Informatica® Cloud Data Quality
April 2024

Exception Management

Informatica Cloud Data Quality Exception Management
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Preface

Refer to *Exception Management* to learn how to use a rule specification to identify exception records in your data set and to create an exception task from the profiling task that applies the rule specification that you configured to the data. An exception is a record that contains unresolved data quality issues.

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CHAPTER 1

Introduction to exception management

An exception record is a record that contains unresolved data quality issues. You can use a rule specification to identify exception records in your data set as part of an exception management process.

You might perform exception management towards the end of a data quality project. For example, you may run a deduplication and consolidation operation on a data set to identify and resolve duplicate records. However, you may be interested in the status of the records whose duplicate scores are on the border of the deduplicate threshold that the operation defined. You can configure a rule specification to identify the records with borderline scores and to add exception indicators to the records.

Or, you may complete a pattern-based parsing operation and find that one or more key data columns still contain null data. You can configure a rule specification to flag the records that contain the null values and to add exception indicators to the records.

In each case, the rule specification adds data columns to the records to store the exception indicators. You can use a profile to review the records.

In the exception management process, you create an exception task from the profiling task that applies the rule specification to the data. At run time, the exception task selects the records that contain the exception indicators and writes the records to a target that you can download for further processing.

You may decide to process the data further in Informatica Intelligent Cloud Services. For example, you might run additional deduplication and consolidation operations on the data set and apply a lower deduplication threshold. Or, you may decide to manually review and update the records in another application.

Exception management prerequisites

Before you and your team can perform exception management operations, you must ensure that you have the correct privileges and permissions on the exception tasks. You must also ensure that the exception task connector is enabled.

To enable all exception management operations, verify the following prerequisites:
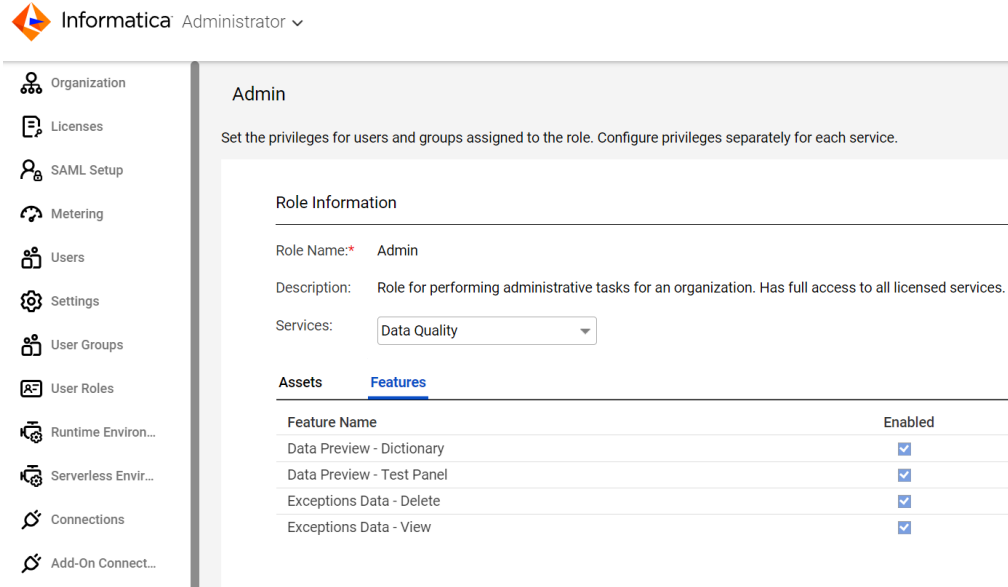
- Verify that the feature privileges for your user role include exception management.
- Verify that the asset privileges for your user role include exception tasks.
- Verify the exception task connector.
- Verify permissions for other users on the exception task assets that you create.

Verifying exception task feature privileges

You can view and update the feature privileges for your role in Administrator.

1. Open Administrator, and select the **User Roles** page.
2. Select your user role.
3. On the **Services** menu, select **Data Quality**.
4. Select the **Features** tab.

   The following image shows the Data Quality features that are available for the user role:

5. Enable the following privileges:
   - *Exceptions Data - Delete*
   - *Exceptions Data - View*

   The *Data Preview - Dictionary* and *Data Preview - Test Panel* features are necessary for many data quality operations. Select the features also.

Note: The exception task features are enabled by default on the Admin and Designer user roles. The Admin and Designer roles are system-defined roles. To change the feature privileges for users with a system-defined role, create a custom role and set the feature options that the users need.

Verifying exception task asset privileges

You can view and update the asset privileges for your role in Administrator.

1. Open Administrator, and select the **User Roles** page.
2. Select your user role.
3. On the **Services** menu, select **Data Quality**.

4. On the **Assets** tab, enable the *Exception Task* asset privileges that you want to configure for the role.

   The following image shows the Data Quality assets on the tab:
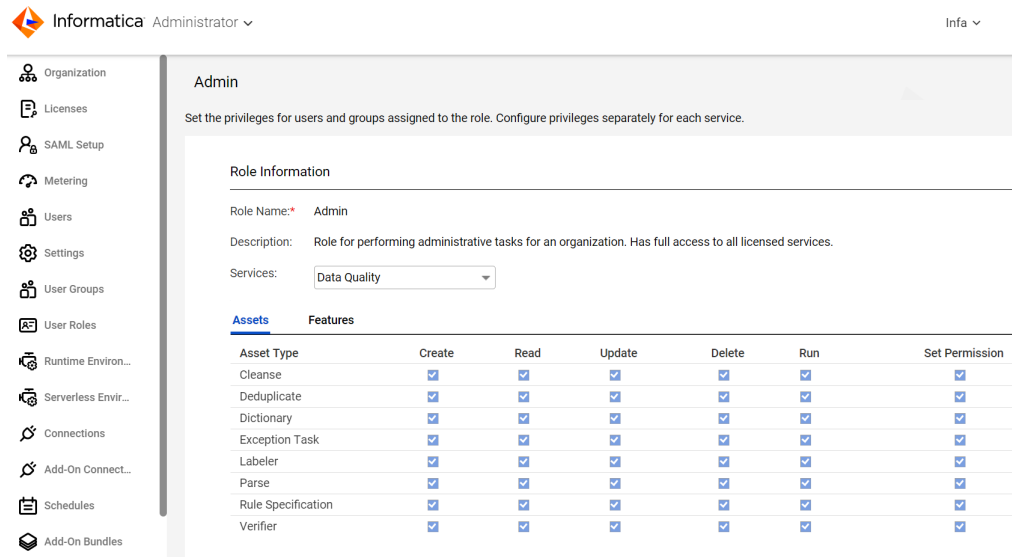
Note: The exception task privileges are granted by default to the Admin and Designer user roles. The Admin and Designer roles are system-defined roles. To change the feature options for users with either role, create a custom role and set the feature options that the users need.

Verifying the exception task connector

You can view and update the status of the exception task connector in Administrator. To perform exception management, enable the connector.

1. Open Administrator, and select **Runtime Environments**.
2. On the **Runtime Environments** page, find the runtime environment in which you will run an exception task.
3. Hover over the **Actions** icon for the runtime environment, and select the **Enable or Disable Services, Connector** option.

   The **Enable/Disable Components in Agent Group** dialog box appears.
4. Select the **Connectors** tab.
5. Enable the *Data Quality Exceptions* option.

Verifying permissions on an exception task

When you create an exception task, you inherit all permissions on the task by default. You can use the **Explore** page options to view and update the permissions that the task grants to you and to other users and groups.

1. Open the **Explore** page.
2. Select the exception task.
3. Click the **Actions** icon for the exception task, and select **Permissions**.

The following image shows the **Permissions** dialog box for an exception task:

Permissions: Exception Email Test

Users and Groups with permissions on the asset are listed here. Other Users have no access to the asset. If no Users or Groups are listed, then this asset has no permissions restrictions.

| Users | Groups |

	User Name	First Name	Last Name	Read	Update	Delete	Execute	Change Permission
☐	dqemawsrel	Pau	TEAM	☑	☑	☑	☑	☑

Add   Remove

?   Save   Cancel
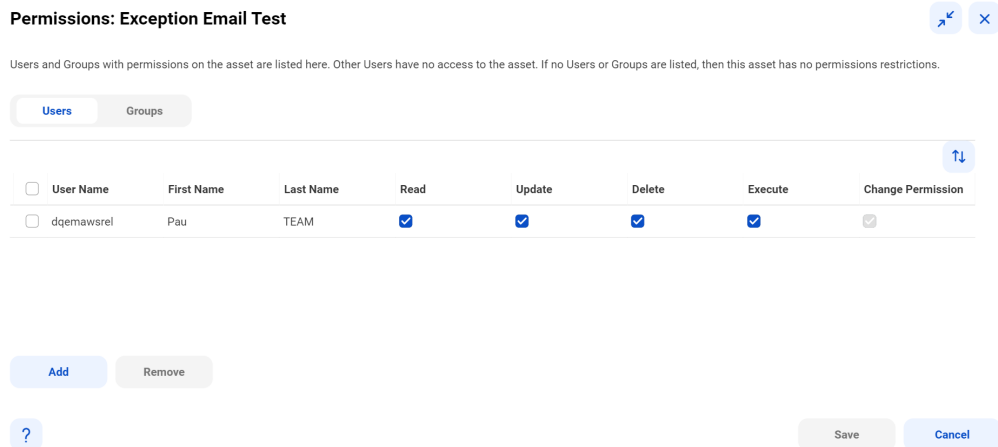
4. Review the Users and Groups lists, and select the user or group whose permissions you want to update.

   If the user or group name is not present, click **Add** to add them to the appropriate list.

5. Enable or disable the appropriate permissions on the user.

   Note: Users and groups need Read and Execute permissions to download the exception data. Users and groups need Delete permission to delete the exception data associated with an exception job.

Exception management process flow

To identify exception records in your data set, you perform steps in Data Quality and in Data Profiling.

The following image shows the steps involved in the exception management process:

| Identify the source data set | → | Configure a rule specification | → | Create a profiling task, and add the rule specification | → | Create an exception task from the profiling task | → | Run the exception task |
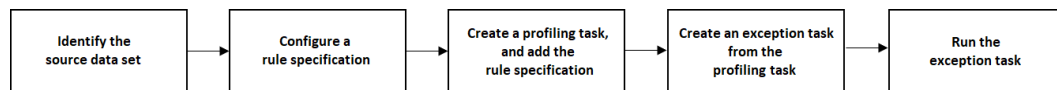
Note: Although profiling tasks and exception tasks are reusable assets, you must ensure that the tasks are tailored to the data set that you select. You are likely to create a unique profiling task and exception task for each data set that you examine for exception data.

The exception management process includes the following steps:

1. Identify the data set that you will examine for exception records.

   You may decide to examine a data set that you previously updated but that may contain records with unresolved data quality issues.

2. In Data Quality, configure one or more rule specifications to identify and update the exception records in the data set.

   Each rule specification has the following characteristics:

   - The rule specification includes one or more statements that can identify records as exception. For example, a record may be an exception if it contains a primary key field and the primary key is null.

- The rule specification adds the following exception indicators as outputs to the data:
    - A field for status values.
    - A field that indicates the priority of the data quality issue that identifies the record as an exception.
    - A field that describes the data quality issue.
- The rule specification uses a single set of outputs for exception indicators.

    In basic mode, you configure the exception indicators in the primary rule set. If you add a rule specification within a rule statement, take care that the child rule specification does not create additional outputs for exception indicators. In advanced mode, you can configure exception indicators in logical statements throughout the rule logic.

Create rule specifications according to the number and type of data quality issues that you expect to find in the data. For example, you might create a single rule specification with multiple rule statements that relate to a range of issues. Or, you might create a single rule specification for each type of data quality issue that you are concerned about.

3. In Data Profiling, create a data profiling task and add one or more rule specifications as rules to the task. Include a rule specification that you configured to find and update exception records. Configure the profiling task to read the data set that contains the exception records.

    You can add multiple rule specifications to a profiling task. Select one or more rule specifications that examine the source data in a manner that best suits your project requirements.

4. Create an exception task from the profiling task. You can create an exception task in Data Profiling or in Data Quality.

    Add one or more rules from the profiling task to the exception task. Include the rule specification that you configured earlier to find and update exception records.

5. Run the exception task, and review the job summary on the **My Jobs** page. Use the link in the summary to download the data that the exception task generated.

    You can run the exception task in Data Profiling or Data Quality. Run a single exception task at a time.

    You can view the status of your exception jobs from the **My Jobs** page in Data Quality, Data Integration, and Data Profiling.

For more information on data profiling tasks, see *Data Profiling* in the Data Profiling documentation.

Identifying the source data set

As the first step in an exception management process, you select the data set in which you expect to find exception records. The structure of the data set that you select determines the configuration of the assets that you use in exception management.

For example, you might decide to search the output from an earlier data process for records that contain unresolved data quality issues. The data might include records that contain duplicate information, or records with incorrect or non-standard data values, or records with null values in one or more columns. To begin the exception management process, you identify the columns across the data set that are likely to contain that data quality issues that you're interested in. You'll select the columns in the assets that you configure.

The assets that you configure for exception management read the data set in the following ways:

- A rule specification analyzes one or more columns and generates exception values that report on the quality of the column values. You select one or more rule specifications in a profiling task.

- An exception task selects records from the data set based on the exception values that the rule specifications report. You create the exception task from the profiling task that includes the rule specifications.

Note: You configure a rule specification with *inputs* that represent the columns in the source data set. Create an input for each column in the data set that you want to analyze. The data properties that you configure for rule specification inputs must match the data properties of the corresponding columns in the data set.

Configuring a rule specification in basic mode

Configure the different elements in the rule specification to represent the data that the business rule applies to and the steps that the business rule must perform.

In an exception management project, the business rule objective is the identification of exception records. The key configurable element in a rule specification for exception management is the rule statement or statements that define an *Invalid* status value as an action.

1. Click **New** > **Rule Specification**. Data Quality opens the **Rule Specification** page.

2. On the **Definition** tab, enter a name for the rule specification.

3. Optionally, enter a description.

   Tip: Enter a summary of the underlying business rule as the description.

4. Select the location in which to save the rule specification.

5. Optionally, select a data quality dimension to represent the type of data quality issue that you want the asset to examine.

6. Save the rule specification.

   The **Asset References** panel appears. The **Asset References** panel shows additional assets that are referenced by Data Quality assets to perform transformation tasks. When you create a new asset, there are no referenced assets.

7. Select the **Configuration** tab.

   Data Quality displays the configuration workspace for the rule specification. The Configuration tab includes the **Design** panel and the **Properties** panel.

8. Click the **Inputs** tab in the **Properties** panel to add one or more inputs that suit your input data and your project requirements.

   Create an input for every column in the input data in which you expect to find the data quality issues.

9. On the **Properties** panel, click the **Rule Logic** tab to configure a rule statement.

   Configure the following elements in the rule statement:

   - Input. The rule statement reads the input that you add.

   - Operator. The operator specifies the type of comparison operation that a condition performs.

   - Condition. A condition is a data operation that a rule statement specifies for the input data values.

   - Action. An action specifies the output from a rule statement.

     To add exception indicators to the records that the rule statement identifies as exceptions, configure an action with the status value of *Invalid*. Additionally, define the exception indicators that the rule statement can add to the exception records. Click the **+ Exception** option to access the exception indicator properties.

   You can add multiple rule statements to identify exception records.

10. Save the rule specification.

Exception data options in basic mode

To add exception indicators to a record, activate the exception indicators in a rule statement that specifies the status value *Invalid* as an action.

Use the **Configure Exception Data** dialog box options to define the indicators. To open the dialog box, click the **+ Exception** option beside the action properties.

The following image shows the options on the **Configure Exception Data** dialog box:

The dialog box contains the following options:

1. Add Exception Details.
    Indicates whether the rule statement adds exception indicators to records. The option is cleared by default.

    The rule statement can add indicators to a record if it assigns *Invalid* as a status value to the record. You specify the indicators in the **Exception priority** and **Exception description** fields.

2. Exception priority.
    Indicates the priority of the data quality issue that defines the record as an exception. The rule statement adds a field to the output records for the priority indicators.

    You can select one of the following options:

    - Minor

    - Major

    - Critical

3. Exception description.
    Describes the data quality issue that defines the record as an exception. The rule statement adds a field to the output records for the description.

Configure all of the dialog box options if you will use the rule specification in a profiling task from which you create an exception task.

Note: The dialog box does not identify an output field for status values. You activate the output for status values when you configure the Invalid option in the rule statement action.

Configuring a rule specification in advanced mode

Write expression logic in the rule specification that represents the steps that the business rule must perform.

In an exception management project, the business rule objective is the identification of exception records. The key configurable element in advanced mode for exception management is the logical statement or statements that can write exception indicators to their corresponding outputs. You can define multiple exception indicators in advanced mode and associate each value with a unique data quality issue. However, the rule specification must specify a single output field for status values and must specify a single ExceptionPriority field and ExceptionDescription field.

Configuring a new rule specification in advanced mode

In this task, you'll create a rule specification from scratch and save it in advanced mode.

1. Create a rule specification asset.
2. On the asset toolbar, click **Convert to Advanced**.
3. On the **Definition** tab, enter a name for the rule specification.
4. Optionally, enter a description.

   Tip: Enter a summary of the underlying business rule as the description.
5. Select the location in which to save the rule specification.
6. Optionally, select a data quality dimension to represent the type of data quality issue that you want the asset to examine.
7. Save the rule specification.

   The **Asset References** panel appears. The **Asset References** panel shows additional assets that are referenced by Data Quality assets to perform transformation tasks. When you create a new asset, there are no referenced assets.
8. Select the **Configuration** tab.

   Data Quality displays the configuration workspace for the rule specification.
9. Click **Manage Inputs and Outputs** to add inputs and outputs that suit your input data and your project requirements.

   To add exception indicators as outputs, enable the **Add Exception Details** option on the **Manage Inputs and Outputs** tab.
10. In the **Rule Editor** panel, write the rule logic. To add exception indicators to the records that the rule logic identifies as exceptions, add outputs for a status value, exception priority, and exception description to any statement that defines exception criteria.
11. Optionally, configure additional exception rules in the editor. You can define different values for the exception indicators in each exception rule.
12. Save the rule specification.

Converting a saved rule specification from basic mode

In this task, you'll convert a rule specification that you saved in basic mode.

1. Open a rule specification that you configured in basic mode.
2. On the asset toolbar, click **Convert to Advanced**.

   Data Quality creates a copy of the rule specification in advanced mode.
3. Save the rule specification in advanced mode with a new name.

   Review the description, location, and other properties on the **Definition** tab.
4. Verify or update the configuration of the asset to ensure that the inputs, outputs, and expression logic meet your requirements.
5. Save the rule specification.

Exception data options in advanced mode

To add exception indicators to a record, activate exception indicators in the rule specification. You can include the exception indicators in the rule logic that you write.

Use the **Input and Output Management** dialog box options to activate the exception indicators. To open the dialog box, click **Manage Inputs and Outputs**.

The following image shows the options on the **Outputs** tab in the **Input and Output Management** dialog box:

Input and Output Management
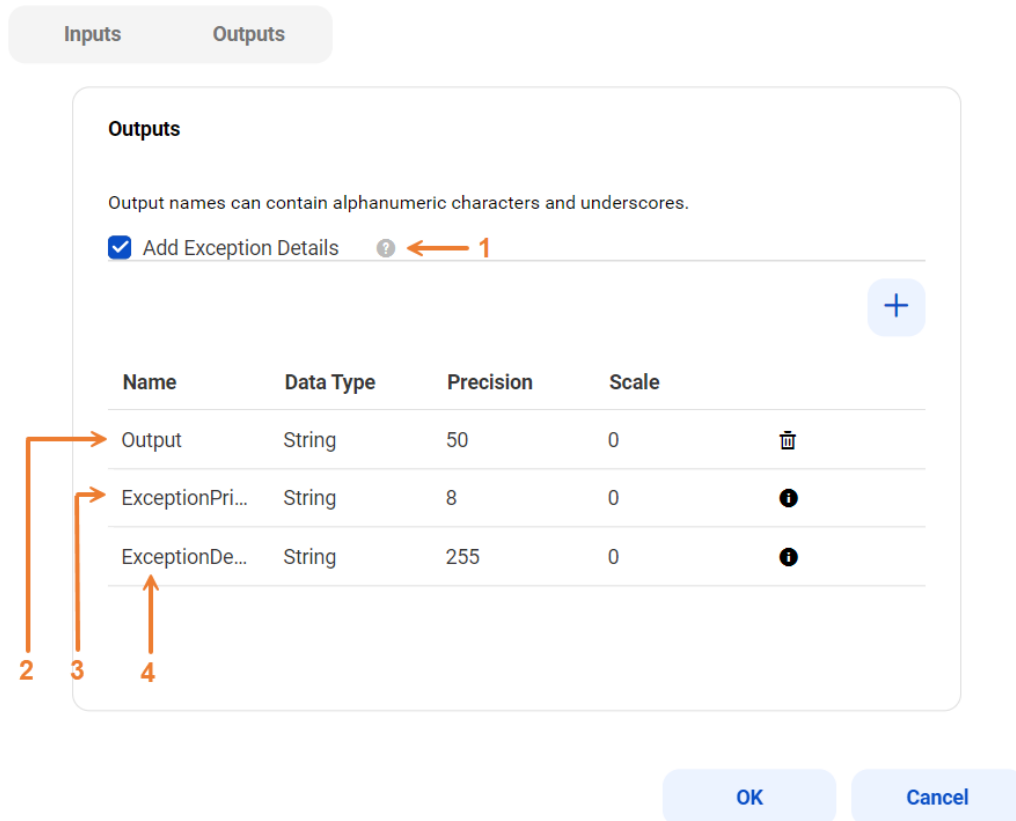
Inputs	Outputs

Outputs

Output names can contain alphanumeric characters and underscores.

☑ Add Exception Details ⓘ ← 1

➕

Name	Data Type	Precision	Scale	
Output	String	50	0	🗑
ExceptionPri...	String	8	0	ⓘ
ExceptionDe...	String	255	0	ⓘ

2 3 4

OK   Cancel

The dialog box contains the following options:

1. Add Exception Details.
    Indicates whether the expression logic can add exception indicators to records. The option is cleared by default.

2. Output field for status values.
    Identifies an output field that the rule specification can use for status values. You can rename the status field in advanced mode.

3. Exception priority field.
    The name of the output field that indicates the priority of the data quality issue in the output field. The statement adds the ExceptionPriority field to the output data.

    You can specify one of the following options when you configure the exception indicator:

    - Minor

    - Major

    - Critical

4. Exception description field.
    The name of the output field that describes the data quality issue in the output field. The statement adds the ExceptionDescription field to the output data.

Creating a profiling task

You can create and run a profiling task to view and analyze the content and structure of a source object.

1. In Data Profiling, click **New**.

2. In the **New** dialog box, click **Data Profiling Task**.

    The **Profile** page contains a **Definition** tab and a **Schedule** tab.

3. On the **Definition** tab, enter the asset, source, and profile details. Select the data set that in which you expect to find exception records. You can also choose columns and add a filter for the profiling task. Select the columns that may contain the exception data.

    Based on the source object and the attributes that you choose, Data Profiling adds a **Rules** tab to the profiling task.

4. On the **Rules** tab, add one or more Data Quality assets as rules to the profiling task.

    - You can add a cleanse, labeler, parse, or rule specification asset to view the impact of the corresponding data quality operations on the source data.

    - Select a rule specification that can add exception indicators to the source data.

    Note: The properties on one or more of the inputs that you defined in the rule specification must match the columns that the profiling task will examine for exception data.

5. On the **Schedule** tab, optionally choose a runtime environment and schedule. You can also change the default email notification options and advanced options for the profile run as necessary.

6. Choose one of the following options to save and run the profiling task:

    - Click **Save** to save the profiling task.

    - Click **Run** to save and run the task. You run the task to generate a profile of the source data.

    - Save the profiling task and choose a schedule on the **Schedules** tab to run the profiling task.

Creating an exception task

To create an exception task, you use a data profiling task that contains a rule specification that can identify exception data. Use Data Profiling or Data Quality to create an exception task.

1. From the **Explore** page, open a profiling task.

   Note: Ensure that the profiling task contains a rule specification that can identify exceptions.

2. Select the **Create Exception Task** option from the **Menu**.

   The **New Exception Task** dialog box appears.

3. On the **Add Details** page, configure the following fields:

   - Name. Enter a name for the exception task.

   - Description. Optionally, enter a description.

   - Location. Select the location in which to save the exception task.

4. Click **Next**.

5. On the **Select Rules** page, you can select one or more rule specifications from the profiling task. Select at least one rule specification that can identify exceptions.

   By default, the **Select Rules** page displays and selects all of the rules. You can expand the Task Details to view the details of the task.

6. Click **Next**.

7. On the **Confirm** page, review the task details and the selected rules.

8. Choose one of the following options to save or run the exception task:

   - Click **Save** to save the exception task.

     An onscreen message displays the name of the exception task.

   - Click **Save and Run** to save and run the task.

     The onscreen messages display the name of the exception task and the exception job.

   - Save the exception task and choose a schedule on the Schedules page to run the exception task. For information about how to configure the schedule details to run the task, see "Running an exception task" on page 18.

Exception task configuration options

When you create an exception task, you select one or more rule specifications to apply to the data.

The following image shows the options on the **New Exception Task** dialog box:
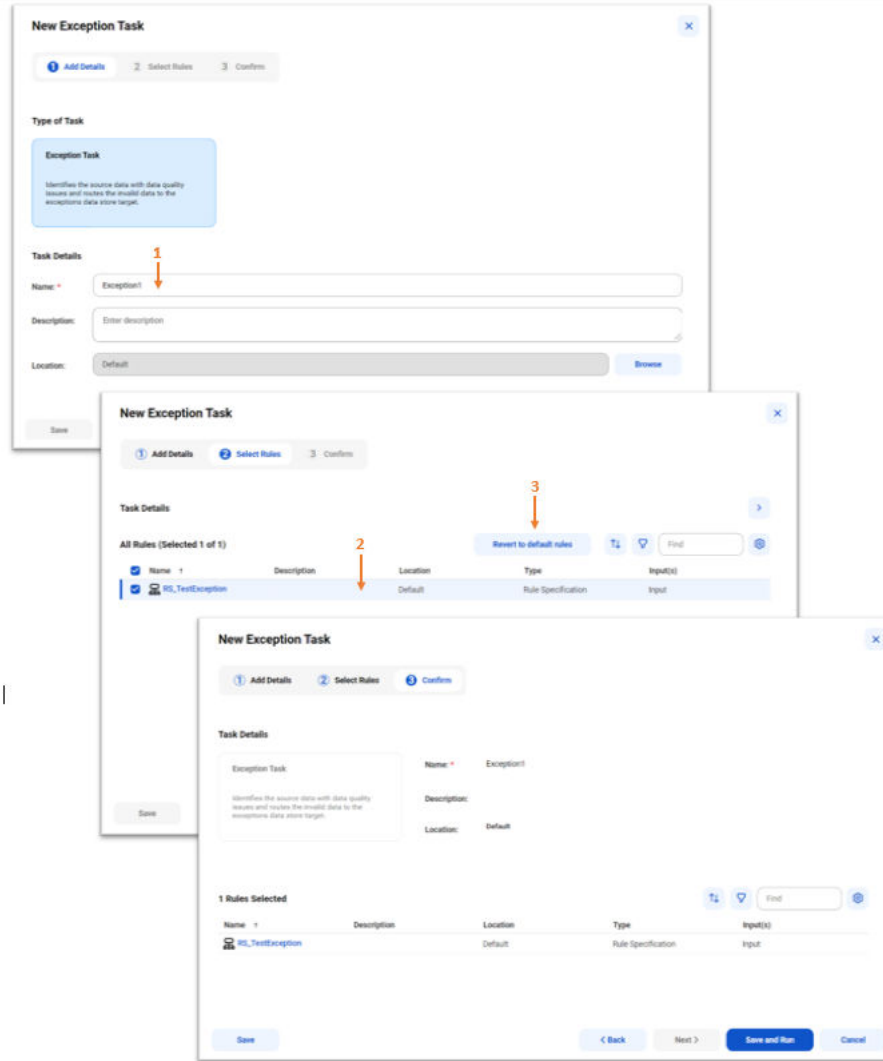
The dialog box contains the following options:

1. Exception task name.
    Specifies the name of the exception task that you create.

2. Rules option.
    Displays the rule specifications that you can select. By default, the exception task selects all of the rule specifications available on the profiling task. You can select one or more rule specifications.

3. Revert to default rules.
    Selects all of the rule specifications from the profiling task.

Running an exception task

After you create an exception task, you can run the exception task manually or on a schedule. Use Data Quality or Data Profiling to run the exception task that you create. At run time, the exception task applies the rule specifications that you selected to the data set and writes the exception records to a file that you can download.

1. From the **Explore** page, open the exception task that you created.

   The following image shows the job execution options in an exception task:
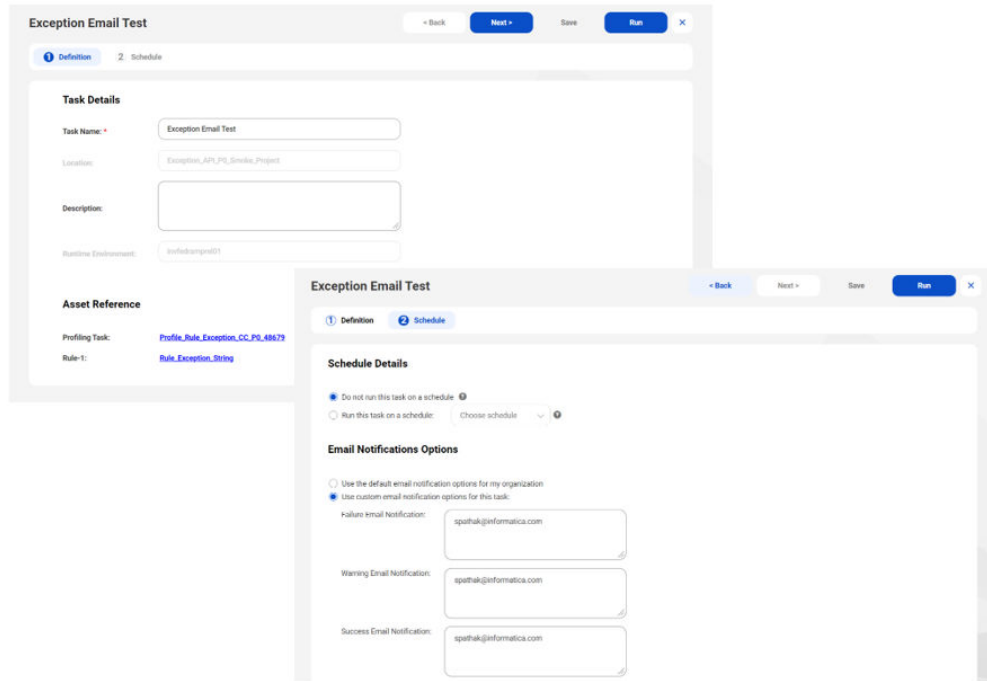
2. On the **Definition** page, verify the task details and the asset references.

   The asset references identify the profiling task from which you created the exception task. The profiling task identifies the data set that the exception task reads. The asset references also identify the rule specifications that run on the data set.

3. Click **Next**.

4. On the **Schedule** page, optionally define a schedule and an email notification option for the exception job. For information about the task schedule options, see <u>"Schedule and email notification options" on page 19</u>.

5. Click **Save**.

6. Click **Run**.

The exception task writes the exception records that it identifies to an the exception data store. The records include the exception indicators that the rule specifications in the exception task specified. You can download the records from the **My Jobs** page when the task completes.

Note: You can view the database connection for the exception data store on the **Connections** tab in Administrator.

Schedule and email notification options

You can run an exception task manually, or you can use schedules to run the task at a time or interval that you specify. You can also select the users to notify about the outcome of a job that runs an exception task.

Configure schedules and notifications on the **Schedule** page.

Schedule Details

You can configure the options on the **Schedule Details** panel to run an exception task on a schedule.

The following table describes the options that you can choose in the **Schedule Details** panel:

Option	Description
Do not run this task on a schedule	Choose the option if you want to manually run the exception task.
Run this task on a schedule	Choose a schedule to run the exception task. You can create, view, edit, and delete schedules in Administrator. To delete a schedule for an exception task, you must dissociate or delete the assets linked to the schedule.

Email Notification Options

You can configure the email notification options to notify users about the outcome of a job that runs an exception task. You can configure the task to send email notifications when an exception task completes successfully, when a task completes with one or more warnings, and when the task job fails.

The following table describes the email notification options that you can choose for an exception task:

Option	Description
Use the default email notification options for my organization	Choose to send the notifications to the default email addresses that your organization specifies for each type of job outcome. The **Organization** tab in Administrator lists the email recipients for each outcome. For more information, see *Administrator* in the Administrator help.
Use custom email notification options for this task	Choose to send the notifications to one or more email addresses based on the job outcome. You can enter one or more email addresses for each type of outcome. Use a comma to separate multiple email addresses for a given type of outcome.

Exception task outcomes

The exception task writes the exception records that it identifies to the exception data store. You can download the records that the task identifies as exceptions. You can also retrieve the session log for the job in which the task ran.

When you download the exception records, you can analyze or resolve the data quality issues that records contain in a separate data process. If your organization no longer needs the exception records, you can delete the records and the associated exception indicators from the exception data store.

If you no longer need an exception task, you can delete the task from the **Explore** page. When you delete an exception task, the operation also deletes the exception records and exception indicators for any job that ran for the exception task.

To download exception records and delete exception data, your user role must have the *Exceptions Data - View* and *Exceptions Data - Delete* feature privileges. Additionally, you must have *Read* and *Execute* permissions on an asset to download the asset, and you must have *Delete* permission on an asset to delete the asset.

Note: Consider the following points:

- Informatica Intelligent Cloud Services manages the exception data store. Exception data in the exception data store adheres to Informatica's data retention policy. The data retention policy is set at 45 days, and a scheduled cleanup job deletes the data that is older than this time frame. The system also deletes all jobs beyond the count of 1000.

- You can set up permissions to protect your data from other users. For information about privileges and permissions on the exception tasks, see "Exception management prerequisites" on page 6.

- The application in which you open the exception data file may apply a limit to the quantity of data that it displays. For example, Microsoft Excel places a limit on the number of rows and columns that it displays in a single worksheet. Consider creating a backup copy of the file that you download before you open and save in another application.

Downloading and deleting exception data

Download and delete exception data on the **My Jobs** page.

You can open the page in Data Quality, Data Profiling, or Data Integration. You can also view the details of the exception task job on the **My Jobs** page.

1. Open the **My Jobs** page. The page lists all of the jobs that you run.

2. On the **My Jobs** page, click an exception job name. The page displays detailed information about the exception job.

   The following image shows the details of an exception job:

   The job details include the following statistics:

   - Success Rows. The total number of rows that the job read.

   - Exception Rows. The number of rows that contain data quality issues.

- Number of Issues. The total number of data quality issues that the job identified across the rows that it read.

3. In the Results area on the exception job page, you can perform the following operations:

   - To download the exception data associated with the exception job, click **Download Exception Data**. You download the data in a comma-separated format.

   - To delete the exception data that the job identifies, click **Delete Exception Data**.

   - To download the session log for the exception task job, click **Download Session Log**.

   The **Download Exception Data** and **Delete Exception Data** options appear disabled for a job instance in the following cases:

   - You deleted the exception data for the job instance.

   - You deleted the exception task that generated the data.

   You can stop and resume a job on the **My Jobs** page.

Exception report output columns

The exception report that you download for an exception task job contains columns from the source data set that you select and columns that the exception task creates at run time.

The exception report that you download contains the following columns:

Row Id

Indicates the row number of the exception record in the source file.

A given record can appear more than once in an exception report in the following cases:

- A rule specification found a data quality issue on more than one input column in the record.

- More than one rule specification identified a data quality issue in the record.

When more than one instance of a record appears in the exception report, each instance has the same Row Id value.

Priority

Indicates the priority of the data quality issue that defines the record as an exception. The exception task reads the priority value from the rule specification that identifies the record as an exception.

Exception Message

Describes the data quality issue that defines the record as an exception. The exception task reads the exception message from the rule specification that identifies the record as an exception.

Rule Name

Contains the name of the rule specification that identifies the record as an exception.

Rule Input Columns

Identifies the columns of input data that the rule specification in the exception task analyzes.

JobId

Contains a unique identifier for a particular job that you ran.

Creation Date

Contains the date on which you ran the exception job.

Dynamic renaming of duplicate field names

If the input data to the exception task contains a column with same name as the column in the exception report, the system renames the input column in the following ways:

- For the column names Row Id, Exception Message, Rule Name, Rule Input Columns, and Creation Date, Data Profiling replaces the space character in the input column name with an underscore. For example, Data Profiling changes the name `Rule Input Columns` to `Rule_Input_Columns`.

- For the column names JobId and Priority, Data Quality appends an integer to the input column name. For example, Data Quality changes the name `JobId` to `JobId_1`.

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