the ID generated using the first API: ***http://host:port /dgcontroller/services/v1/products/Privacy/request/.***

Response Body:
It will display a success message on the screen.

2. **Download the Report**
   This API will post a request to download a report which is generated using the above API. This API will download the report in any of specified file format i.e. PDF, Excel and CSV.

   URL:
   http://host:port/dgcontroller/services/v1/products/Privacy/report/download

   Sample Call:
   http://localhost:8088/dgcontroller/services/v1/products/Privacy/report/download

   Header Parameters
   sessionId

   Request Body:
   ```
   {
           "requestId":5,
   }
   ```

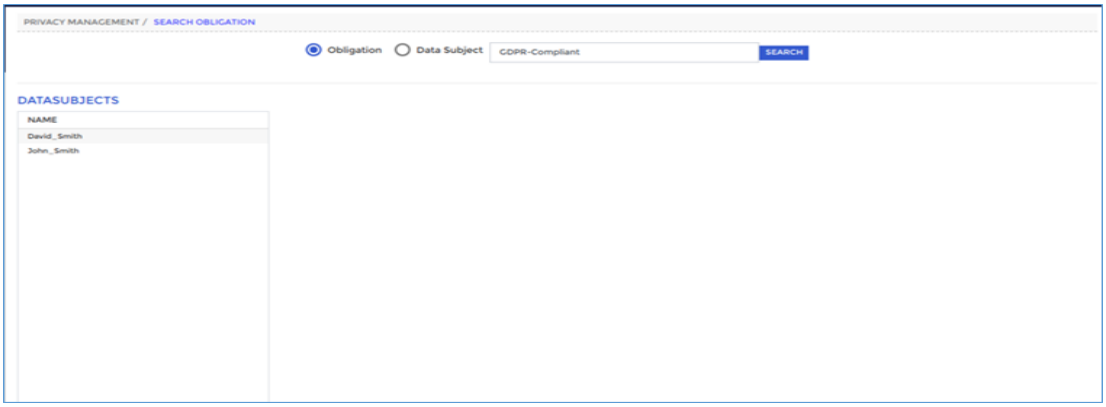
   The "requestId" is the ID generated using API: ***http://host:port /dgcontroller/services/v1/products/Privacy/request/***.

   Response Body:
   In case of success, file will be downloaded on the host machine.

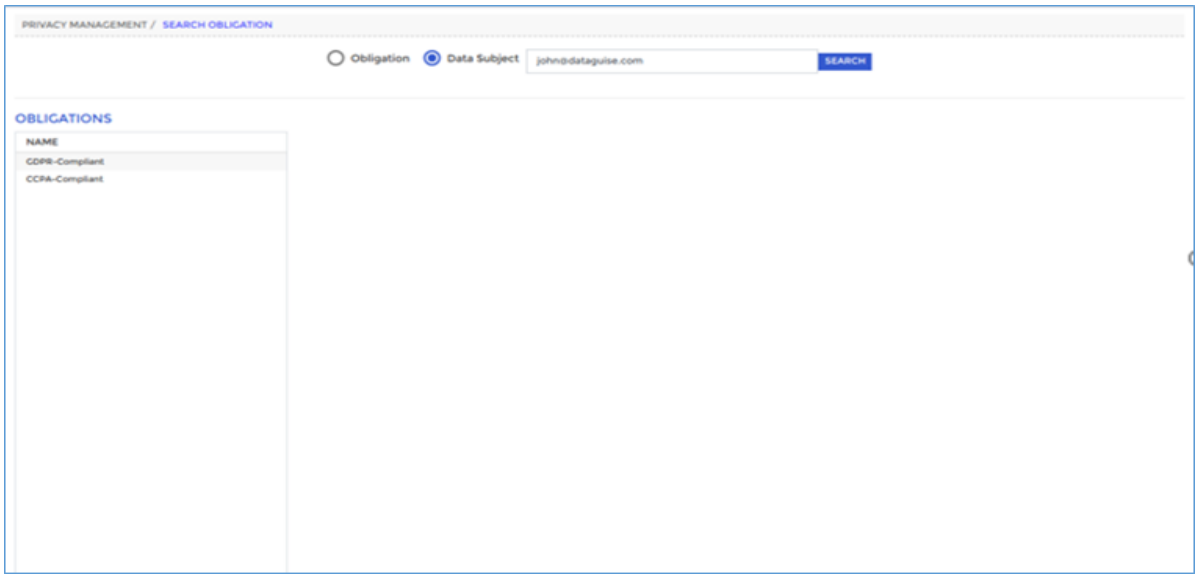
16.4.11 Search Obligation

This is the main screen where the end user of DgSecure can select obligations and get lists of data subjects falling within its scope, can select a data subject and get all obligations affecting that data subject.

On entering the obligattion name in the search box, we can get the list of datasubjects associated with that obligation.



For getting the list of obligations associated with the datasubject, we have to provide the strong identifier value of the datasubject in the searchbox.



16.5 Configure Privacy

Perform the following steps to configure Privacy in DgSecure:

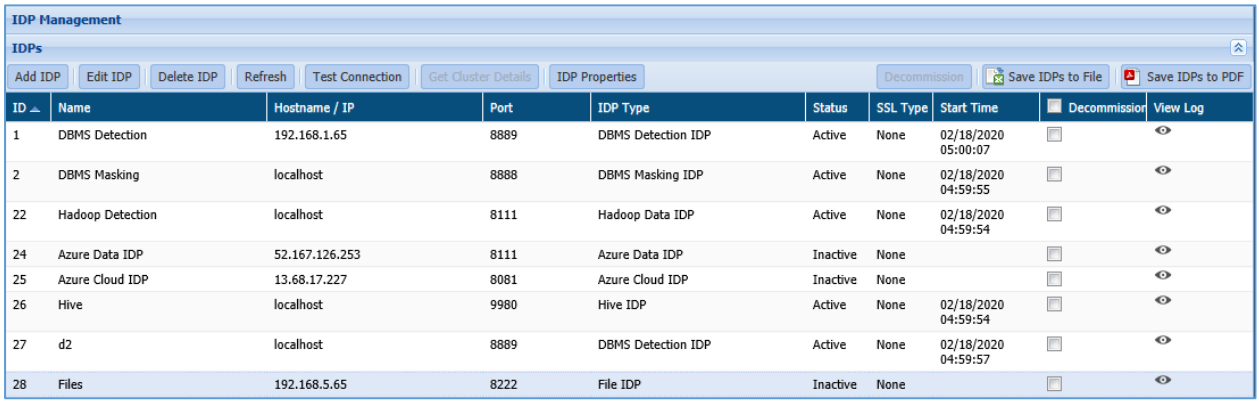
***Note** – Steps 1 to 7 are one-time configuration steps, and the last 2 steps, Execute Task and View Report, are the ones that need to be performed repeatedly.

1. Add IDPs
2. Add/Edit Identifier
3. Add Data Group
4. Add Data Subject
5. Add System
6. Create Connection - Privacy
7. Create Task
8. Execute Task (As per the Schedule)

9. View Report

16.5.1 Add IDPs

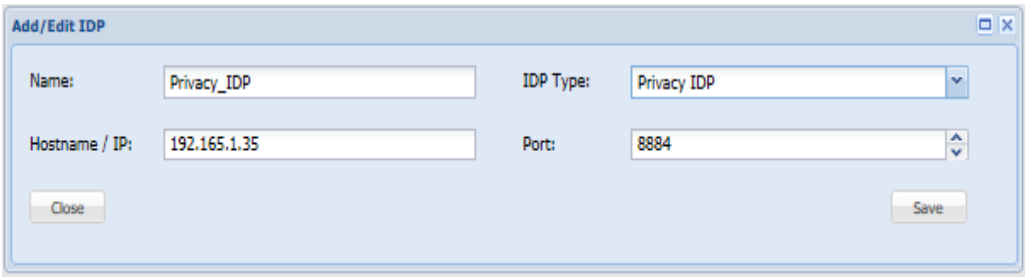
To add an **IDP**, login into the **DgAdmin**. To Access the **IDP** screen, click **IDP Management > IDPs > Add IDP**. The **IDP Management** panel will appear.



ID	Name	Hostname / IP	Port	IDP Type	Status	SSL Type	Start Time	Decommissior	View Log
1	DBMS Detection	192.168.1.65	8889	DBMS Detection IDP	Active	None	02/18/2020 05:00:07		
2	DBMS Masking	localhost	8888	DBMS Masking IDP	Active	None	02/18/2020 04:59:55		
22	Hadoop Detection	localhost	8111	Hadoop Data IDP	Active	None	02/18/2020 04:59:54		
24	Azure Data IDP	52.167.126.253	8111	Azure Data IDP	Inactive	None			
25	Azure Cloud IDP	13.68.17.227	8081	Azure Cloud IDP	Inactive	None			
26	Hive	localhost	9980	Hive IDP	Active	None	02/18/2020 04:59:54		
27	d2	localhost	8889	DBMS Detection IDP	Active	None	02/18/2020 04:59:57		
28	Files	192.168.5.65	8222	File IDP	Inactive	None			

Follow the below steps to add an IDP:

3. Click the **Add IDP** button. The **Add / Edit IDP** dialog box will appear.



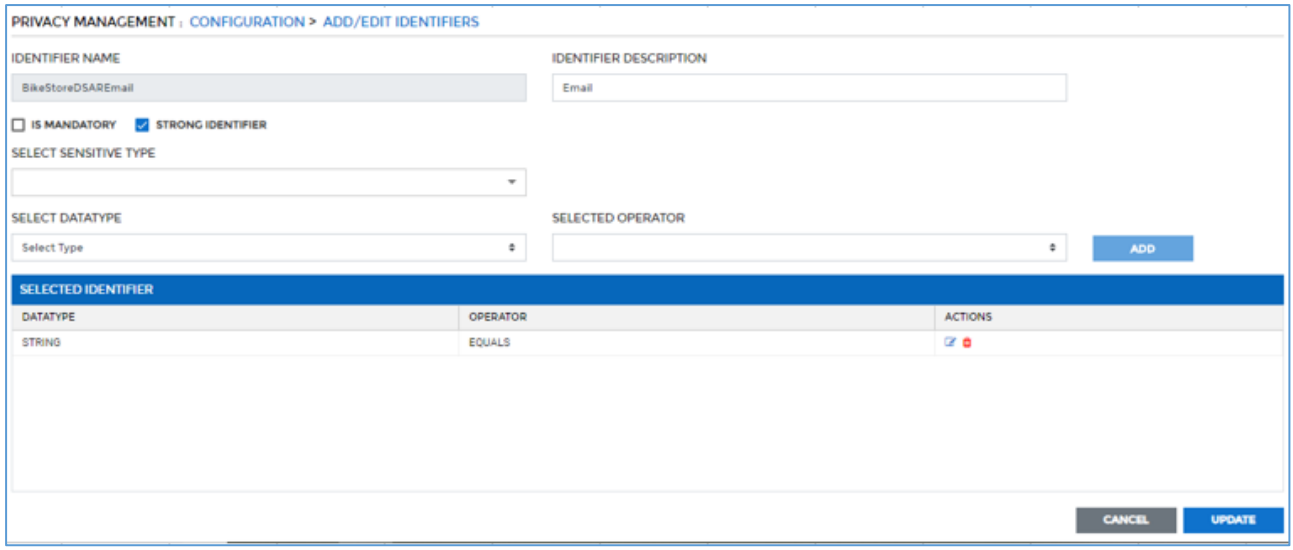
1. Enter the descriptive name for the IDP in the **Name** textbox.
2. Enter the **hostname or IP** address of the IDP's host machine in the **Hostname/IP** textbox.
3. Select the **Privacy IDP** as the IDP Type from the drop-down.
4. Enter the **port number** which the IDP will use to send and receive information.

4. Click **Save**.
5.

16.5.2 Add/Edit Identifier

To access the Identifiers screen, log into the **DgSecure** Application.

Click **Privacy > Configuration > Identifiers > Add Identifier** button. The **Add/Edit Identifier** panel will appear.

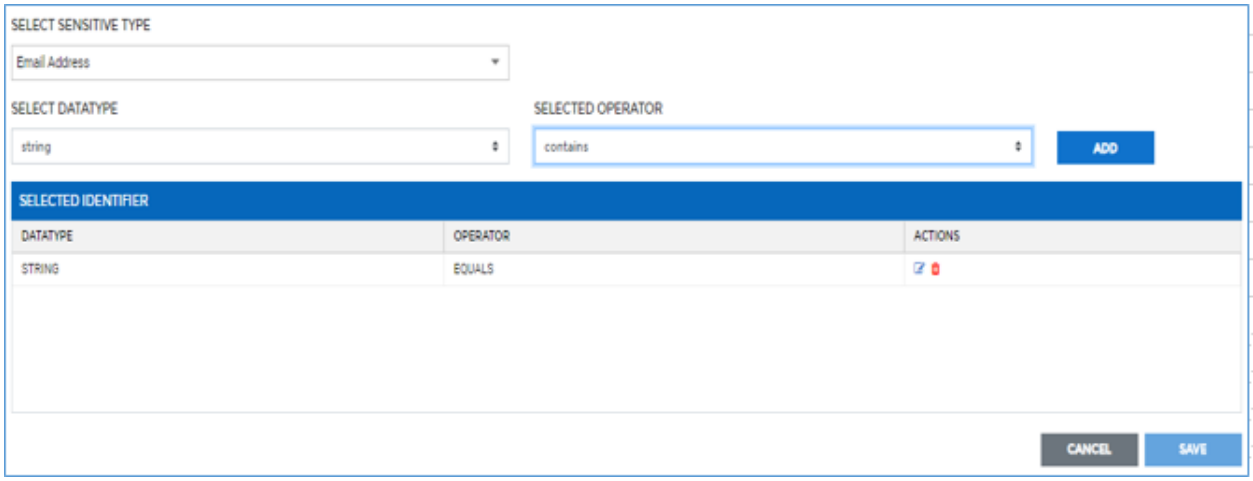
6. 

7.

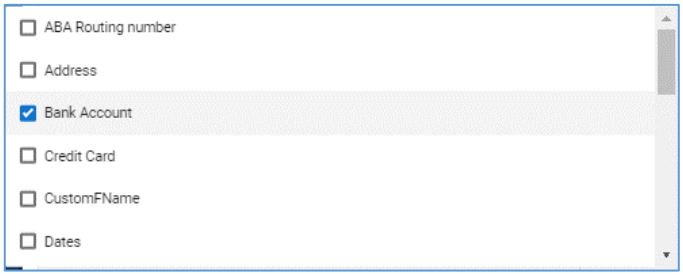
To add a new identifier, follow the below steps.

8. Enter the name of the identifier in the **Identifier Name** text box.
9. Enter the description of the identifier in the **Identifier Description** text box.
10. If the identifier is mandatory, check the **Is Mandatory** checkbox. At the time of creating a Data Subject, value for these Identifiers must be provided.
11. If the identifier is a strong identifier, check the **Strong Identifier** checkbox. **Strong identifier** is the identifier that value must be present at the time of scanning.

    When the **Strong Identifier** checkbox is selected, the **Select Sensitive Type**, **Select DataType**, **Selected Operator** fields and **Selected Identifier** pane will be visible.



12. The **Sensitive Type** field will appear only if you have checked the **Strong Identifier** checkbox. Select the sensitive type in the **Select Sensitive Type** drop-down.

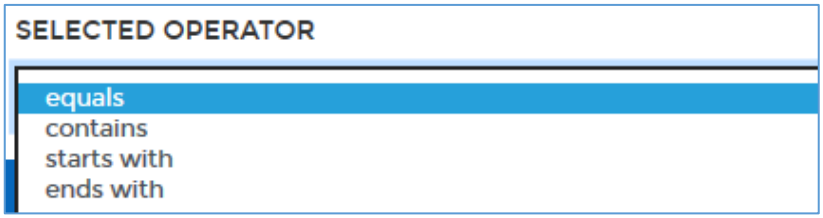


13. The **DataType** field will appear only if you have checked the **Strong Identifier** checkbox. Select the data type in the Select **Datatype** drop-down.

    The available data types are: **String**, **Numeric** and **Date**.

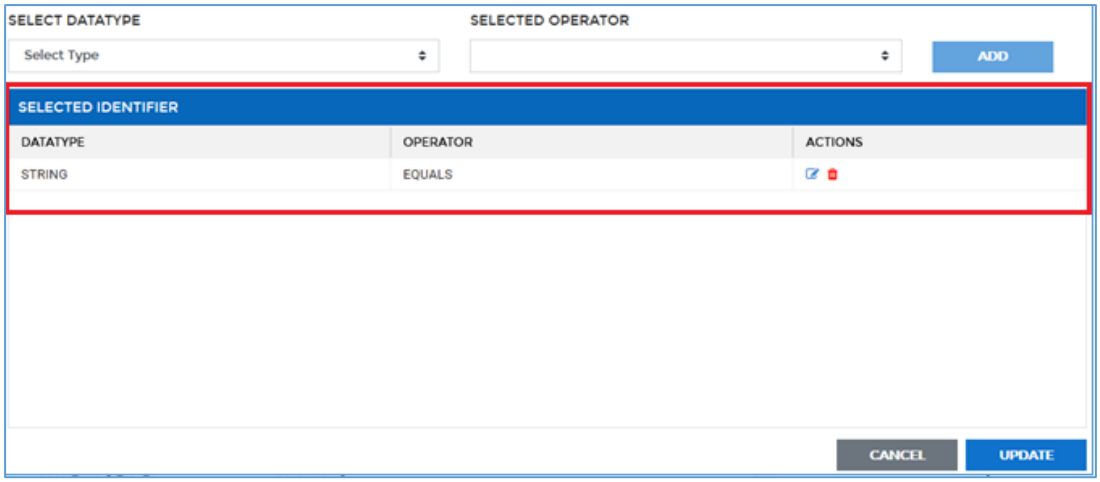
14. The **Selected Operator** field will appear only if you have checked the **Strong Identifier** checkbox. Select the operator in the **Selected Operator** drop-down.

    The list will display the available operators based on the selected **DataType**.



    In the above screenshot, the listed operators are displayed when **DataType = 'String'** is selected.

15. Click the **Add** button to add the datatype. The added datatypes will be available in the **Selected Identifier** panel.

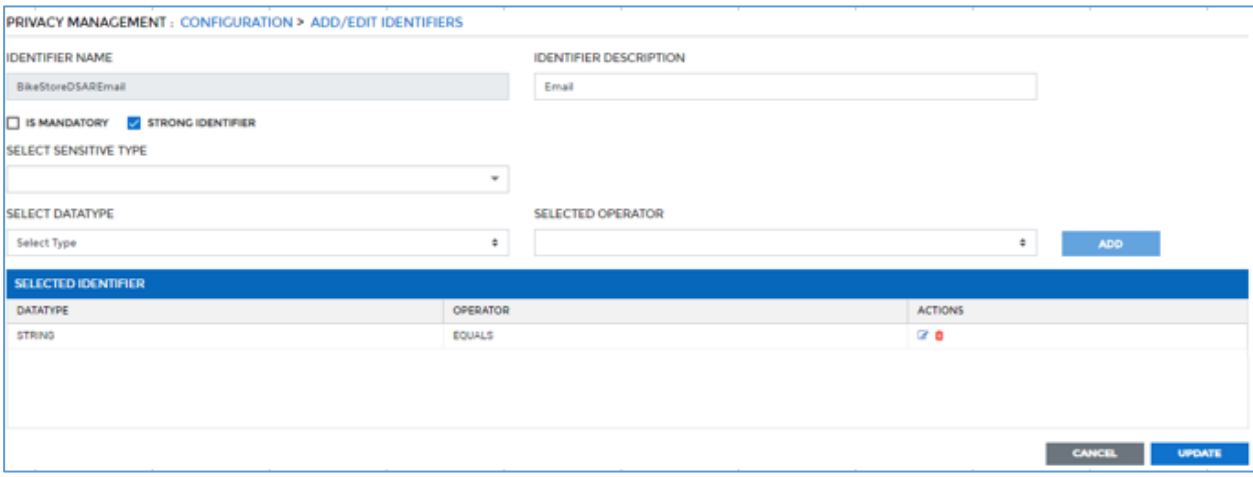


To edit a Datatype or Operator, click . To delete a Datatype or Operator, click .

16. Click **Save**.

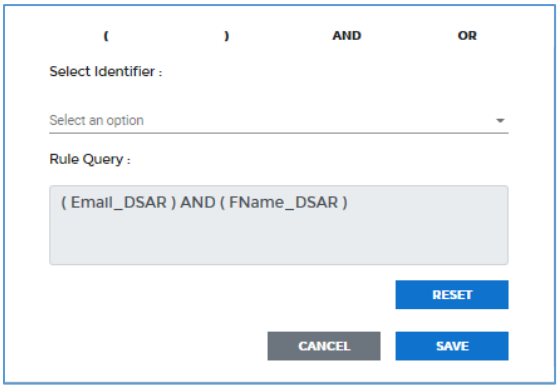
16.5.3 Add Data Group

To access the **Data Groups** screen, click **Privacy > Configuration > Groups > Add Group** button. The **Add/Edit Data Group** screen will appear.



To add a new **Data Group**, perform the following steps:

17.
    18. Enter the name of the Data Group in the **Data Group** text box.
19. Enter description of the Data Group in the **Data Group Description** text box.
20. Enter the expiry days of the Data Group in the **Group Index Expire In** text box. The **Group Index Expire In** is the expiration time of the group in days.
21. To create the rule for the Data Group in the **Create Rule** text box. Click **Rule Builder** button.

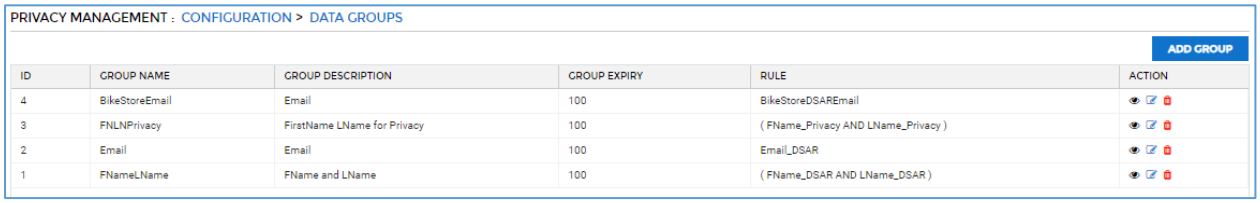


vi. Select at least one strong identifier in the **Select Identifier** drop-down.

vii. The query will be displayed in the **Rule Query** text box.

viii. Click **Save**.

22. Click the **Save** button. This will save the Data Group and it will be available on the **Data Group** screen.

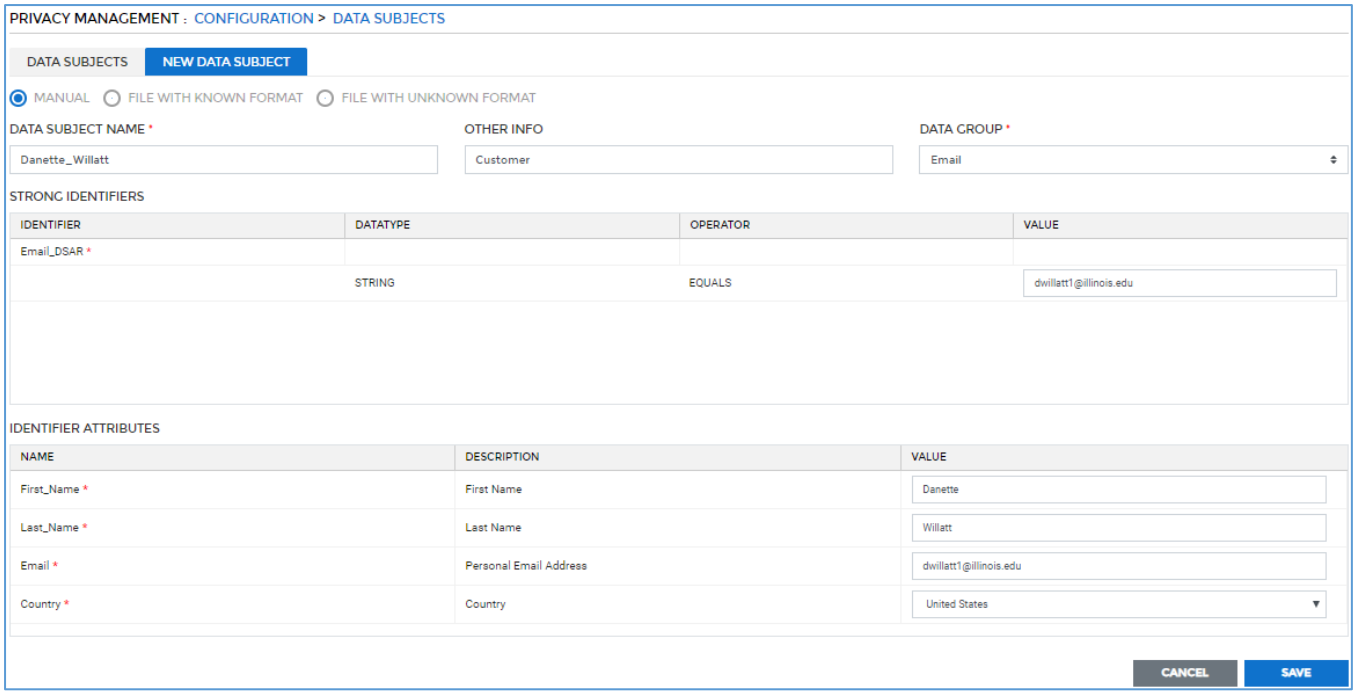


ID	GROUP NAME	GROUP DESCRIPTION	GROUP EXPIRY	RULE	ACTION
4	BikeStoreEmail	Email	100	BikeStoreDSAREmail	
3	FNLNPrivacy	FirstName LName for Privacy	100	(FName_Privacy AND LName_Privacy)	
2	Email	Email	100	Email_DSAR	
1	FNameLName	FName and LName	100	(FName_DSAR AND LName_DSAR)	

To view the details of a Data Group, click . To edit a Data Group, click . To delete a Data Group, click .

16.5.4 Add Data Subject

To access **Data Subjects** screen, click **Privacy > Configuration > Data Subjects > New Data Subject** tab. The **New Data Subject** panel will appear.

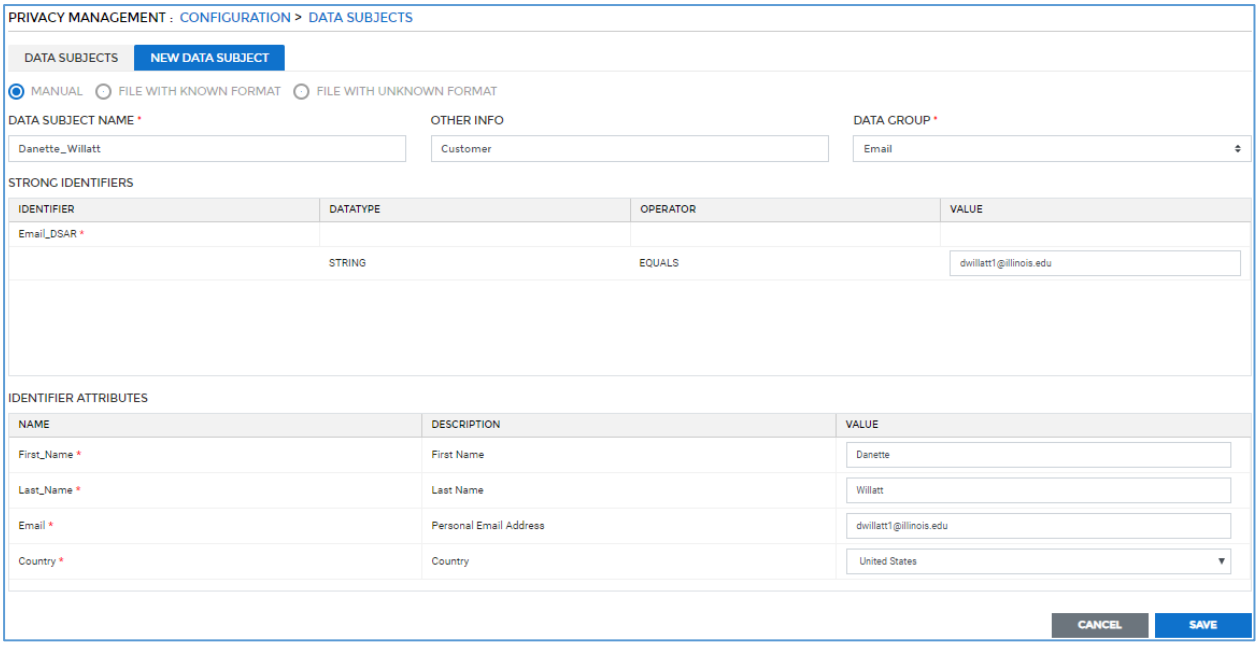


There are three ways in which you can create new **Data Subject**. These are:

1. Manual
2. File with Known Format
3. File with Unknown Format

To add a new Data Subject, follow the below steps:

23. **Manual**: Select the **Manual** option to provide all the required information manually. Perform the following steps to create a Data subject manually:
24.

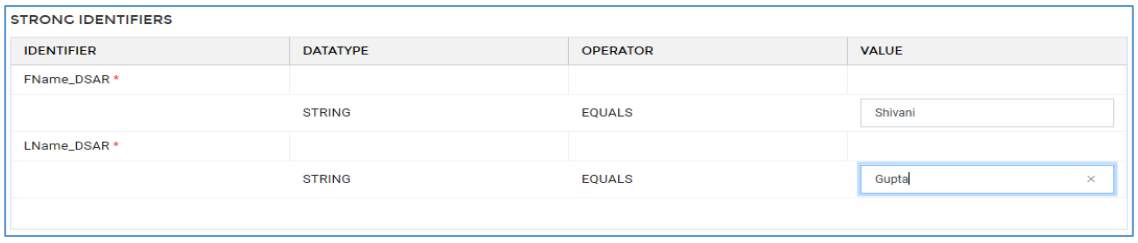
25. 

1. Enter the name of the Data Subject in the **Data Subject Name** text box.

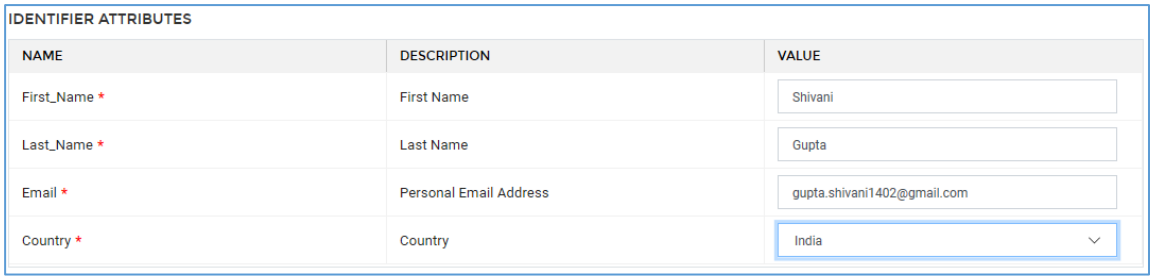
2. Enter extra information of the Data Subject in the **Other Info** text box, if any.

3. Select the Data Group from the **Data Group** drop-down. This will display the list of **Strong Identifier** and **Identifier Attributes** associated with the selected Data Group.

4. Enter the values of the **Strong Identifiers**. This field will appear only if you are creating the Data Subject manually.

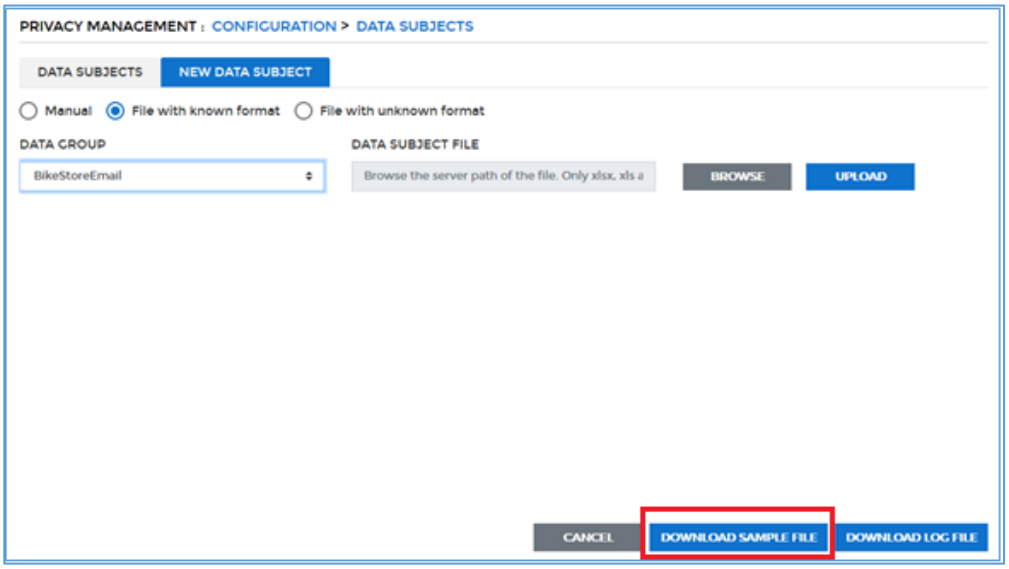


5. Enter the value of the mandatory Identifiers in the **Identifier Attribute** list.



6. Click **Save**.

26. **File with Known Format**: Select the **File with Known Format** option to upload the information from the file.
27.
28. Perform the below steps to create the Data Subject by uploading a file.
29.

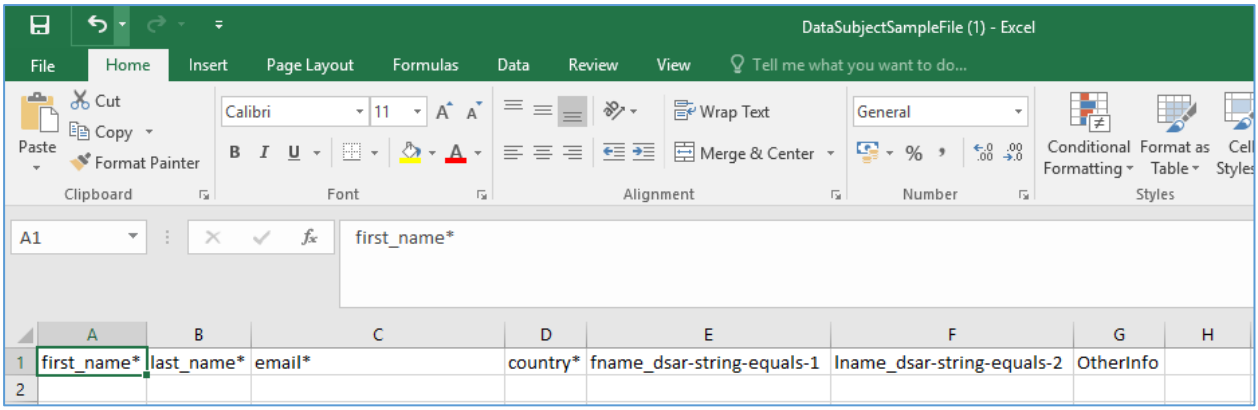


30.
31.

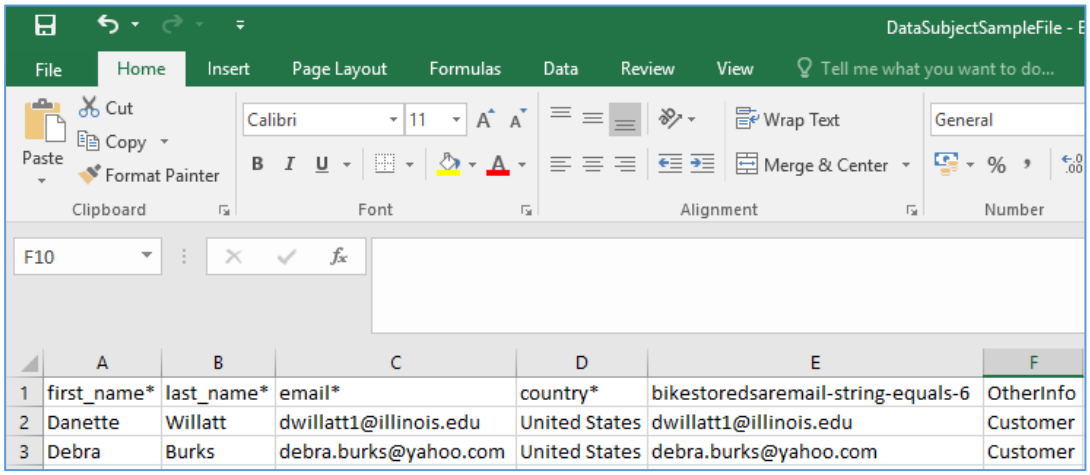
1. Select the Data Group from the **Data Group** drop-down.

2. To download a sample file, click the **Download Sample File** button in the bottom of the screen. This file contains the column headers for the selected Data Group, based on which you will enter the data.

Note – The **Download Sample File** button will be enabled only when you select a Data Group from the **Data Group** drop-down.

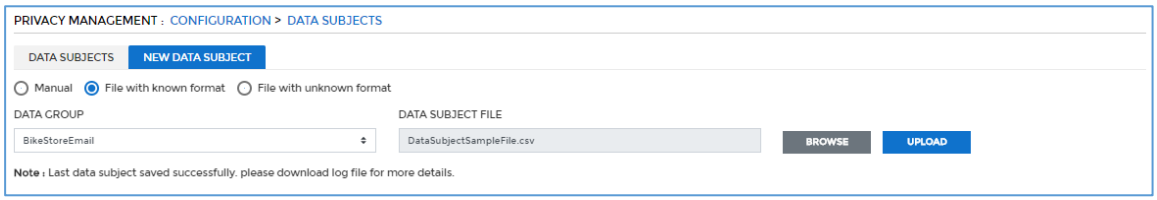


3. Fill the data in the downloaded sample file as per the specified format and save it on your local machine.

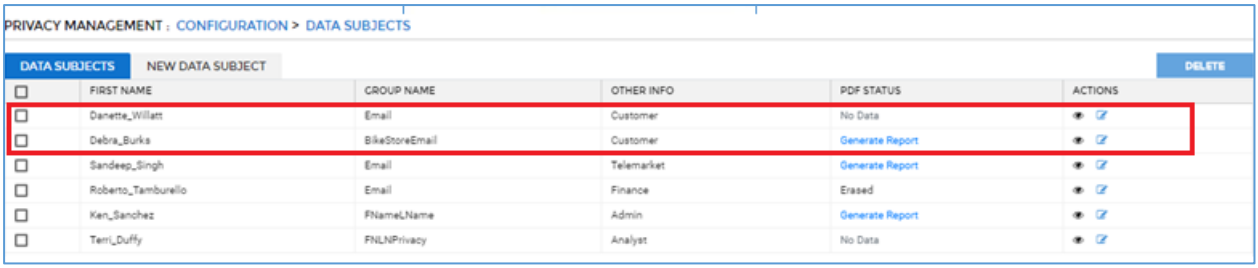


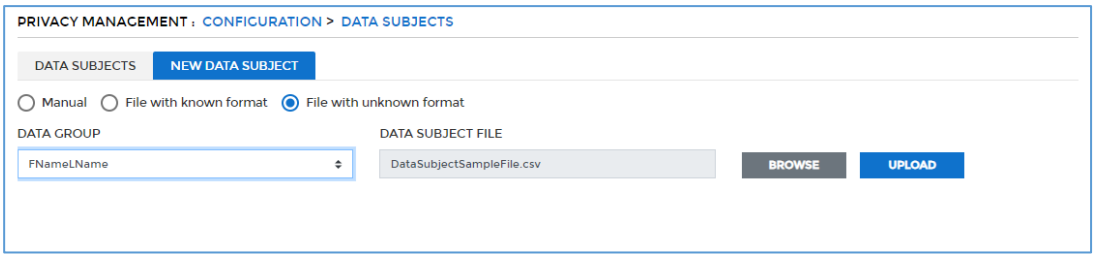
4. Click the **Browse** button to upload the saved file from your local machine.

Note – Only xlsx, xls and csv file are allowed.



5. Click the **Upload** button. The data for **Data Subject** will be available on the **Data Subjects** tab.

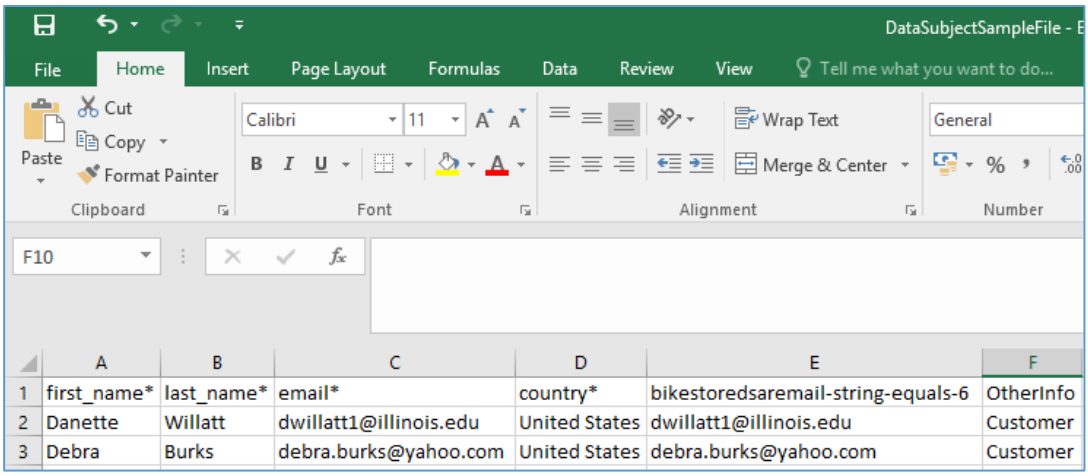


32. **File with Unknown Format**: Select the **File with Unknown Format** option to upload information from the unknown file format.
33.
34. Perform the below steps to create Data Subject by uploading a file format.
35.
36. 

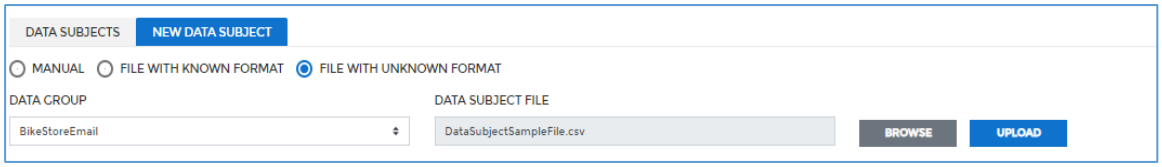
    1. Select the Data Group from the **Data Group** drop-down.

    2. Create a csv file on your local machine which will contain the details of **Data Subject.**

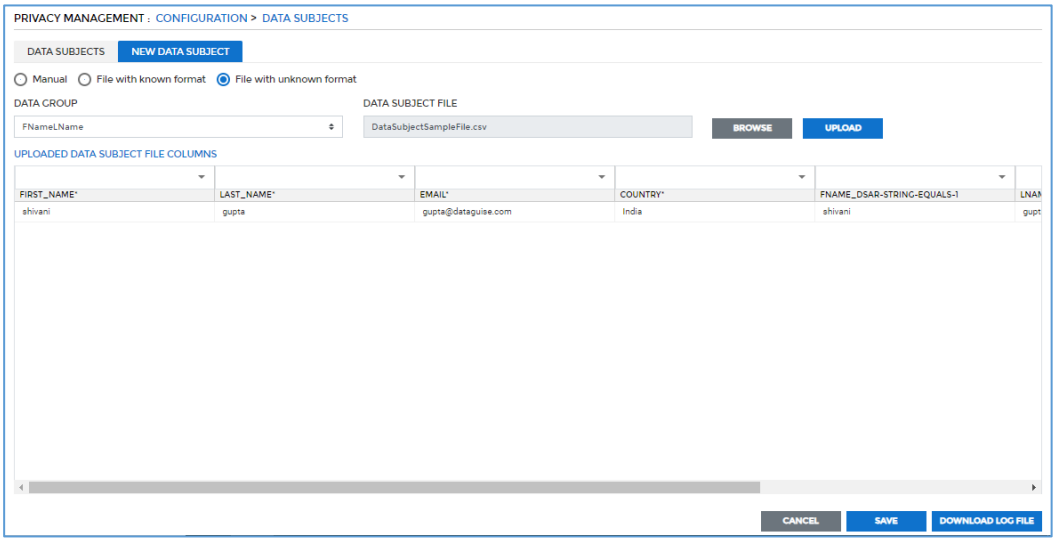
    Note – Only csv file is allowed.



    3. Click the **Browse** button to search the file from your local machine.



4. Click the **Upload** button to the csv file. The uploaded data will appear in the **Uploaded Data Subject File Columns** panel.

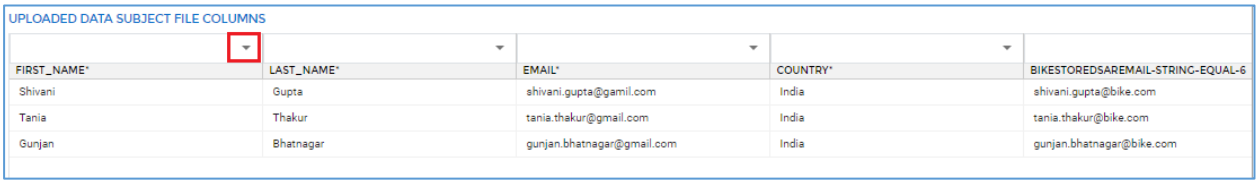


5. Once the file is uploaded then tag the file columns headers with the **Strong** and **Mandatory Identifiers**.

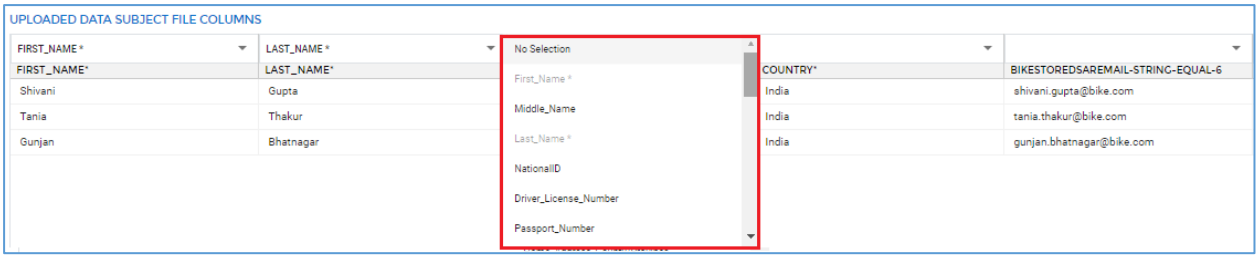
Note - Identifiers in '**bold'** are Strong Identifiers. Identifiers with '*' are Mandatory Identifiers. Identifiers in '**bold**' with '*' are both Strong and Mandatory Identifiers.

To tag file columns with the **Strong** and **Mandatory Identifiers.**

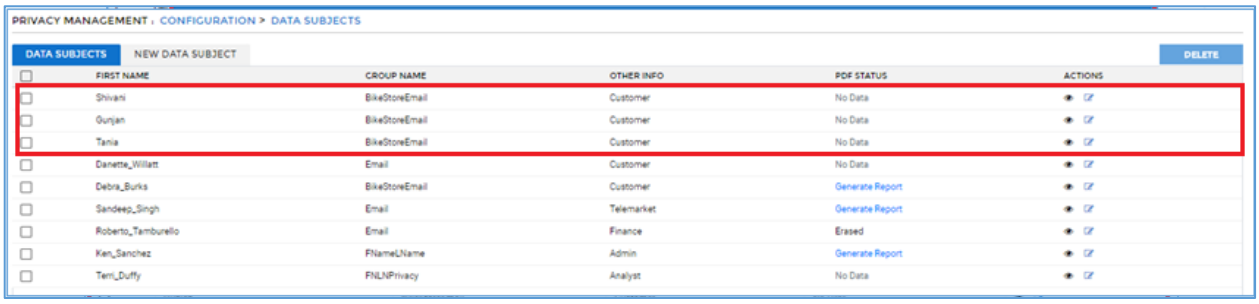
a. Click on the drop-down above of the column headers.



b. Select the **Strong** and **Mandatory Identifier** from the given list.



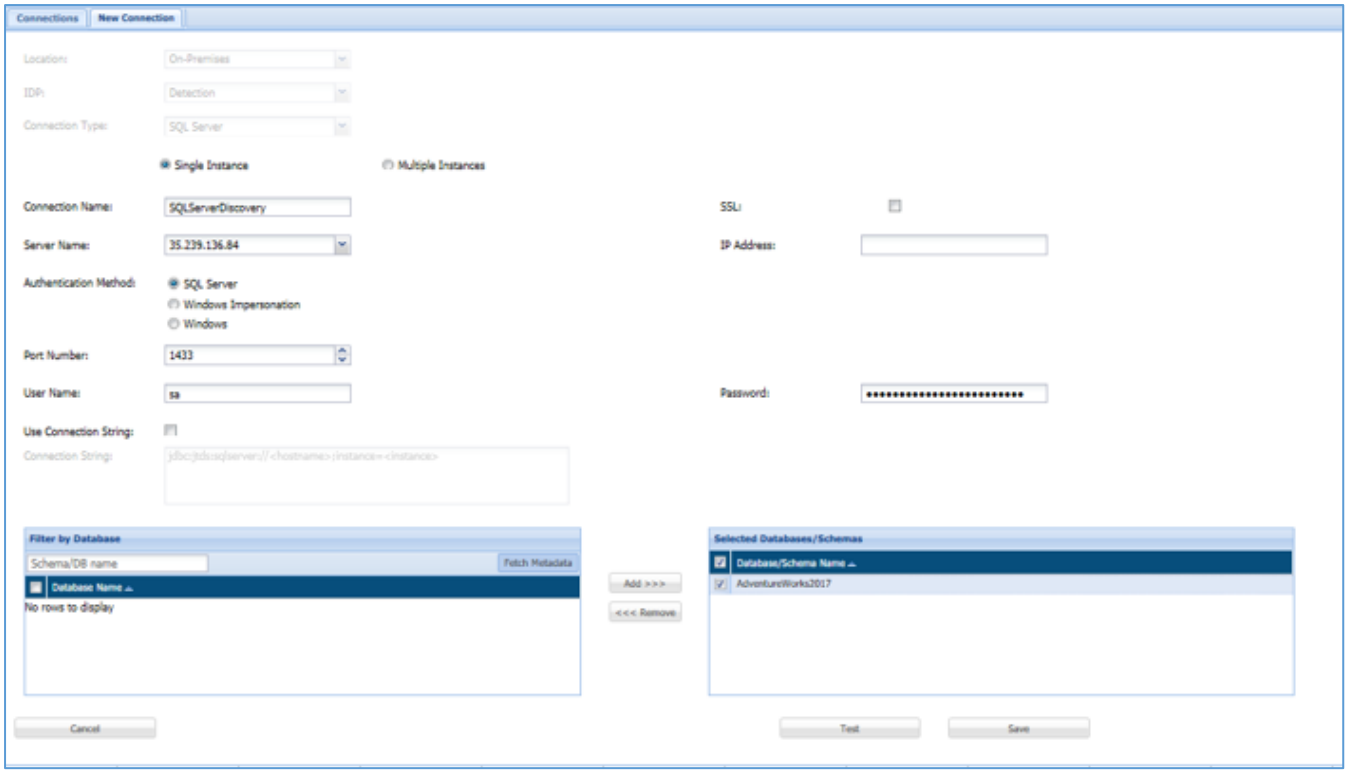
6. Click the **Save** button to save the changes. The saved Data Subjects will be displayed on the **Data Subjects** tab.



16.5.5 Create Connection – Privacy

For each **Data Group** created in the above sections, create connection with the database where you want to scan the sensitive data.

To create a connection, access the **Connection Manager.** Click **RDBMS > Connection Manager > Connections > New Connection** tab.



Follow the below steps to create a connection.

37. Select either **On-Premises** or **Cloud** option from the **Location** drop-down.
38. Select **Detection** from the **IDP** drop-down. A connection designated for the Detection IDP only applies to Detection tasks.
39. Select the connection type from the **Connection Type** drop-down. It lists down all the supported databases types.

> **Note** – The **Location**, **IDP** and **Connection Type** cannot be edited, once the connection has been created.

40. Enter unique **Connection Name**. This fields accepts letters, numbers, and symbols.
41. Check the **SSL** checkbox if you want to make your connection secure.
42. Select the **Connection Type** either **Basic** or **TNS**.

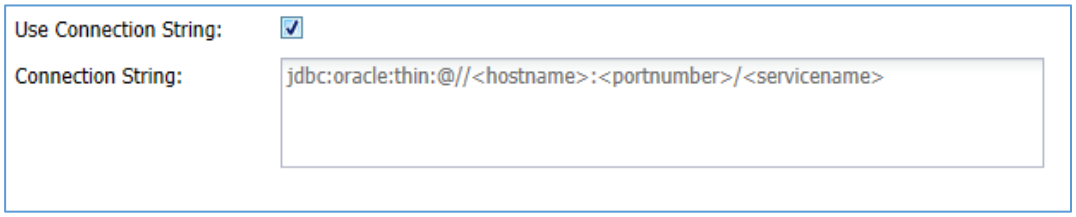
    1. **TNS Name**: Enter unique TNS name.

> **Note:** The **TNS Name** field will appear only when you select the Connection Type as **TNS**.

43.

44. Enter the **Host Name** or select the **IP address** from the **Host Name** drop-down. You can also search for the hostnames and IP addresses of databases by **Find DBMS** tasks.
45. Enter the **IP Address** for the connection.
46. Enter the **Port Number** for establishing a connection. You can also edit the port number later, if required.
47. Enter the **Service ID** (SID) or **Service Name**.
48. Enter the database **user name**.
49. Enter the database **password**.
50. Check the **Use Connection String** checkbox, if you want to enter the Connection string.
51. The **Connection String** text box will appear only when you have checked the **Use Connection String** checkbox.

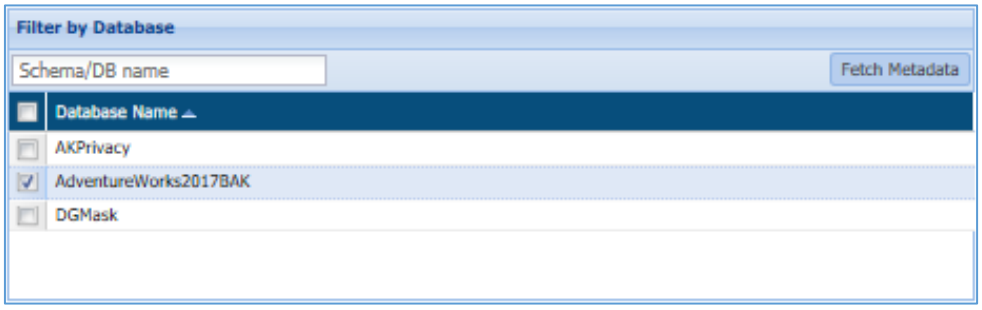
    The **Connection String** specify the information about the data source and the means of connecting to it.



52. Select the **Authentication Method** according to the Connection Type.
53.
54. **Note** – The **SQL Server**, **Windows Impersonation** and **Windows** authentication method are available when **Connection Type** SQL server is selected.
55.
56. Following are the available Authentication Methods:

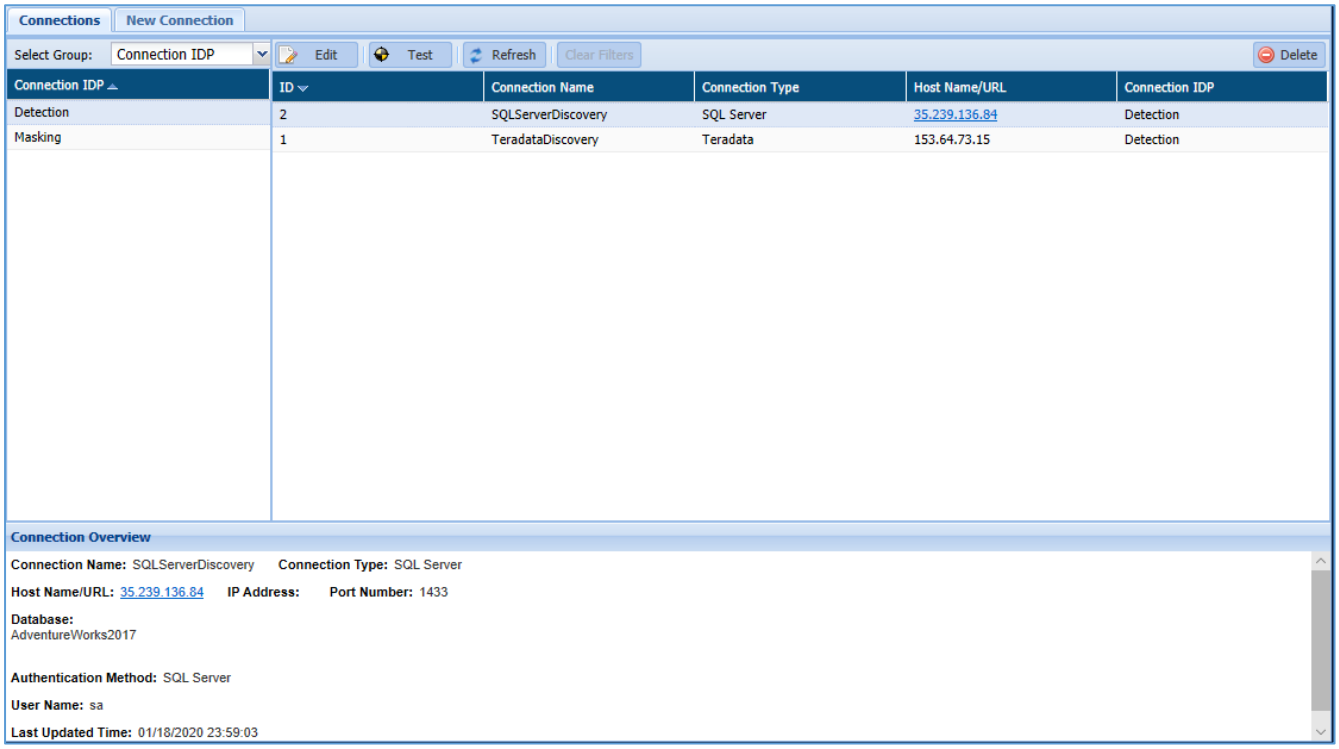
    1. **SQL Server**
    2. **Windows Impersonation**
    3. **Windows**

57. Click **Fetch Metadata**. A list of all databases on the server will appear under the **Filter by Database** pane.



58. To select a database, check the checkbox next to the listed database. Click the **Add** button.
59. The selected databases will be added to the **Selected Databases/Schemas** list.

60. To remove a database from the **Selected Database/Schema** list, click **Remove** button.
61. Click the **Save** button, if you want to save the connection.
62. Click the **Cancel** button, if you do not want to save the connection.
63. Click the **Test** button, if you want to test the connection before using it to ensure that the connection has been established.
64. Once the **Connection** is ready. It will be available on **Connection Manager** screen.



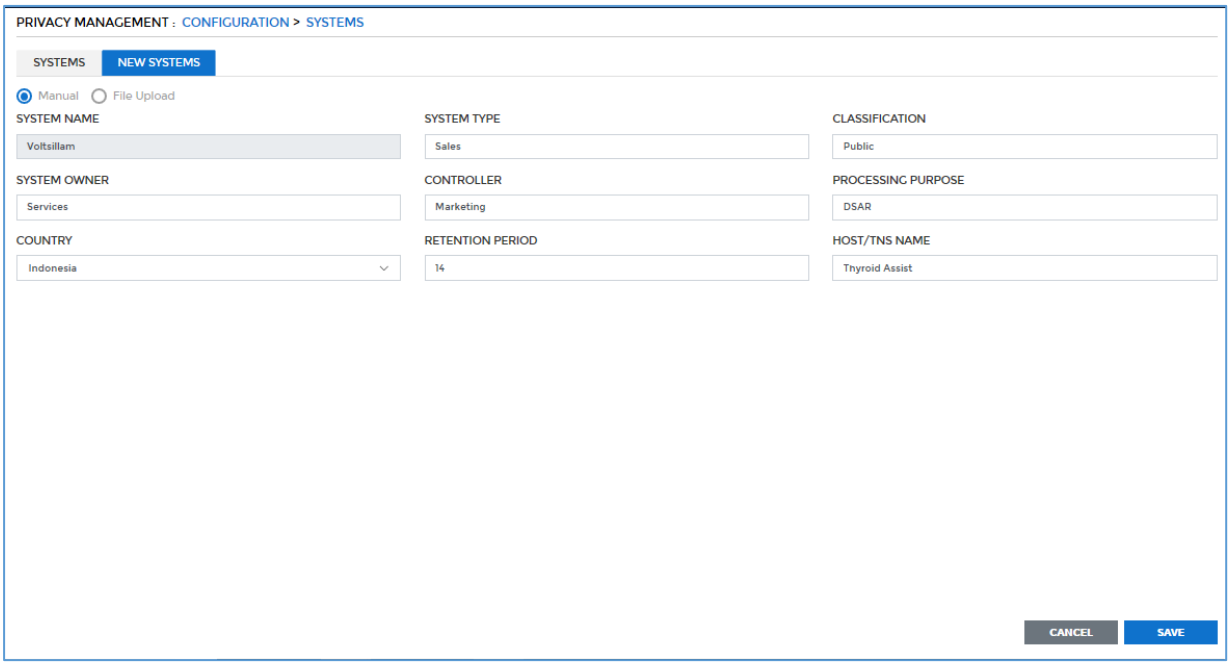
16.5.6 Add System

To access **Systems** screen, click **Privacy > Configuration > Systems > New System** tab. The **New System** screen will appear.

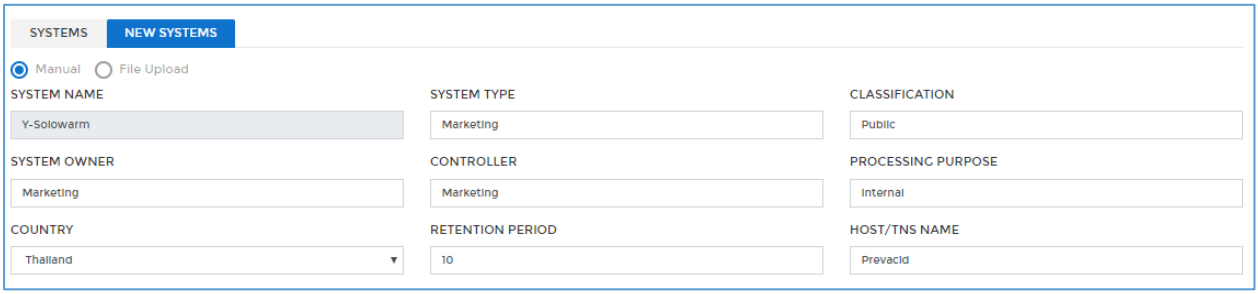
There are two ways in which you can add a new **System**.

1. Manual
2. File Upload

65. **Manual**: Select the **Manual** option to provide all the required information of the System manually. Perform the following step to add a system manually:



66. Enter the details for creating a System such as System Name, System Type, Classification, Owner of the system, Controller, Processing Purpose, Country, Retention Period and Host Name.



i. **System Name:** Enter the name of the system. A System is a host on which there can be single or multiple database servers.

ii. **System Type:** Enter the category of the system.

iii. **Classification:** Enter the classification of the system.

iv. **System Owner:** Enter the owner of the system.

v. **Controller:** Enter the controller name of the system.

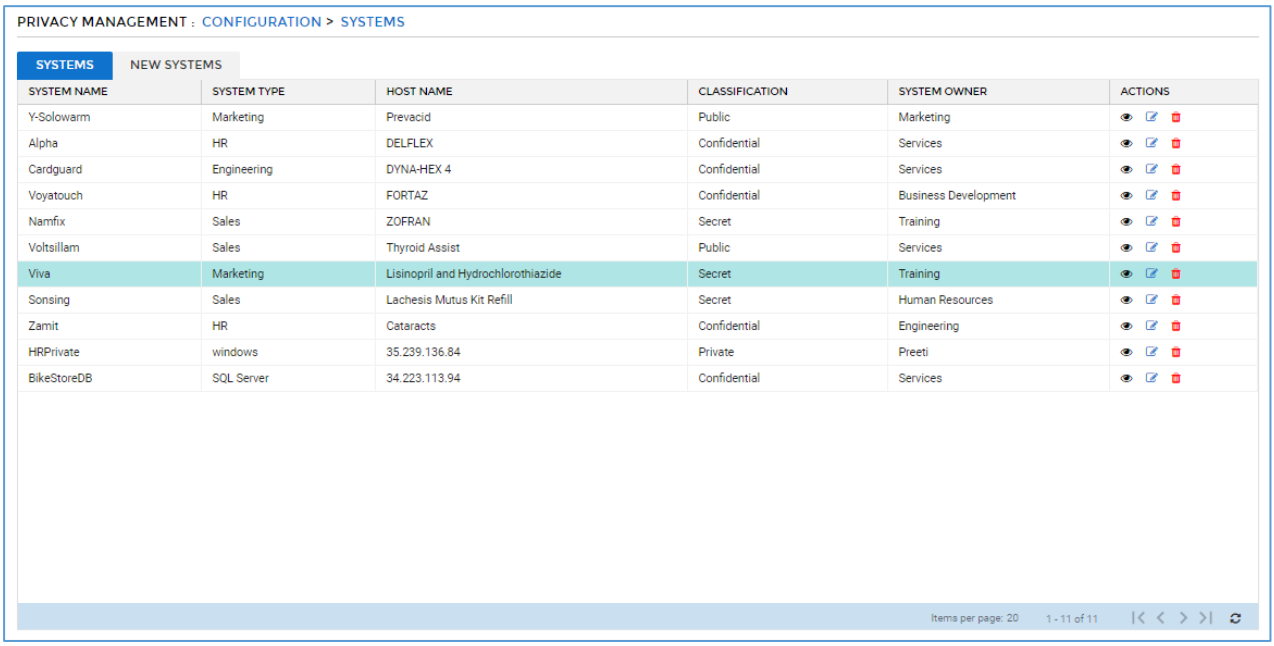
vi. **Processing Purpose:** Enter the **Processing Purpose** for which system is created. E.g., HR data, Employee data, etc.

vii. **Country:** Select the country name from the drop-down. This field specifies the name of the country in which system is located.

viii. **Retention Period:** Enter the numeric value. This field defines the period, when retention needs to be done on the system.

ix. **Hostname/TNS Name:** Enter the **Hostname** or **TNS Name**. This field should contain unique hostname.

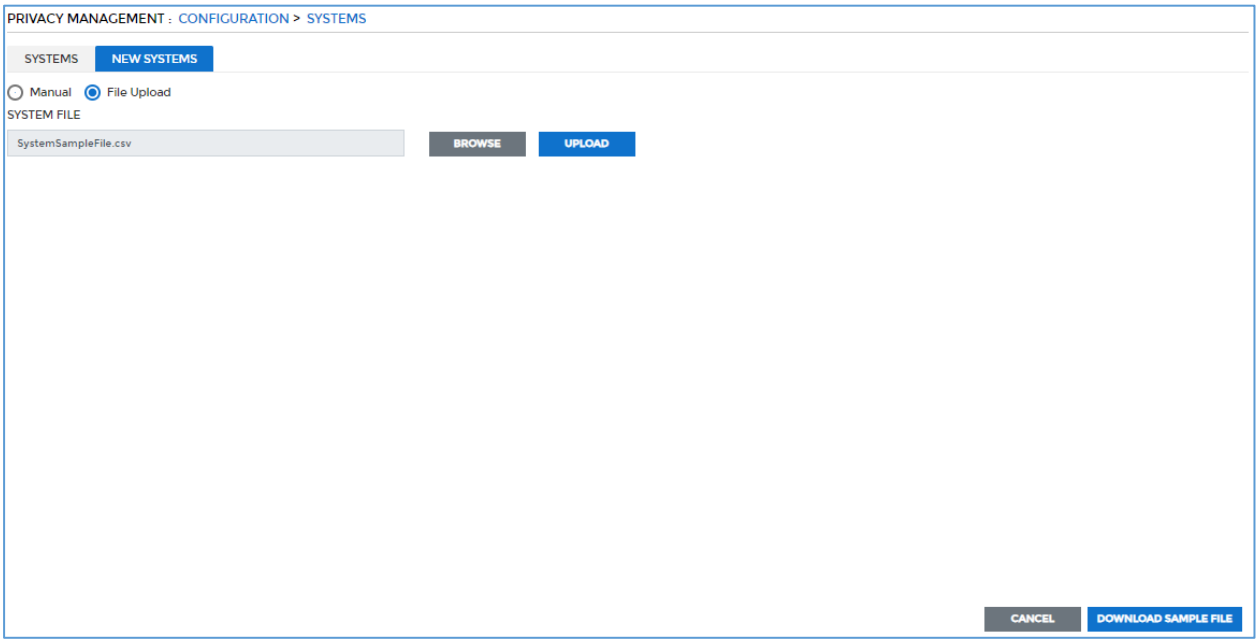
67. Click **Save**.
68.
69. The System will be created and the basic details of the System will be displayed in the **System** screen.



To view the System details, click . To edit the System details, click . To delete the System, click .

70. **File Upload**: Select **File Upload** option to create a System by uploading information through a file.

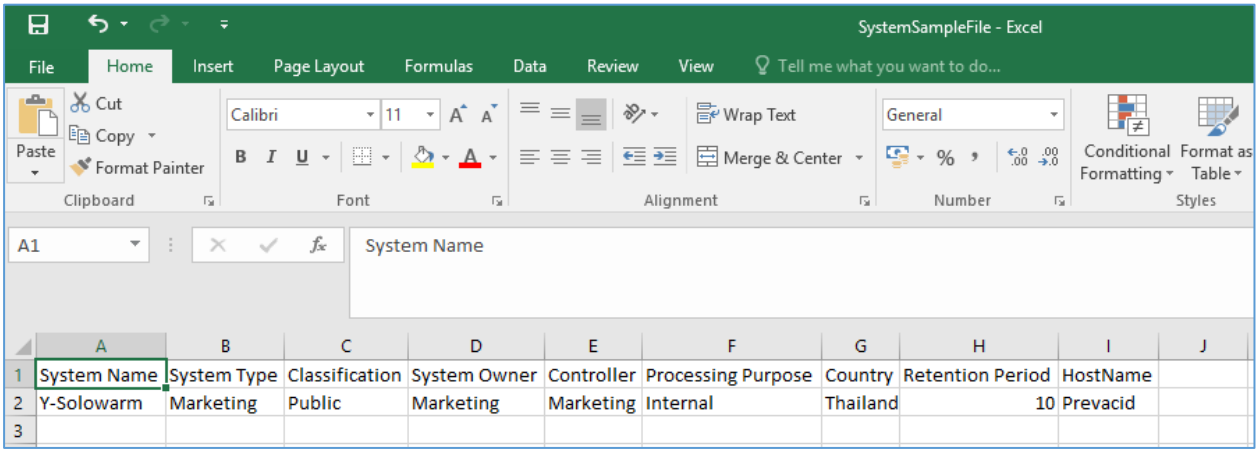
71.

72. 

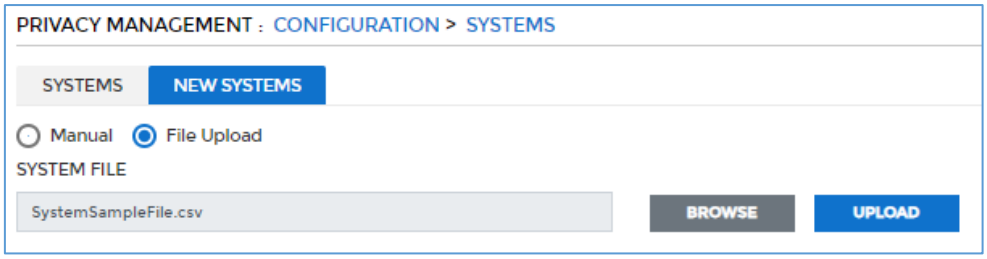
Perform the following steps to add a System:

1. To download the system sample file, click the **Download Sample File** button in the bottom of the screen.

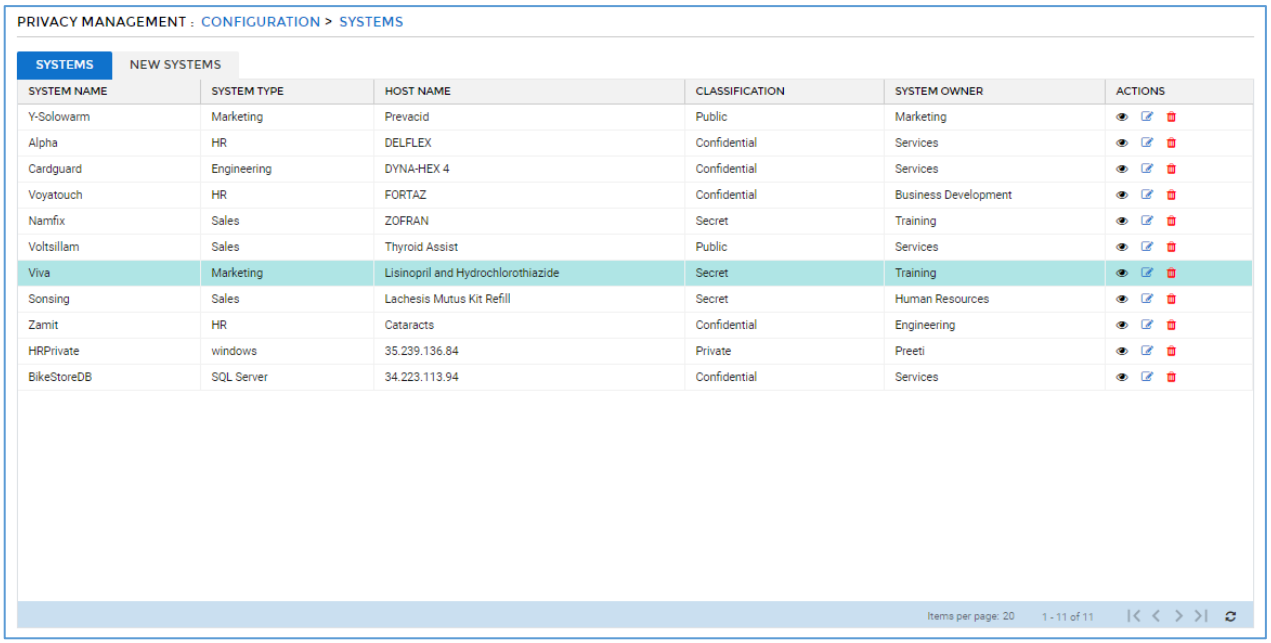
2. Fill in the data for the System in the downloaded sample file as per the specified format and save it on your local machine.



3. Click the **Browse** button to search the location of the saved file on your local machine.



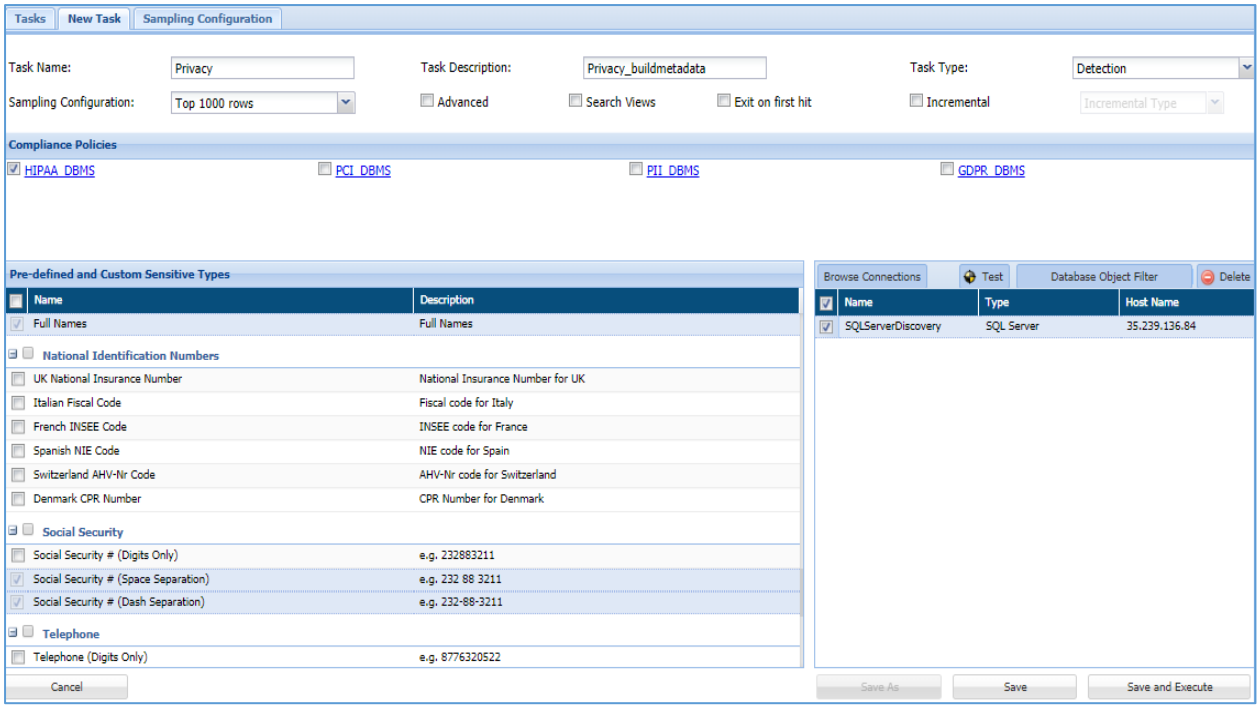
4. Click the **Upload** button to upload the csv file. This file contains the information of the System. Once the file is uploaded, the system details will be added on the **Systems** screen.



16.5.7 Create Task

Detection task identifies sensitive data in known databases. If the database IP address and port numbers are already known, a **Detection** task can be run immediately. If this information is not known, it can be found using a **Find DBMS** task.

To access the **New Detection Task** screen, click **RDBMS > Detection > Tasks > New Task** tab. The **New Task** panel will be displayed.



The **New / Edit Detection Task** screen is divided into four panels which are described below.

1. Task List
2. Compliance
3. Pre-defined and Custom Sensitive Type
4. Connections

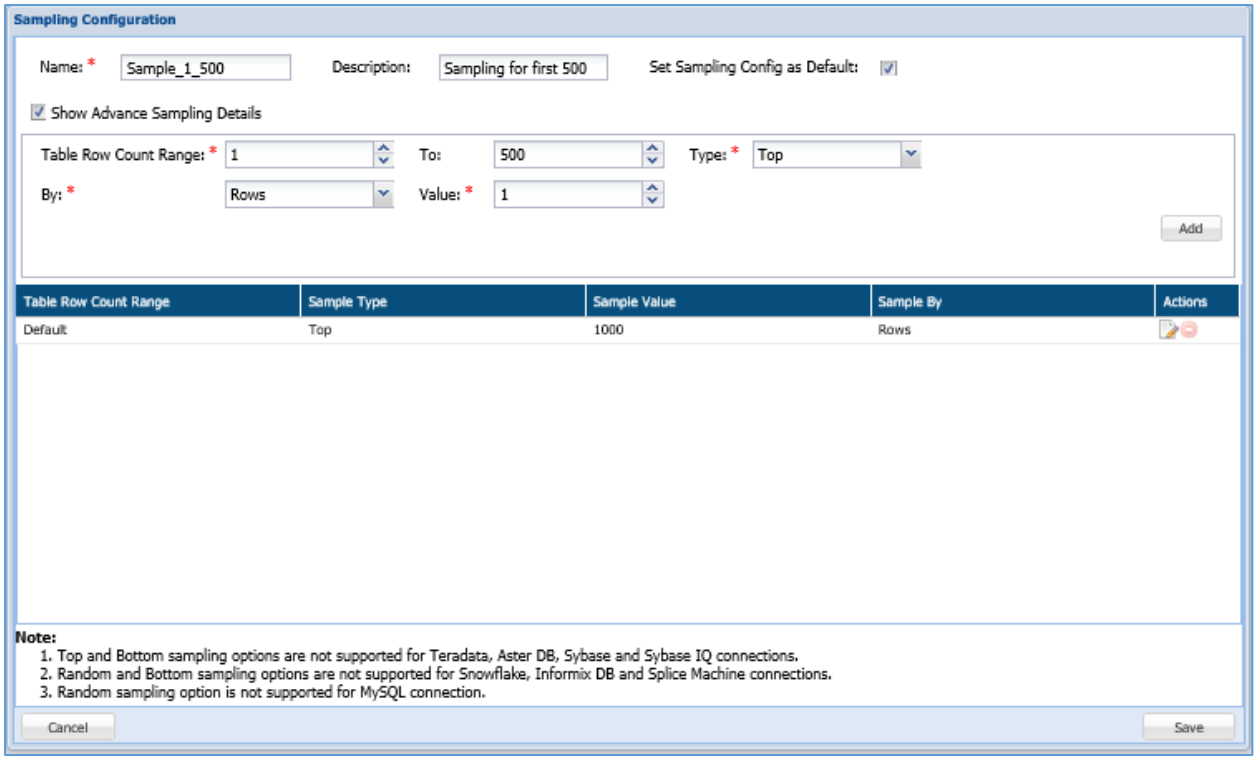
1. **Task List**

   This panel displays the **Task Name** and **Task Description**. Both fields accept letters, numbers, and symbols, and hold up to 256 characters. The name must be unique for each individual task. The task name cannot be edited once a task is created. Altering the Task Name and clicking **Save As** will create a new task.

   Select the sampling configuration type from the **Sampling Configuration** drop-down. By default, there are three options.

   5. **Top 1000 rows**: Select this option to sample the top 1000 rows for sampling.
   6. **Read Top 5% of data**: Select this option to sample the top 5% data for the sampling.
   7. **Full**: Select this option to do the sampling of the entire database.

   Check the **Advance** checkbox to define the sampling configuration.



i. Enter the **Name** and **Description** of the Sampling Configuration.

ii. **Set Sampling Config as Default**: Check the checkbox if you want to set the sampling configuration as default.

iii. **Show Advance Sampling Details**: Check the checkbox to set the advance setting of sampling configuration.

iv. Enter table row count range start value in **Table Row Count Range** box. This value specifies the starting range for sampling.

v. Enter table row count range end value in **To** box.

vi. Select the **Type** of the sampling from the given options. There are four options. These are:

a. **Top**: Select the **Top** option in the drop-down. It will process the records from the top of the database.

b. **Bottom:** Select the **Bottom** option in the drop-down. It will process the records from the bottom of the database.

c. **Random**: Select the **Random** option in the drop-down. It will process the random records in the database irrespective of their position.

d. Complete: Select the **Complete** option in the drop-down. It will process entire database.

vii. Select the type by which data is to be scanned in the **By** drop down. The options are:

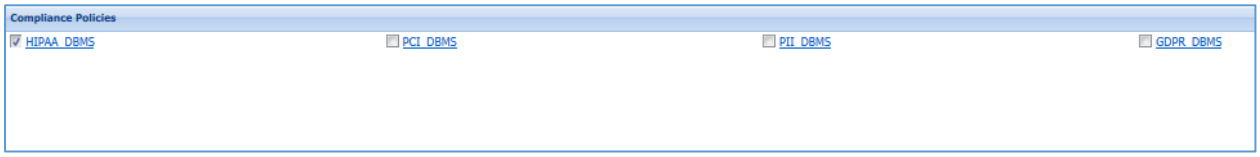
8. **Rows:** Select **Rows** from the drop-down, if you want to see the number of records sampled.

9. **Percent** Select **Percent** from the drop-down, if you want to see the percent of records sampled.

viii. Select the value of rows or percent in the **Value.** Click **Save** button to save the configuration.

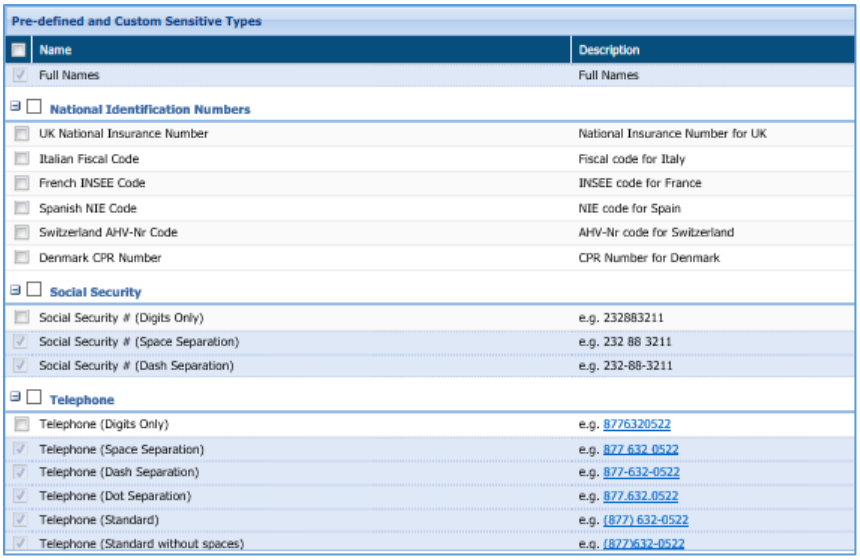
2. **Compliance Policies**

The **Compliance policies** panel is where all DBMS policies are listed. You can select any number of the policies while creating a **New Task**. When a policy is selected, the sensitive types associated with that policy are automatically selected in the **Pre-defined and Custom Sensitive types** panel.

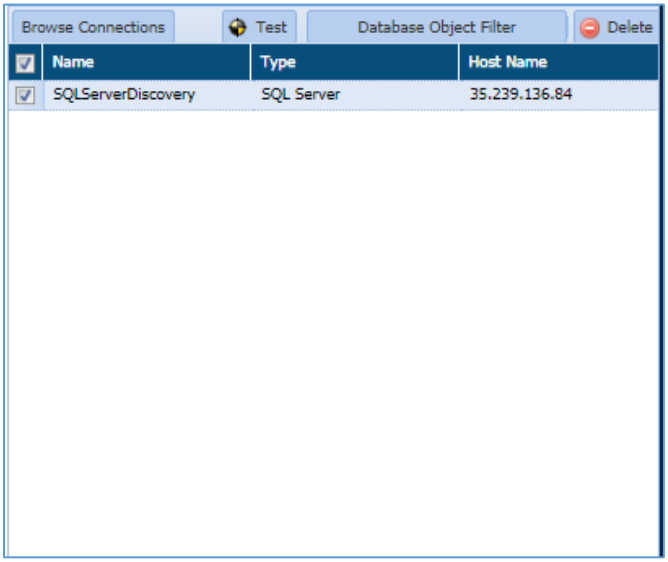


3. **Pre-defined and Custom Sensitive Type**

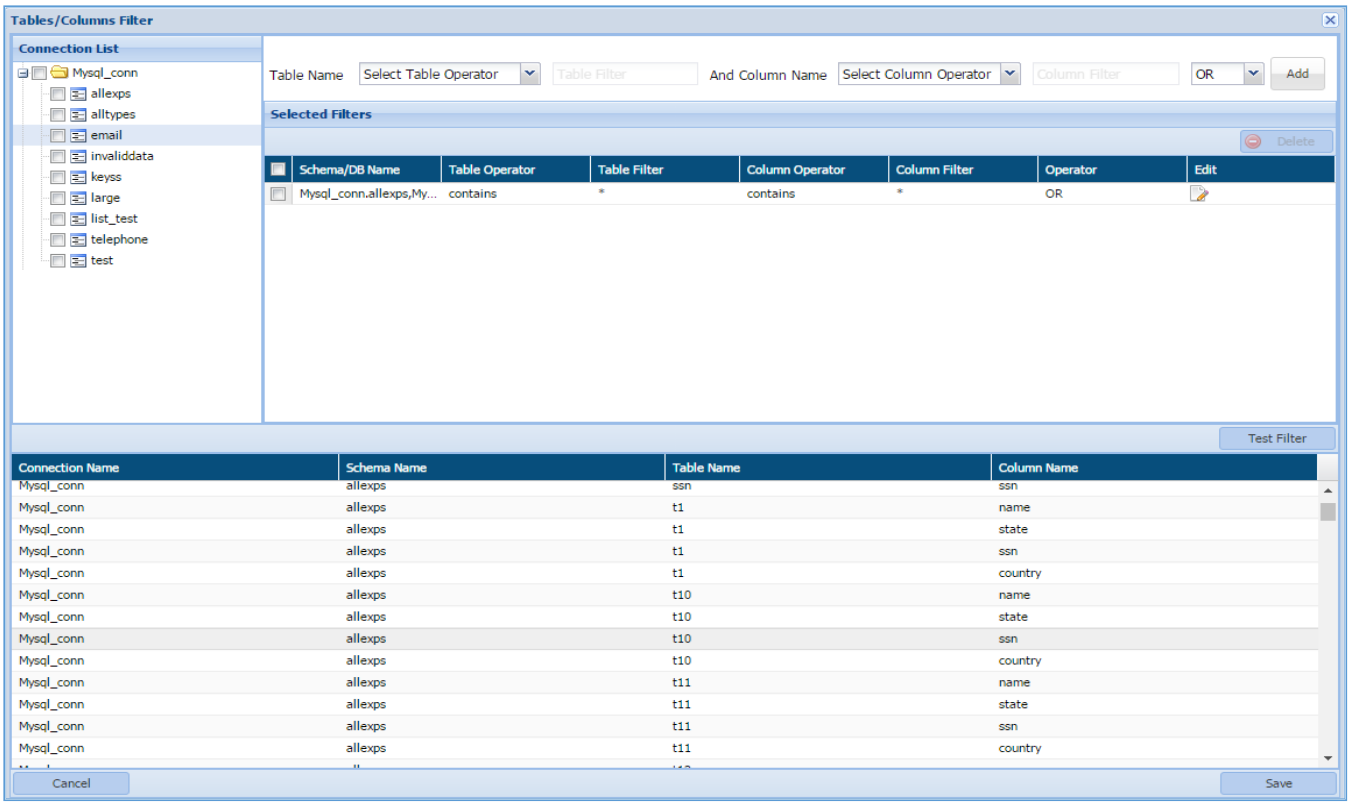
When a policy is selected, the sensitive types associated with that policy are automatically selected in the Pre-defined and Custom sensitive types panel. It is also possible to add sensitive types to a task independent of a policy. Clicking the checkbox in the upper left corner of the panel selects all sensitive types. The sensitive types are categorized by sensitive group; each group expands and collapses by clicking on the +/- button next to the group name or by clicking the group name itself.



4. **Connections**
   The **Select Connections** panel is where the user selects the RDBMS connection(s). There is no limit to the number or type of the connections that can be selected. The connections that appear in this panel are those which have been created on the **Connection Manager** screen.



   Click the **Database Object Filter** button to filter certain tables and/or columns out of the search. When filters are defined, only those Databases/Tables/Columns that match the filter are scanned.



Once you will create a task, schedule it.

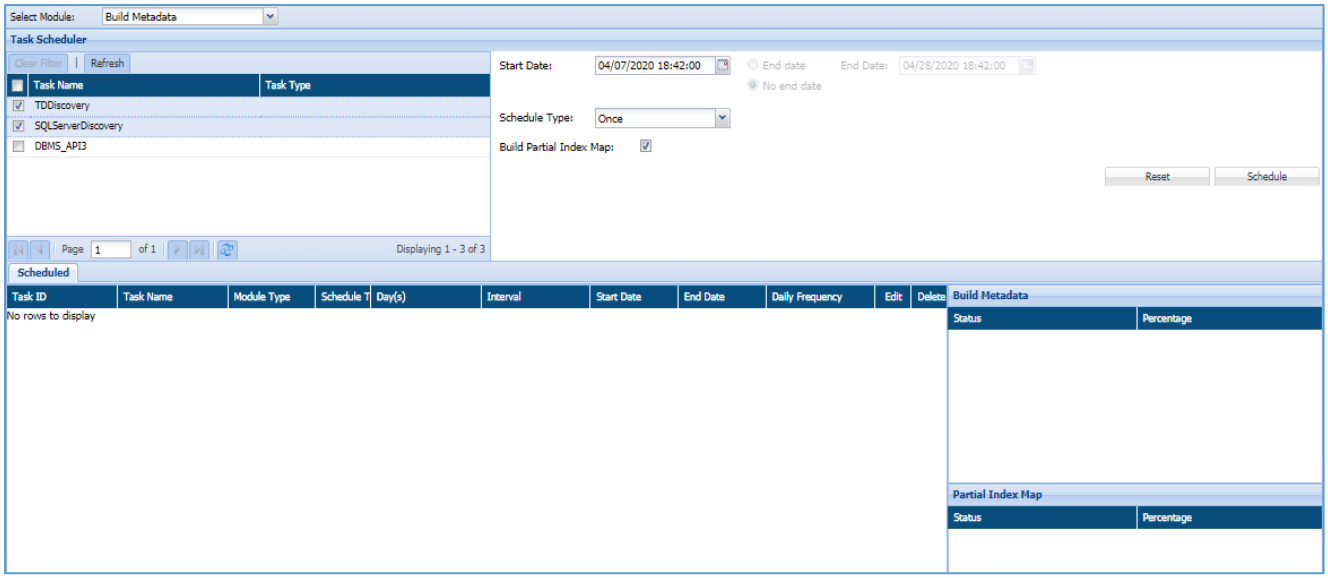
16.5.8 Execute Task (As per the Schedule)

The next step is to schedule, and execute the detection task as well as build the metadata.

The Metadata summarizes the basic information about the data. It makes finding and working with particular instances of data easier. The Build Metadata task is used to push the DBMS discovery results from the controller agent to the Privacy agent repository. It also saves the system, database, schema, column and regex information into agent repository.

Once the task has been scheduled, the results will get generated automatically and It will push those results on the Privacy IDPs.

To schedule a task and to create **Metadata**, access the **Scheduler** screen. Click **Scheduler** from the side bar. The Scheduler screen will be displayed.



To schedule a Task, follow the below steps.

73. Go to the **Scheduler** and select the module **Build Metadata** from the **Select Module** drop-down
74. Select the required task.
75. Select the task schedule start date.
76. Select the **end date** for a task. If the task is scheduled forever, select **no end date**.
77. Select the schedule type. The available options are:
    i. **Weekly**: Select this option to perform the task on the selected days of the week.
        1. Select the days of the week to perform the task.
        2. Select the daily frequency of the task. Select **Occurs once at** and mention the time**,** if you want to perform the task once in a day.
        3. Select **Occurs every** and mention the hours, start time and end time, if you want to perform the task in every few hours.

    ii. **Hourly**: Select this option to perform the task in every few hours.

        4. Select the time interval.
        5. Monthly: Select this option to perform the task on the selected days of the month.
        6. Select days of one or more months to perform the task.
        7. Select a specific weekday of one or more months to perform the task.
        8. Select the frequency of the task. Select **Occurs once at** and mention the time**,** if you want to perform the task once in a day.
        9. Select **Occurs every** and mention the hours, start time and end time, if you want to perform the task in every few hours.

iii. **Daily**: Select this option to perform the task daily.

10. Select the frequency of the task in the **Recurs.**
11. Select **Occurs once at** and mention the time**,** if you want to perform the task once in a day.
12. Select **Occurs every** and mention the hours, start time and end time, if you want to perform the task in every few hours.
13. **Once**: Select this option to perform the task only once.

78. Click the **Schedule** button to complete the action.

79. Scheduled tasks will appear in the bottom panel. You can reschedule a task by editing them from this screen. You can delete a task also.

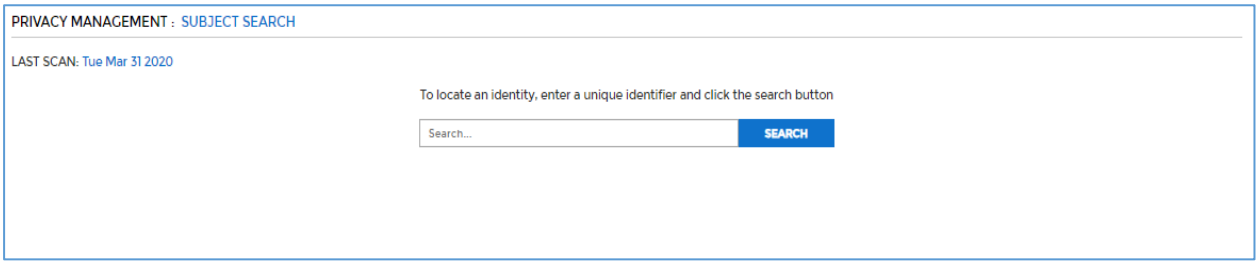
80.

16.5.9 View Report

Using the Subject Search screen, you can view the report for any Data Subject as per the specified Strong Identifier in the Search text box. It is an interactive way to access the report for any Data Subject.

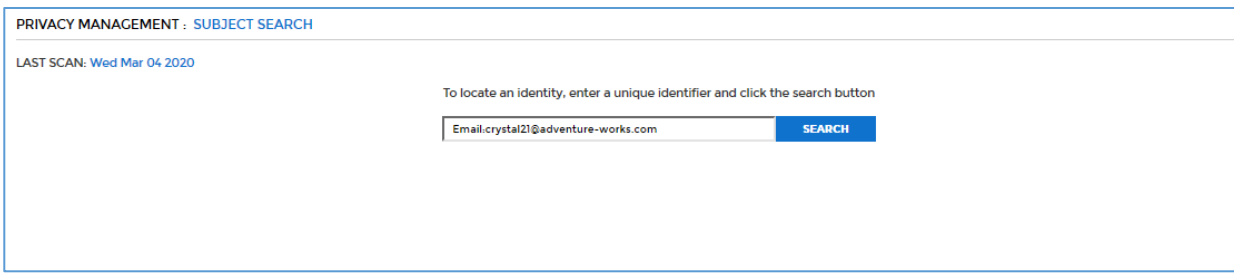
To access the **Subject Search** screen, click **Privacy > Subject Search**.

The **Subject Search** screen allows you to view the report based on the given **Strong Identifier**. It displays the list of all the databases in which the Data Subject is detected.



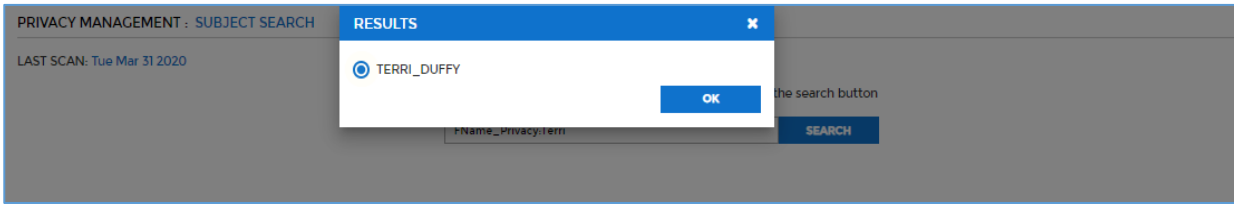
81. Enter the strong identifier and click **Search.** The **Results** pop-up will appear.

82.



83.
84.
85.
86. Choose the identity in the **RESULTS** pop-up. Click **Ok.**

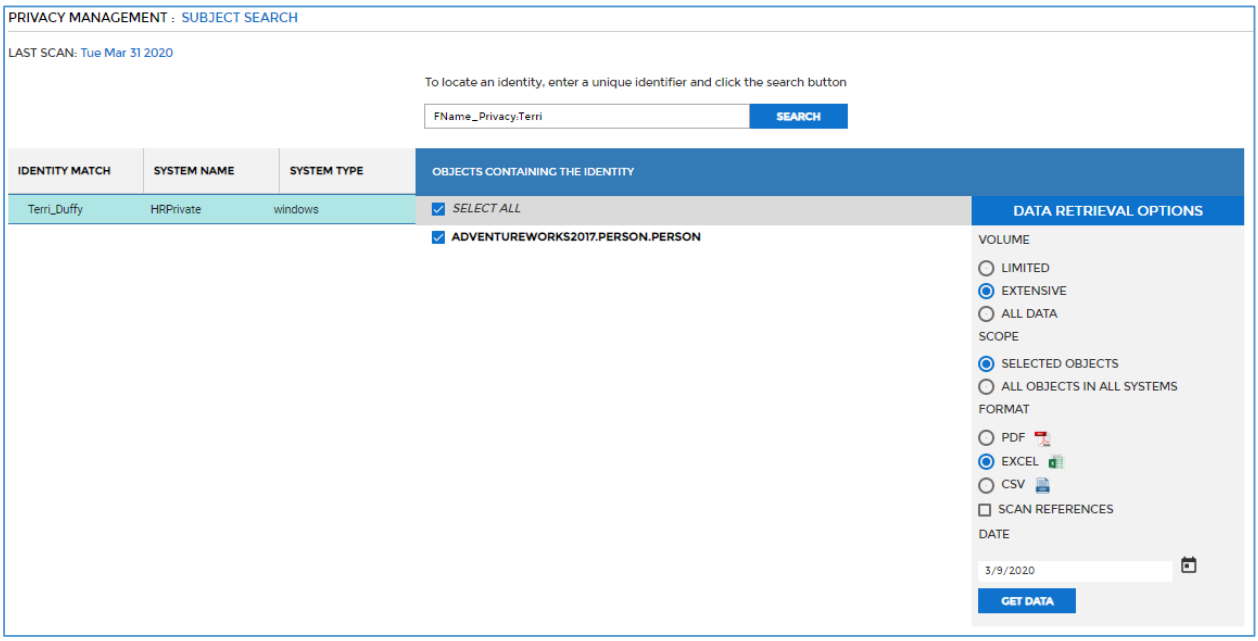
87.



88.

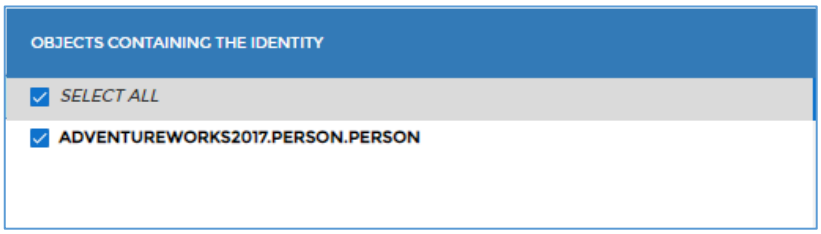
89.

90. The detailed data will be displayed showing the **Objects** name and **Data Retrieval Options**.



The left pane will display the matched **Identity** along with the **System Name** and **System Type** to which the identity is related. The middle pane will display the list of all the **Objects** i.e. tables in which the information for matched identity exists. The right pane will display the **Data Retrieval Options**.

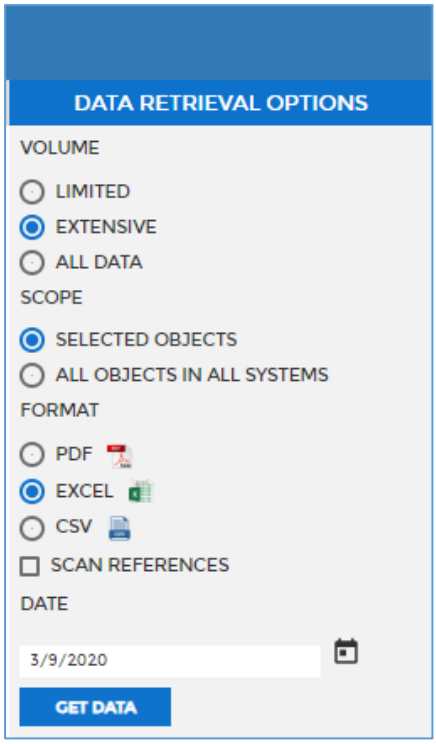
91. Select the **Objects** by checking the check box next to each object name. The listed objects contain the data for matched identity.



92.

93.

94. Select the **Data Retrieval Options** and click **Get Data.** It will appear the **Report** tab.

95. 

96.
97. The options available in **Data Retrieval Options** pane are:
98.

i. **Volume**: Select **Limited**, **Extensive** or **All Data** option in volume.

1. **Limited**: Select **Limited** option, if you want to scan only the first two records of identifier in the selected object.
2. **Extensive**: Select **Extensive** option, if you want to scan the first 10-15 records in the selected object.
3. **All Data**: Select **All Data** option, if you want to scan the entire list of selected objects.

ii. **Scope**: Using the **Scope** option you can specify the Objects i.e. tables that need to be selected for generating a report. There are two options.

1. **Selected Objects:** Select **Selected Objects** if you want to select few objects.
2. **All Objects in All Systems:** Select **All Objects in All Systems** if you want to select all the listed objects.

iii. **Format**: You can download the report in any of the specified format. There are three options available for format:

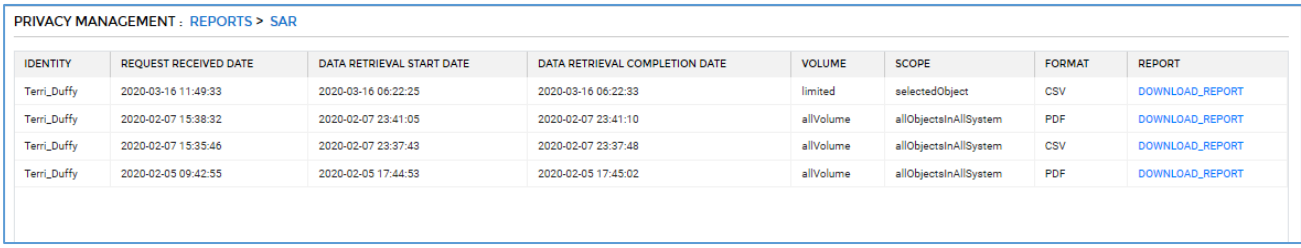
1. PDF
2. Excel

3. CSV

iv. **Scan References**: Check the **Scan References** checkbox, if you want to look for the foreign key references in the other objects. Using this option, the foreign key which are associated in other objects are also selected for the scanning.

v. **Date**: Select the date for which you have received a request from the customer. DPO or Admin who operates on DSAR Application needs to put this date manually before clicking **GET DATA**.

99. To download the Report, click **Privacy > Reports > SAR**.

100. 

101.

1. Select the report you wish to download and click **Download_Report** hyperlink in the **Report** column.

Appendix A: Verifying Hadoop Results

Verify that Hadoop tasks are finding targeted sensitive data by comparing the Task Results file or Detailed Results file with the file on which the task was run.

Task Results files can be found at hadoop fs -cat /dataguise$/results/(taskname)/(task_instance_ID)

Detailed Results files can be found at hadoop fs –cat /dataguise$/results/(taskname)/(task_instance_ID)/summary_results_structured/

The specific contents of the task results file differ slightly according to file type, and whether the file is treated as structured or unstructured.

Task Results files show the type and location of the discovered sensitive element. However, the discovered sensitive data element's actual vale can be suppressed by setting the results.suppressRealValues property in the HDFSIDPConfig.properties file. For instance, if DgSecure discovers the email address dataguise@dataguise.com when this property is turned on, dataguise@dataguise.com will not appear in the results file. Please see the *Installation & Configuration Guide, section 3.1.1 HDFS IDP* for more information.

Task Results

Task results are available for tasks run against both structured and unstructured file types. The information displayed in the file varies according to the type of file that was scanned.

The format of a task results file is the same for structured text, structured Sequence, Avro, RC/ORC, and Parquet files.

When reading the files, please note that all offsets are from the beginning of the file.

Unstructured Text Files:
Begin offset of Line, End offset of Line, Begin offset of sensitive item, End offset of sensitive item,

***Unstructured Sequence Files:**
row # (within the map), col # (always 1), 0, 0,

*__Note__: A Sequence file where the value field is unstructured text is considered "unstructured".

***Structured Files of All Types:**
row # (within the map), col #, sensitive item count, and whether the discovered item is a dependent or not (a numeric string representing the sensitive type ID = yes, a 0=no)

*__Note__: A separate results file is created for each map:

Here is an example task results file for the scan of an ORC file:

```
hdfs://centos.cdh503:8020/user/hive/warehouse/orc_userdatatest/000000
_0 ------ (PATH OF ORIGINAL FILE)
      SSN-D 1     2     1     0     410312381
      Name  1     6     1     0     BRIAN
      EmAdr 1     7     1     0     BRIANxxx@gmail.com
      ABA   2     2     1     0     312765553
      Name  2     6     1     0     ERIK
      EmAdr 2     7     1     0     ERIKxxx@gmail.com
      ABA   3     2     1     0     343583325
      Name  3     6     1     0     EDWARD
      EmAdr 3     7     1     0     EDWARDxxx@gmail.com
      Name  4     6     1     0     DAVID
      EmAdr 4     7     1     0     DAVIDxxx@gmail.com
      ABA   5     2     1     0     686222131
      Name  5     6     1     0     TOMMY
      EmAdr 5     7     1     0     TOMMYxxx@gmail.com
      ABA   6     2     1     0     211333981
      Name  6     6     1     0     SEAN
      EmAdr 6     7     1     0     SEANxxx@gmail.com
```

Detailed Results

Field Results are only available for Detection tasks run against structured files. This file shows each sensitive type discovered, the type of scan (full vs incremental), the ratio of matched to total rows, and the number of columns in which sensitive data was found.

When the sensitive data was discovered using a Dependent expression, the Field Results file treats the Dependent expression as one expression. In the field column, multiple column numbers would be displayed. Also, each sensitive comprising expression would be listed in the SensitiveType column.

Filed(s): Match/Total Rows || SensitiveType || Sample Mode

Column 2: 156/13474 || NPI || Full scan.

Column 3: 13318/13474 || Telephone (Digits Only) || Full scan.

Column 1: 2973/13474 || Social Security # (Digits Only) || Full scan.

Column 12: 10495/13474 || ABA Routing number || Incremental scan.

Column 0: 13474/13474 || Credit Card # (Digits Only) || Full scan.

NPI found in 1 column(s).

Social Security # (Digits Only) found in 1 column(s).

Telephone (Digits Only) found in 1 column(s).

ABA Routing number found in 1 column(s).

Credit Card # (Digits Only) found in 1 column(s).

Appendix B: EDI Transaction Set

Currently, Dataguise uses EDI transaction set 837 “Healthcare claim”. In order to alter the transaction set being used, please contact Dataguise Professional Services.

The transaction set is used to parse data in the EDI file format. The parsing starts from the tag of each EDI line and is based on the value of each column or the position of each column. Once parsing is done for an EDI line, the sensitive data in that line is detected. Dataguise sensitive type ID is also called regex ID under some documentations.

The EDI transaction set is combined with menu.txt and multiple dictionary files. Menu.txt is the catalog for all dictionary files. Menu.txt can contain multiple lines and each line defines one column of a tag.

One directory file can contain multiple lines and each line defines one value for the related column.

menu.txt format:

[EDI tag]*[EDI column number (start from 0)]*[dictionary file name]

dictionary file format:

[EDI value for the column defined in menu.txt](+[offset from such column]):[Dataguise sensitive type ID list (split by ',')]#[comments]

Example 1:

```
menu.txt:

...

NM1*8*Identification Code Qualifier.txt

...

Above line means:  if an EDI line starts with tag "NM1", we look up
dictionary file "Identification Code Qualifier.txt" for how to process its
column 8.

Identification Code Qualifier.txt:

...

34(+1):4,5,6#Social Security Number

...
```



```
Above line means: if column 8 has value "34", its next column (+1) can
contain Security Security Number (whose sensitive type ID is 4, 5, or 6)

Here is an EDI line which will match above dictionary entry:

NM1*IL*1*Duo*John*X*Mr**34*365118888*12*05
```

Example 2:

```
menu.txt:

...

N4*4*country.txt

...

Above line means: if an EDI line starts with tag "N4", we look up dictionary
file "country.txt" for how to process it coumn 4.

country.txt:

~(+0):77#Country

Above line means: regardless what value is on column 4 (this is meaning of
~), its current column (+0) can be country name.

Here is an EDI line which will match above dictionary entry:

N4*Fremont*CA*94538*USA
```


Appendix C: Error Messages

Error Text	Error Code
Task does not exist	100
Cluster Name does not exist	101
ScanLocation does not exist	102
Cluster name should not be null	103
Cluster name should not be blank	104
Cluster does not exist	105
Policy does not exist	106
Specified path doesn't exist	107
Unable to find the task	108
Specified task type does not exist	109
No results found!	110
Unsupported JSON	111
Input JSON is malformed	112
Syntax Error	113
Special characters are not allowed except underscores	114
The system cannot find the path specified	115
No cluster has been added to session	116
Access denied	117
Task Status	118
Unable to get details of instance id	119
Please remove the trailing slash(es) in scanlocation	120
No such Hadoop policy found	121
No policy specified	122
Both excludeListFilePath and excludedScanPathList cannot be specified	123
Path specified to Exclude File list does not exist	124
Please select only .txt file for Exclude File list	125
Unsupported tasktype	126
Special characters are not allowed except underscore	127
Search Parameters can only be specified for Auto Discovery tasks	128
File Extensions in excludedFileExtensions should start with .	129
Either deleteExclusionList should be set to false or excludeListFilePath should not be specified	130
Structured flag cannot be set to true for {Row Encryption, Discovery, Detection} tasks	131
OutputColumnForm can only be specified for {columnar masking} task	132
DeleteInputFiles cannot be specified	133
Search Parameters must be specified	134
discoveryCriteria must be specified	135
fullFileScan must be specified	136
fileModifiedBefore can never be greater than today's date	137
File Modified Date Range is invalid.	138
Scan location not associated with any structure therefore verifyStructure cannot be set	139

Appendix D: Role Based Access Controls

Role-based access control (RBAC) is a method of regulating access to computer and/or network resources based on the roles of individual users within an enterprise. In this context, access is the ability of an individual user to perform a specific task, such as view, create, or modify a file.

Users belonging to a specific role create a policy and members of other roles will not have access to these policies. The user creating the policy will have access to set permissions on the custom policies – Create, Update, Read, D. These users will have privileges to create and manage structures, policies, and sensitive types. Admins will be able to define global policies (open to all users) and if a private policy needs to be opened to the public, an Admin will need to be contacted. Tasks will not be executed nor be able to be modified if they contain a policy that the user does not have access to.

Users with “DEFAULT” role have “Product” and “Owner” access by default on Policies, Sensitive Types, Domain, Structures, etc. This means they are able to see the objects created by themselves in addition to the predefined ones. They can also be given access to objects created by others.

Under “Owner Access” permissions, every role type user will be able to access their own created items.

Under “Full Access” permissions, every role type will be able to access all items – those created by themselves and others.

To provide access on individual items (task, policy, connections, structures, etc) to specific role types, Super_Admin can set the “R,U,D,E” permissions as required.

Appendix E: Voltage SimpleAPI

In order to use the Voltage SimpleAPI to obfuscate your sensitive data with DgSecure, please follow the instructions below.

1. Create **CustomProtectionDefinition.json** file with following parameters for the sensitive types on which we need to enable **VolProtection**

```
[{
"sensitiveType": "Credit Card # (Digits Only)",
"customProtectionDetails": [{
"protectionName": "VolProtection",
"paramsList": ["TaskType","ProtectionType","Format","Identity","SharedSecret"]
}]
},
{
"sensitiveType": "Credit Card # (Space Separation)",
"customProtectionDetails": [{
"protectionName": "VolProtection",
"paramsList": ["TaskType","ProtectionType","Format","Identity","SharedSecret"]
}]
}]
```

A. Put the **CustomProtectionDefinition.json** file under directory …**/webapps/dgcontroller/**
B. Update CustomProtectionConfig.properties file at …**/HDFSIDP/expandedArchive/WEB-INF/classes/com/dataguise/Hadoop/util/**

Setting up the configuration properties:

a. **policyURL=**https://voltage-pp-0000.dataprotection.voltage.com/policy/clientPolicy.xml
This could be different on production environment.

b. **trustStore** with root certificates must be available on all nodes of cluster at the same path with resetting the permissions to be world-readable.

c. Update the trustStore property with the trustStore path.
Ex: **trustStore=/opt/voltage/trustStore**

d. Provide the cache path for caching the cryptographic keys and other centrally managed information in file.
cache =/opt/voltage/cache

Other properties are optional.

C. Put **VolProtection.jar** file under …/HDFSIDP/expandedArchive/WEB-INF/plugins/custom_protecion
D. Restart tomcat.
E. Restart HDFSIDP service.

F. Create Masking/Encryption policy for VolProtection task by setting the protection parameters.

Acceptable values for VolProtection parameters are:

TaskType: It could be one of the following-

a. *Protect*
b. *Access*
c. *Digest*

ProtectionType: Acceptable values for ProtectionType parameter:-

For TaskType **Protect/Access**:-

a. *FPE*
b. *AES*

For TaskType **Digest**:-

a. *DigestMD5*
b. *DigestSHA1*
c. *DigestSHA224*
d. *DigestSHA256*
e. *DigestSHA384*
f. *DigestSHA512*

Format: It is the FormatName which is defined for FPE on voltage appliance.
Example: **AlphaNumeric**

Identity: authIdentity is defined for particular FormatMapping on voltage appliance.
Example: **test@test.int** **or**
test@voltage.com
SharedSecret: Shared secret to be used for Key Server authentication.
Example: "**voltage123**"

G. Create a domain and associate above policy to it along with the input directory.
H. Create a structure for an input file.
I. Create and execute structured Protection(Masking/Encryption) task on input file with VolProtectionPolicy.

Appendix E: Snappy Files Support

In order to run masking/encryption on Snappy Compressed file type, following these steps.

1. Copy the following files from your cluster:

    a. libsnappy.so

    b. libsnappy.so.1

    c. libsnappy.so.1.1.4

2. Copy the above files to a location of your choice on the machine where DgSecure is installed:

Ex. /usr/java/jdk1.7.0_67/lib/amd64

3. Update the jetty-embedded.properties file as follows (/…/Dataguise/DgSecure/IDPs/HDFSIDP):
JavaOptions=-Dhdp.version=<HadoopVersion> -Djava.library.path=<path selected in step 2>
Ex. JavaOptions=-Dhdp.version=2.3.4.0-3485 -Djava.library.path=/usr/java/jdk1.7.0_67/lib/amd64

4. Restart the HDFS IDP before running your next task.

Appendix F: Lightweight Primitives

These are created to ease the task creation process for users that keep the task type, options, and policies remain the same, whereas the directory paths and their corresponding structure definitions are the things that change per task.

The lightweight primitives take advantage of this information and we can create a task template with the repeated details: task type, task options, and policies, and stores these details into the database.

Lightweight Primitives

Task Template: The key new primitive is the *Task Template.* The Task Template defines the following:

1. Task type
2. Task options
3. Policies

The Task Template is stored in the database.

Structure Definition: With the lightweight primitives, the `create structure` statement is not needed. The JSON file description of the structure is still created as a file, and passed on with scan paths to execute a task template. Structures are *not* stored in the database, as the `create structure` statement is never executed.

There is no “Task Definition” in the lightweight primitives set.

Task Instance: Gets created for each execution of a task template.

In an abstract sense, the task template gets executed as follows:

```
execute task_template (ListOf<scan path, structure for scan path>)
```

Initially, Task Templates will only be supported for Hadoop, and only from DGCL. Later, support will be extended to S3, GCS, DBMS etc., and also support from the UI will be available.

Usage of the Lightweight Primitives

1. Create/copy a JSON task template file, containing the task type, options, and policies, in the local file system where DGCL executes
2. Create/copy a JSON structure definition file in the local file system where DGCL executes.

From DGCL:

```
create hadoop task_template from <task_template_file>
```

```
run hadoop task_template (
      {“scanpath1”, “structureFile1”},
      {“scanpath2”, “structureFile2”},
      {“scanpath3”, “structureFile3”}
)
```

Here, structureFile1..3 refer to files that describe the structure in JSON format. Additionally, we will explore the ability to plug in the structure JSON in the `run task_template` statement, so that the structure file is not needed.

From a database storage perspective, only the task template and details for each task execution (i.e. task instance) are stored. There is no storage of task definitions or structure definitions. The task template definition (which will be a JSON description), will contain additional options to control what will be saved in the database, further reducing the storage requirements for the executing task.

Appendix G: Key-Pair Authentication for Snowflake Connections

To configure the public/private key pair:
From the command line in a terminal window, generate a private key:
$ openssl genrsa 2048 | openssl pkcs8 -topk8 -inform PEM -out rsa_key.p8

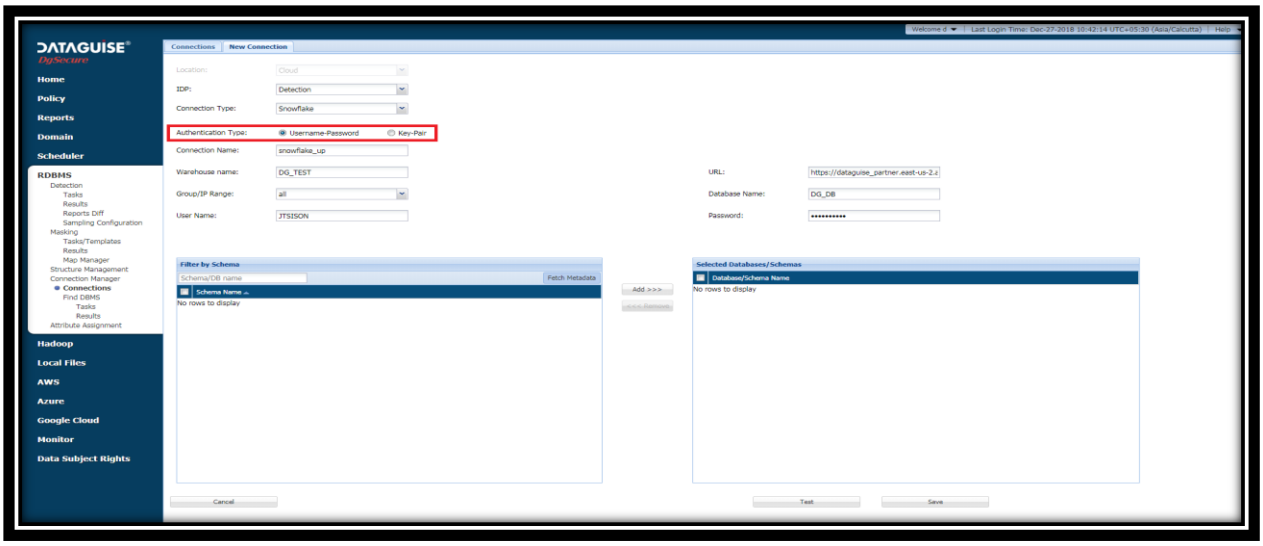
OpenSSL prompts for a passphrase used to encrypt the private key file. Record this passphrase. You will input it when connecting to Snowflake.
From the command line, generate the public key by referencing the private key:
$ openssl rsa -in rsa_key.p8 -pubout -out rsa_key.pub

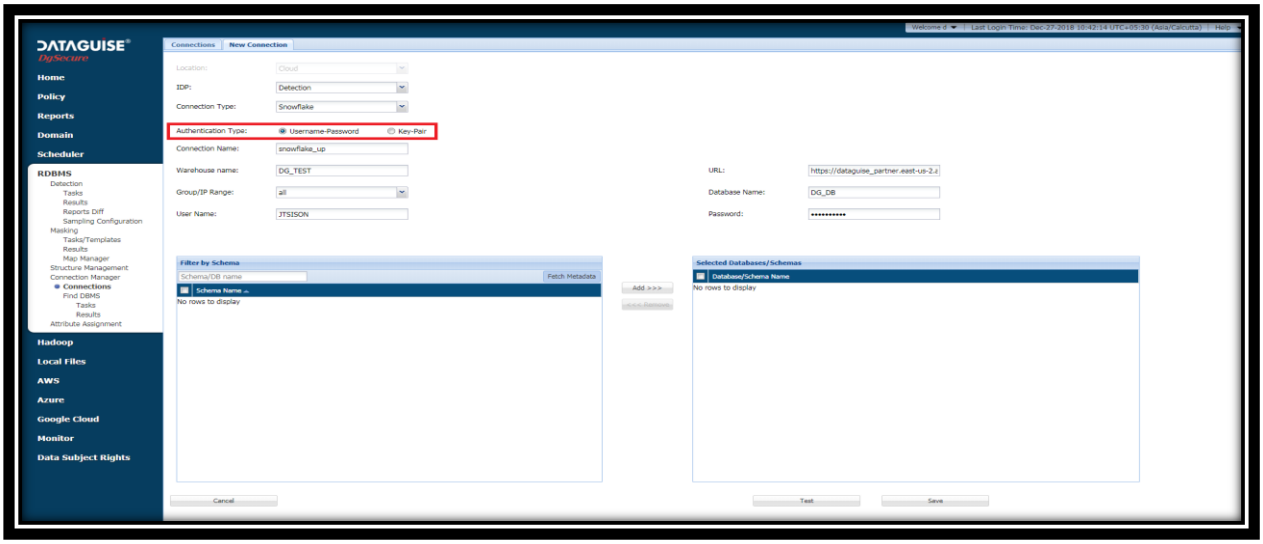
Copy the public and private key files to a local directory for storage. Record the path to the files.

*__Note__ that the private key is stored using the PKCS#8 (Public Key Cryptography Standards) format and is encrypted using the passphrase you specified in the previous step; however, the file should still be protected from unauthorized access using the file permission mechanism provided by your operating system. It is your responsibility to secure the file when it is not being used.
DgSecure will then apply **AES encryption** layer above this encrypted private key and store it on the Agent side:
DBMS **Detection** Agent (\dgDiscoverAgent\WEB-INF\classes\com\dataguise\discoverAgent\keystore\<username>.txt);
DBMS **Masking** Agent (\dgAgent\WEB-INF\classes\com\dataguise\Worker\Masker\PrerequisiteFiles\keystore\<username>.txt)

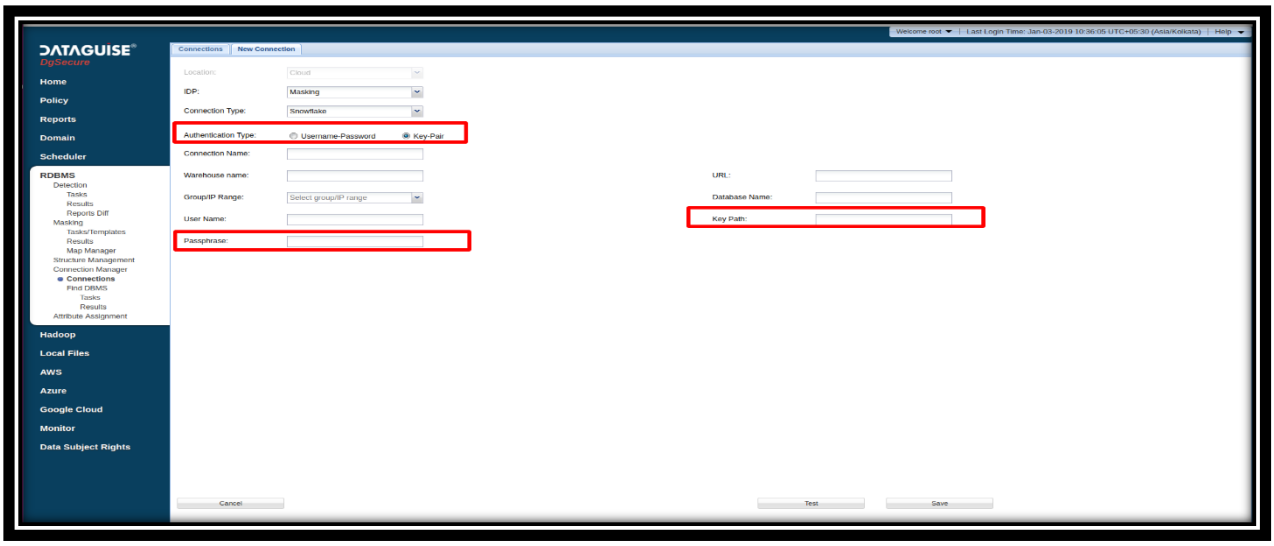
Assign the public key to the Snowflake user using ALTER USER. For example:
alter user jsmith set rsa_public_key='MIIBIjANBgkqh...';

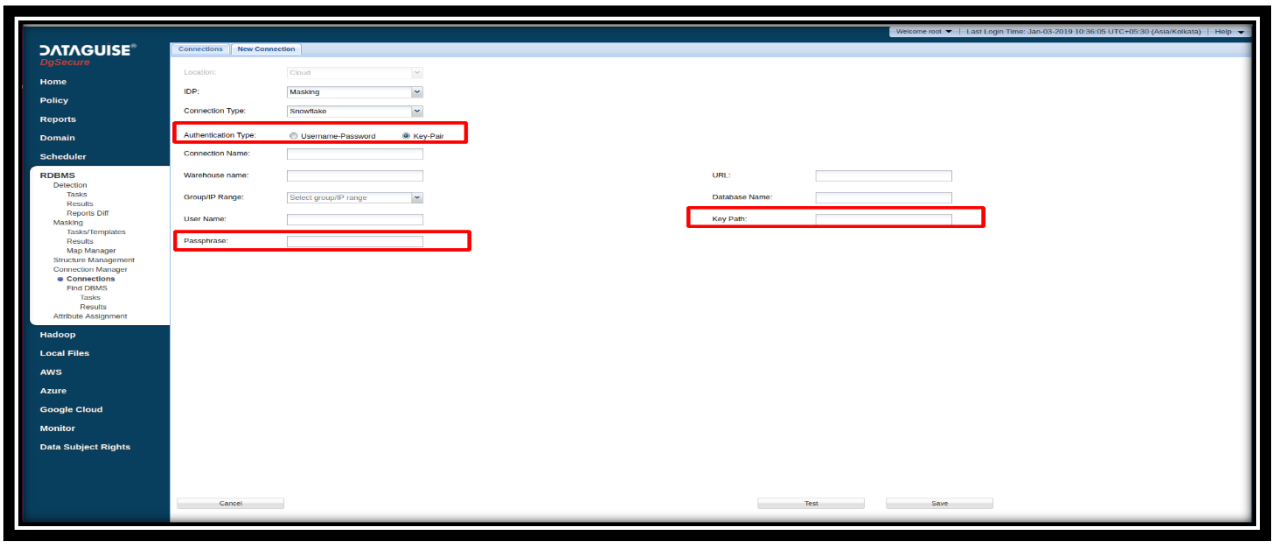
DgSecure:
Authentication Type: Username-Password





Authentication Type: Key-Pair





Private Key path and passphrase are required to authenticate.

NOTE: Private Key should be placed on Agent side.

Case a: Private Key path contains the private key
Agent looks into the specified location for the private key. If found, Agent uses it and stores it in AES encrypted format (location above-mentioned).
Note supreme priority is given to the '*Key Path*' such that Agent always stores the updated private key as provided by the user.

Case b: Private Key path does not hold the private key
Agent is unable to fetch the private key from the specified location. Agent looks for the private key on its side (*<username>.txt*) and tries to authenticate using it.
'*Test Connection*' and running of (Detection or Masking) task demands establishing a

connection with the specified database using the mentioned credentials; hence this forces to store the encrypted private key in AES encrypted format on Agent side.

Appendix H: Detection in Kerberized Clusters

Following are the config properties required for YARN-specific Kerberos Configurations, which we need to configure in the spark.properties file available at the location:

.../HDFSAgent/expandedArchive/WEB-INF/classes/spark.properties

On IDP deployment machine.

- **spark.yarn.principal**
  Principal to be used to login to KDC, while running on secure clusters.
- **spark.yarn.keytab**
  The full path to the file that contains the keytab for the principal specified above. This keytab will be copied to the node running the YARN Application Master via the YARN Distributed Cache,and will be used for renewing the login tickets and the delegation tokens periodically.
- **spark.yarn.access.hadoopFileSystems**
  A comma-separated list of secure Hadoop filesystems your Spark application is going to access.

  For example,
  spark.yarn.access.hadoopFileSystems=hdfs://nn1.com:8032,hdfs://nn2.com:8032, webhdfs://nn3.com:50070.

  The Spark application must have access to the filesystems listed and Kerberos must be properly configured to be able to access them (either in the same realm or in a trusted realm). Spark acquires security tokens for each of the filesystems so that the Spark application can access those remote Hadoop filesystems.

- **spark.yarn.kerberos.relogin.period**
  How often to check whether the kerberos TGT should be renewed. This should be set to a value that is shorter than the TGT renewal period (or the TGT lifetime if TGT renewal is not enabled). The default value should be enough for most deployments.

Appendix I: SL Masking

Configure SL Masking for Kerberos User in Oracle

To perform SL masking, we need to create a database user to load the library into; this user is identified externally by the kerberos user.

To create a user, follow the below steps before masking is run:

1. Create a new user which is identified externally by Kerberos user. The username must be same and should be without domain name. The names are case sensitive. Following is the command:

   create user <KRBUSER_NAME> identified externally as '<KRBUSER@EXAMPLE.COM>'

   For example,
   create user ORAKRB identified externally as 'ORAKRB@DGAD.COM'.

2. Give the grants required for masking to <KRBUSER>; e.g. ORAKRB. The grants can be found under prerequisites folder for oracle in DgMaskerAgent installation.

Steps 3-4 are specific to SL masking

3. Load the jar file in <KRBUSER> using below command.
4. loadjava -user sys/sys -schema ORAKRB <location for DgFPELib.jar>

   where ORKRB is the <KRBUSER> as specified in the step 1 example.
5. Give grants mentioned in GrantsToAccessJavaFromRDBMS.sql to <KRBUSER>.

   Run the masking task.

***Note**: During SL masking task execution, if an error related to run time permission is encountered then provide the grant specified below and re-execute the task.

Call dbms_java.grant_permission('ORAKRB','SYS:java.lang.RuntimePermission', 'accessClassInPackage.sun.misc',")

Where 'ORAKRB' is the Kerberos user i.e. <KRBUSER>

Enabling SL Masking in Oracle

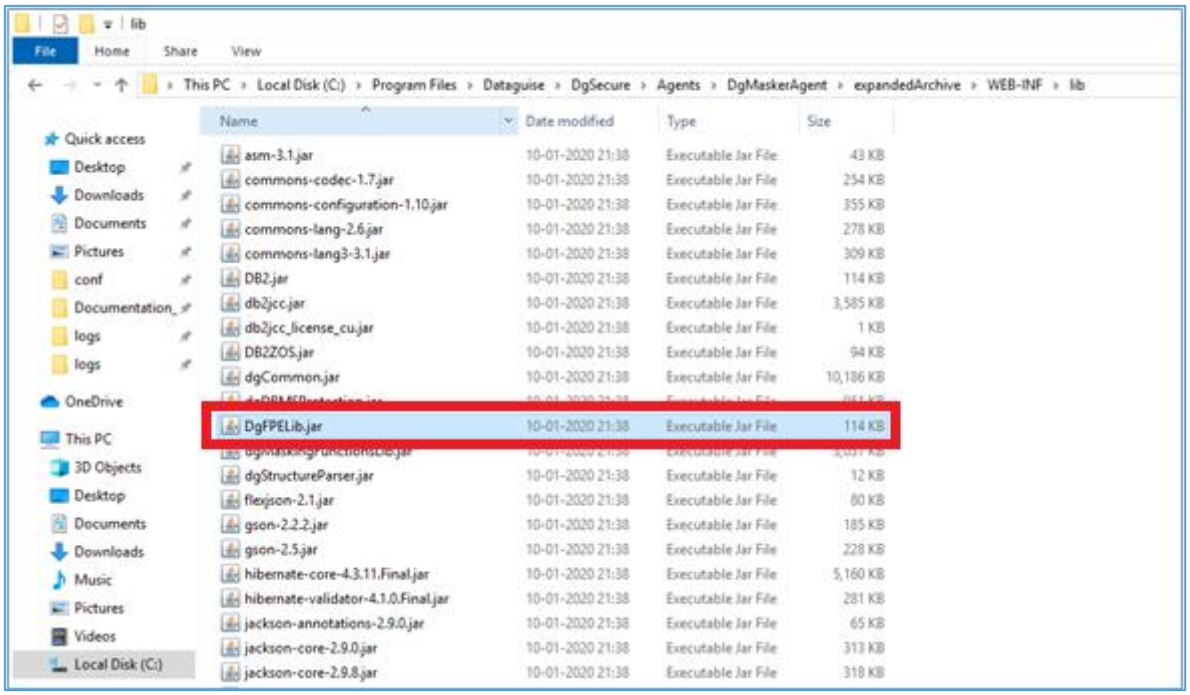
Some pre-requisites are required before executing SL masking and Encryption/Decryption in Oracle for 'On-Premises'. Follow the below steps to executing SL masking in Oracle:

1. Open ***GrantsToAccessJavaFromRDBMS.sql*** file from **location**: "…/x.x.x/x.x.x.0.0.0_x_DD-M-YYYY/PrerequisiteScripts/Oracle/".

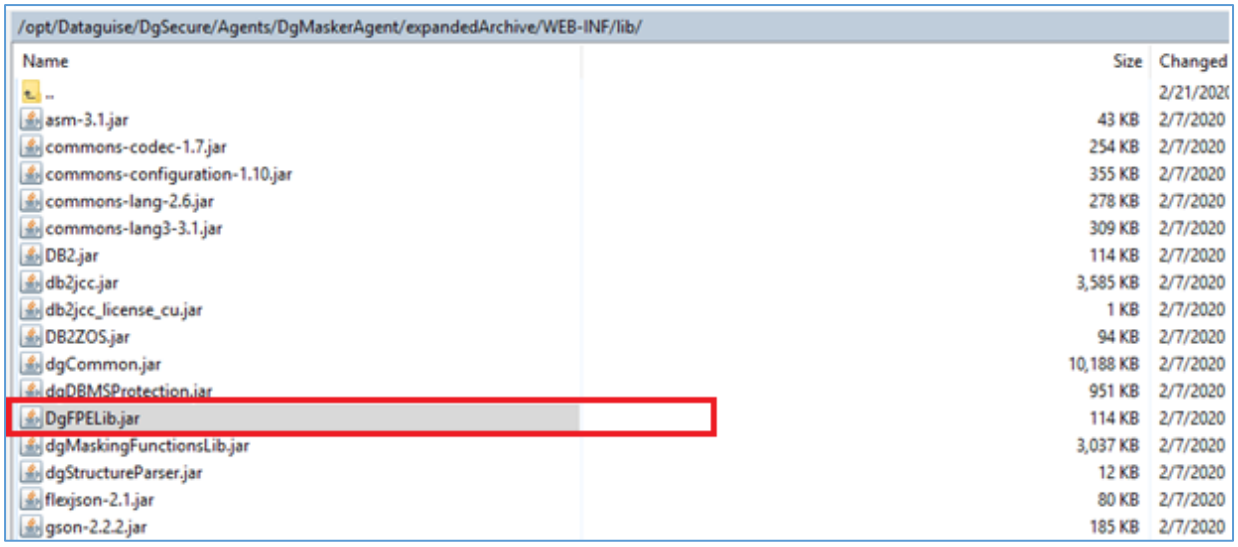
   This file has grant scripts that are needed to access java function from RDBMS. Follow the steps written in this file to provide the grants.

2. Copy ***DgFPELib.jar*** file to Oracle server location.

   Windows location:
   C:/Program Files/Dataguise/DgSecure/Agents/DgMaskerAgent/expandedArchive/WEB-INF/lib



   Linux location:
   /opt/Dataguise/DgSecure/Agents/DgMaskerAgent/expandedArchive/WEB-INF/lib



3. To load jar file, execute below mentioned command.

   Windows: execute the below command from command prompt, using the same username and password with which connection is created in Connection Manager in DgSecure.

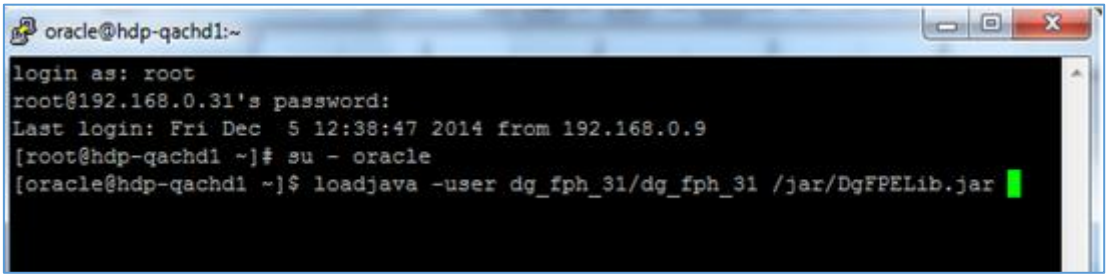
   loadjava -user <username>/<password> <location of DgFPELib.jar file>

   For e.g. loadjava -user hr/hr D:\DgFPELib.jar

   Linux:

   loadjava(space)-user(space)Dg-user(dgmasker)/Dg-user(password)(space)location of the JAR file e.g./opt/FPE/DgFPElib.jar.

   For e.g. loadjava –user dg_fhp_31/dg_fph_31 /jar/DgFPELib.jar



   In the above screenshot, the dg_fph_31 is the masking user. This user is used to create connection for masking.

Enable Random-SL Masking Support for HBase

The system has been enhanced to provide Random SL Masking support to HBase. This maintains the

consistency of the repetitive values while masking. The repeated sensitive information spotted during the detection task in the database will be masked with the same value throughout to maintain consistency.

To support this functionality, the following property has been added:

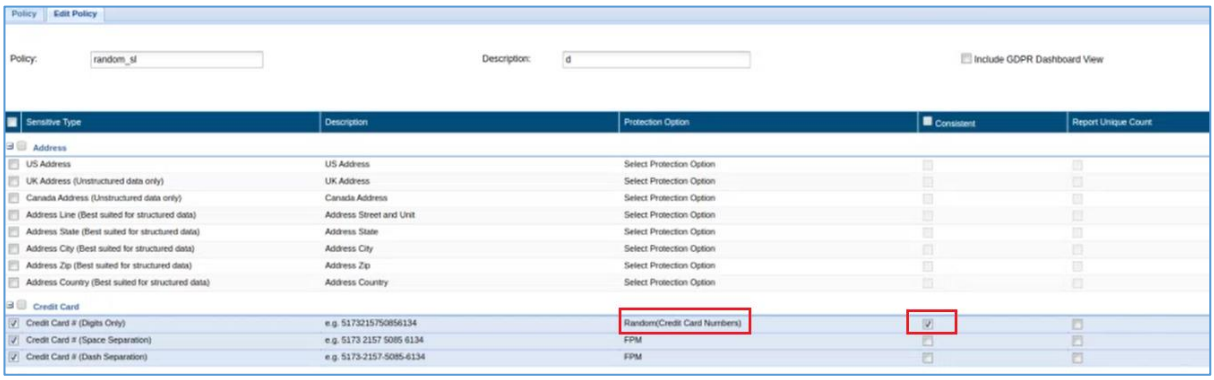
```
# Restrict overwriting of any table, which is also selected as a destination table for masking.
# By default, this is set to Y to restrict the overwriting. Change to N, for forceful overwrite.
# If the destination table selected in masking task already exists, masking of the source table would be skipped, if set to Y.
dg.restrict.destination.table.overwrite = Y

# Consistent masking engine type, default value is SL
dg.cmengine = SL
```

The file in which the above mentioned property exists can be located under:

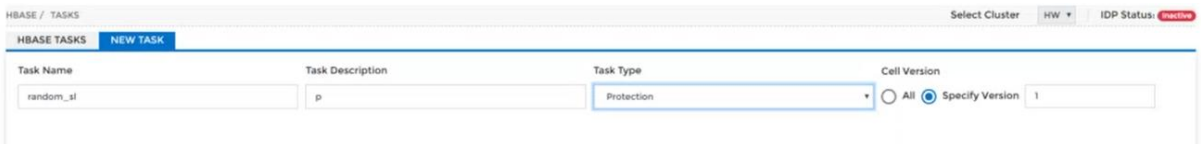
<Installation_Directory>/Dataguise/DgSecure/Agents/HBaseAgent/expandedArchive/Web-INF/classes/HBaseIDPConfig.properties

Perform the following steps to provide Random SL Masking support in HBase:

1. Create a new policy for HBase. While selecting the sensitive type, select the **Random** option for **Protection option** and check the **Consistent** checkbox for the selected sensitive type.

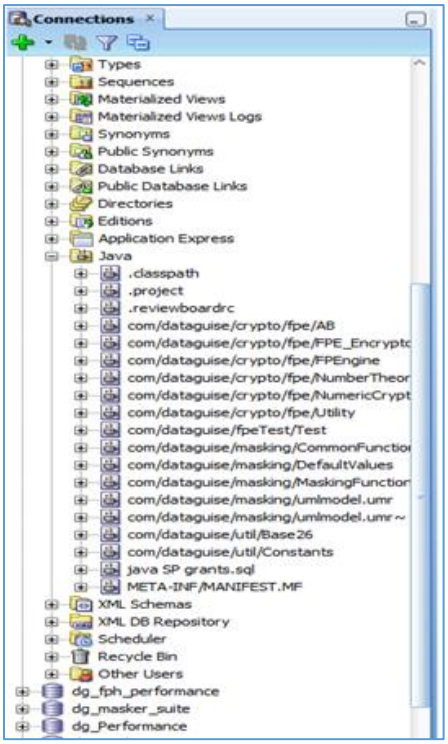


2. Create an HBase task. Go to **HBase** > **Tasks** > **New Tasks**.



3. **Save and Exceute** the task.

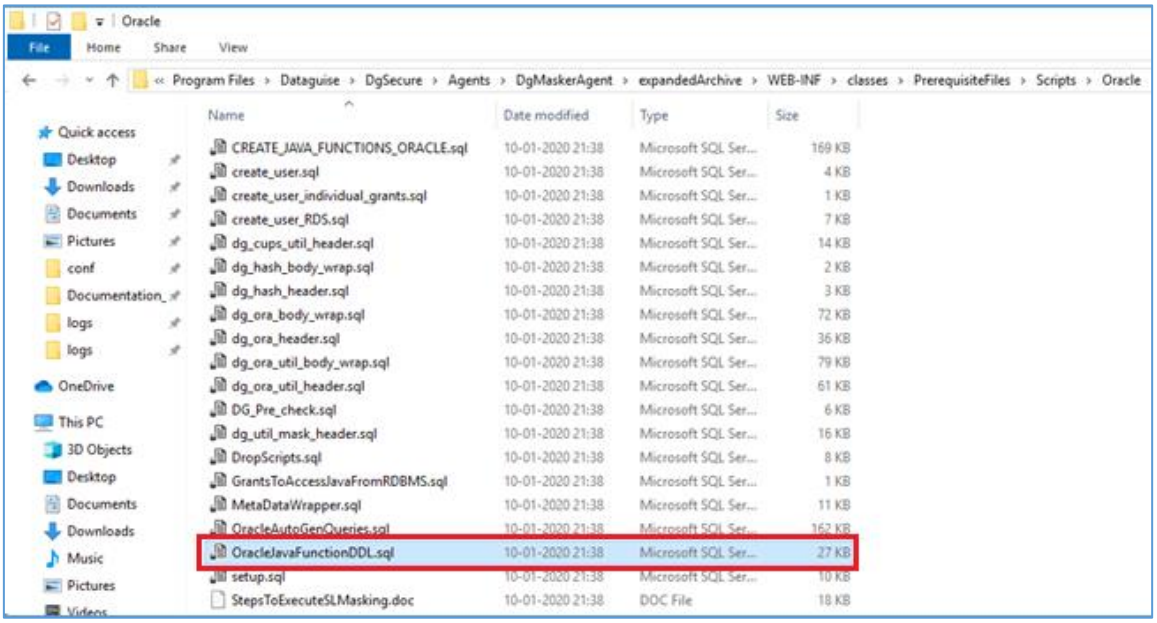
4. Verify JAR file is uploaded or not, check JAVA folder in DG User (dgMasker).



5. Run **OracleJavaFunctionDDL** file in Dg User (DgMasker).

   Windows location: The script is available under following location

   'C:\Program Files\Dataguise\DgSecure\Agents\DgMaskerAgent\expandedArchive\WEB-INF\classes\PrerequisiteFiles\Scripts\Oracle'



Linux location:

'/opt/Dataguise/DgSecure/Agents/DgMaskerAgent/expandedArchive/WEB-INF/classes/PrerequisiteFiles/Scripts/Oracle'

6. Set "***JAVA_JIT_ENABLED***" to true.

Once the permission has been granted, below mentioned masking options will be available for SL masking:

a) Regular Expression
b) FPM
c) IntelliMask
d) Random (All available masking options)
e) NPI

Upon selecting SL option in DgSecure, the Consistent (C) and Unique (U) options gets selected automatically. However, for some of the masking options only Consistent (C) is selected and Unique (U) is disabled; and they cannot be selected manually. These masking options are:

a) Regular Expression
b) Intellimask
c) Random (Address Line 1, Address Line 2, First Name, Last Name, First and Last Name, Email Addresses, City, State Country and Random String)

If you want to generate Consistent Unique data for Regular Expression, Intellimask and Random (Address Line 1, Address Line 2, First Name, Last Name, First and Last Name, Email, Addresses, City, State, Country and Random String). You can apply FPM or Shuffle masking with SL option.

There are some other important points related to SL:

1. SL option does not allow to select persistent dataset from sync window.
2. SL option is not supported with Custom masking.

Appendix J: Configure Multiple SQL Server Instances in DgSecure

DgSecure supports detection on multiple SQL Server instances. To connect with multiple instances, the Detection IDP must have access to the SQL Server to get a list of all the available instances. To achieve this an sqlcmd utility must be installed on the machine where the Detection IDP is installed. To download sqlcmd utility, click on the following link:

https://www.microsoft.com/en-us/download/details.aspx?id=53591

There are two ways to obtain the list of SQL Server Instances:

1. Execute the following .net function, after executing the function call this function from the java:

```
-------------------------------------------------------------------------------
            using System;
            using System.Collections.Generic;
            using System.Linq;
            using System.Text;
            using System.Threading.Tasks;
            using System.Data.Sql;
            using System.Data;


            namespace ConsoleApplication2
            {
                class Program
                {
                    static void Main()
                    {
                        using (DataTable sqlSources =
      SqlDataSourceEnumerator.Instance.GetDataSources())
                        {
                            foreach (DataRow source in sqlSources.Rows)
                            {
                                string servername;
                                string instanceName =
      source["InstanceName"].ToString();

                                if (!string.IsNullOrEmpty(instanceName))
                                {
                                    servername = source["InstanceName"] +
      "\\" + source["ServerName"];
                                }
                                else
                                {
                                    servername =
      source["ServerName"].ToString();
                                }
                                Console.WriteLine(" Server Name:{0}",
      servername);
                                Console.WriteLine("     Version:{0}",
      source["Version"]);
                                Console.WriteLine();

                            }
                            Console.ReadKey();
                        }
                    }
                }
            }
-------------------------------------------------------------------------------
```

***NOTE:** Following are limitations to using the above mentioned .net function:

- SQL Server Browser must be running at the time of execution of this function else incorrect information may be displayed.
- Only the named SQL Server instances will be listed.

2. Execute the sqlcmd-L command to get the list of available instances. The code to execute this command through java is as follows:

```
------------------------------------------------------------------
----------




                    Runtime rt = Runtime.getRuntime();

                    Process pr = rt.exec("sqlcmd -L");

                    BufferedReader input = new BufferedReader(new
InputStreamReader(pr.getInputStream()));

                    String line=null;

                    while((line=input.readLine()) != null) {
                    System.out.println(line);

                    }
                    int exitVal = pr.waitFor();

                    System.out.println("Exited with error code
"+exitVal);
```

***NOTE:** The command 'sqlcmd-L' can only be executed on SQL Server machine containing MS Tools. To install MS Tools click on the following link:
https://docs.microsoft.com/en-us/sql/linux/sql-server-linux-setup-tools

Appendix K: Confidence Factor

MISSCOUNT = TOTALCOUNT - (HITCOUNT + NULLCOUNT);

CONFIDENCE = 100 * (HITCOUNT - MISSCOUNT) / (TOTALCOUNT - NULLCOUNT)

IF (ISHEADERMATCH)

CONFIDENCE += HEADERWEIGHTAGE - REDUCTIONFACTOR * (TOTALCOUNT - NULLCOUNT) / TOTALCOUNT;

Here, TOTALCOUNT refers to the row scanned and HITCOUNT refers to the match count.

