VALIDATAR
2021.3 User Guide

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Using the Validatar Documentation

Documentation Overview

Welcome to the Validatar Documentation site where we hope you can find answers to your questions and problems and enhance your journey toward improved data quality with Validatar.

If this is your first time here let us give you a quick tour so you can make the most of the features available to you. After you read through this page we would recommend the Validatar Quick Start Guide as your next stop.

Navigation

On the left-hand side of the screen, you will find the main navigation. It is organized for you to easily find what you are looking for.

Inside of each article, you will also find helpful navigation. On the right-hand side of your screen, you will find the article's table of contents that will let you quickly and easily jump to any section in the article. Below the table of contents, you will find links to related articles in the documentation.

Search

At the top of your screen, you will find the Search bar. This will give you the fastest way to find what you are looking for across the entire site.

Knowledge Base Assistant In Validatar

You may not know it, but starting in Validatar 2021.2 this documentation is available directly inside of the Validatar interface through the Knowledge Base Assistant. It will provide you context-based access to documentation that is relevant to the page you are on in Validatar.

Types of Documentation

On this site, we have several types of documentation to help you on your Data Quality journey.

- **Getting Started With Validatar** - These articles are designed to help you ramp up as quickly as possible so you can begin using Validatar effectively to improve your organization's data quality.
- **Feature Documentation** - These articles provide comprehensive documentation about a specific feature, function, or page in Validatar.
- **How-To Articles** - These articles walk you through tasks that may have several complex steps involved.
- **Concept Guides** - These articles are designed to step back from specific features and provide guidance for how you could approach a particular problem or implement a solution related to Data Quality.
- **Release Notes - If you are looking to find out what is new in each version of Validatar this area will get you up to speed.**
- **EULA** - In case you have questions about our End User License Agreement we have made it easy to access here.

Interactivity and Feedback

At the bottom of each article, you will find options for providing feedback on how helpful you found the article. We appreciate your feedback so we can continually improve the value this documentation is providing you.

Getting Support

Getting support for Validatar issues you are having is straightforward.

Contacting Support

We have created a couple of options for you to contact us for support with Validatar.

1. Please submit a ticket via our Customer Portal
2. Please send us an email at support@validatar.com

Using the Customer Portal

When using the Customer Portal to submit tickets, you will be required to create an account. If this is your first time, click the Sign-Up link.

Log in to Validatar Customer Portal

Email

Next

Need an account? Sign up

Once you have logged in, you will have the option to select what kind of support request you have. You may submit the following types of tickets:

- Technical Support
- Licensing and Billing Questions
- Product Trial Questions
- Test Pack Related Questions
- Report a Bug
- Suggest a New Feature
- Suggest an Improvement
- Other Questions

Working with Support

There are times when you will need to work with our support team to get them information about what is happening in your Validatar environment. This may require us to review logs. A Validatar Global Admin can download recent logs from the server by navigating to Global Settings > Configuration > Logs if this is required.

Validatar Configuration

SMTP

Authentication

Scheduling

Default Values

Data Environments

Result Storage

Reporting

Logs   ❯

Server Configuration - Logs

⬆ Download Logs

Logs to Download required

| Enter number of days | ⬍ | day(s) |

ⓘ This process will download via the browser the most recent log files from the Validatar Server so that these can be shared with support to troubleshoot errors on the server. The following items are included in the zip file:
- Server Settings and Configuration Information
- Web Server Logs
- Service Layer Logs

No Customer Sensitive Data will be included in the Settings or Log files that are downloaded.

Validatar Quick Start Guide

What is Validatar?

Validatar is a Data Quality Management and Automation platform that enables organizations to improve data quality & increase trust in data by automating the discovery, profiling, testing, and monitoring of its data assets.

Who Can Use Validatar and Why?

- Business Leaders will gain confidence that the data they are using is trustworthy.
- Data Stewards are given the tools they need to monitor and govern data assets.
- Data Developers can deliver accurate and trusted data faster using automated data testing.
- Data Consumers are given the visibility to know and trust the data assets available to them.

Common Use Cases

- Data Warehouse ETL Dev QA
- Data Governance
- Cloud Migration
- Data Quality Monitoring

10 Steps to Getting Started

Getting started in Validatar is simple, but we've created a list of ten tasks to complete before running your first test to make it even easier.

1.	Install the Validatar application on the appropriate server.
2.	Create a Global Admin user.
3.	Apply License information.
4.	Configure SMTP settings.
5.	Add additional Validatar users.
6.	Give your Validatar project a name.
7.	Create a data source with both primary and profiling connections configured.
8.	Ingest the data source's metadata.
9.	Run a full profile on your data. Try a small table first.
10.	Start running tests!
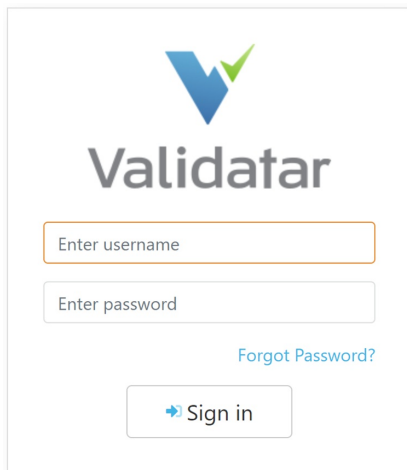
Accessing Validatar

Logging In

To login to Validatar:

1. Navigate to your instance of Validatar via the provided URL.
2. Enter your username and password.

Forgot Password?

If you've forgotten your password:

- Navigate to the Login Screen and click on the **Forgot Password?** link. You will be prompted to provide your **username** or **email** and receive a link to reset your password.

If you've forgotten your username:

- Go through the reset password procedure described above using your email. This will allow you to log in and then view your username.

Navigating Validatar

The Toolbar

The main toolbar bar contains four main areas of Validatar: Explorer, Projects, Reports, and Settings.

1. **Explorer** - Brings you to a list of data sources that you have browse permissions for and changes the navigation tree to the explorer tree. If Validatar has ingested the data source's metadata, the latest ingestion date as well as statistical information about the data source will be shown.
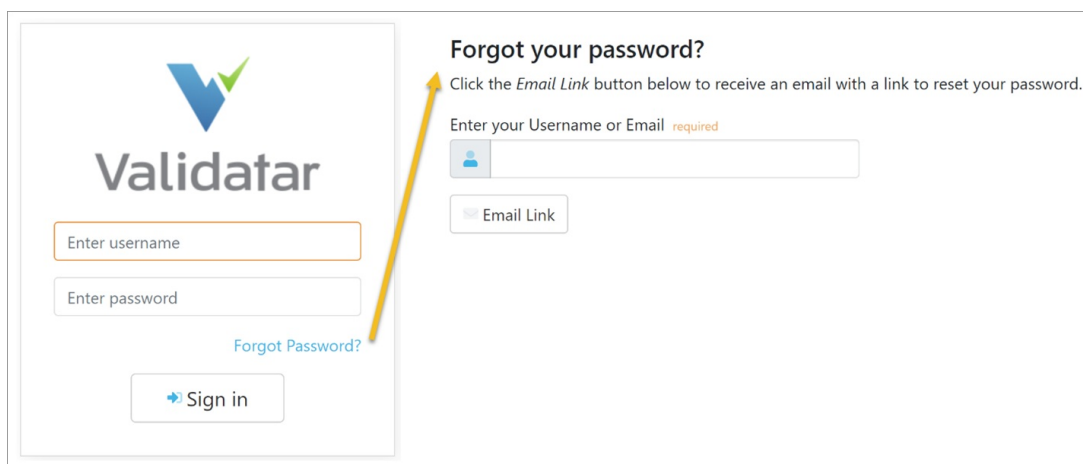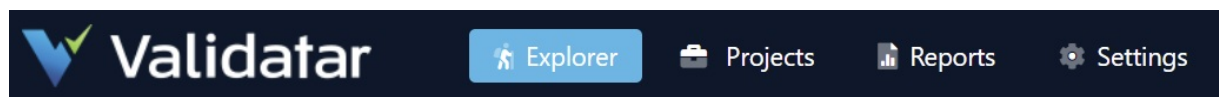2. **Projects** - Brings you to a list of every project that you have access to inside of Validatar and changes the navigation tree to the project tree. Browse the repository of existing tests, jobs, and results and create new test cases under Projects.
3. **Reports** - View standard reports like test and job history or create new custom reports by connecting Validatar to a business analytics tool like Tableau. Clicking Reports changes the navigation tree to the reports tree.
4. **Settings** - Global administrators can configure their Validatar server to support the needs of their organization. Add new data source connections, database engines, and custom profiles for enhanced monitoring and data quality testing. Clicking Settings changes the navigation tree to the settings tree.
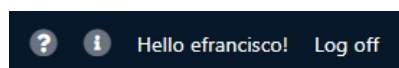
1. **Help** - Clicking the help icon displays Validatar's knowledge base. You can also find links to Validatar's website and support portal.
2. **About Validatar** - Here you can find information about Validatar such as the version you're currently on.
3. **User Information** - Clicking your username brings you to your account profile.
4. **Log Off**

Understanding the Navigation Tree

Clicking a main Validatar area in the tool bar changes the navigation tree on the left side to display objects in that area of Validatar.

Explorer Tree

Browse a data source by expanding it's schemas, tables, and columns. You can also use the search bar to find an object. Clicking on an object in the data source tree brings you to that object's data profile.

Project Tree

Navigate between different Validatar projects using the project tree. Under each project you'll find the tests and job repositories, results, schedules, and project settings.

Reports Tree

Any reports you create or have public access to will be listed in the reports tree. Click on the report name to view it.

Settings Tree

Manage projects, users, data sources, and more using the Validatar settings tree.

Global Settings

Click a link below for more information.

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User Groups	9
Users	31
Data Sources	40
Data Source Groups	2
Data Profiles	43
Database Engines	15
Licenses	1

Home Page Dashboard

Overview

The Validatar Home page provides a quick look into your environment. Discover any changes or issues with your data sources, view your test and job execution history over the past seven days, and get quick access to your projects.
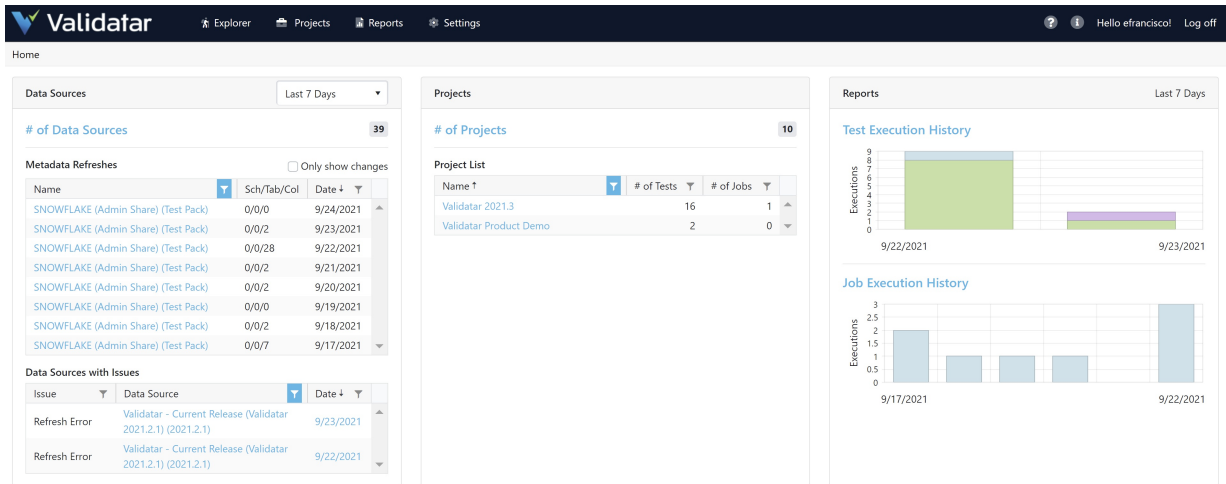
Click around to discover something new!

Security and Permissions Overview

Overview

Validatar has various security permissions at the global, project, and data source levels. Users are added globally and then given the appropriate level of access to projects and data sources by either a global administrator or project administrator. Permissions and roles determine how a user interacts with different objects and pages in Validatar. Learn more about Administrator, Creator, and Viewer roles below.

Global Level Security

A user must be added under **Global Settings** before they can access any Validatar project. Each user requires a

- First Name
- Last Name
- Valid Email Address
- Username
- Password

You can also add the user's Active Directory account if you want to authenticate a Validatar job's execution outside of the Validatar using the Command Line Interface (CLI). Learn more about external job execution here.

The **Enable User** checkbox should be checked if the user is active and unchecked if the user is not.

Optional Roles and Access

A user can become a global admin, licensed test author, and project admin at the global level.

Role	Description
Global Admin	A global admin has the ability to create, configure, and manage settings for a Validatar instance. A full global admin inherits the following roles: • Configuration Admin: Can only see configuration settings. • Data Source Admin: Can only manage data sources and view Validatar server logs. • Security Admin: Can only manage projects, users, and user groups and view Validatar server logs. A user can have a combination of these roles without being a full global admin. There is not a limit on the number of global admins a Validatar instance can have.
Licensed	There are two types of Validatar users: • Test Author: Can create new Validatar tests. • Viewer: Can view tests and test results for projects they have access to. All Validatar users are viewers. There is a maximum limit of users who can be test authors at one time based on the edition of Validatar that was purchased. Once that limit is reached, a user will have to lose the test author role for another user to gain it. Find your volume limits under your activated license key or in your Validatar Startup Guide emailed to you from the Validatar Customer Success team.

Role	Description
Project Admin Access	A project admin has the ability to configure and manage settings for individual projects in Validatar. This includes creating data sources, running data profiles, and using Validatar's Import and Export functionality to move objects between projects. Check all of the projects the user should have project admin access to in the list provided on the user's page.

Project Level Security

Depending on the purpose of each project, you'll want to grant the appropriate users access to the project. A user must be a project admin to view or grant access to other users. Double-click on their username to modify a user's access permissions and check or uncheck the box related to the appropriate role.

Granting Access

To add a user to a project:

1. Navigate to **Project Settings** > **Project Users**.
2. Select **Grant Access**.
3. Select the username from the **Choose Username** dropdown.
4. Select the appropriate roles for the user.
5. Select **Save**.

Removing Access

To remove a user from a project:

1. Select the user from the list.
2. Select **Remove Access**.
3. Select **Remove** in the validation pop-up.

> **Note**
>
> You can immediately restore a user's access after you've removed them from a project as long as you do so before navigating away from the **Project User Permissions** page. Once you navigate away, you will have to go through the full process of granting a user access to a project to re-add them.

Project Roles

The following is the list of available project roles and details of what they allow the user to do.

Role	Description
Create Jobs	The user can create jobs.
Create and Edit Labels	The user can create and modify labels to attach to tests, template tests, and jobs.
Import	The user can import objects into a project using an XML file.
Export	The user can export objects out of a project to an XML file.
Project Admin	The user has project admin access to the current project. You cannot remove your own project admin access from a project on this page.
Project Access	The user has read-only access to a project. In addition, the user can create and edit tests only if they are a global Test Author.

Data Source Level Security

The data source level is the final level of security you will have to configure in Validatar. Validatar allows

The data source level is the final level of security you will have to configure in Validatar. Validatar allows each data source to have its own independent set of permissions to prevent users from having unintentional access to data. You can add individual users or a user group to a data source by creating a **New Rule**.

The user who creates the data source automatically becomes the **data source owner** and has all permissions enabled. You can identify the owner by being the first username on the list and the image of a crown beside their username. The owner can be changed by double-clicking on the owner's username and selecting another user from the dropdown then selecting **Save**.

> **Data Source Access Recommendation**
>
> We recommend that users are added to a user group and then the user group is assigned to a data source. This standardizes access rules and makes user permissions easier to manage.

Data Source Permissions

There are four types of data source users:

- Global and data source admins
- Owner (the data source creator)
- User
- User Groups

The following is the list of available permissions available to configure for a data source.

Permission	Description
Browse Metadata & Data Profiling	The user can view the data source's data profile and metadata in the **Explorer** area. If the user does not have this permission, the data source will not appear on the **Explorer** page list.
View Test Results	The user can view test results where this particular data source is selected as the test or target data source.
Create & Edit Tests	The user can create new tests and modify existing tests.
Run Tests	The user can execute a test either from the test configuration page or the test home page.
Run Profile Sets	The user can execute profile sets that have been created under **Project Settings** > **Data Sources** > **Profile Sets**.
Manage Connections & Schema Metadata	The user can configure and modify a primary connection, metadata connection, and profile connection. The user can also configure metadata ingestion SQL, refresh a data source's metadata, and put the metadata refresh on a schedule.
Manage Data Profiling	The user can create new profile sets and modify existing profile sets. The user also has permission to rename and delete profile sets and the record of their subsequent executions.
Manage Permissions	The user can create new rules to add users and user groups to a data source. The user can also add and remove user permissions for the data source.

Using and Structuring Projects

Overview

Projects can be configured in various ways depending on the intended use of Validatar.

Types of Projects

A single project can host any of the following testing scenarios plus more!

- Validating data warehouse developing
- Data governance monitoring controls
- Validating cloud migrations

Organizing Your Project

Here are some ways Validatar users organize their projects:

- By Environment
- By Project Team
- By Task
- One all-inclusive project

Common Folder Structure

- Source to Target Process
- Data Quality Metrics (CUVCAT)
- Business-Related Processes

Install Guide

Overview

Installing Validatar consists of two steps:

- Download the installer at https://licensing.teknionusa.com/downloads/Validatar
- Complete prerequisites relating to the web server and the database server

Completing Installation

Prerequisites

1. **Access Needed to Complete Install**
   - Admin access to the operating system to run the installer
   - Admin access to the web server
   - Admin access to the database Validatar will use on the back end

2. **Web server**. We recommend a range of 4 - 16 GB of memory. 2- 8 cores.
   - The server must have Internet Information Services installed, including the following highlighted options:
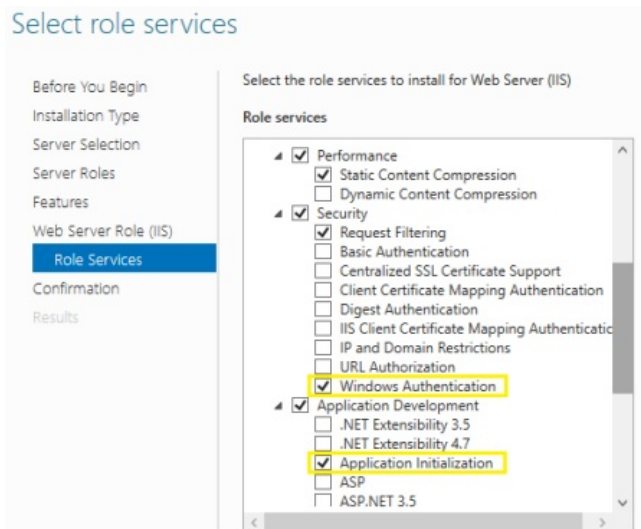
   - The web server must have Microsoft .NET framework 4.5.2 or higher installed: https://www.microsoft.com/en-us/download/details.aspx?id=42643
   - The web server must have the **Hosting Bundle** installed for ASP.NET Core Runtime 3.1.x:
   - Potentially create a DNS record for the Validatar User Interface website so that Validatar can be accessed using something other than the web server name or IP Address

3. **Database server** (SQL Server)

- Recommended versions
  - SQL Server 2012 Express or later
  - SQL Server 2012 or later
- SQL Server admin credentials – used during the installation to create the Validatar database
  - Minimum security permissions for the Validatar Service Account
    - Atleast db_owner database role
- If you want to use Windows Authentication instead of SQL Server authentication for connections created in Validatar to the databases you're testing, your IT will need to create an Active Directory service account and provide the account credentials. Validatar will then be setup to run using that service account.

4. **SMTP credentials** – used for password reset and other notification emails. If the SMTP settings are not known, check with your IT administrator or Network administrator for this information.
5. **SSL Certificate** - We encourage obtaining an SSL certificate from a certificate authority. Install the certificate on the web server to encrypt network traffic. After Validatar is installed, use IIS to assign the certificate to the Validatar site.

Installation

1. Download the installer from https://licensing.teknionusa.com/downloads/Validatar
2. Run the installer. If the user does not have the operating system administrator role they will need to Run as Administrator.
3. Select the components to install
4. Verify that the directory to place the components is the C drive (C:)
5. Enter Validatar metadata database location and the credentials to use for the application server
   - If the database does not already exist, a second step will be shown to enter admin credentials so that the installation can create the new database
6. Enter IIS application pool identity information – this will be the account that Validatar runs under. This must be a domain account if database connections will use Windows authentication instead of SQL Server Authentication.
7. Enter IIS website information for the User Interface and Service Component websites. The port number is up to you.
   - **Validatar - UI:** Port 80 is commonly used
   - **Validatar - Service:** 8081 is commonly used
8. Finish install.
9. In IIS, verify that the default site has been stopped and both the Validatar-UI and Validatar-Services sites are running.

Assigning an SSL Certificate

Complete the following steps to assign an SSL certificate to the Validatar site to ensure secure network traffic.

1. Open IIS.

2. In the **Connections** tree, expand the server then expand **Sites**.
3. Select the **Validatar-UI** site.
4. In the **Actions** pane on the right, under Edit Site, select **Bindings…**
5. In the **Site Bindings** window, select the **https** binding then click **Edit**.
6. In the SSL certificate drop-down, select your newly installed SSL certificate.
7. Select OK.

Configuration

1. **For New Installations**
   1. In a web browser, navigate to the web application URL
   2. Enter the information for the system administrator user
   3. Enter the name of the initial project
   4. Click the "Complete Setup" button
   5. Login using the credentials of the administrator user you just created

2. **Activate the license**
   1. Navigate to **Global Settings > Licenses**
   2. Select "Activate License"
   3. Read the Validatar End-User License Agreement and select "I Agree"
   4. Fill out the license information form. Find your license information in the start up guide emailed to you from the Validatar Customer Success Team.
   5. Select "Activate"

3. **Configure SMTP**
   1. Navigate to **Global Settings > Configuration > SMTP**
   2. Enter SMTP settings as needed.

Home / Settings / Configuration / SMTP

Server Configuration - SMTP

Validatar Configuration

SMTP >

Authentication

Scheduling

Default Values

Data Environments

Result Storage

Reporting

Logs

Save   Send Test Email

Host *required*
ValidatarSMTP

Port *required*
587

☑ Use TLS? ?

☐ Use Default Credentials ?

Username
Enter SMTP username

Password
Change SMTP password

From Address *required*
no-reply@validatar.com

Upgrading to New Versions

Overview

Upgrading Validatar is a super easy process! Use the following steps to complete the upgrade.

Instructions

1. Backup the Validatar SQL Server metadata database.
2. In Microsoft IIS, record the prior host and port settings so that the same settings can be entered during the new install.
3. Go to C:\inetpub\ and create a copy of the Teknion Validatar folder just in case you need to roll back to the previous version.
4. Download the installer from https://licensing.teknionusa.com/downloads/Validatar
5. Select the components to install.
6. Verify the directory to place the components is the C drive (C:)
7. Enter Validatar metadata database location and the credentials to use for the application server.
8. Enter IIS application pool identity information – this will be the account that Validatar runs under. This must be a domain account if database connections will use Windows authentication instead of SQL Server Authentication.
9. Enter the IIS website information for the User Interface and Service Component websites that you recorded in step 2.
10. Complete the upgrade and log in to Validatar.

TVAdmin CLI Setup

The tvadmin command-line application allows jobs to be executed from an external scheduler. The domain account running the tvadmin application will be used to authenticate the user into Validatar, so the command line does not require any credentials. The following steps can be used to install tvadmin on an application server – this assumes that Validatar has already been installed on a separate web server.

> **Remember**
> The user who is launching the job must have access to the application server in order to execute the job via command line.

Configuration

1. Make sure .NET Runtime 3.1.x has been installed on the application server. It can be downloaded from here if necessary: https://dotnet.microsoft.com/download/dotnet/3.1. **NOTE:** On that page, scroll past the ASP.NET Core Runtime and .NET Desktop Runtime sections to the .NET Runtime section and download the appropriate .NET Runtime installer.
2. On the web server, verify that the "Teknion Validatar – Services" website has "Windows Authentication" enabled.
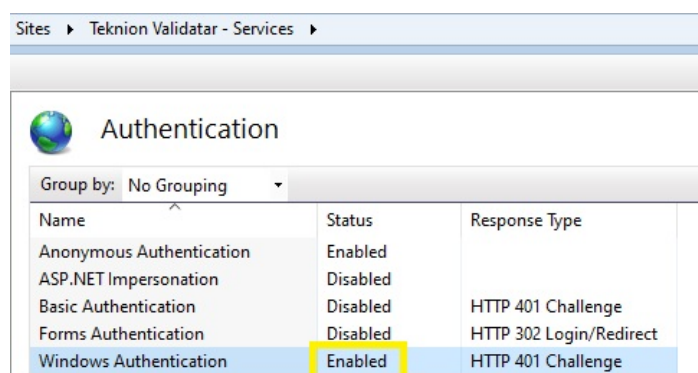
3. Copy the C:\inetpub\Teknion Validatar\Utilities folder from the web server and paste it to the application server.
4. On the application server, open the appsettings.json file using a text editor and update the WebApiBaseUrl property if necessary. That property should be set to the binding used for the "Teknion Validatar – Services" website on the web server and will typically look something like the following: *http://[web-server-name]:8081*
5. Ensure that the domain account that will be used for authentication has been added to a Validatar user profile.

Testing The Command Line

> **Additional Help**
> Refer to the screenshot at the bottom of this section for additional assistance.

1. In Validatar, under **Global Settings > Users**, add the Windows AD or domain account to the user's

profile who will execute the job if it hasn't been added already.

2. Navigate to the job you want to execute.
3. Grab the job ID which is the last number in the URL.
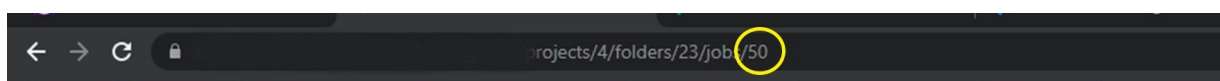
4. Using the application server that you want to externally run the job on, open up a command prompt.
5. Navigate to the Utilities folder that you saved in step 3 of the configuration. You may have to change directories using the cd command. We're using the Z:\ drive in the example below.
6. After navigating down to the Utilities folder type **tvadmin**
7. Press Enter.
8. The Validatar commands should appear on the next two lines.
9. Next type **tvdmin -j [insert job ID]**. Be sure to include a space between -j and the job ID.
10. Press Enter. The job will now execute.
11. The exit code that appears refers to the result of the job.
12. Navigate back to Validatar, under Results, to be sure the job executed correctly and displayed the proper exit code in the command prompt.

Integrating Validatar with an External Tool

After you confirm that you're able to execute jobs via command line, you can include this into your external scheduler workflow. You can either kick off a Validatar job externally or based on the result of the Validatar job, kick off an external job.

A way to do this is to create a Powershell host script to call the Validatar CLI. If you want to kick off an external job based on the result of the Validatar job, you can configure your script to release the appropriate external job based on the return code of the CLI. You may need to refer to the external tool's documentation to get the syntax for a job-release.

When building out the process, it's highly recommended to use parameters or extended properties as much as possible. That will make the process more flexible and easier to change.

Explorer Overview

Overview

The Explorer area is where you can dive into the profile of each of your data sources making data discovery easy!

- You'll be able to see an overview of your metadata as well as drill into column-level profiles.
- You can easily see test coverage and identify any gaps in testing.
- You can also search for objects of interest and see their data quality.

Displayed Information

What's in the Table?

Column Name	Description
Data Source	The data source name.
Group	The data source group.
Metadata Updated	The date and time the metadata was last refreshed.
Schemas	The count of schemas in the data source
Tables	The count of tables and views in the data source.
Columns	The count of columns in a data source.
Tests	The number of tests that has a metadata link to that the data source.
% Tables with Tests	The coverage of tables in the data source that have a test associated with it.
% Columns with Tests	The coverage of coverage in the data source that have a test associated with it.

Navigating the Explorer

Overview

Viewing the profile of your data source is simple! Once you've selected your data source you can drill down until you reach the level of detail you want.
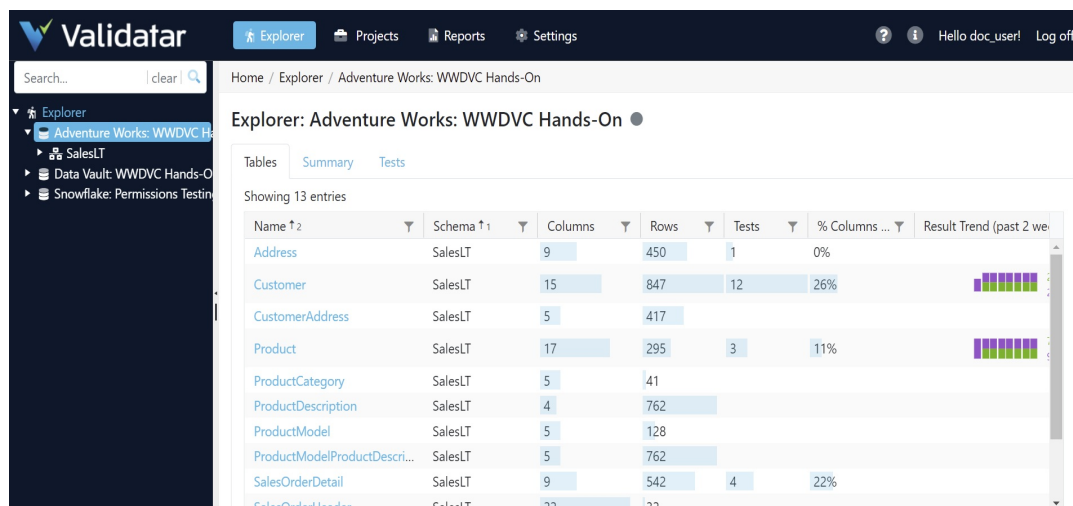
- **Data Source level**: An overview of the number of schemas, tables, and columns in your data source as well as a look into Validatar's test coverage of the data source. The greater the test coverage, the more accurate and acceptable your data quality is.
- **Table level**: The table view shows a list of all of the tables and views in a data source as well as an overview of the metadata connected to each table. The Result Trend column shows how many tests linked to that table have passed, failed, or executed with an error within the past two weeks. Learn more about the Result Trend below.
- **Column level**: The column list shows all the same data as the table list. Click on the column name to view the full profile details.

Result Trend

The result trend column shows a graphical representation of how many tests related to a table or a column have passed, failed, or executed with an error in the past two weeks. Viewing the trend of results lets you know how consistent your data quality is. Hover over the graphic to view test results for each day.
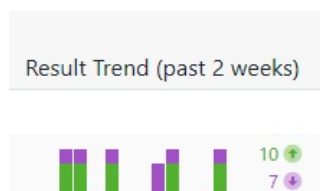
- Green bars represent passed tests. Purple bars represent failed tests. Orange bars represent tests executed with an error.
- A high deviation may indicate data that's constantly changing or being updated.
- A low deviation may indicate data that's consistent and has not been changed.

The result trend lets you know how consistent your data is but whether the result is passed or failed is

another important aspect. As testing continues over time, you should see more passed test results. If you do not, it's good to revisit your written test and check that any changes to your database or source system have been implemented. Consistently failed tests may indicate that necessary changes to either the database or data structure have not been implemented in a timely manner.

> **Note**
>
> The result trend does not reflect test executions that have been run to the screen. All results are pulled from what has been saved to the test repository.

Summary

There is a Summary tab at both the data source and column level. At the data source level, you can see the result trend over the last two weeks of the number of passed and failed tests across the data source. To get the most accurate summary, make sure that all of your tests have a table linked to them.

At the column level, the view is the same except the result trend is shown amongst all columns in the table. Ensure that the column is linked to each of your test cases to see the most accurate result trend.

Hover over each bar to view the number of passed and failed tests on each day.
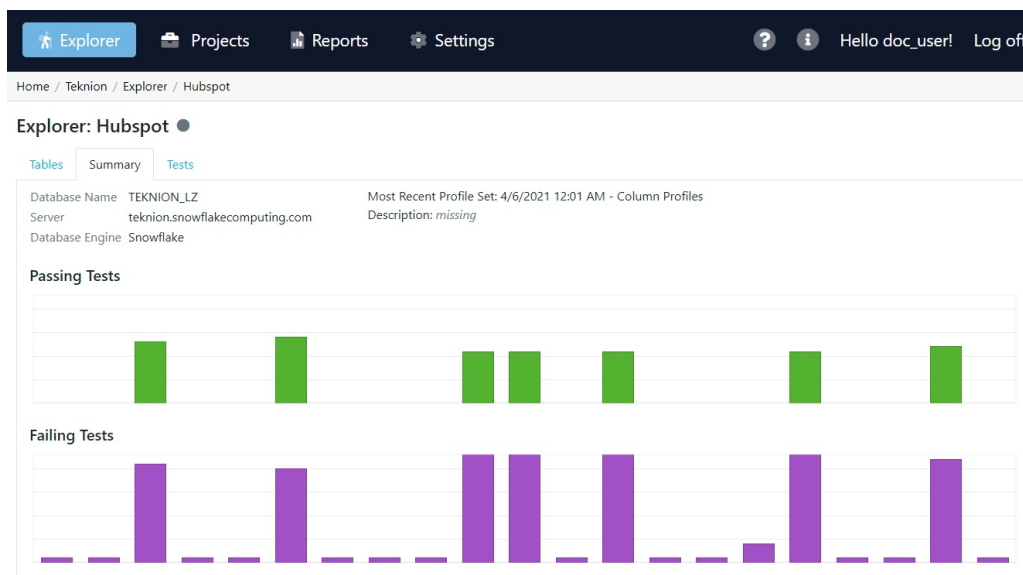
Tests

The Tests tab is also at both the data source and column level. This area shows a list of all tests that have either a table or column metadata link related to a data source. Clicking on the test name takes you directly to the test's configuration screen. You can also see where the test is located within Validatar as well as the pass or fail result trend over the last two weeks.

Home / Teknion / Explorer / Hubspot

Explorer: Hubspot ●

Tables   Summary   **Tests**

Showing 44 entries

Test Name ↑	Test Location	# Jobs	Last Run	Last Result	Result Trend (past 2 weeks)
Comparison Test - Source to Target	Demo Tests	1	4/1/2021 1:56:10 PM	Failed	1 ⊛
Comparison Test Miultiple Columns - Source to Target	Demo Tests	1	4/1/2021 1:56:30 PM	Failed	1 ⊛
Data Monitoring Test	Tests				No recent test executions
Monitor Contact Creation	Tests				No recent test executions
Multi-Value SQL	Test Type Scenarios				No recent test executions
new Test	Demo Tests	1	4/1/2021 2:48:28 PM	Failed	1 ⊛
Profile Result to Numeric Range 1: Success	Profile Result to Numeric Range	1	4/5/2021 3:01:25 PM	Passed	5 ⊛
Profile Result to Numeric Range 2: Failure	Profile Result to Numeric Range	1	4/5/2021 3:01:25 PM	Failed	5 ⊛
Profile Result to Numeric Value 2: Numeric tolerance (Success)	Profile Result to Numeric Value	1	4/5/2021 3:01:25 PM	Failed	5 ⊛
Profile Result to Numeric Value 3: Percent tolerance (Success)	Profile Result to Numeric Value	1	4/5/2021 3:01:25 PM	Passed	5 ⊛
Profile Result to Previous Profile Result 1: No	Profile Result to Previous		4/5/2021		

Understanding the Data Profile

Overview

Depending on the data type of the column that was profiled, the returned statistics may vary. At the top of the profile, you'll always see technical metadata. Technical metadata includes the column name, data type, number of rows, length (for strings), and more.

The data profile is populated by running profile sets on a data source. For this reason, each data profile can be updated at different times depending on the content of a profile set. To view the recency of a profile statistic, hover over the gray circle next to the name. The color of the gray circle represents how recent the metadata is. The darker the circle, the more recent.
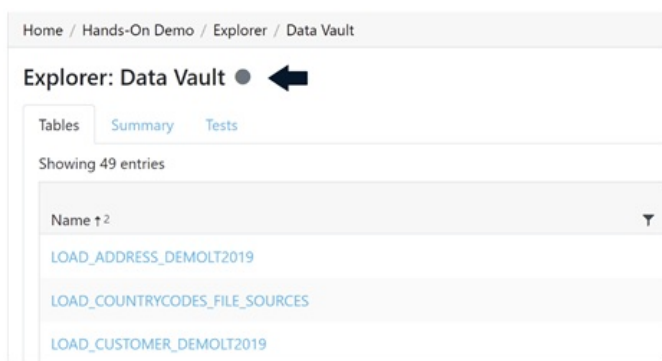
The profile only shows the results of profile sets that were executed. If you're missing profile information, go back into the Data Source and create a profile set containing the chosen data profile(s) on the appropriate objects.

String Profiles
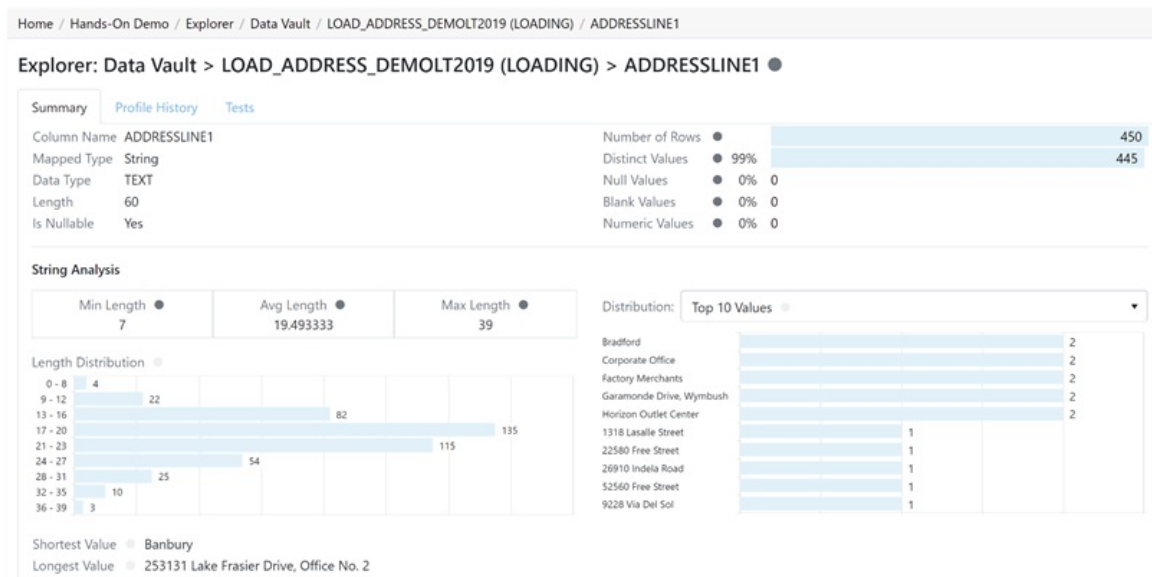
String profiles show the following information.

Profile Type	Data Profile

Profile Type	Data Profile
Summary	• Length • Is Nullable • Number of Rows • Number, Percent of Distinct Values • Number, Percent of Null Values • Number, Percent of Blank Values • Number, Percent of Numeric Values
Analysis	• Minimum Length • Average Length • Maximum Length
Distribution	• Length Distribution • Top 10 Values • Bottom 10 Values
Length	• Shortest Value • Longest Value

Numeric Profiles
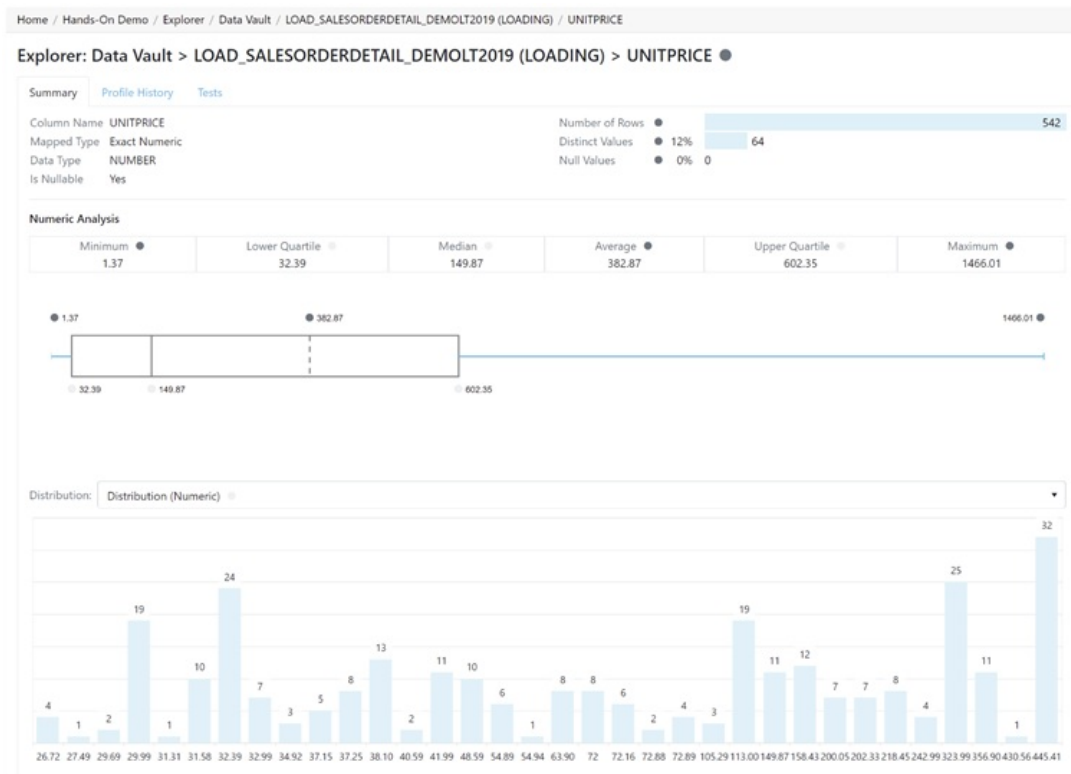
Numeric profiles show the following information.

Profile Type	Data Profile
Summary	• Is Nullable • Number of Rows • Number, Percent of Distinct Values • Number, Percent of Null Values

Profile Type	Data Profile
Analysis	- Minimum - Maximum - Average - Lower Quartile - Upper Quartile - Median
Distribution	- Numeric Distribution - Top 10 Values - Bottom 10 Values

Date/Time Profiles

Date/Time profiles show the following information.

Profile Type	Data Profile
Summary	- Is Nullable - Number of Rows - Number, Percent of Distinct Values - Number, Percent of Null Values
Analysis	- Minimum Date - Maximum Date
Distribution	- Top 10 Values - Year Distribution - Year Month Distribution

Configuring a Test

Overview

Configuring a Validatar test is simple. Here's what you need to know:
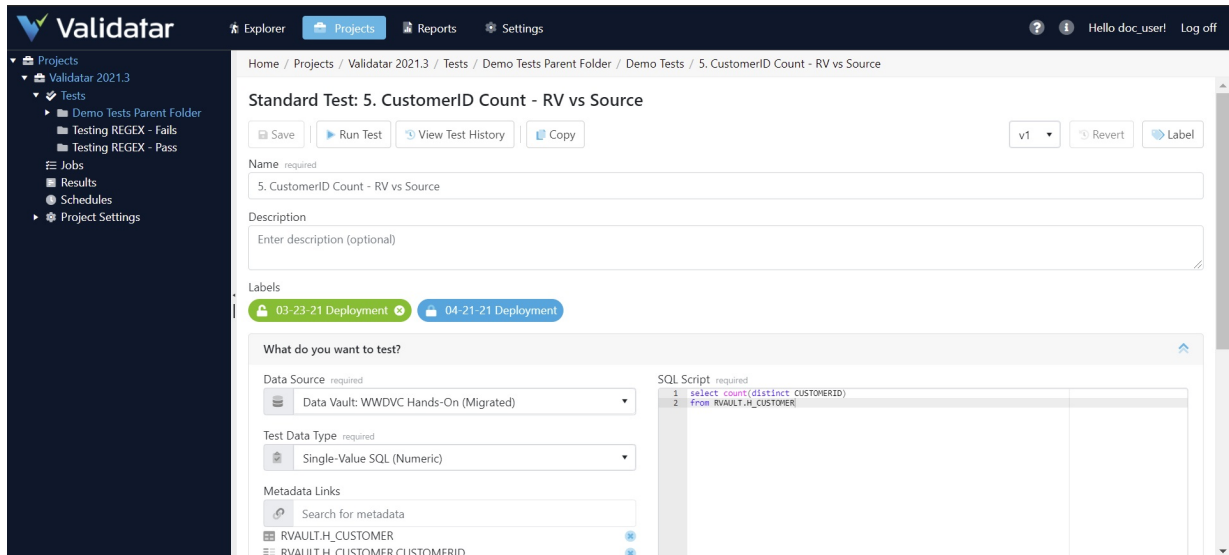
There are two types of test creation methods in Validatar:

- Standard Tests
- Template Tests

In this article, you'll learn about creating a standard test that is ideal for ad-hoc, one-time use cases. View the related articles to learn more about Template Tests.

When to Use a Standard Test

Here are a few examples of when you would choose to create a standard test.

- For ad hoc test scenarios
- Business rules only apply to one or a few tables
- All object names are known and/or won't change

Data Sources

A user must have Create & Edit Tests permissions enabled in Data Source Permissions to select a data source. You will only see the list of Data Sources you have access to.

Test Data Types

A test data type is exactly as it sounds: you are choosing the type of data you want to test. The options are:

	Write a SQL statement that returns a single string or numeric value. For example,

Single Value SQL (String or Numeric)	PL/SQL Copy
	
	``
	select count(*) from dbo.Customers;
	``

Key-Value List SQL (String or Numeric)	Write a SQL statement that returns two columns. The first column is a key and the second column can either be a string or numeric value. A Key-Value List SQL script usually includes a Group By clause when the second column returned is an aggregate. PL/SQL Copy ``` select CustomerID, count(*) from dbo.Customers group by CustomerID; ```
Profile Result	If you've executed a profile set against a table or column, you can use that profile result in a Validatar test. You have to link the appropriate table or column to the test using the Metadata Links section before you can select a profile result. If *Create a link to the metadata that contains profile data* remains after you've linked table or column, go to Profile Set Executions and verify that a profile was run against the appropriate table or column.

Target Data Type

Target Data Type is where you choose the type of data you want to compare the previously selected data to. The options include Single Value SQL, Key-Value List SQL, and Profile Result as well as a few new options:

Numeric Value	Compare your data to a single numeric value without having to write a SQL statement. You would choose this option when you expect a specific number in your data and don't plan to change it.
Numeric Range	See if your data lies between a range of numbers. The range is inclusive.
String Value	Compare your data to a single string value. To search for patterns, check the Regular Expressions checkbox. Learn more about Regular Expressions syntax here.
Previous Profile Result	Compare your data to a previous profile result. You have to link the appropriate table or column to the test using the Metadata Links section before you can select a previous profile result. You can compare to either the average, minimum, or maximum of previous results for a selective amount of days, weeks, or executions. If Create a link to the metadata that contains profile data remains after you've linked table or column, go to Profile Set Executions and verify that a profile was run against the appropriate table or column.

The available options in the Target Data Type field depends on what is selected in the Test Data Type above.

Test Data Type	Available Target Data Types
Single Value SQL (string)	Single Value SQL (string), Profile Result, Previous Profile Result, String Value
Single Value SQL (numeric)	Single Value SQL (numeric), Profile Result, Previous Profile Result, Numeric Value, Numeric Range
Key-Value List SQL (string)	Key-Value List SQL (string), Single Value SQL (string), String Value

Key-Value List SQL (numeric) Test Data Type	Key-Value List SQL (numeric), Single Value SQL (numeric), Numeric Value, Numeric Range Available Target Data Types
Profile Result	Profile Result, Previous Profile Result, Numeric Value, Numeric Range, Single Value SQL (numeric)

> **Test Data Type Notes**
>
> Starting in Validatar 2021.3, the **Multi-Value SQL** test data type is now referred to as **Key-Value List SQL**.

Metadata Links

Metadata Links allows profile results that have been run against a table or column to be used in a Validatar test. By monitoring your data profile over time, you can easily identify and correct deviations. You can also see all the tests that are related to a Data Source in the Explorer area as long as the test has a metadata link in place. You can link your metadata to the test regardless of what test or target data type you choose. Start typing the name of a table or column to search for the object and select it. You can add multiple metadata links to a test.
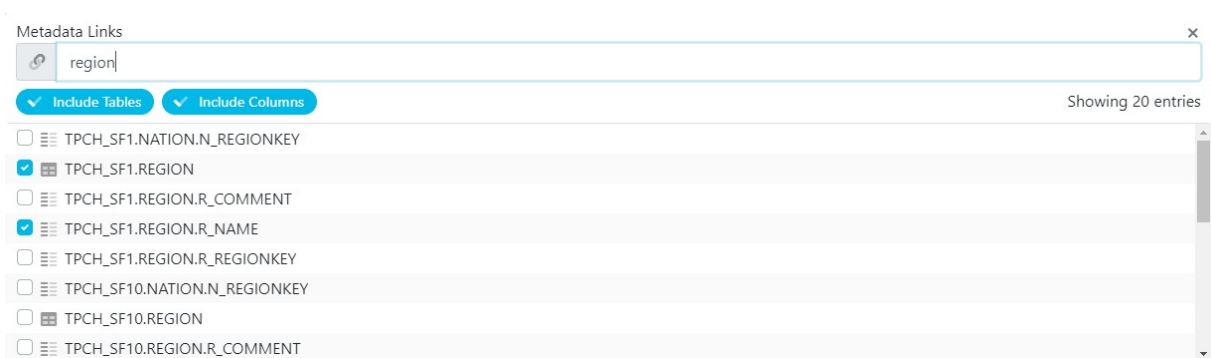
Result Configuration

The Result Configuration section is used to tell Validatar what it should consider as a failed test. You can also select options to increase execution efficiency when running the test. The contents of the result configuration section depend on the combination of test and target data types selected in the previous sections.

Value Success Criteria	Compares the two pieces of data from the test together and calculates the difference. • **For string tests**: Choose if the test should pass or fail based on how the source value compares to the target value. When a regular expression is used, the only comparison option is for the source value to match the target value. • **For numeric tests**: If the difference is greater than the absolute value of the tolerance in place, the comparison fails. You can choose either to use a numeric tolerance or a percent tolerance. Numeric and percent tolerance entries must be greater than or equal to 0, with no more than 19 digits before the decimal and 8 digits after the decimal.
Overall Success Criteria	Appears when Key-Value List SQL is selected as a data type. Since Key-Value List SQL results return multiple records that have been compared, the overall success criteria option allows the user to decide how many failed records account for a failed test.
Only Keep Failures	Choose Yes if you only want to return failed records. This keeps your results repository from being overloaded.
Abort Processing After Failures	Allows Validatar to abort the execution of a test after a certain number of record failures.
Abort Processing After Rows	Allows Validatar to abort the execution of a test after a certain number of rows have been returned.
Scripts Include Order By	Choose Yes if your SQL script includes an order by clause. This lets Validatar know that it does not have to sort your data, optimizing execution time.
Purge Results After Days	Allows Validatar to clear the results of this test from the Validatar database after a certain number of days. Configuring this option overrides the default purge settings set at the global level.

Access

1. Click on Tests in the navigation pane or from the project home page.
2. Select the New button.

Test Repository

Overview

The **Test Repository** page provides access to all tests and access to various actions described below.

Each **Project** has its own Test repository. Tests in the test repository are organized in an easy-to-use folder structure that allows teams to organize their tests in whatever structure best fits their needs.

Displayed Information
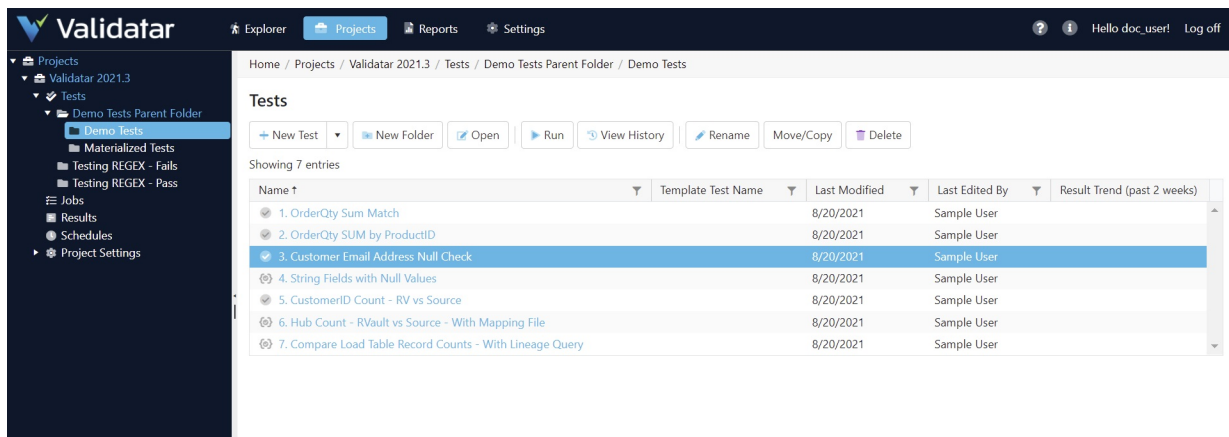
Action Buttons

New	Click on the dropdown to create a new standard test or new template test.
New Folder	Creates a new folder in the current view. There is no hierarchical limit. As many folders and sub-folders can be created as desired.
Open	Open the Test Configuration page for an existing test.
Run	Run a test. See information about the Run Test page.
View History	Navigate to a page displaying the historical pass/fail results for a selected test. See information about the View Test History page.
Rename	Rename a selected test or folder.
Move/Copy	Move or copy one or more selected tests or folders to another folder.
Delete	Delete one or more selected tests or folders.

What's in the Table?

Column Name	Description
Name	The name of the test or test folder.
Template Test Name	The parent template the child test was created from. Click the template test name to edit the template.
Last Modified	Last modified date.
Last Edited By	The user who made the last edit.
Result Trend (past 2 weeks)	The result trend column shows a graphical representation of how many tests related to a table or a column has passed, failed, or executed with an error in the past two weeks. No bar chart means that no test has been executed and saved to the repository in the past two weeks.

Using Move/Copy

Move/Copy Items   ✕

Move ○ Copy

Choose the destination folder required

▼ ✔ Tests
   ▼ 📁 Demo Tests Parent Folder
      📁 Demo Tests
      📁 Materialized Tests
   📁 Testing REGEX - Fails
   📁 Testing REGEX - Pass

[→ Move] [Close]
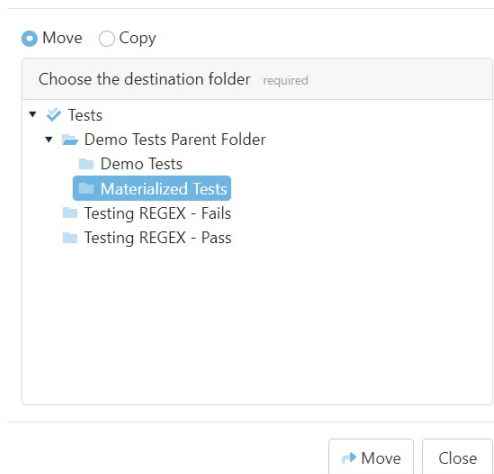
To move or copy tests or folders in a project,

1. Highlight the intended test or folder
2. Select the Move/Copy button in the toolbar
3. Choose the Move or Copy radio button according to which function you want to use
4. Find and select the new destination in the folder tree
5. Select either Move or Copy at the bottom of the window

Move/Copy Note

The destination folder must be different than the current folder when moving items.

Access

1. On the navigation pane in the appropriate project, click **Tests.**

Template Tests

Overview

The common challenge of data quality testing is efficiently testing a large volume of data. QA testers tend to thoroughly test critical objects and processes while leaving less critical objects untouched. To help increase test coverage, Validatar can create multiple tests at one time by creating a test from a template. Just choose your target object type and how you want to select the database objects to populate the template.

When to Use a Template Test

When you run into some of these scenarios, try generating tests from a template to cut down on test creation time:

- You have to validate that a common business rule transformation has occurred across multiple tables.
- You have an Excel file with a list of known objects you want to test against.
- Your test cases requires the use of dynamic SQL script configuration because objects may be deleted or updated.
- You've spent over 20 hours creating test scripts and want to cut down on test creation time.

How to Get Started

There are a few concepts to familiarize yourself with before you can start creating tests from a template. These concepts include:

- Understanding metadata references
- Learning about child tests and how to materialize them
- Learning how to import metadata and test requirements via a flat file

View some of the related articles to get started.

Access

Home / Projects / Validatar 2021.3 / Tests

Tests

+ New Test ▼ | New Folder | Open | ▶ Run

✓ New Standard Test

{⊙} New Template Test

📁 Demo Tests Parent Folder
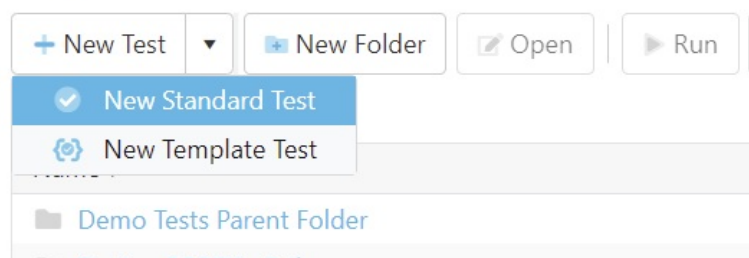
To access Template Tests,

1. On the **Test Repository** page, select the New Test dropdown.
2. Select **New Template Test**.

Permissions Note

A user must have Create & Edit Test permissions to create a Template Test.

Configuring a Template Test

Overview

Configuring a template test is made up of six easy steps:

1. Select the target object type and metadata object selection and definition.
2. Build out the test.
3. Define how each child test is to be named and in which folder they should be saved.
4. Configure the metadata object selection.
5. Materialize the child tests.
6. Run the test.

To configure a template test, you must first select a target object type. The target object type defines how the Template Test will generate each child test. A child test is a standard test that was created, or materialized, from a template instead of by the typical new test creation process.

Target Object Type	Definition
Table	For table-level comparisons. This test generates one child test per table. For example, each child test compares the record counts of two tables to each other.
Column	For column-level comparisons. This test generates one child test per column. For example, each child test compares the max value of two columns to each other.

The second option you'll have to configure is how you want Validatar to select the metadata objects that will populate the template when it's time to materialize the child tests.

Object Selection Options	Definition
Metadata Driven	This option uses the metadata that Validatar has ingested from the data source and allows the user to exclude any unwanted objects.
Metadata Query	This option allows a user to write a SQL query that will pull the intended metadata from the data source.
Import File	This option allows a flat file that has each object and its intended test definition settings to be imported into the template. Used to map source and target metadata objects.

Learn more about each of the object selection options in later sections.

Test Definition

The Test Definition tab is similar to the standard test configuration page. Test Variables and References are sections that have been added and they help to make template tests dynamic.

Test Variables

Test Variables are custom references you can make to your data source. Each variable requires a reference key, variable type, and default value.

Reference Key	The name Validatar will use to refer to the object.
	The type of object you're referencing. Options are:

	This type of object you're referencing. Options are:
Variable Type	- Schema - Table - Column - Numeric - Boolean - Other
Default Value	The default value Validatar will substitute for the variable. This is optional.

References

Use reference tags for metadata objects and profile objects to dynamically plug desired objects in throughout your template without having to hard code anything!

The available reference tags are determined by which target object type is selected for the template and what test variables have been created.

Chosen Target Object Type	Available Metadata References	Available Profile References
Table	- {{meta.database_name}} - {{meta.schema_name}} - {{meta.table_name}}	- {{profile.record_count}} - {{profile.total_data_mb}}
Column	- {{meta.database_name}} - {{meta.schema_name}} - {{meta.table_name}} - {{meta.column_name}} - {{meta.column_data_type}} - {{meta.column_mapped_type}} - {{meta.column_string_max_length}} - {{meta.column_is_nullable}} - {{meta.numeric_precision}} - {{meta.numeric_scale}}	- {{profile.record_count}} - {{profile.total_data_mb}} - {{profile.stddev_large}} - {{profile.distinct_count}}, {{profile.distinct_percent}} - {{profile.most_common_count}} - {{profile.min_numeric}}, {{profile.max_numeric}}, {{profile.mean_numeric}}, {{profile.median_numeric}} - {{profile.lower_quartile}}, {{profile.upper_quartile}} - {{profile.standard_deviation}} - {{profile.max_length}}, {{profile.min_length}}, {{profile.mean_length}} - {{profile.null_count}}, {{profile.null_percent}} - {{profile.blank_count}}, {{profile.blank_percent}} - {{profile.numeric_count}}, {{profile.numeric_percent}} - {{profile.zero_count}}, {{profile.zero_percent}} - {{profile.negative_count}}, {{profile.negative_percent}}

How to Use References

Anywhere you want to place a metadata object or data profile in your template, you can use a reference tag. The reference tag acts as a placeholder that detects and swaps out the reference for the intended object name. For example, if you want Validatar to grab a fully qualified table name, you would type:

PL/SQL	Copy
{{meta.database_name}} {{meta.schema_name}} {{meta.table_name}}	

`{{meta.database_name}}.{{meta.schema_name}}.{{meta.table_name}}`

After materialization, the standard tests may replace the reference tags with something like:

PL/SQL	Copy
CRM.dbo.Customer	

To use references, enclose the metadata object or data profile in double curly braces {{ }}. We recommend copying and pasting the reference tags into the view to ensure that the proper format is used.

> **Reference Note**
>
> Reference tags are case-sensitive. Verify that each reference tag uses all lowercase characters before saving.

View how metadata references are used in the SQL queries, Metadata Links, and Child Test Name field in the picture below.

Test Definitions Tab

Child Test Configuration Tab

Test Definition   File Selection   Child Test Configuration

Child Test Name required

> {{meta.table_name}}.{{meta.column_name}} Count - RVault vs Source

Child Test Description

> Enter description (optional)

Folder Location for Save

Parent Folder required

> Materialized Tests   ▼

Relative Path

> \Source Counts

Results Configuration

The Results configuration section is quite similar to the result evaluation section in a standard test. The evaluation options configured in the template will apply to all child tests when they are materialized but can be changed later.

The available result configuration options depend on the Test Data Types that were selected in the sections above. Learn more about these options on Configuring a Test.

Metadata Selection

Using filters

By default, if the Metadata Driven object selection is selected, all objects in the data source will be used to populate the child tests. For a more focused set of objects, you can add filters to the metadata selections.

Test Definition   Metadata Selection   Child Test Configuration

➕ Add Filter   🔍 Preview Objects

	Field	Operator	Criteria	
🖉	Column Mapped Type	Equals	String	✕
🖉	Column Nullable	Equals	Yes	✕

Filter Options

Field	Operator	Criteria
Schema Name	String Filters	Any string input
Table Name	String Filters	Any string input
Table Record Count	Numeric Filters	Any numeric input
Table Type	Equals, Not Equals	Table or View
Column Name	String Filters	Any string input
Column Data Type	String Filters	Any string input
Column Mapped Type	Equals, Not Equals	Validatar data types
Column Nullable	Equals, Not Equals	Yes or No
Column Identity	Equals, Not Equals	Yes or No
Column Primary Key	Equals, Not Equals	Yes or No

Column Max Length Field	Numeric Filters Operator	Any numeric input Criteria

Metadata Query

Using a metadata query is a second way to decide which objects will populate the template. This option allows you to pull metadata directly from the data source using a SQL script with the proper table joins or filter, if necessary. After you select your data sources on the Test Definition tab, you can select which data source you want to pull metadata from on the Metadata Query tab.

The Metadata Query must return certain columns based on what references were used on the Test Definition tab. You will see which columns are required under **Required Metadata Columns**. They do not have to be returned in the order they are listed but they must be named correctly.

To ensure the proper column aliases are used, copy a template of the accepted SQL query by clicking the **Copy Template Query** button on the right-hand side of the screen.

To ensure that the correct metadata is included click the **Preview and Validate Metadata Query**.

View what a metadata query object selection may look like in the image below.

File Selection

The third way to choose which objects will populate the template is via importing a flat file.

The table contains a record for each object in the database that is to be used to replace the reference tags in the template. Each record represents one child test that will be created during materialization, therefore each record also includes results evaluation criteria that should be used for each test.

Below is a sample import file for a column-level template test.

meta.schema_name	meta.table_name	meta.column_name	Value Success Criteria	Value Success Tolerance	Only Keep Failures	Abort Processing After Failures	Scripts Include Order By
RVAULT	H_ADDRESS	ADDRESSID	Numeric Tolerance	0	Yes	1000	Yes
RVAULT	H_CUSTOMER	CUSTOMERID	Percent Tolerance	0.5	Yes	1000	Yes
RVAULT	H_PRODUCT	PRODUCTID	Numeric Tolerance	0	Yes	1000	Yes
RVAULT	H_PRODUCTCATEGORY	PRODUCTCATEGORYID	Numeric Tolerance	0	No	1000	Yes
RVAULT	H_PRODUCTDESCRIPTION	PRODUCTDESCRIPTIONID	Numeric Tolerance	0	Yes	1000	Yes
RVAULT	H_PRODUCTMODEL	PRODUCTMODELID	Numeric Tolerance	0	Yes	1000	Yes
RVAULT	H_SALESORDERHEADER	SALESORDERID	Numeric Tolerance	0	Yes	1000	No

Generating an Import File

To get the proper column headers in the import file the file should be generated from Validatar. The column headers depend on which reference tags are used in either the SQL script text box or Metadata Links box, or any field that has *Import From File* checked on the Test Definition tab. The file also includes any references used on the Child Test Configuration tab.

Generate Import File   ✕

Select a method to generate the import file.

🔘 Headers Only   ⚪ Previous Version   ⚪ Pre-Populate Metadata

                                                        ↪ Download File   Cancel

There a 3 options when choosing to generate the import file:

Headers Only	This option downloads a blank Excel file with column headers only.
Previous Version	This option lists the previous files that were imported into the Template test. This file includes column headers as well as metadata and results evaluation content from the previous file.
Pre-Populate Metadata	Coming soon.

Uploading an Import File

Once the import file has been configured to include the appropriate metadata objects and test settings, it's time to upload the file. Just select the **Upload Import File** button on the File Selection tab to do so.

If column headers are references that aren't being used anywhere on the Test Definition or Child Test Configuration tabs

View Version History

Another option for templates that have been saved with different versions of the import file is viewing the version history. Learn who has previously imported a file and when it was uploaded.

Child Test Configuration

Child tests are simply standard tests that have been created from a template. The Child Test Configuration tab lets Validatar know how you want to name each child test and where should they be saved in the test repository.

Similar to the Test Definition tab, you can use metadata reference tags in the Name and Description fields. Just type out the reference you want to use and when the child tests are materialized, the appropriate object will be plugged in its place.

Folder Location for Save

Parent Folder
The parent folder is the parent directory for where all of the child tests will be saved. The parent folder can be chosen from a tree of existing folders using the folder dropdown.

Relative Path
The relative path is the path of folders that will be created where each child test will be nested when the

test is materialized. This field is optional.

Use text or reference tags separated by a backslash (\ ) to create the relative path of folders.

For an example of how to use the Child Test Configuration tab, view the image below.

Materializing Child Tests

Overview

Materializing child tests create one test per table or column, depending on the selected target object type, for each metadata object that's been selected. Think of materialization as the creation of each test that will run for your designed test scenario. Each time your template is modified, it is recommended to re-materialize child tests to reflect the updated changes. For example, if you modify the metadata object filters to reflect tables that were deleted from your database, re-materialize the child tests so that the old tables won't be included in the scope of the test anymore. You may also want to re-materialize tests before any jobs using those child tests are run.

When tests are materialized each child test will be saved by the name and location that was established on the Child Tests Configuration Tab.

First-Time Materialization

Before you can materialize a test, the template must be saved. The first time a test is materialized, you will see a statistics box with the number of tests to be created as well as the folder location information.

Once the materialization is complete, a message will read that the materialization has been completed successfully.

Subsequent Materializations

After initial materialization, as the template test or child tests are edited the Test Summary box on the template screen will update with statistics that reflect any changes.

Once you choose to materialize the child tests again, the pop-up will include configuration options for previously materialized tests.

- Delete all child tests for objects no longer selected in metadata
- Delete empty child folders

- Update all unmodified child tests - updates all previously materialized child tests to the current template version if they haven't been modified since creation.
- Overwrite all modified child tests - overwrites all previously materialized child tests to the current template version if they have been modified since creation.

Any changes to the Child Test Configuration tab are also reflected on the pop-up screen.

Deleting Child Tests

To delete all child tests that were created from the template, use the Delete Child Tests button. To delete only the objects that are no longer selected in the metadata, use the Materialize Child Tests button and then select that configuration option.

Executing Child Tests

Overview

After materialization, you can think of child tests as a standard Validatar test that was created from a template. Because of this, child tests can be run from the template test configuration screen, the test repository after materialization, or as part of a job just like a standard test.

From the Template Test Screen

1. When running child tests from the template test screen there are a few configuration options to choose from. You can either choose to run a single child test, which is recommended to validate that your test was created and runs as expected, or you can run all child tests at once. If you choose to run a single child test you have the option to choose which test runs.
2. Next, choose where to send the test results. Similar to a standard test, results can be sent to the screen for one-time viewership or be saved in the test repository. Note that if you choose to run all child tests instead of a single child test, you can only send results to the test repository.

Advanced Configuration

There is also an option to configure how many tests will run in parallel. This option allows multiple tests to run simultaneously which helps with optimization. The default setting is 10.

If the template has been modified since the last time child tests were materialized, you will be prompted to materialize child tests before you run the tests.

From the Test Repository

Template tests can also be run from the test repository screen by selecting the template test record and clicking the Run button on the toolbar. This process will display the same Run Test pop-up configuration window that appears on the template test screen.

Home / Permissions Testing / Tests / Validate Import File Test / Metadata Driven Testing

Tests

Not only can you run all child tests from the template itself, but you can also run each test as a standard test. Select the appropriate test standard test, which is identified by the checkmark icon next to it, and either select the Run button on the toolbar or drill into the test interface and run the test from there.

Within a Job

Another option to execute child tests is to add the template test or multiple child tests to a job. Adding the template test itself ensures that no child test is accidentally excluded from the job resulting in total test coverage for your metadata objects.

1. Just select the template test on the left-hand side and move it over to the Job Steps on the right.

2. Once the template is added to the job step list, select the materialize icon to the right of the template name to choose if you want to materialize the child tests before execution. If you do, you will be given a list of materialization settings to choose from.

3. Update the configuration, save the job, then navigate back to the Job Repository screen to run the job or add a schedule to the job for it to run automatically.

Job Repository

Job Repository

Overview

The Job Repository contains all of the jobs that have been created in a Project.

Displayed Information
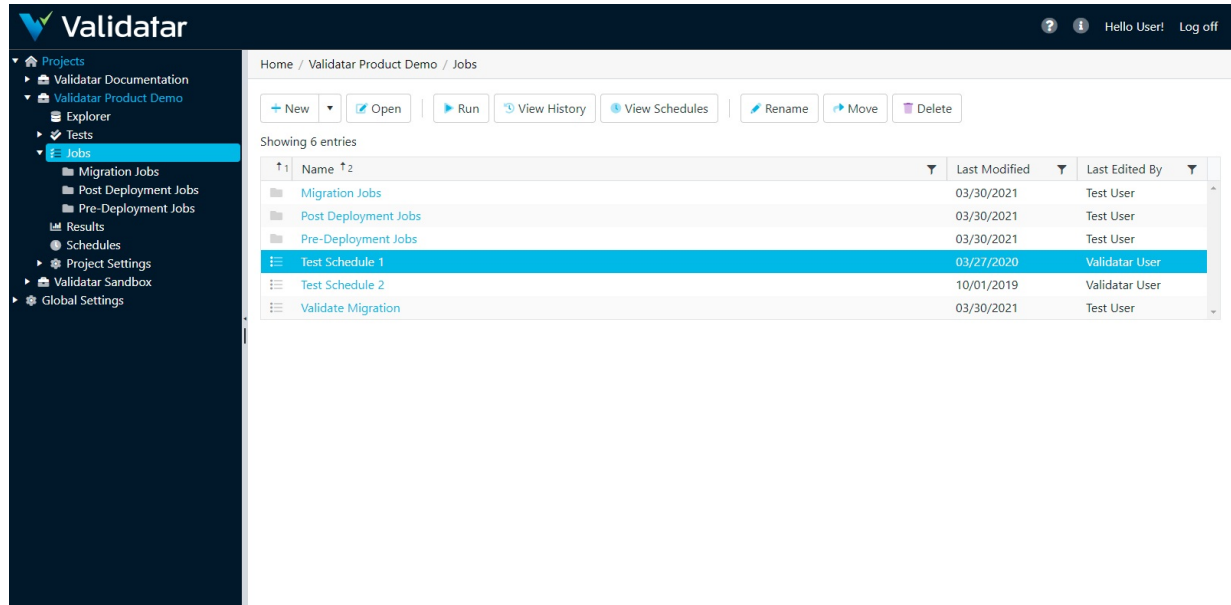
Displayed information can be sorted by clicking on column headers or filtered by clicking on the filter icons also located on the column headers.

Action Buttons

New	Click on the dropdown to create a new job or job folder. There is no hierarchical limit. As many folders and sub-folders can be created as desired.
Open	Opens the Job Configuration page for an existing job.
Run	Runs the selected job.
View History	Navigates to a page displaying the historical pass/fail results for a selected job. More on Job History page.
View Schedules	Navigates to a page displaying schedule(s) assigned to a job. More on Schedules page.
Rename	Renames a selected job.
Move	Move one or more selected jobs.
Delete	Delete one ore more selected jobs.

Table Headers

Job/Job Folder	Job and Job Folders are represented by icons in the first column as shown in the screenshot below.
Name	The name of the job or job folder.
Last Modified Date	The date the job or job folder was last modified.
Last Edited By	The user who last modified the job or job folder.

Access

1. Click the dropdown associated with a given project.
2. Click Jobs.
3. Select the desired job.

Configuring a Job

Configuring a Job

Overview

Jobs provide your data testing and profiling efforts the opportunity to tell a more complete story of what's happening in your environment. By executing tests and profiles together, your test coverage increases which improves the measure of your data quality.

Displayed Information

The Job Configuration page provides an interface for choosing the objects to be included in a job, when to run the job, and defining email notifications to send upon job completion.
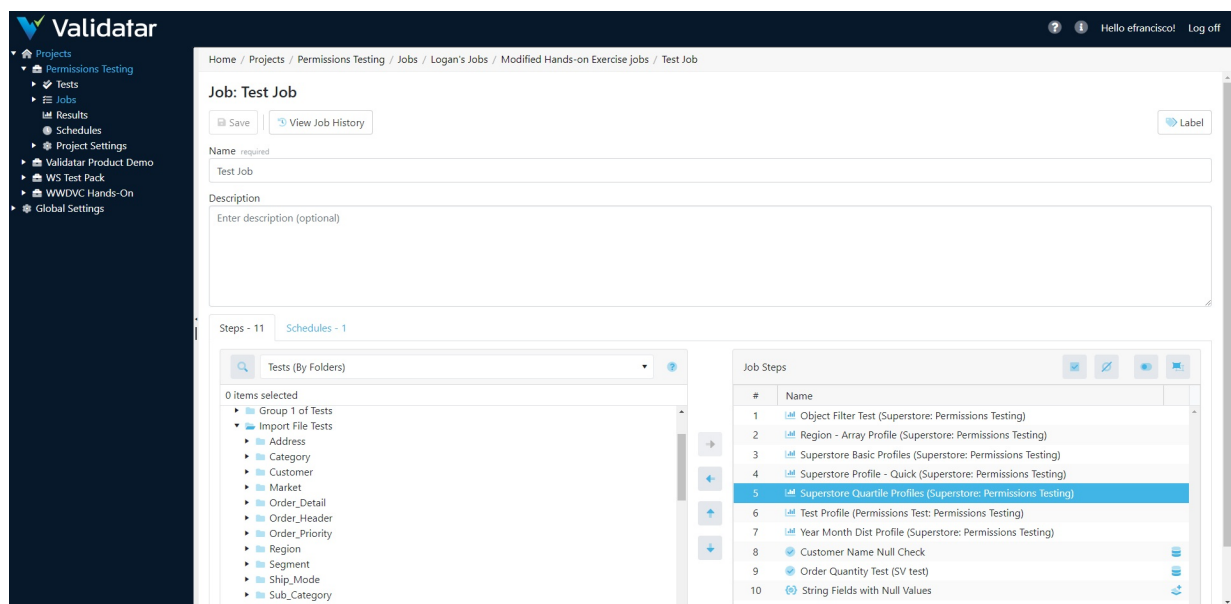
Action Buttons

Save	Saves the job.
View History	Navigates to the Job History page which displays historical pass/fail results for the job.

Job Steps

The Steps section of the Job Configuration page consists of a list of available tests and jobs on the left-hand portion of the screen and a list of selected job steps on the right-hand portion of the screen tagged as Job Steps.

There are four types of objects that can be added to a job:

1. Standard Tests
2. Template Tests
3. Jobs
4. Profile Sets

Available objects can be found using the Tests (By Folders) dropdown or by toggling to the search view using the search icon to the left of the dropdown.

Job Step Buttons

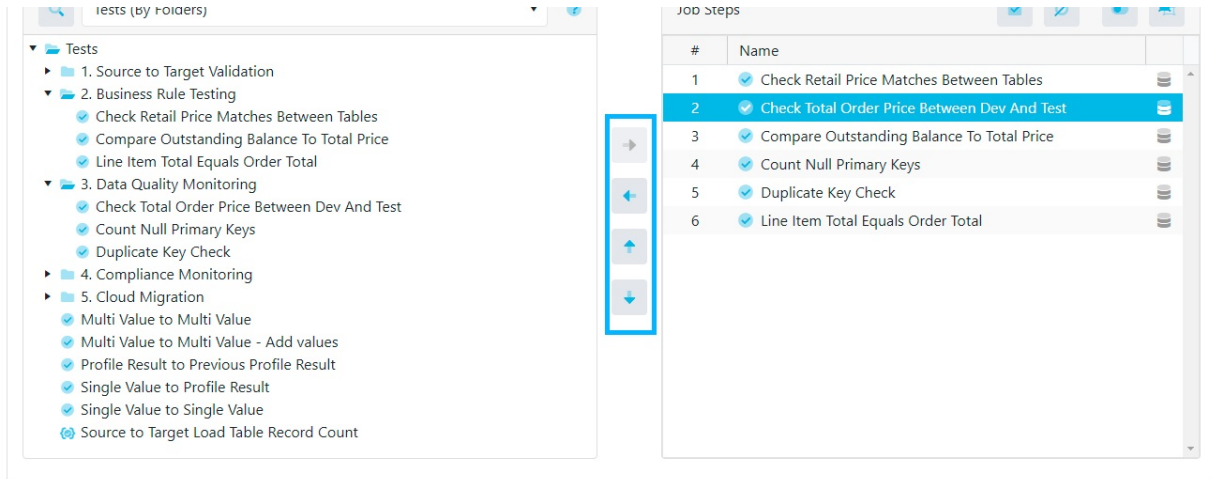|	
Arrow buttons (*highlighted in above image*)	Allow a user to : • Add an object to a job • Remove an object from a job • Move an object up on the job step list • Move an object down the job step list **Note:** Adding the same object to the Job Step list produces a warning icon about the duplicate job step.
Select All	Selects all items on the job steps list.
Deselect All	Deselects all items on the job steps list.
Disable Job Step	Disables the selected job step from executing when running the job.
Group / Ungroup Job Steps	Group job steps together to run them in parallel. Ungroup job steps to run them sequentially. Grouped steps share the same step number. Ctrl + click on multiple tests within Job Steps and then click on the Group button to create a group of tests.

> **Job Configuration Note**
>
> Clicking the database icon in Job Steps allows the user to choose source and target connections that differ from the default for standard tests. If a different connection is chosen, the database icon will turn blue. Similarly for runtime configuration of Template Tests, clicking the materialize icon allows the user to enable child test materialization before running the job. If this option is enabled, the materialize icon will turn blue.

Job History

Job History

Overview

The Job History page displays an overview of results from past job runs and provides links to the individual test results within each job run. Viewing job history is a great way to see how your data quality changes over time.

Displayed Information

Action Buttons

View Tests	Click the View Tests button to navigate to the Job Result page and view detailed results for tests associated with a job. Note that clicking on the Run Date will also navigate to the Job Results page.

Table Headers

Run Date	The date and time the the job was executed.
Status	Status options: • Completed • Running • Aborting • Aborted • Abandoned
Result	Details whether the job passed or failed. If the job contains profile sets only, the result will read *0 tests*.
Runtime Context	Detail the context the job was run under.
Run By	The user who ran the job.
Duration	How length of the job execution.

> **Note**
>
> Learn more about table header filters here.

Learn more about table header filters here.

Access

The Job History page can be accessed at the individual job level or via the Job Repository page. Both access methods are detailed below.

1. In the navigation pane, click the dropdown associated with a given project.
2. Click Jobs.
3. To open a job via the Job Repository page:
   - Highlight the desired job.
   - Click View History located at the top of the Job Repository page.

4. To open job history at the individual job level:
   - Click the link associated with the desired job in the information window.
   - In the resulting page, click the View Job History button.

Scheduling a Job

Overview

Scheduling a Job allows users to receive the results of their test and profile executions without having to be inside of Validatar. This feature is ideal for sending reports to higher level managers, informing data warehouse developers of issues as they arise, and providing peace of mind that your data is constantly being monitored.

The Job Schedule Configuration screen allows the user to define job scheduling and email notification. A job schedule can be configured in many ways. Some examples include:

- A daily configuration that recurs every day at 5:00 AM after source system data has been updated.
- A weekly configuration that recurs every Monday to monitor changes in the data warehouse.
- A monthly configuration that recurs on the 2nd Friday of each month in preparation for sending status updates to higher level managers.

Displayed Information

When scheduling a job, email notifications can be configured with the following options:

- Choose to send an email when a job is completed with a failure or error, when the job doesn't complete at all, or when a job is completed successfully with no failures or errors.
- Enter recepients emails using a comma or semi-colon delimited list.
- Provide an email subject line.

> **Note**
>
> It's easy to overlook whether a schedule is enabled or disabled. Verify that the schedule is enabled if you intend for it to run.

Access

Existing Job Schedules can be accessed by clicking Schedules within the navigation pane. New Job Schedules can be created via the following steps:

1. Click the dropdown associated with a given project.
2. In the navigation pane click Jobs.
3. Click on the desired job.
4. Click the Schedules tab.
5. Click New.

Reports Home Page

Overview

Reports are standard and custom views about your data. You can view execution history about tests and jobs across multiple Validatar projects using standard reports. Filter standard reports and save the view, which you or a team member can revisit later! You can also embed Tableau Server dashboards in Validatar by creating a custom report.

Standard Reports

Validatar delivers two standard reports:

- Test Execution History
- Job Execution History

Both reports show execution history across all Validatar projects. Click on the name to view the report.

Standard Reports

Overview

Standard reports come built into Validatar. In this article, we'll talk about each standard report and what's included in them.
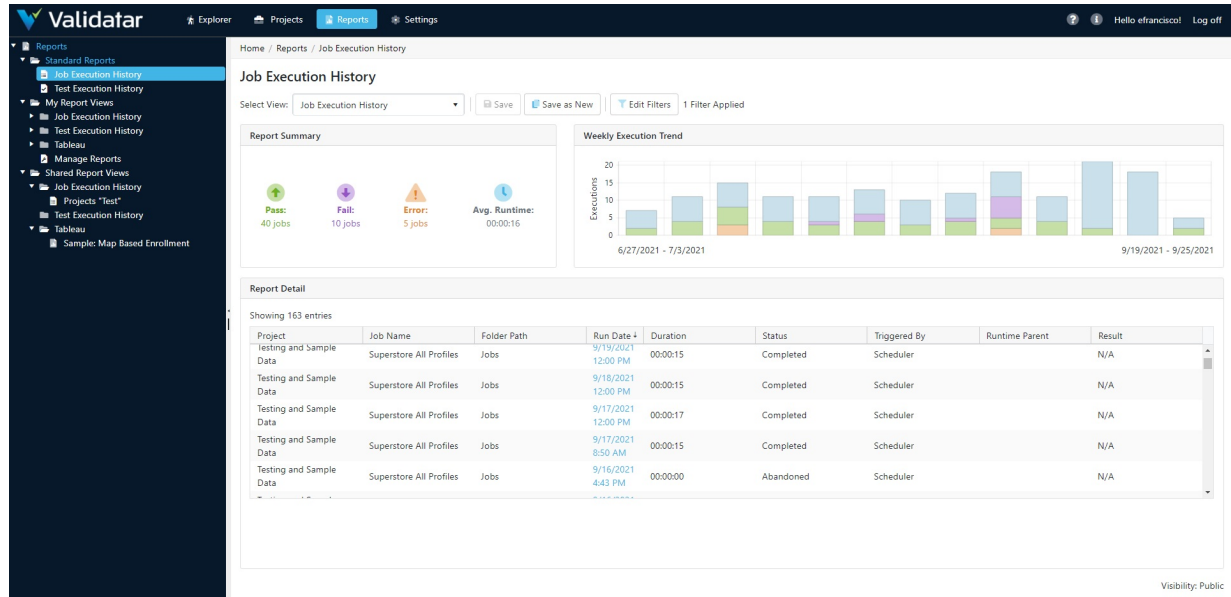
Test and Job History Report

There are two separate reports to show test and job execution history. These reports allow you to evaluate historical execution data across multiple Validatar projects in one place. You can view the summary of passess and failures, how often a test or job is run, and more.

Why View This Report?

Here's why you should use test and job history reports:

- It's a quick look into how many tests pass, fail, or error within a project.
- You can view changes in test results over time.
- You can view gaps in test execution.
- You can compare result history across projects.
- You can save views of relevant execution history to quickly refer back to.

Report Summary

The Report Summary provides KPI's that display the number of pass, fail, and error results in the current view. It also shows the average runtime of the results. As you add or remove filters to the report, the report summary will update.

Execution History Chart

The stacked bar chart shows the full time frame that the test or job history report is filtered to. Every bar represents a date part which is determined by how many bars are in the view.

Results Table

The items shown in the results table depends on the filters applied to the report. The list of results in the table drive the KPI's in the Report Summary box and the execution history bar chart. As you added or remove filters to the report, the results table will update and change the dependent graphics.

Column Name	Description
Project	The Project where the test or job was executed.
Test or Job Name	The name of the test or job.
Folder Path	The folder path to where the test or job is stored.
Run Date	The date and time of the execution. Clicking on Run Date brings you to the execution details.
Duration	How long the execution lasted.
Status	There are five status options: Running, Aborting, Aborted, Completed, Abandoned.
Triggered By	Shows whether the execution was triggered by the Validatar scheduler or an individual user.
Runtime Parent(s)	Shows the parent objects involved in the execution.
Result	There are three result options: Pass, Fail, Error.

Applying Filters

Apply filters to create a targeted view of execution history.

Creating a Filter

1. Click **Edit Filters**.
2. In the pop up window, choose the filter you want to apply under **Field**.
3. Select the operator.
4. Enter the filter criteria.
5. Add as many filters as needed.
6. Click **Close**.

Note: Filters use "and logic", which means that only data that meets every criteria will be included.

Saving Views

Saving a report will save the filters and sort options selected in the view.

Report Visibility
The user that creates the view determines whether the view is Private, Public, or accessible by a User Group. Only the owner can change how the view can be shared.

Save As New
If you are not the owner, you cannot edit the saved view but you can choose to Save As.

Managing Reports

Overview

You can create a new Test or Job Execution History report by expanding the **My Report Views** folder on the Reports tree and selecting **Manage Reports**.

You can also embed Tableau Server dashboards in Validatar in the **Manage Reports** section. To create a Tableau report, you must have the Tableau **Workbook Name** and the **View Name**.

Creating a Job or Test Execution History Report

From the Reports tree, click **Manage Reports**.

2. Click **New Report**.
4. Enter the report name.
5. Choose **Job Execution History** or **Test Execution History** as the report type.
6. Enter a description. (optional)
7. Choose the report visibility.
8. Click **Save**.

Creating a New Tableau Report

> **Prerequisite Required**
>
> Before you create a new report, ensure that a global admin has connected your organization's Tableau Server to Validatar. This setting is found under **Settings** > **Configuration** > **Reporting**. Learn more about this setup **here**.

Any Validatar user can create a new report.

1. From the Reports tree, click **Manage Reports**.
2. Click **New Report**.
3. Enter the report name.
4. Choose **Tableau** as the report type.
5. Enter a description. (optional)
6. Choose the report visibility.
7. Enter the Tableau report path in the following format:
    - [Workbook Name]/[View Name]

8. Click **Save**.

Managing Reports

1. From the Reports tree, click **Manage Reports**.
2. Select either the white space next to the name and click **Open** or click the configuration icon next to the name to view the report details.
3. Make any necessary changes, then click **Save**.
4. To delete a report, select the white space next to the name and click **Delete**.

> **Delete Note**
>
> You can **restore** a report immediately after deleting it. **Once you navigate away from the reports page, you cannot restore the report.**

Connecting Tableau to Validatar

Overview

Connecting to Tableau requires a **Tableau Server** account and user accounts with access to the intended workbooks and views.

Server Configuration

Prerequisite Required

To set up the Tableau Server connection, the user must be a **Configuration Admin** or a **Global Admin**.

1. Click **Settings** on the main menu bar.
2. On the navigation tree, select **Configuration**.
3. On the Validatar Configuration list, click **Reporting**.
4. Enter the server configuration settings.
   - **Tableau Server URL:** The URL to your Tableau Server account. Example (https://tableau.xyzcorp.com)
   - **Tableau Site (optional):** Specifies a site on a Tableau Server instance. Sites are used to separate groups of users and content on the same Tableau Server instance.
   - **Identity Store:** This is chosen when Tableau Server is installed.
     - Local Store: All user and group information is stored and managed in the Tableau Server repository.
     - External Store (AD or LDAP): An external directory service stores and manages user and group information.
5. Click **Save**.

How Users Access Workbooks

To view the embedded dashboards, a user must:

1. Have a Tableau server user account with permissions to view the workbook.
2. Have their Tableau server username added to Validatar.

Adding Tableau Account to Validatar

To add a user's Tableau Server account to Validatar:

1. A **Security Admin** or a **Global Admin** must navigate to **Settings** > **Users** > **User Details**.
2. Enter their **Tableau Username** in the provided field.
3. Click **Save**.

Project Settings

Overview

The **Project Settings** page reflects the same choices available within the navigation pane under the Project Settings dropdown; that is, access to settings for Data Sources, Users, Groups, Activity, and Tools. As the name implies, Project Settings are limited to a given project, whereas **Global Settings** are application-wide.
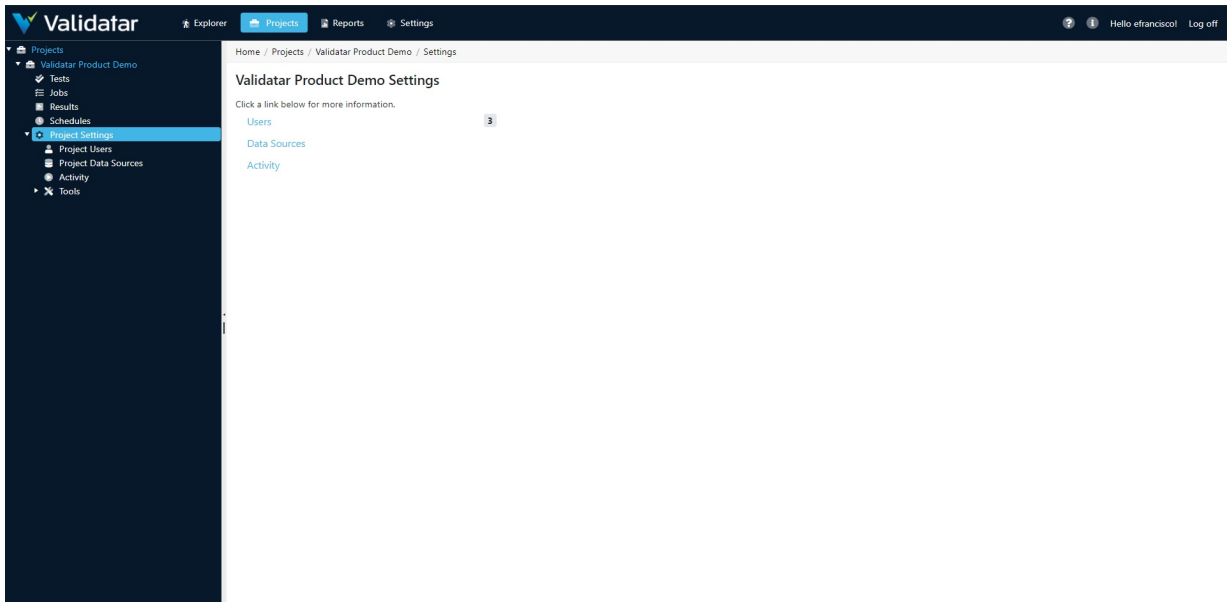
Included in Project Settings are:

- Project Users
- Project Data Sources
- Activity
- Tools
    - Labels
    - Import
    - Export

For information on Project Data Sources, see the Data Sources section.

Access

1. The Project Settings page may be directly accessed by expanding a project and clicking on Project Settings in the navigation pane.

Project Users

Overview

The **Project Settings Users page** lists Validatar users with access to the selected project.

Granting Access

The **Grant User Access** page provides a list of users that do not have access to the project. The process for granting a user project access is as follows:

1. Within **Project Settings**, click **Users** and then click **Grant Access**.
2. Type the user's name to select them from the dropdown list.
3. Add the permissions by checking the appropriate boxes for each role.

Removing Access

1. Select the user from the list.
2. Click **Remove Access**.

You can restore a user's access immediately after removing it by clicking the **Restore Access** button. If you navigate away from the page, you will have to click the **Grant Access** button to re-add the user.

Roles

Create Roles	Import/Export Roles	Project Roles
• **Create Jobs** - the user can create Validatar jobs. • **Create and Edit Labels** - the user can create and manage labels found under Project Tools.	• **Import** - the user can import an XML file of Validatar objects into the project. • **Export** - the user can export Validatar objects out of a project to an XML file.	• **Project Admin** - the user is a project administrator. • **Project Access** - the user has read-access to the project.

Project Data Sources

Data Sources are managed and assigned to a project globally, but a project admin can also enable the use of a data source in project settings.

The Project Data Sources page shows a list of all available data sources. Check or uncheck the data sources you want to use in your project.

Import

Overview

The Import feature allows an XML file that contains the contents of a project to be imported into another project. Importing is a three-step process:

- Step 1: Select a file
- Step 2: Map the data sources and choose the target import folder
- Step 3: Review the changes

Import: Step 1

Select an XML file containing exported Validatar objects. Invalid file types and XML files incorrectly structured will not be accepted. To ensure you have the correct file to import, export objects from Validatar first for reference.

Home / WWDVC Hands-On / Settings / Tools / Import

Import - Step 1 of 3

Choose a file containing exported Validatar information.

Select file...   Drop files here to upload

Import: Step 2

Mapping Data Sources

If a data source in the project you're importing into has the same name and connection string as a data source found in the imported XML file, the data sources will automatically be mapped to each other. This default mapping can be changed if necessary.

For data sources where an identical name and connection string is not found, you will have to choose the respective data source.

Home / WWDVC Hands-On / Settings / Tools / Import

Import - Step 2 of 3

"**Hands On Export.xml**" was uploaded successfully. To complete the import:
- Map each source data source below to the corresponding target data source
- Choose the target folder to import tests into
- Choose the target folder to import jobs into
- Click the Review Changes button below to review the changes that will be made to the project

Data Sources Included in File required	
Adventure Works	Adventure Works ▼
Data Vault	Data Vault ▼
WhereScape Repository	Choose Data Source ▼

Choosing the Target Folder

All the tests and jobs included in the file will appear on the left pane. Choose a single folder on the test and job levels to import every object included in the file. After the selection is made, click **Review Changes.**

Import: Step 3

The final step of the import is to review the objects that will be added to the project. Each object is highlighted based on whether the object currently exists in the project or will be added.

- Identical - The object already exists in the current project. This requires the user to either overwrite or rename the object.
- Add - The object does not exist in the current project and will be added.

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- Overwrite - If the object already exists, replace it with the new object by overwriting it.
- Rename - If the object already exists, duplicate the object and rename it.

To toggle between overwrite and rename, click the icon next to the object.

Finalizing the Import

Once you review all changes to be made to the project, select **Import**. Navigate back to the Tests and Jobs area to confirm the import was successful.

Access

1. Navigate to **Tools** found under **Project Settings**.

2. Select **Import**.

Export

Overview

The export feature allows selected tests, template tests, profile sets, and jobs in a particular project to be exported to an XML file. The XML file can then be used to import the contents into another project.

A user may want to export Validatar objects to:

- Create a backup of a Validatar project
- Make mass changes to the contents of a test or job
- Duplicate tests or jobs for use in a different development environment (e.g. Running the same set of tests configured against the DEV environment to the TEST environment).

There are two ways to export Validatar objects

- via Folder path selection
- via Label selection (requires the project to have at least one locked label)

Exporting via Folder Path Selection

Exporting via folder path selection allows you to select available objects based on their hierarchical location in Validatar. Expand and collapse tests, jobs, and folders to show or hide certain objects.

Selection Options

Every object that is checked on the Available Objects for Export list will be included in the exported XML file. You can configure how the object selection should work using the section called **Selection Options**.

When an item is checked and unchecked choose to:

- **Check and uncheck descendants**. This allows all the children objects inside of folders to be

selected or deselected for export.

- **Check and uncheck ancestors**. This allows all the parent objects of the item to be selected or deselected for export.

When a job is checked and unchecked choose to:

- **Check and uncheck dependent objects**. This allows the objects within a job to be selected or deselected for export. Learn more about dependent job configuration in the next section.

When a template test is checked choose to:

- **Automatically include the meta-object file**. Checking this option ensures the import file is included with the template test if the template test is driven by an import file.

Job Configuration

When **Also check/uncheck dependent objects for a job** is selected, each job that is selected in the folder tree will have a configuration icon appear next to the job name so the user can choose which dependent objects of the job should be included in the export. Selecting the configuration icon opens the following window.

If you choose to remove an item from the item list one of two things may happen when it's time to import the file:

- If an item name with the same hierarchy of the removed item name is found in the target project, the job step will be linked to that item.
- If an item name is **not** found, the job step will be removed from the job upon import.

Learn more about the last export step in the Finalizing the Export section below.

Exporting via Label Selection

Exporting via label selection allows you to select all objects related to locked labels associated with tests, template tests, or jobs. Only locked labels will show up on the export list and multiple labels can be selected for export at once.

To view the configuration of the locked label, select the external view icon to the right of the label name.

Export

Available Objects for Export

Selection Options

Label Name		# Tests		# Jobs		Date Locked	
☑ 05-25-21 Deployment	↗	1		0		6/24/2021	
☑ 04-21-21 Deployment	↗	1		0		6/24/2021	
☑ 03-23-21 Deployment	↗	2		1		6/24/2021	
☐ 01-26-21 Deployment	↗	2		1		6/24/2021	
☐ 02-23-21 Deployment	↗	1		1		6/24/2021	

Selection Options

☑ Include meta-object files for template tests

3 selected tests
1 selected job

One or more objects were referenced by multiple labels and will only be included once in the export. Multiple selections of the same test or template test will result in only the latest selected version being used.

‹ Previous   › Continue

Selection Options

The selection options include an aggregate of how many tests and jobs will be included in the export as the labels are selected on the available objects pane.

If a test, template test, or job is referenced by multiple selected labels, the object will only be included in the export once. If multiple versions of the same test or template test are selected, only the latest selected version will be used.

When checked, the **Include meta-object files for template tests** option includes the import file that drives the respective template test.

Finalizing the Export

The final step of the export includes adding a name and description (optional) to the exported XML file. You will also see a folder tree of all of the objects that will be included in the export file. This includes tests, folders, template tests, jobs, profile sets, and data sources.

Upon export, the file will be automatically downloaded and can be found in your Downloads folder. The destination of the export file cannot be changed.

Labels Overview

Overview

Labels are a way to group Validatar objects. As items in your development environment change, new deployments happen, and test cases must be updated, labels can be used to identify objects that are a part of the same deployment.
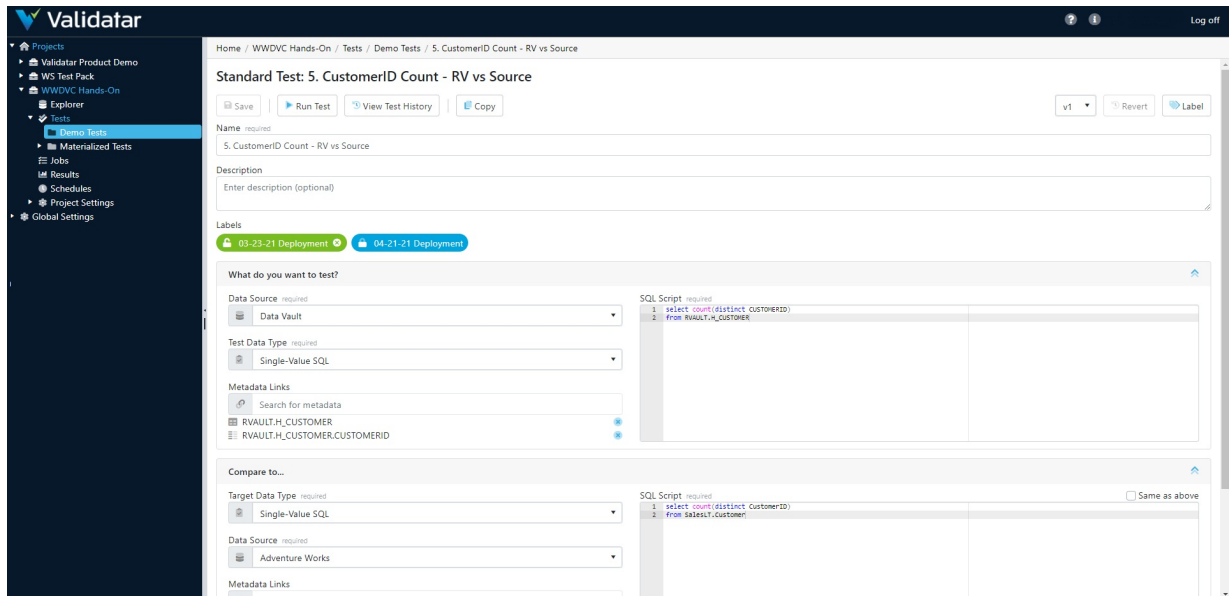
When to Use Labels

There are many reasons why you would choose to use labels. The main two being:

1. The ability to identify a version of a set of tests.
   - Let's say you have a sprint release where a large number of changes will be delivered. Creating a label for each sprint will allow you to go back in time to refer to every test, template test, and job involved in that sprint.
   - To distinguish your labels, your label name might include versioning information such as the version number, delivery date, the development ticket number.

2. The ability to move a set of tests from one Validatar environment to another.
   - The simplest example here is if you've finished testing in your Validatar QA environment and you're ready to deploy your code to Production, having a label for that deployment makes it easier to move the QA tests you've completed to your Validatar Production environment to be executed.

> **Export Note**
>
> When exporting Validatar objects by label selection, you can not exclude any objects during the import. Be sure to include only what you plan to import in your XML document.

Label Management

Permissions

To manage labels, a user must have the **Create and Edit Labels** role found in Project User Permissions. Other users can view the label details in read-only mode by having Project Access permissions.

On the Label list screen you can:

- Create a new label
- Modify an existing unlocked label
- Lock or Unlock a label
- Archive or Restore a label

Creating a Label

Creating a new label is easy:

1. Select **New Label**.
2. Enter the label name and optional description and additional notes.
3. Click **Save**.

Once a label is created and is assigned to objects, you can view all the associated objects on the label details page.
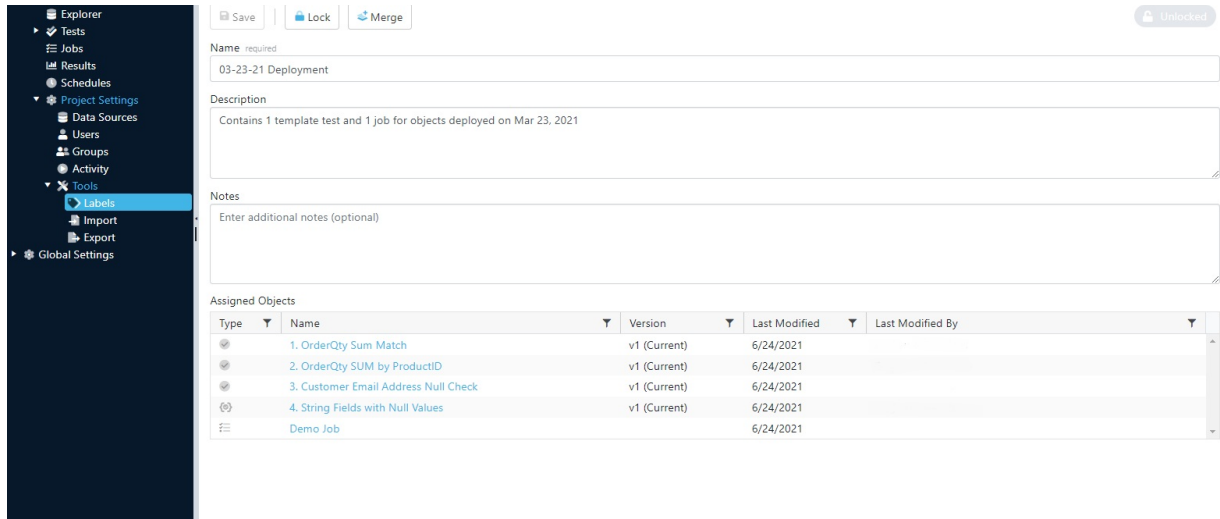
Unlocked vs. Locked Labels

New labels are automatically unlocked meaning they can be modified and assigned to Validatar objects such as tests, templates, jobs, and profile sets. Locked labels cannot be modified. If a label is locked after it is assigned to an object, the association to the object will remain and cannot be removed unless the label is again unlocked.

There are two ways to lock or unlock a label:

- By selecting the label and clicking the **Unlock** or **Lock** button on the label list screen.
- By opening a label and clicking the **Unlock** or **Lock** button.

The current status of a label is shown on the label list screen and in the top-right corner of the label's detail page.

Archiving a Label

You can archive labels that you no longer want to use by selecting the **Archive** button on the label list screen. Archived labels can be viewed by checking the **Include archived** checkbox in the top-right hand corner of the screen.

To restore an archived label, select the label and click the **Restore** button.

Merging Unlocked Labels

You can copy the contents and object assignments of one or more unlocked labels to a single label by merging the labels.

To merge labels:

1. Create a new label or select an existing label that will be the current label.
2. On the label detail screen select **Merge**.
3. Search for and select the label(s) you want to copy the label contents of to the current label.
4. Select **Merge**.

You can merge labels that have the same objects assigned to them (e.g. both labels are associated with the same test). If you try to merge in a label that contains a different version of the object than the current label, the latest version of the object will be referenced.

Using Labels

Adding Labels to an Object

No matter if you're adding a label to a standard test, template test, or job, there's a label button in the upper-right corner of the configuration screen that will open a pop-up window to add the label(s).

Select an Unlocked Label   ✕

Associated Labels
🔒 01-26-21 Deployment

| Search for unlocked labels... |

Label Name ↑
02-23-21 Deployment
03-23-21 Deployment
04-21-21 Deployment
05-25-21 Deployment

🏷 Label Test

Once you click the Label button, the project's unlocked labels will appear in a list. Next, you can choose to add one or more labels to that object by selecting the row. Any label already associated with the object will be pinned at the top of the window and not appear in the list. After selecting the relevant labels, click the **Label Test** button.

After adding a label, a **Labels** area will appear under the Description box and list the associated labels. Click on a label to view the label details.

Home / WWDVC Hands-On / Tests / Demo Tests / 2. OrderQty SUM by ProductID

Standard Test: 2. OrderQty SUM by ProductID

All unlocked labels are highlighted in green. If a label is locked after being added to an object, the label highlight becomes blue.

Removing Labels

To remove a label from the object, navigate to the object detail page and click the x on the label. Note that only unlocked labels can be removed.

Learn about exporting Validatar objects by a label on the **Export** page.

Global Settings

Overview

The **Global Settings** page reflects the same choices available within the navigation pane under the Global Settings dropdown. As the name implies, Global Settings are application-wide, whereas **Project Settings** are limited to a given project.
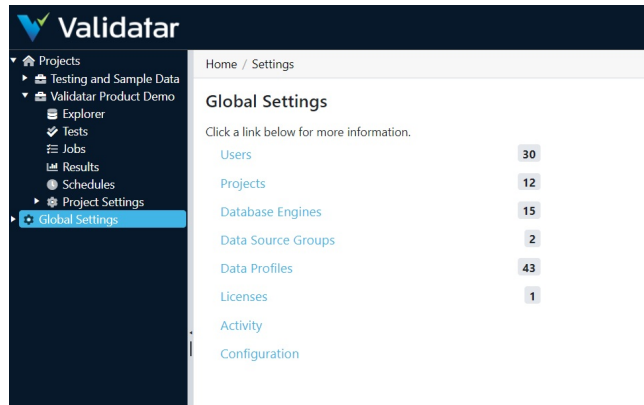
Included in Global Settings are:

- Projects
- Users Groups
- Users
- User Tokens
- Activity
- Data Source Groups
- Data Profiles
- Database Engines
- Licenses
- Configuration

Access

1. The Global Settings page may be directly accessed by clicking **Settings** on the main menu bar.

Projects

Overview

Projects house tests, jobs, and project settings. The Global Settings Projects page is where you manage all of your projects in Validatar.

Action Buttons

New Project	Click to navigate to the New Project page.
Open Project	Open the currently highlighted project.
Archive	Validatar projects are not deleted. Rather, they are archived. Clicking the Archive button will archive the selected project. Archived projects can be restored.

Table Headers

Header	Description
Name	The name of the project.
# Users	The number of users associated with the project.
# Data Sources	The number of data sources assigned to the project.
# Tests	The number of tests associated with the project.
# Jobs	The number of jobs associated with the project.

Access

1. The Projects page is accessed under **Settings** in the navigation pane.

User Groups

> **Upgrading to 2021.3**
>
> User groups were previously found in **Projects** but have moved to **Global Settings**. After upgrading, the user group list will show the user group's name followed by the name of the project to identify where the particular user group migrated from. You can now **Merge** user groups from multiple projects into one single group to avoid redundancy. You can also rename any migrated user groups to improve clarity.

Overview

Groups are used to organize users. We recommend using User Groups to assign permissions instead of individual users for easier and consistent management.

Creating Groups

1. To create a new user group, select **New Group** in the toolbar.
2. To add users to a group, select the checkbox next to their username. Deselect the checkbox to remove users from a group.
3. Click **Save**.

Merging User Groups

Follow these steps to merge user groups:

1. Open the user group you want to survive.
2. Click on **Merge** in the toolbar.
3. Choose to either save or delete the user groups that you're merging into the current group.

4. Select one or more user groups from the list. (Hold down Ctrl to multi-select)
5. Click **Merge**.

Note: You cannot restore a user group after it is deleted during the merge.

Deleting User Groups

Follow these steps to delete user groups:

1. Click the whitespace next to the user group name to select the row.
2. Click **Delete**.

Note: You can restore the user group after it is deleted if you don't navigate away from the page. **Once you leave the User Groups page, the user group cannot be restored.**

Users

Overview

As the name implies, the Global Settings **Users** page is where you can manage every Validatar user across all projects.

Displayed Information

Action Buttons

Buttons	Description
New User	Navigate to the Global: User Details page to create a new user.
Open	Open the selected user's Global: User Details page.
Archive	Validatar users are not deleted. Rather, they are archived. Clicking the Archive button will archive the selected user. Archived users can be restored.

Table Headers

Header	Description
Include archived (checkbox)	Validatar users are not deleted, rather they are archived. Clicking the **Include archived** checkbox will cause those users to display.
Username	The username.
First Name	The user's first name.
Last Name	The user's last name.
Global Admin	Displays a checkmark if the user has the Global Admin role.
Test Author	Displays a checkmark if the user has the Test Author role.
Project Admin	Displays the project name where the user has the Project Admin role. If the user has Project Admin privileges for more than one project, the number of projects will display instead.
Last Login	The date the user last logged in.

Adding a New User

To add a new user, click the **New User** button on the User list page and enter all required user information.

Displayed Information

Save	Saves the new user.
First Name	The user's first name.
Last Name	The user's last name.
Email	The user's email address.
Username	The username.
Password; Confirm Password	Validatar requires a strong password. A strong password is defined by default as one that is at least 7 characters long and contains three of the following: • Upper-case characters (A-Z) • Lower-case characters (a-z) • Digits (0-9) **Note**: Password settings can be changed under **Global Settings** > **Configuration**.
AD Account	The AD textbox can be used to link Validatar with Active Directory.
Global Admin Roles	A global admin has the ability to create, configure, and manage settings for a Validatar instance. A full global admin inherits the following roles: • **Configuration Admin**: Can only see configuration settings. • **Data Source Admin**: Can only manage data sources and view Validatar server logs. • **Security Admin**: Can only manage users and user groups and view Validatar server logs. A user can have a combination of these roles without being a full global admin. There is not a limit on the number of global admins a Validatar instance can have.
Licensed Roles	There are two types of Validatar users: • **Test Author**: Can create new Validatar tests. • **Viewer**: Can view tests and test results for projects they have access to. All Validatar users are viewers. There is a maximum limit of users who can be test authors at one time based on the edition of Validatar that was purchased. Once that limit is reached, a user will have to lose the test author role for another user to gain it. Find your volume limits under your activated license key or in your Validatar Startup Guide emailed to you from the Validatar Customer Success team.
Project Admin Access	All active projects display under **Project Admin Access**. Selecting any project will grant the user admin access to that project. Admin access can also be granted via **Project** > **User Details**.

Access

1. Navigate to **Settings** on the main menu bar.
2. Click **Users**.

User Tokens

Overview

User tokens make API requests on behalf of a user. By creating a new user token, the user will be able to access specified projects and scopes. The token will encapsulate encrypted user security information.

Creating User Tokens

Each token is always associated with a specific user account and will inherit the permissions of that user.

1. After logging into Validatar, click your username in the upper right-hand corner.
2. On the left pane, select **Tokens**.
3. Select **New Token**.
4. Enter a token name.
5. Enter a comma-delimited list of IP addresses where this token can have API access. (optional)
6. Specify the Projects this token can access.
     - Allow access to all projects
     - Filter access to the following project(s)

7. Specify the Scopes that are allowed.
     - Allow access to all scopes
     - Allow access to the following scope(s)
         - **Execution** - Allows users to run tests and jobs
         - **Security Admin** - Allows users to create and remove users
         - **Authoring** - Allows users to modify the contents of operations (such as tests, jobs, and folders)

8. Click **Save**.
    A masked API key will be generated after saving a user token. The API key can be unmasked, which is what you will need to connect to the API.

Managing User Tokens

A Validatar Security or Global admin can manage user tokens by navigating to **Settings** > **User Tokens**.

Managing user tokens uses the same interface as creating a new user token. An admin has the following abilities:

- To modify, disable, and delete tokens

- To view which projects the token has access to
- To view which scopes the token has access to
- Viewing the last accessed date
- View the age of the token

An admin cannot unmask a user token's API key. Only the user account the token is associated with can unmask the key.

Using Tokens to Access API

You can learn more about the API scopes using **Validatar's API documentation** on the user token configuration page.

The documentation includes information about the REST API endpoints each scope contains and examples of API responses.

Activity

Overview

The **Activity** page lists all the jobs and tests that are currently running. There are two Activity areas in Validatar:

- Global Activity - shows activity amongst all projects in Validatar.
- Project Activity - shows activity in the project the user in currently in.

The purpose of the Activity page is to provide a comprehensive view of all activity that has taken place within Validatar. The list can be refreshed and filtered on any of the information elements to easily find activity for a particular project, user, destination, etc.

If a test or job is hung up, you can abort the execution of the test or job from the Activity page.

Data Source Groups

Overview

The **Data Source Groups** page displays the full list of data source groups available (connected) within Validatar. The list displays be Group Name, Group Description, and the Number of Data Sources within the group. Each column is sortable and filterable, which allows easier management when the list becomes long. A new group can be added by clicking the New Group button on this page. A group can also be deleted on this page by clicking on the white space of the group name, then clicking the Delete button.

Data Source Groups Configuration

When creating a new data source group, clicking on the **New Group** button will open a new screen. Once you enter the Name (required) and Description (optional), the Save button will become available to add this new group.

If you want to change the name or description of an existing group, click on the existing name and a new window will display, where changes can be made and saved.

Data Profiles

What are Data Profiles?

Data Profiles are information about existing data that help to determine the accuracy, completeness, and quality of your data. Data profiling is typically used within the broader context of ELT, monitoring, and Data Governance. When done properly, data profiling can play a significant part in data cleansing, enriching, and maintaining quality data within an organization.

Some common data profiles that are useful in many cases are:

- Record count
- Distinct value count
- Nulls
- Range of values
- Average values

Validatar contains a standard set of 40 data profiles. They are listed on the **Data Profiles** page with filterable columns. Any data profile on the list can be deleted by clicking on the white space next to the Name and then clicking the Delete button at the top of the page.

Creating a New Data Profile

When you create a new data profile, you're creating the existence of the profile. To configure the data profile definition, navigate to **Settings > Database Engines > Profiling > Choose the data profile**. This allows for different database engines to use the same data profile name, but to be configured differently.

1. Click **New Profile** on the Data Profiles page.
2. Configure the settings in Table 1.
3. This will bring up a new page with space to enter the Name (required), Reference Key (required), Description (optional), Profiled Object (required), and Results Format (required). Once the required fields are populated, the Save button will become clickable and you can save the new profile.

Table 1

Setting	Description
Name	The data profile name.
Reference Key	The data profile's unique key identifier.
Description (optional)	A description of the data profile.
Profile Object	Choose a table or column-level profile. • Table level - Evaluates the entire table. • Column level - Evaluates one column.
	The data type and format the result should be in. Options are: • Date/Time Array • Date/Time Value

Setting	Description
Result Format	- Numeric Array - Numeric Value - Percent Value - String Array - String Value
Restrict data types (checkbox)	When checked, the data profile is only valid for the selected data types. The data type options are: - Approximate Numeric - Boolean/Logical - Date/Time - Exact Numeric - Geospatial - GUID - String - Other

Data Profile List

The complete list of the standard profiles pre-written in Validatar is:

Record Count	Lower Quartile	Null Percent	Maximum (Date)
Total Data MB	Upper Quartile	Blank Count	Longest Value
Distinct Count	Minimum (String)	Blank Percent	Shortest Value
Distinct Percent	Maximum (String)	Numeric Count	Distribution (String)
Most Common Value	Standard Deviation	Numeric Percent	Distribution (Numeric)
Most Common Count	Max Length	Zero Count	Top 10 Values
Minimum (Numeric)	Min Length	Zero Percent	Bottom 10 Values
Maximum (Numeric)	Mean Length	Negative Count	Binned (Numeric)
Mean (Numeric)	Length Distribution	Negative Percent	Year Distribution
Median (Numeric)	Null Count	Minimum (Date)	Year Month Distribution

Data Profile Details

Each data profile name is clickable and when opened, displays a details page for that profile. The details include Name, Reference Key, Description, Profiled Object, and Results Format. There is also an optional Restrict Data Type checkbox and if checked, will display a list of options. Multiple options can be checked within the Data Type options list. The data profile details page can be updated and saved.

Database Engines

Overview

The **Data Engines** page is the place to create and manage all the various data engines that Validatar is connected to. Each data engine is listed on the main page, with the ability to add new engines through the **New Engine** button at the top of the page. The name of each engine is clickable and a detail page opens. The same detail page opens when you click the new engine button. Whether creating a new engine or editing an existing one, the detail page allows you to name or rename (required) and enter a version (optional).

Database Engine Settings

Unlike some of the other detail pages within the Global Settings sub-categories, this page has a left-pane list with three sub-pages of data engine settings to create or edit.

The **Data Types** sub-page allows the user to associate the Data Type with Mapped Type. The Mapped Type options are based on a dropdown menu of standard options, such as Boolean, Date/Time, and String. Mappings can be added and deleted on this page by using the appropriate buttons at the top of the page.

The **Metadata Ingestion** sub-page is the place for writing, storing, and managing SQL scripts for data engines. This page contains three separate tabs, Schema Script, Table Script, and Column Script. all of these scripts are required as part of the database engine information.

The third sub-page, **Profiling**, is to set the profile configuration. The Formula Type needs to be set to either Query or Calculation, from the dropdown menu in the Formula Type box. There is also an option to set the Grouping Key and Profile Condition. In addition, the Aggregate Formula and FROM statement (including optional WHERE clause) are defined on this page.

40 Standard Data Profiles

Overview

Validatar ships with 40 data profiles already configured. Each one can be modified at both the management level and definition level within a database engine.

Record Count

- Table profile
- Returns the record count of the table

Total Data MB

header	header	header	header
Record Count • Table profile • Returns the record count of the table. • Result Format: Numeric Value	**Distinct Count** • Column profile • Returns	**Distinct Count** • Column profile • Returns	**Distinct Count** • Column profile • Returns
Total Data MB • Table profile • Returns the total size of the table in megabytes. • Result Format: Numeric Value	**Distinct Count** • Column profile • Returns	**Distinct Count** • Column profile • Returns	**Distinct Count** • Column profile • Returns
Distinct Count • Column profile • Returns the distinct number of records in the column. • Result Format: Numeric Value	**Distinct Count** • Column profile • Returns	**Distinct Count** • Column profile • Returns	**Distinct Count** • Column profile • Returns
Distinct Percent • Column profile • Prerequisites: Distinct Count, Record Count • Returns the distinct count divided by the total number of records. • Result Format: Percent Value	**Distinct Count** • Column profile • Returns	**Distinct Count** • Column profile • Returns	**Distinct Count** • Column profile • Returns
Most Common Value • Column profile • Returns the most frequently used value. • Result Format: String	**Distinct Count** • Column profile • Returns	**Distinct Count** • Column profile • Returns	**Distinct Count** • Column profile • Returns
Most Common Count • Column profile • Returns the most frequently used number. • Result Format: Numeric Value	**Distinct Count** • Column profile • Returns	**Distinct Count** • Column profile • Returns	**Distinct Count** • Column profile • Returns
Distinct Count • Column profile • Returns	**Distinct Count** • Column profile • Returns	**Distinct Count** • Column profile • Returns	**Distinct Count** • Column profile • Returns
Distinct Count • Column profile • Returns	**Distinct Count** • Column profile • Returns	**Distinct Count** • Column profile • Returns	**Distinct Count** • Column profile • Returns
Distinct Count • Column profile • Returns	**Distinct Count** • Column profile • Returns	**Distinct Count** • Column profile • Returns	**Distinct Count** • Column profile • Returns

header	header	Returns	header	Returns	header	Returns

Licenses

Overview

A Validatar license contains information about the edition of Validatar being used, when the license expires, and the features included in the Validatar purchase.

Activating a License

To activate a license:

1. Navigate to **Global Settings > Licenses**.
2. Select **Activate License**.
3. Read the Validatar End-User License Agreement and select "I Agree".
4. Fill out the license information form. Find your license information in the start-up guide emailed to you from the Validatar Customer Success Team.
5. Select **Activate**.

Activating a License without Internet

In instances where the server does not have internet connectivity, you can activate a license using the following steps:

- Generating a license request file.
- Send the license request file back to the Validatar team who will provide you with a license activation file in return.
- Upload the license activation file to Validatar.

- Upload the license activation file to Validatar.

To generate and upload a license file:

1. Complete the **Activating a License** steps listed above.
2. When you click **Activate** the following pop-up will appear:

Off-line Activation   ✕

The Validatar licensing server cannot be accessed.

Validatar licenses can be activated off-line by generating a license request file, which can be:
- uploaded to https://licensing.teknionusa.com/validatar/activate, or
- emailed to support@validatar.com

With either option, you will receive a license activation file that can then be uploaded on the Licenses page to activate your license.

Would you like to generate a license request file for off-line activation?

Generate File   Cancel

3. Click the **Generate File** button to start the offline activation process.
   - This will create and download a file named Validatar-license-request-yyyyMMdd-hhnnss.json (with the date/time components in the filename replaced) and the page will change to the following:

Home / Settings / Licenses / Activate

License: Activate

🖫 Activate
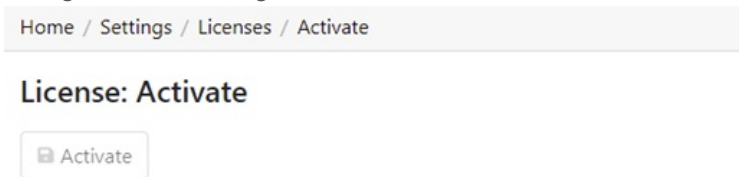
The license request file was generated successfully. This file should now be:
- uploaded to https://licensing.teknionusa.com/validatar/activate, or
- emailed to support@validatar.com

   - The generated JSON file contains the user information entered on the screen as well as a computed signature that guarantees the file was correctly generated from the client's instance of Validatar and was not modified after the file was created.

4. Upload the request file.
   - If you choose to upload the file via the activation link, you will see the following page:

TEKNION

Activate License
Upload the license request file that was generated from your installation of Validatar.

Select files...   Drop files here to upload
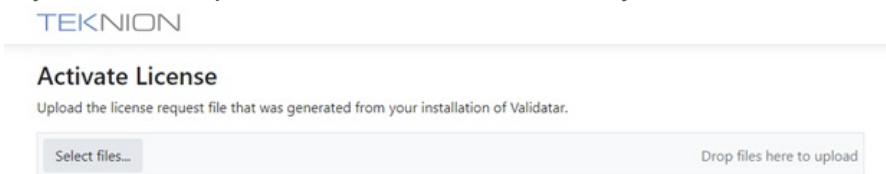
      - Select the request file that was downloaded from Validatar.

   - If you choose to send the Validatar team the request file directly, we will complete **Step 4** for you and send you the **activation file**.

5. Navigate to the **Licenses** page and click **Upload Activation File** that shows the following pop-up:

Upload Activation File   ✕
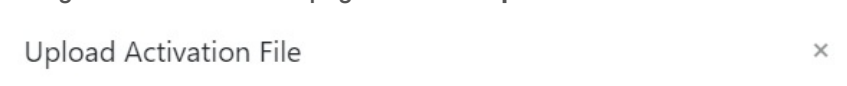
Choose the Validatar license file.

Select file...	Drop files here to upload

Cancel

6. Select the activation file that was either downloaded to your computer or sent to you by the Validatar team.
7. You should then get a message that says "The license file was activated successfully".

Common Errors

When uploading the generated request file, you may receive one of the following errors:

- "The uploaded file contained an invalid key."
- "The uploaded file was not a valid license request."
- "The uploaded file did not contain a valid signature."
- "The license key in the uploaded file has already been activated."
- "The uploaded license request was not processed successfully."

When uploading the activation file, you may receive a message that says "The uploaded license file was not valid."

In both cases, contact the Validatar team for further support.

License Details

The **License Details** page displays specifics about a given license.

<table>
<tr><td colspan="4">00000-12345</td></tr>
<tr><td>First Name</td><td>Last Name</td><td colspan="2">Email</td></tr>
<tr><td></td><td></td><td colspan="2">@teknionusa.com</td></tr>
<tr><td>Activation Date</td><td>Effective Date</td><td>Expiration Date</td><td>Version Restriction</td></tr>
<tr><td>8/26/2020</td><td>9/1/2017</td><td>9/1/2030</td><td>0.1 - 2021.0</td></tr>
<tr><td colspan="2">Included Features</td><td colspan="2">Volume Limits</td></tr>
<tr><td colspan="2">Jobs</td><td colspan="2"># of users   20</td></tr>
<tr><td colspan="2">Command Line</td><td colspan="2"></td></tr>
</table>

- **Version Restriction** - The versions for which this license is applicable.
- **Included Features -** Included features may change depending on the release and license.
  - **Jobs**: Jobs and related features are included; for example, since jobs are available, this instance of Validatar supports scheduling.

- **Command Line**: Command line access is available.
- **Template Tests**: Users can create multiple dynamic tests at once using the Template Test functionality.
- **Custom Profiles**: Users can create custom profiles to go along with the 40 standard profiles Validatar ships with.

- **Volume Limits**: The number of users that can be enabled at one time.

Access

1. Find all license keys by navigating to **Global Settings > Licenses** in the navigation pane.

What Is a Data Source?

Overview

A data source is what you use to run Validatar tests and profiles against. A data source consists of:

- A primary database connection
- A metadata connection
- A data profiling connection
- Profile sets and executions
- Data Source permissions

Displayed Information

Action Buttons

New Data Source	Opens a new data source configuration page
Open	Opens an existing data source configuration page
Archive	Archives a data source
Restore	Restores a deleted data source
Include archived	Shows any archived data sources when checked

Table Headers

Name	The data source name
Database	The primary connection's database name
Server	The primary connection's server name
Database Engine	The primary connection's related database engine
Group	The data source group the primary connection belongs to
Metadata Status	Shows if metadata has been ingested for this data source
# of Profile Sets	Shows the number of profile sets created under this data source

Access

1. A user must have Project Admin rights
2. In the navigation pane, expand Project Settings
3. Click Data Sources

Data Source Settings

The Data Source Configuration Page

> **2021.3 Navigation Change**
>
> Data Sources have moved from Project Settings to Global Settings. To learn more about this move, visit **Moving Data Sources to Global Settings**.

To create a new data source, simply select the **New Data Source** button on the toolbar.
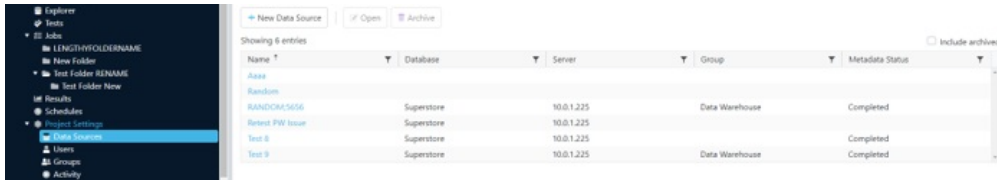
This will open the **Data Source Configuration** page, which is divided into five sections, as indicated by the Data Source Settings menu on the left.

These sections are as follows:

Name	Description
General	Basic Data Source information, including name and Primary Connection.
Schema Metadata	Used to Configure Metadata Ingestion SQL and set Refresh Schedules. Can also be used to establish a Metadata Connection for the Data Source separate from the Primary Connection.
Profiling	Used to configure and run Profile Sets on specified tables or columns within the Data Source.
Projects	Shows the list of Validatar projects that can use this data source. Data Source Admins can add or remove data sources from a project.
Permissions	Used to specify what features related to the Data Source that individual users can view, create, and manage.

View the related articles to get information on the Schema Metadata, Profiling, and Permissions sections of data source settings.

Data Source Settings: General

When either creating a new Data Source or opening an existing one, the Data Source Configuration page displays the General section by default. For new Data Sources, the General section must be filled out and saved before the others can be accessed.

In addition to giving the Data Source a name and optional description, the user must set a Primary Connection for the Data Source before the page can be saved. To do so, click on the Add button in the connection field, which will open a popup window.

> **Note**
>
> Once connection information has been entered, the Add button will be renamed as Edit.

Within the popup window, use the Connection Type dropdown to select a connection type (such as SQL Server or ODBC) for the Data Source's Primary Connection. If desired, the connection can be assigned one of the Database Engines configured under Global Settings, as well as given a description. Next, enter the Connection String for the connection being established, as well as the appropriate password if one exists.

Once the required fields are filled out, the Create Connection button will become active. Selecting it will close the popup and allow the Data Source to be saved. However, it is recommended to use the Test Connection button on the left first in order to verify whether the connection information was entered correctly.

Lastly, the Connection field of the General section contains an optional dropdown that allows the Data Source being created to be assigned to an existing data source group.

Metadata Ingestion

Overview

To perform profile testing and ensure complete data testing coverage, Validatar has the ability to store a data source's metadata. We call this metadata ingestion.

Here's a few steps to complete in order to ensure your metadata is ingested and used as you would like:

1. Configure the ingestion SQL
2. Set up the metadata connection
3. Refresh the metadata
4. Set a metadata refresh schedule
5. Profile your data source
6. Link each test written in Validatar to it's metadata on the test configuration page

Displayed Information

Metadata Connection	The database connection used that contains the metadata intended for Validatar's ingestion. Check Same as primary if this connection is the same as the primary connection.
Refresh Schedule	This box shows the metadata refresh schedule once one has been set.
Metadata Statistics	This box shows the count of schemas, tables, views, and columns that are in a data source as of the latest ingestion time.
Ingestion History	This box shows the history of metadata ingestions. Each record includes • Date Started • Date Completed • Source: Can be manual or scheduled • Status • Schemas/Tables/Columns: The count of schemas, tables, and columns.

Action Buttons

Save	Saves the Schema Metadata.

Configure Ingestion SQL	Opens a configuration pop up to view and edit the metadata ingestion SQL scripts.
Refresh Now	Immediately refreshes the metadata manually.
Set Refresh	Opens a schedule configuration pop up used to configure, enable, and disable a metadata

Schedule	refresh schedule.

Access

1. Click on a data source name on the Data Source page in Project Settings.
2. Click on Schema Metadata

Profile Sets

Overview

A profile set is a collection of data profiles that are run together to provide specific information about a data source.

Displayed Information

Action Buttons

New	Creates a new profile set.
Open	Opens an existing profile set.
Run	Allows you to run a profile set.
Rename	Renames a profile set.
Delete	Deletes a profile set.
Restore	Restores a deleted profile set. After you've deleted a profile set, you cannot restore it once you navigate away from the Profile Set screen.

Table Headers

Profile Set	The name of the profile set.
# Tables Profiled	The number of tables that the set profiles.
# Columns Profiled	The number of columns that the set profiles.
# Queries	The number of queries that will be executed when you run the profile set.
# Jobs	The number of jobs that include the profile set as a job step.
Last Run	The time and date of the last profile set execution.
Connection	Displays whether the profile set uses the primary connection or a specific profile connection.

Access

1. Click on a data source name on the Data Source page in Project Settings.
2. Click on Profile Sets.

Configuring a Profile Set

Overview

The Profile Set configuration screen is separated into three tabs:

1. Profile Selection
2. Object Selection
3. Profile Set Configuration

Profile Selection

The profile selection tab is where you select the data profile you want to include in a profile set out of a list of data profiles available for that respective data source to use. The list of available data profiles depends on which profiles are enabled for the respective database engine. See more in Global Settings – Database Engines.

Displayed Information

Default Profile Sets	Validatar ships with three pre-configured profile sets: • Table Profile: Selects all profiles that are run on a table level. E.g., table record count • Full Column Profile: Selects all profiles that are run on a column level. E.g., distinct count or null count • Basic Column Profile: Selects a smaller number of column-level profiles to run.
Custom Profile Set	To customize a profile set, check any box to the left of the profile name to add it to the set.
Prerequisites	Prerequisites appear when you have added a profile to the profile set and that profile is dependent on another profile to be run first. For example, if you want to run a Distinct Count profile you must include the Record Count profile in the profile set. To know what the distinct count is, you must have the total record count for that table. Any missing prerequisites are highlighted in orange and can be added by simply selecting the *add plus sign screenshot* button.

Object Selection

Displayed Information

	Field	Operator	Criteria
✏	Table Record Count	Less Than	100000
✏	Schema Name	Ends With	100

Profile Selection   **Object Selection**   Profile Set Configuration

＋ Add Filter   🔍 Preview Objects

Note

Add filters on your profile sets to limit the number of objects that will be profiled. View the Profile Set Statistics box as you add filters so you can see how extensive running the profile set will be on your database.

Filter Options

Field	Operator	Criteria
Schema Name	String Filters	Any string input
Table Name	String Filters	Any string input
Table Record Count	Numeric Filters	Any numeric input
Table Type	Equals, Not Equals	Table or View
Column Name	String Filters	Any string input
Column Data Type	String Filters	Any string input
Column Mapped Type	Equals, Not Equals	Validatar data types
Column Nullable	Equals, Not Equals	Yes or No
Column Identity	Equals, Not Equals	Yes or No
Column Primary Key	Equals, Not Equals	Yes or No
Column Max Length	Numeric Filters	Any numeric input

Action Buttons

Add Filter	Add an object filter on the data profile set.
Preview Objects	Preview the objects that will be run on the data profile set.

Table Headers

Field	The type of object filter.
Operator	The comparison operator used for the object filter.
Criteria	The criteria must be met by an object to be included in the filter.

Profile Set Configuration

The profile set configuration tab contains advanced configuration settings that affect how a profile set is executed.

Displayed Information

Profile Connection	Select from the dropdown whether to use the primary connection or the specified profile connection.
Max Concurrent Queries	Determines the maximum number of SQL queries that will be run concurrently when the profile set is executed. The value can range from 0 to 20.
Max Profiles Per Query	Specifies the number of separate profiles that can be grouped together into one query for a given object. A higher value reduces the total number of queries that are generated when this profile set is executed.
Purge Results After Days	Choose to purge profile results after a certain number of days.

Permissions

Overview

The Permissions section of the Data Source Configuration page consists of a grid listing each user with access to the Data Source, along with the Data Source permissions that he or she has been granted.
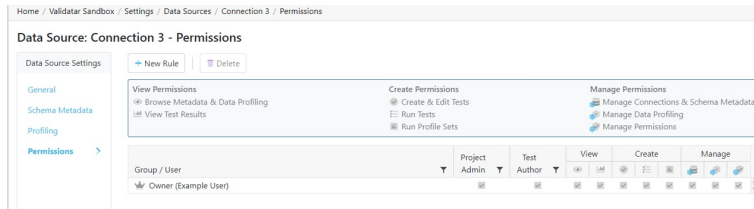
Types of Access

When a Data Source is first created, only the user who created it has access to it. This user is automatically given the role of being the Data Source Owner, ensuring that all permissions are always active. A Data Source can only have one owner at a time, though ownership can be changed by double-clicking on the owner's row in the grid and selecting a new name from the dropdown menu.

Permission rules for other users can be set by the owner via the New Rule button on the toolbar, which will add a row to the grid and allow a name and individual permissions to be set and saved.

Aside from the Data Source Owner, there is a row for global and data source admins. Global and data source admins automatically inherit manage permissions for created data sources. Permissions for global and data source admins cannot be changed.
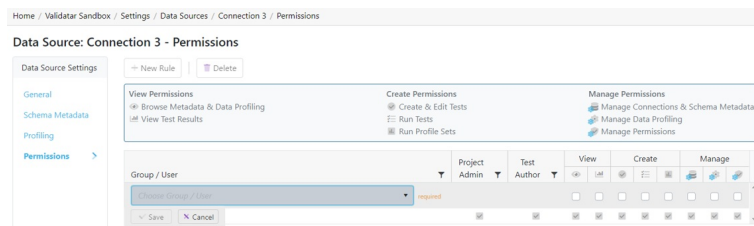
To set individual permissions for a certain user, simply check or uncheck the corresponding boxes on the appropriate row in the grid. Note that this can only be done by users who themselves have the Manage Permissions enabled.

The Data Source permissions are identified by a legend above the grid and are as follows:

Category	Permission
View	Browse Metadata & Data Profiling
View	View Test Results
Create	Create & Edit Tests
Create	Run Tests

Category	Permission
Create	Run Profile Sets
Manage	Manage Connections & Schema Metadata
Manage	Manage Data Profiling
Manage	Manage Permissions

Category	Permission

Users without certain permissions will be unable to perform the tasks associated with them within the context of the data source.

SMTP Settings

Overview

Simple Mail Transfer Protocol (SMTP) is a communication protocol used for email transmission. SMTP must be configured in order to receive job email notifications and to reset passwords. Contact your organization's IT or Network Administrator for SMTP details.

The settings that must be configured are listed below.

Setting	Description
Save	Save any changes made to the SMTP configuration settings.
Send Test Email	Sends a test email to your user's email address to verify SMTP settings.
Host	The server name for the SMTP server.
Port	The port that the mail server expects communications to come through. The port should typically be set to one of the following values: • 25: clear text SMTP port • 587: encrypted SMTP using TLS
User TLS?	Check this option to encrypt SMTP traffic using the Transport Layer Security (TLS) protocol.
Use Default Credentials	Check this option to authenticate using the service account Validatar runs under instead of entering specific credentials.
Username (optional)	SMTP username
Password (optional)	Changes SMTP password
From Address	The displayed sender's address.

Authentication

Overview

The **Authentication** section contains settings related to profile security, such as automatic logouts and account passwords.

User Session

User Session

Session Duration required

| 60 | minute(s) |

- **Session Duration:** Determines how long, in minutes, a user can remain idle in Validatar before they are automatically logged out.

Account Security & Recovery

Account Security & Recovery

Login Attempts Before Lockout required

| 5 |

Account Lockout Duration required

| 10 | minute(s) |

Password Reset Window required

| 1 | day(s) |

- **Login Attempts Before Lockout:** The number of incorrect password attempts allowed before locking a user account.
- **Account Lockout Duration:** How long, in minutes, an account is locked after the maximum number of failed login attempts is reached.
- **Password Reset Window:** The length of time, in days, a user has to click the Password Reset email link before it expires.

Password Complexity

Password Complexity

Minimum Password Length required

| 7 |

Required Character Groups required

| 3 |

- **Minimum Password Length:** The minimum character length of all passwords.
- **Required Character Groups:** The minimum number of character groups that are required for an acceptable password. Character groups are necessary to enforce password complexity.
  - Set to 1, then only upper-case characters are required.

- Set to 2, then upper-case and lower-case characters are required.
- Set to 3, then upper-case characters, lower-case characters, and digits are required.
- Set to 4, then upper-case characters, lower-case characters, digits, and punctuation characters are required.

Scheduling

Overview

The **Scheduling** section allows the user to

- Choose to ignore past or skipped schedules when the Validatar site is restarted in IIS (Internet Information Services) and
- Choose to schedule a daily result purge. The result purge clears the Validatar database of test results but keeps the history of test executions.

If the Result Purge Schedule is set to yes, Validatar will purge the results of any tests or profile sets that have been stored longer than the defined number of days either on the individual test, profile set, or default setting at the specified time.

Home / Settings / Configuration / Scheduling

Server Configuration - Scheduling

Validatar Configuration

SMTP

Authentication

Scheduling ❯

Default Values

Data Environments

Result Storage

Reporting

Logs

Save

Restart Behavior

Ignore past/skipped schedules on Validatar restart?

🔘 No ⚪ Yes

Result Purge Schedule

Schedule daily background execution result purge process

⚪ No 🔘 Yes, at 11:00 AM

Default Values

Overview

The **Default Values** section allows you to select test and profile set configuration settings on a server level. This allows every new test and profile set created to be standardized.

> **Configuration Note**
>
> The configuration setting on an individual test or profile set overrides the default setting.

Test Configuration

The test configuration settings reflect the result configuration section found at the bottom of standard and template tests.

Test Configuration	
Configuration Setting	**Default Value**
Value Success Criteria *Single-Value, Multi-Value, Profile*	● Numeric Tolerance ○ Percent Tolerance
Value Success Tolerance *Single-Value, Multi-Value, Profile*	0
Overall Success Criteria *Multi-Value*	● Max Failure ○ Percent Failure
Overall Success Tolerance *Multi-Value*	0
Only Keep Failures *Multi-Value*	● No ○ Yes
Abort Processing After Failures *Multi-Value*	● No ○ Yes, after 1000 failures
Abort Processing After Rows *Multi-Value*	● No ○ Yes, after 1000 rows
Scripts Include Order By *Multi-Value*	● No ○ Yes
Purge Results After Days *All*	● No ○ Yes, after 180 days

The test data type that applies to each setting is italicized under the setting name.

Profile Set Configuration

The profile set settings reflect what's on the Profile Set Configuration tab inside of a profile set.

Profile Set Configuration	
Configuration Setting	**Default Value**

Max Concurrent Queries	4	
Max Profiles Per Query	500	
Purge Results After Days	● No ○ Yes, after	180	days

Data Environments

Overview

Data Environments help to define a data source's usage relating to development and deployments.

Standard environment names include:

- Development or DEV
- Test or QA
- Production or PROD
- UAT

Usage of these environments helps separate architectures for deployments and are used in development. Adding an environment to your data source allows you to use the same name for different database connections but differentiate them by attaching the development environment.

Adding an Environment

1. Navigate to **Settings** > **Configuration** > **Data Environments**.
2. Click **Add Environment**.
3. Enter environment name.
4. Add as many environments as needed.
5. Click **Save**.

Removing an Environment

1. Navigate to **Settings** > **Configuration** > **Data Environments**.
2. Select the environment from the list.
3. Click **Remove Environment**.

Assigning an Environment to a Data Source

1. A **Data Source Admin** or **Global Admin** must navigate to **Settings** > **Data Sources** > **Select the Data Source**.
2. On the General tab, select an Environment from the dropdown.
3. Click **Save**.

You can find the total number of data sources assigned to an Environment on the Data Environments list page.

Migrated Environment

If you're upgrading from an older version to 2021.3, all data sources will inherit the **Migrated** environment automatically. You can change the name after the upgrade is complete.

Result Storage

Overview

During installation, a SQL Server database server is set up, which stores the results of test and profile set executions locally. If you are interested in storing results in the cloud, we offer the option to store result records in Snowflake.

Choosing a Location

- **Local Storage:** Test Results and Profile Results will be stored in the Validatar repository.
- **Snowflake:** Test Results and Profile Results will be stored in Snowflake. This option is not available until the Snowflake configuration has been completed and verified below.

Configuring Snowflake

Prerequisites

1. SnowSQL needs to be installed on the Validatar web server before changing the storage location to Snowflake.
2. A Snowflake admin must run the generated setup script in Snowflake to initialize the environment.

> **SnowSQL Note**
>
> Files are transferred to Snowflake using SnowSQL.

Setting up SnowSQL on Windows

Click here to view Snowflake's documentation on installing SnowSQL.

Note: The installer may fail to initialize log. If this occurs,

- Go to: %USERPROFILE%\.snowsql\
- Update the config file by replacing this line: log_file = ../snowsql_rt.log
- With this line: %USERPROFILE%\.snowsql\log

Configure the Connection

All parameters are required to configure the connection.

Connection Parameters	Description
Account Name	The account name is found in the URL used to log into Snowflake, excluding "*https://*" or "*.snowflakecomputing.com*". The account name must include the region.
Database Name	The database that will store the results. The database does not have to exist beforehand.
Schema Name	The schema that will store the results. The schema does not have to exist beforehand.
	The assigned user role used to. The role cannot be one of the following Snowflake system-defined roles: • ACCOUNTADMIN • SECURITYADMIN

Connection Parameters	Role Name	Description
	• USERADMIN • SYSADMIN • PUBLIC	
Username		
Warehouse Name		The warehouse that will store the results. The warehouse does not have to exist beforehand.
Temporary File Path		Temporary files will be created in this folder before being imported into Snowflake.

Running the Setup Scripts

Complete the following steps to configure Snowflake.

1. After configuring the Snowflake Connection in Step 2, click **Generate Setup Script**.
2. Copy the setup script to the clipboard.
3. Paste the setup script into an open Snowflake worksheet.
4. Setup a password for the user by substituting [[REPLACE]] in the setup script with the actual password.
5. Run the setup script in Snowflake.
6. In Validatar, generate the public/private keys that will authenticate SnowSQL.
7. Click View Public Key/Script and copy the script to the clipboard.
8. Paste the key script into an open Snowflake worksheet
9. Run the key script.

You're done with the Snowflake setup! Next is validating the connection.

> **Public/Private Key Note**
>
> You can regenerate the public/private keys as frequently as you want, but you will need to regenerate and rerun the script to assign the new public key to the Validatar user account in Snowflake.

Validate the Connection

The last step to set up Snowflake is validating the connection. Click **Validate Settings**, and Validatar will complete the following steps:

1. Verifying that the Snowflake account exists
2. Verifying that SnowSQL is installed
3. Verifying the Snowflake login
4. Verifying the database, role, and warehouse
5. Creating the schema, table, stages, and pipes
6. Verifying access to the temporary file path
7. Verifying that a sample file can be uploaded/imported to Snowflake

Reporting

Overview

Overview

You can embed Tableau Server dashboards in Validatar by configuring the **Reporting** section.

Here's what you need to complete the setup:

- **Tableau Server URL:** The URL to your Tableau Server account. Example (https://tableau.xyzcorp.com)
- **Tableau Site (optional):** Specifies a site on a Tableau Server instance. Sites are used to separate groups of users and content on the same Tableau Server instance.
- **Identity Store:** This is chosen when Tableau Server is installed.
    - Local Store: All user and group information is stored and managed in the Tableau Server repository.
    - External Store (AD or LDAP): An external directory service stores and manages user and group information.

Logs

Overview

Overview

The **Logs** section allows the user to download recent log files that can be shared with support to troubleshoot errors on the server. Enter how far back (in days) you want the log file to go in the text box, then select Download Logs.

The following items are included in the zip file:

- Server Settings and Configuration Information
- Web Server Logs
- Service Layer Logs

No customer-sensitive data will be included in the settings or log files that are downloaded.

Commonly Used Regex

Overview

Overview

Regular Expressions also referred to as Regex, are a sequence of characters that attempts to identify patterns. Regex is commonly used to perform validations such as email or phone number validation in a set of data.

Regex Rules

There are a few categories of characters, operators, or constructs that define regular expressions. Provided are the categories referenced in the .Net regex engine. Use the following categories to build your regular expression.

Character Classes

A character class matches any one of a set of characters.

Character Class	Description	Example Pattern	Matches
[*character_group*]	A case-sensitive match of any single character in *character_group*.	[ah]	"a" in "ball" "a", "h" in "watch"
[^*character_group*]	Matches any single character that is **not** in *character_group*. Case-sensitive.	[^ba]	"o", "r", "d" in "board"
[*first - last*]	Matches any single character in the range from *first* to *last*.	[A-Z]	"A", "B" in "ABC123"
.	Wildcard that matches any single character except \n (new line). To match a literal period, escape the character (\.).	b.e	"bje" in "object" "ble" in "noble"
\p{*name*}	Matches any single character in the Unicode general category or named block specified by *name*.	\p{Lu}	"S", "A" in "Swiss Alps"
\P{*name*}	Matches any single character that is not in the Unicode general category or named block specified by *name*.	\P{Lu}	"l", "p", "s" in "Alps"
\w	Matches any word character.	\w	"A", "B", "C", "2", "5" in "ABC 2.5"
\W	Matches any non-word character.	\W	" ", "." in "ABC 2.5"
\s	Matches any white-space character.	\w\s	"C " in "ABC 2.5"
\S	Matches any non-white-space character.	\s\S	" 2" in "ABC 2.5"
\d	Matches any decimal digit.	\d	"3" in "3 toys"
\D	Matches any character other than a decimal digit.	\D	" ", "t", "o", "y", "s" in "3 toys"

Quantifiers

A quantifier specifies how many instances of a previous element (character, group, or character class) must be present in the string for a match.

Quantifier	Description	Example Pattern	Matches
*	Matches the previous element 0 or more times.	\d*\.\d	".0", "15.5", "415.5"
+	Matches the previous element 1 or more times.	"fe+"	"fe" in "fell" "fee" in "feel"
?	Matches the previous element 0 or 1 time.	"rai?n"	"ran", "rain"
{*n*}	Matches the previous element exactly *n* times.	",\d{3}"	",056" in "1,056.4"",435", ",692", ",718" in "9,435,692,718.00"
{*n,*}	Matches the previous element at least *n*	"\d2 \"	"22" "425" "2224"

Quantifier	Description	Example Pattern	Matches
{n}	Matches the previous element at least n times.	"\d{2}"	"29", "435", "2031"
{n,m}	Matches the previous element at least n times but no more than m times.	"\d{3,5}"	"789", "5347" "90875" in "908756"
*?	Matches the previous element 0 or more times, but as few times as possible.	\d*?\.\d	".0", "15.5", "415.5"
+?	Matches the previous element 1 or more times, but as few times as possible.	"\fe+?"	"fe" in "feel" "fe" in "fell"
??	Matches the previous element 0 or 1 time, but as few times as possible.	"rai??n"	"ran","rain"
{n}?	Matches the previous element exactly n times.	",\d{3}?"	",056" in "1,056.4" ",435", ",692", ",718" in "9,435,692,718.00"
{n,}?	Matches the previous element at least n times, but as few times as possible.	"\d{2,}?"	"29", "435", "2031"
{n,m}?	Matches the previous element between n and m times, but as few times as possible.	"\d{3,5}?"	"435", "2031" "908", "756" in "908756"

Anchors

Anchors cause a match to pass or fail depending on the current position in the string.

Anchor	Description	Example Pattern	Matches
^	The match must start at the beginning of the string, or the beginning of the line.	^\d{3}	"913" in "913-333-"
$	The match must occur at the end of the string or before the new line at the end of the string. Or it must occur before the end of the line or before the new line at the end of the line.	-\d{3}$	"333" in "-913-333"
\A	The match must occur at the start of the string.	\A\d{3}	"913" in "913-333-"
\Z	The match must occur at the end of the string or before a new line at the end of the string.	-\d{3}\Z	"-333" in "-913-333"
\z	The match must occur at the end of the string.	-\d{3}\z	"-333" in "-913-333"
\G	The match must occur at the point where the previous match ended.	\G\(\d\)	"(1)", "(3)", "(5)" in "(1)(3)(5)[7](9)"
\b	The match must occur on a boundary between a \w (alphanumeric) and a \W (non-alphanumeric) character.	\bscheme\b	"scheme" in "That was a clever scheme"
\B	The match must not occur on a \b boundary.	\Band\w*\b	"ands", "ander" in "and sands android lander"

Escaped Characters

Escaped Character	Description
\a	Matches a bell character
\t	Matches a tab
\r	Matches a carriage return
\v	Matches a vertical tab
\f	Matches a form feed
\n	Matches a new line
\e	Matches an escape

\	When followed by a character that's not an escaped character,'\' is the literal match of the character.

Alternation

Alternation

Alternation modifies a regular expression to enable either/or matching.

Alternation	Description
a|b	Matches either *a* or *b*
(?(*exp*)*yes|no*)	*yes* if *exp* is matched; *no* if *exp* isn't matched
(?(*name*)*yes|no*)	*yes* if *name* is matched; *no* if *name* isn't matched

9 Commonly Used Regex

Copy and paste the following regular expressions into Validatar to search for patterns in your data. Learn more about using regex with Validatar here.

1. Digits

- **Whole Numbers:** ^\d+$
- **Decimal Numbers:** ^\d*\.\d+$
- **Whole + Decimal Numbers:** ^[\-+]?\d*(\.\d+)?$
- **Negative, Positive Whole + Decimal Numbers:** ^-?\d*(\.\d+)?$
- **Whole + Decimal + Fractions:** [-]?[0-9]+[,.]?[0-9]*([\/][0-9]+[,.]?[0-9]*)*

2. Alphanumeric Characters

- **Alphanumeric without space:** ^[a-zA-Z0-9]+$
- **Alphanumeric with space:** ^[a-zA-Z0-9]*$

3. Email

- **Common Email Address:** ^([a-zA-Z0-9._%-]+@[a-zA-Z0-9.-]+\.[a-zA-Z]{2,6})*$

4. Dates

- **Format YYYY-MM-dd:** ^(19|20)\d\d([- /.])(0[1-9]|1[012])\2(0[1-9]|[12][0-9]|3[01])$
- **Format MM-dd-YYYY:** ^(0[1-9]|1[012])[- /.](0[1-9]|[12][0-9]|3[01])[- /.](19|20)\d\d$
- **Format dd-MM-YYYY:** ^(0[1-9]|[12][0-9]|3[01])[- /.](0[1-9]|1[012])[- /.](19|20)\d\d$

5. Time

- **Format HH:MM 12-hour, optional leading 0:** ^(0?[1-9]|1[0-2]):[0-5][0-9]$
- **Format HH:MM 12-hour, optional leading 0, AM/PM:** ^((1[0-2]|0?[1-9]):([0-5][0-9]) ?([AaPp][Mm]))$
- **HH:MM 24-hour with leading 0:** ^(0[0-9]|1[0-9]|2[0-3]):[0-5][0-9]$
- **HH:MM 24-hour, optional leading 0:** ^([0-9]|0[0-9]|1[0-9]|2[0-3]):[0-5][0-9]$

- HH:MM:SS 24-hour: ^(?:[01]\d|2[0123]):(?:[012345]\d):(?:[012345]\d)$

6. Match Duplicates

- **Search Duplicates:** (\b\w+\b)(?=.*\b\1\b)

7. Phone Numbers

- **US and International Phone Numbers with Separators:** ^(\+\d{1,2}\s)?\(?\d{3}\)?[\s.-]\d{3}[\s.-]\d{4}$
- **US Phone Numbers Only with Separators:** ^(\+0?1\s)?\(?\d{3}\)?[\s.-]\d{3}[\s.-]\d{4}$
- **Unformatted Phone Numbers:** ^(\+\d{1,2}\s)?\(?\d{3}\)?[\s.-]?\d{3}[\s.-]?\d{4}$

8. Identification

- **Social Security Number with dashes:** ^(?!219-09-9999|078-05-1120)(?!666|000|9\d{2})\d{3}-(?!00)\d{2}-(?!0{4})\d{4}$
- **Social Security Number without dashes:** ^(?!219099999|078051120)(?!666|000|9\d{2})\d{3}(?!00)\d{2}(?!0{4})\d{4}$

9. Zip Codes

- **US Postal Code:** ^\d{5}([\-]?\d{4})?$

Connection Strings

> The parameters of a connection string can change depending on the version of the database engine or driver. Reference your database provider's documentation for the correct connection string syntax if you do not see it listed here.

Overview

Connecting a data source to Validatar is done using connection strings. It specifies information about the data source and the means of connecting to it.

The connection string you use depends on the database engine you're connecting to, the chosen Validatar connection type, and whether or not you decide to use Windows Authentication.

> **Password Note**
>
> Always encrypt your password using the placeholder **[[PASSWORD]]** in the connection string and typing your password in the provided password box.

Validatar uses three different connection types: SQL Server, ODBC, and OLE DB.

Connecting using SQL Server

Use the SQL Server connection type to connect to SQL Server and Azure SQL databases. **Note:** Windows comes with the SQL Server driver already installed.

To escape any special characters (semicolons, single-quote character, double-quote character):

- The value must be enclosed in double quotation marks.
- If the value contains both a semicolon and double-quote character, the value must be enclosed in single quotation marks.

SQL Server Authentication

SQL	Copy

```sql
Server=myServerAddress;Database=myDatabase;User Id=myUsername;Password=[[PASSWORD]];
```

Windows Authentication

Integrated Security specifies that you are using Windows Authentication. User credentials are not required. When using Integrated Security, acceptable values are 'true', 'false', 'yes', or 'no'.

SQL	Copy

```sql
Server=myServerAddress;Database=myDatabase;Integrated Security=yes;
```

> **Windows Authentication Note**
>
> Validatar uses the service (domain) account Validatar is running under for Windows Authentication **not the current user's domain credentials**. Check with your web server admin and database admin to verify that the Validatar service account has read-access to the databases you want to connect to via Windows Authentication.

Connecting to a SQL Server Instance

If there are multiple instances on the server, you must identify the instance name in the connection string.

SQL	Copy

```
Server=myServerName\myInstanceName;Database=myDatabase;User Id=myUsername;Password=
[[PASSWORD]];
```

Specifying a Port

You can specify the port number after the server name.

SQL	Copy

```
Server=myServerName,portNumber;Database=myDatabase;User Id=myUsername;Password=
[[PASSWORD]];
```

Synonyms

Some connection string keywords are interchangeable with other synonyms.

Keyword	Synonym(s)
Server	Data Source, Address, Addr, Network Address
Database	Initial Catalog
Integrated Security	Trusted_Connection
Password	PWD
User ID	UID

Connecting using ODBC

Prerequisite Required

The appropriate **ODBC driver** must be installed on the server before connecting to a data source. Be sure to use the correct driver name in the connection string.

Netezza

SQL	Copy

```
Driver=
{NetezzaSQL};Server=myServerAddress;port=myPortNumber;Database=myDataBase;username=myUsername
[[PASSWORD]];
```

Snowflake

SQL	Copy

```
Driver=
```

133

```
{SnowflakeDSIIDriver};Server=myServerAddress;Warehouse=myWarehouse;Database=myDatabase;Uid=my
[[PASSWORD]];
```

Optional parameters

- Schema
- Role

> **Syntax Note**
>
> Make sure there are no spaces between the parameter value and semicolon in the connection string, or the connection will fail.

Oracle

The simplest way to connect to an Oracle database is to create a system DSN on the server. The user must have admin rights to create a system DSN.

- Open ODBC Data Sources 64-bit in Windows
- Click the System DSN tab
- Click Add
- Select the Oracle ODBC driver
- Fill out all relevant information
- Create the DSN

SQL	Copy

```
dsn=dsnName; Uid=myUserName; Pwd=[[PASSWORD]];
```

PostgreSQL

SQL	Copy

```
Driver={PostgreSQL};Server=IP address;Port=5432;Database=myDataBase;Uid=myUsername;Pwd=
[[PASSWORD]];
```

Teradata

SQL	Copy

```
DRIVER={Teradata Database ODBC Driver 16.20};DBCName=156.43.66.95;UID=username;PWD=
[[PASSWORD]];
```

Connecting using OLE DB

> **Prerequisite Required**
>
> The appropriate **OLE DB driver** must be installed on the server before connecting to a data source.

Netezza

SQL	Copy

```
Provider=NZOLEDB;Password=[[PASSWORD]];User ID=myUsername;Data
Source=myServerAddress;Initial Catalog=myDataBase;Port=PortNumber;
```

Oracle

Oracle Provider

SQL	Copy

```
Provider=OraOLEDB;Data Source=MyOracleDB;User Id=myUsername;Password=[[PASSWORD]];
```

Microsoft Provider

SQL	Copy

```
Provider=MSDAORA;Data Source=MyOracleDB;User Id=myUsername;Password=[[PASSWORD]];
```

PostgreSQL

SQL	Copy

```
Provider=PostgreSQL OLE DB Provider;Data Source=myServerAddress;location=myDataBase;User
ID=myUsername;password=[[PASSWORD]];
```

Teradata

SQL	Copy

```
Provider=TDOLEDB;Data Source=myServerAddress;User ID=myUsername;Password=[[PASSWORD]];
```

Troubleshooting Errors

Error	Possible Solutions
Invalid username or password	Verify the credentials by connecting to the database via DBMS or creating a DSN. If using Windows Authentication, check with your server admin and database admin that the service account Validatar is running under has permissions to the appropriate databases.
Could not connect to the database server	If the timeout takes a couple of seconds this is probably an access issue. If the timeout takes a few more seconds this probably is a networking or firewall issue. Check with your networking team to ensure Validatar can connect to the database server.
The connection string is incorrect	Verify that all required parameters for that database engine are included in the connection string. If you're connecting to Snowflake, be sure there are no spaces between the parameter value and semicolon as this will cause the connection to fail.

Data Source and Explorer Changes

Data Sources Changes

Data sources are now managed globally instead of under project settings. That's right, no more creating duplicate data sources for each project using a particular database. With this change you can:

- Create a data source once and use it across Validatar projects.
- Create and manage data environments for data sources. Go to **Settings** > **Configuration** > **Data Environments** to manage the environments. Assign the environment to a data source by navigating to the data source's settings.

Implications of Moving Data Sources

- The names of existing data sources have been concatenated to include the data source name and the project from where it was migrated.
- All data sources that existed before upgrading to 2021.3 are assigned to the **Migrated** environment.
- You can assign data sources to projects in the new **Projects** subsection found in Data Source Settings.
- We've added the ability to **merge duplicate data sources** together if they have an identical connection string. Validatar will preserve the connections to tests, profile sets, and execution history.

Explorer Changes

Explorer has also moved out of Project Settings. The new explorer area brings all of your data sources together, regardless of project, and allows you do discover their structure and full data profile. With this change you can:

- Perform a search to find database objects
- Have profile data about a data source stored in one place
    - This assumes that any duplicate data sources have been merged.

Implications of Moving the Explorer

- Quickly discover and navigate to objects in a data source by drilling into the data source on the Explorer's navigation tree. Click on the object to navigate to its data profile.

What You Need to Do

Now that you know what's changed and why the change happened, visit the following pages to learn how to clean up your environment following the upgrade:

- Data Source Clean Up
- User Group Clean Up

Data Source Clean Up

Overview

Validatar's 2021.3 release comes with changes around data sources, user groups, and much more. Here's a starter guide to cleaning up your environment after upgrading.

Since data sources have moved from Project to Global Settings, duplicate data sources may be in your Validatar environment. To de-duplicate your data sources, you will need to perform a data source merge.

Duplicate data sources have the same connection type, database engine, and connection string. The validation process includes a case-insensitive match on the connection string.

Why Merge?

- A merge allows for more consistent data profiling and test creation. Having more than one of the same data source can cause Validatar to have different metadata refresh schedules, effectively causing profiles and tests not to use the latest data if they're in other projects.
- Easier management of data sources. With data sources now managed in a central location, only one place needs monitoring.

Result of Merging Data Sources

- Anywhere the source data source appeared in standard and template tests will now use the target data source with the "Last Modified" date updating to reflect the change.
- Profile sets and custom profiles created in the source data source will now appear in the target data source.
- Profile set executions performed in the source data source will appear in the target data source.
- Test and Job history will be unaffected.

Are you ready to merge? The following section teaches you how!

Performing the Merge

Merge Warning

Data Source merging is irreversible. Confirm that you want to merge two data sources before you proceed.

Prerequisites

1. The user performing the merge must be either a Data Source Admin or Global Admin. Navigate to **Settings** > **Users** > **Click username** to adjust global role permissions.
2. The connection type, database engine, and connection string of both data sources must be the same, except for the user credentials.
3. Make sure the data source you want to keep has metadata ingested.

Merge Steps

The following steps allow you to merge two or more data sources:

1. Navigate to **Settings** > **Data Sources**.
2. Select the target data source, the one you want to keep, from the list. Open the data source.
3. In the toolbar, select **Merge**.
4. Select the source data source from the drop-down, the data source you're merging into the target. Only data sources with an identical definition are shown on the drop-down list.

5. Select **Validate Data Source For Merge**.
6. The number of tests, profile sets, custom profiles, and profile set executions merged into the target data source will be displayed. If there are any errors, please exit out of the pop-up window and correct them before merging again.
7. Select **Merge Data Sources**.
8. **"Data Sources have been merged successfully"** should appear in the upper right-hand corner.

After the Merge

After merging, when you return to the Data Source list, the source data source should no longer appear on the list.

Next, visit User Group Clean Up to learn how to merge any user groups.

Validation Errors

- **Source metadata was unable to refresh properly**
  - The connection string might have invalid user credentials. Go back into the connection configuration and test the connection.

- **Tables must match** or **Columns must match**

User Group Clean Up

Overview

After upgrading, all existing groups are managed in a central location. User Groups, previously known as Groups under Projects Settings, have moved to Global Settings. To identify which project the user group came from, the project name is appended to the end of the user group name.

There are two ways to manage user groups going forward:

1. Edit the name to better represent the user group.
2. Merge related or duplicate user groups then edit the name to better represent the user group.

Prerequisite Required

1. A user must either have the Security role or Global Admin role to manage user groups.

Editing User Group Names

Follow these steps to edit a user group name:

1. Navigate to **Settings** > **User Groups**.
2. Open the user group.
3. Edit the name.
4. Click **Save**.

Merging Users Groups

Follow these steps to merge user groups:

1. Open the user group you want to survive.
2. Click on Merge in the toolbar.
3. Choose to either save or delete the user groups that you're merging into the current group.
4. Select one or more user groups from the list. (Hold down Ctrl to multi-select)
5. Click Merge.

Note: You cannot restore a user group after it is deleted during the merge.

Creating a Data Source

This article is a step-by-step guide that will teach you how to create a new data source.

Instructions

1. Navigate to Settings
2. Click on Data Sources
3. Click on the "New Data Source" button
4. Enter a name and description for the new data source
5. Click the "Edit" box in the Connection section of the page
6. Choose the Connection Type and Database Engine from the dropdown boxes
7. Enter the connection string
   - Sample SQL Server connection string: Server=;Database=;User Id=;Password=[[PASSWORD]];
   - Sample Snowflake connection string: Driver=SnowflakeDSIIDriver; Server=; Warehouse=; Database=; Uid=; Pwd=[[PASSWORD]]
   - Sample Oracle connection string: DSN=dsn_name; UID=username; PWD= [[PASSWORD]]

8. Enter the password
9. Click the "Create Connection" button
10. Click the "Save" button

Creating a New User Account

This article is a step-by-step guide that will teach you how to create a new user account.

Instructions

1. Navigate to Global Settings
2. Click on Users
3. Click on the "New User" button
4. Fill out the required fields (First Name, Last Name, Email, Username, Password)
5. Click the checkboxes on the right if this user is a Global Admin, Creator, or needs admin access to a specific project
6. Click the "Save Button"

> **Note**
>
> After a new user is created, they still need the appropriate access to projects and data sources before they are able to begin working.

Granting Users Project Access

This article is a step-by-step guide that will teach you how to grant a user access to a project and assign appropriate roles.

Instructions

1. Click on the Project to which you want to grant the user access
2. Expand Project Settings on the navigation tree
3. Click Project Users
4. Click the "Grant Access" button
5. Select the user from the drop-down
6. Click the checkboxes next to the appropriate roles for this user
7. Click the "Save" under the record

Creating a New User Group

This article is a step-by-step guide that will teach you how to create a new user group.

Instructions

1. Navigate to Settings
2. Click on User Groups
3. Click the "New Group" button
4. Enter the group name
5. Click the checkbox to assign any existing users to this group
6. Click the "Save" button

Assigning a User to an Existing Group

This article is a step-by-step guide that will teach you how to assign a user to a user group.

Instructions

1. Navigate to Settings
2. Click User Groups
3. Open the respective user group
4. Click the checkbox to assign the user to the group
5. Click the "Save" button

Assigning Data Source Permissions to a User Group

This article is a step-by-step guide that will teach you how to assign data source permissions to a user group.

Instructions

1. Navigate to Settings
2. Click on Data Sources
3. Click on the name of the data source
4. Click on "Permissions"
5. Click on the "New Rule" button
6. Select the user group from the dropdown box
7. Check the checkbox for the permissions you wish to assign to the group
8. Click the "Save" button

Assigning Data Source Permissions to a User

This article is a step-by-step guide that will teach you how to assign data source permissions to a user group

Instructions

1. Navigate to Settings
2. Click on Data Sources
3. Click on the name of the data source
4. Click on "Permissions"
5. Click on the "New Rule" button
6. Select the user from the dropdown box
7. Check the checkbox for the permissions you wish to assign to the group
8. Click the "Save" button

Validatar EULA

End-User License Agreement ("Agreement")

Last updated: August 1, 2019

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Teknion Data Solutions reserves the right, at its sole discretion, to modify or replace this Agreement at any time. If a revision is material we will provide at least 30 days' notice prior to any new terms taking effect. What constitutes a material change will be determined at our sole discretion.

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The Agreement constitutes the entire agreement between you and Teknion Data Solutions regarding your use of the Application and supersedes all prior and contemporaneous written or oral agreements between you and Teknion Data Solutions.

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2021.3 Product Changes

Validatar has a new release! From major updates to minor bug fixes, we're constantly working to improve your Validatar experience so you can continue to build trust in your data. Learn about what's new below.

New Look and Feel

The UI and navigation have changed to reflect the discovery and reporting nature of Validatar better, in addition to data quality testing.

- There's a **new home page**! Discover details about data sources, projects, and reports as soon as you log in.
- A **new toolbar** provides quick access to the Explorer, Projects, Reports, and Settings areas.
  - The navigation tree on the left changes depending on which areas mentioned above were selected in the toolbar.

API Integration

For organizations on the Enterprise Edition, API integration is now available!

- Use API endpoints to create Validatar objects, execute tests and jobs, and manage users.
- Get in touch with us to learn how to expose the API documentation on your local Validatar install.

Data Sources Changes

Manage data sources globally instead of under project settings. That's right, no more creating duplicate data sources for each project using a particular database.

- You can quickly discover and navigate to objects in a data source by drilling into the data source on the Explorer's navigation tree. Click on the object to navigate to its data profile.
- Create and manage data environments for data sources. Go to **Settings** > **Configuration** > **Data Environments** to manage the environments. Assign the environment to a data source by navigating to the data source's settings.

Implications of Moving Data Sources

- The names of existing data sources have been concatenated to include the data source name and the project from where it was migrated.
- All data sources that existed before upgrading to 2021.3 are assigned to the **Migrated** environment.
- You can assign data sources to projects in the new **Projects** subsection found in Data Source Settings.
- We've added the ability to **merge duplicate data sources** together if they have an identical connection string. Validatar will preserve the connections to tests, profile sets, and execution history.

Learn more about the migration of data sources at Data Source and Explorer Changes

Improved Testing

The long-awaited ability to **compare string values** in Validatar is finally here!

- Compare strings using the following test data types:
  - Key-Value List SQL (previously known as Multi-Value SQL)
  - Single-Value SQL
  - String Value

- **Use regular expressions** on the string value test type to detect patterns. Not a regex expert? No problem! Find out more about common regular expressions here.
- Speaking of Key-Value List SQL, we've changed the name from Multi-Value SQL to explain better that this type of test expects a SQL script that returns only two columns: a key column and a value column.
  - With the addition of string testing, there are now test data type options for both string and numeric value testing.

What's New with Reporting

Everything! We're introducing the ability to connect Tableau dashboards to Validatar and view reports on previously executed tests and jobs.

- Connect to your Tableau Server account by navigating to **Settings** > **Configuration** > **Reporting**.
- You can also find reports for both Test and Job Execution History by clicking on **Reports** in the new navigation bar. Add filters to the report and save the view for easy access for your or your team.

Keep an eye out for other custom reports and views coming soon!

Storage Improvements

You can now save your test and profile results to Snowflake instead of using the local Validatar database.

- Why? A cloud database is more flexible, effiecient, and can be scaled up-or-down quickly depending on its usage unlike locally stored databases.
- How? Have a global admin go to **Settings** > **Configuration** > **Result Storage**, set up and validate the connection to Snowflake, then switch the **Storage Location** to Snowflake.

Other Improvements

- **Modified Move/Copy button**: Move or copy tests and folders straight from the Test Repository page using the **Move/Copy** button.
- **Modified Global Admin role**: Global Admin has been split into three sub-roles: Configuration Admin, Data Source Admin, and Security Admin.
- **Deselect import objects**: We've added the ability to deselect objects you want to exclude during the Import process.
- **Migrated Groups**: We've moved User Groups, previously known as Groups, from Project Settings to Global Settings. This change comes with the ability to merge two or more user groups.
- **Long String Test Results**: If a test returns a string value longer than 500 characters, the entire string result will be evaluated but only the first 500 character will be saved.

Highlighted Bug Fixes

- We've fixed a bug that allowed **the user to change the object selection setting in Template tests unintentionally**.
- We've fixed a bug that required **the purge profile set results setting to be configured and enabled before executing a default profile set**.

enabled before executing a default profile set.

- We've corrected a bug where **users could use a non-numeric profile result in a test**.
- We've corrected an issue in SMTP settings **where users received an error message when sending a test email if they left the username field blank and didn't use default credentials**.
- We've fixed a bug that was causing **scheduled jobs containing a profile set step to lock**.
- We've fixed a bug that **didn't filter custom profile references on Template Tests correctly**.
- We've corrected a bug where **non-global admin users couldn't upload Template Tests import files**.

2021.2.1 Product Changes

Validatar has a new release! From major updates to minor bug fixes, we're constantly working to improve your Validatar experience so you can continue to build trust in your data. Learn about what's new below.

What's New in Version 2021.2.1

- We're introducing the ability to create and add **Labels** to Validatar objects. Do you need to keep track of which tests and jobs belong to a particular development build? Labels will help you group those objects and import them into another Validatar instance.
- We've added the ability to set **default configuration options** for tests and profile sets. Would you rather all newly created tests return failed results only? Have a global admin set the default under **Global Settings** > **Configuration** > **Default Values**.
- You can now **purge results** from the Validatar database on a server and individual test level. Set a purge schedule to keep your environment clean.

Highlighted Improvements

- We've added a Summary box to the Template Test configuration screen which shows stats about new and previously created child tests.
- Load times for the Data Source list in the Explorer have improved.
- You can now multi-select objects to add or remove them from a job by holding down the Ctrl key instead of a single select.
- You can now see who created and last modified a test, along with timestamps, at the bottom of every test.
- You can find the option to purge individual test results in the Result Configuration section of the test. To schedule a purge on the server level, a global admin can navigate to **Global Settings** > **Configuration** > **Scheduling**.
- For users whose Validatar server does not have internet connectivity, we've added an offline license activation mechanism inside of the tool.
- Hover over the metadata data link name on the test configuration page to see the full object name. This is especially helpful when you link multiple metadata objects that have the same schema and table name prefix.
- When reverting to a previous version of a Validatar object, you now have to confirm before the revert is complete.
- We've enhanced the test version dropdown to include more distinguishable information about the previous version.
- Validatar now disables scheduled tasks that are set to occur after a license expires.
- Minor improvements to the navigation pane when test folders are deleted.

Highlighted Bug Fixes

- We corrected a bug that left open the REST API endpoint to create a global admin after the initial Validatar install.
- We've fixed a bug where import files containing multiple profile sets caused an error during the import.
- When copying a test, some of the required result configuration fields would become null effectively invaliding the copied test. This issue has been fixed.

- For the following test scenarios, the test showed as passed when the test had an error. This issue has been fixed.
  - Execution errors
    - A SQL script with invalid SQL

  - Processing errors
    - A single-value SQL script that returns more than one row
    - A single-value SQL script that returns more than one column
    - A multi-value SQL script that doesn't return two columns

- We've corrected a bug where the Archive button was broken visually but still functioned correctly.

2021.2 Product Changes

Validatar has a new release! From major updates to minor bug fixes, we're constantly working to improve your Validatar experience so you can continue to build trust in your data. Learn about what's new below.

What's New in Version 2021.2

- We're introducing Template Tests in our latest release! Tired of making a copy of a test for each target object? Now you can dynamically create multiple tests at one time using a template. The template will use object reference tags to automatically populate the test configuration options including SQL scripts.
- You can now get Validatar help and view documentation without having to leave Validatar using the help icon right next to your username!
- You can now view test version history on the test details page. Want to return to a previous version? Use the test version dropdown to select a previous version and click Revert!

Highlighted Improvements

- You can now add available objects to a Job by search in addition to using the folder tree. Just click the search icon to toggle to the search view.
- The results page has been enhanced to support viewing Template Test run executions.
- The Import and Export tools have been enhanced to support Template Tests.
- The Test Repository page has been updated to show if a standard test was created from a template.
- Minor UI improvements.

Highlighted Bug Fixes

- We corrected a bug for improper sorting on the Results detail page.
- The Aborted % in the step status column on the Profile Executions page is now showing an accurate percentage.
- Fixed a bug where single value tests incorrectly displayed result evaluation options that didn't apply to that test data type.

2021.1 Product Changes

Validatar has a new release! From major updates to minor bug fixes, we're constantly working to improve your Validatar experience so you can continue to build trust in your data. Learn about what's new below.

What's New in Version 2021.1

- There's a new Scheduling area in **Global Settings** > **Configuration** that gives the option to ignore previous or skipped schedules when the Validatar server is restarted.

Highlighted Improvements

- The Validatar installer has been improved to reduce the number of manual steps to upgrade to a newer version.
- We've improved the Profile Execution pages to provide a clearer representation of profile set execution progress.
- We've added titles more consistently across the tool to provide clarity on what page you're currently viewing.
- We've updated the password reset email to look more distinctive and recognized as coming from Validatar.

Highlighted Bug Fixes

- The **Create database manually** option in the Validatar installer did not allow users to continue with the installation process so that bug has been corrected.

2020.4.1 Product Changes

Validatar has a new release! From major updates to minor bug fixes, we're constantly working to improve your Validatar experience so you can continue to build trust in your data. Learn about what's new below.

What's New in Version 2020.4.1

- **Data Source Custom Profiles** – Users can now create custom profiles that are specific to a data source.
- **Log File Access** – We have made it easier to work with support when you have an issue by giving Global Admins a page to download recent log files from the Validatar Server in Global Setting.
- **SMTP Test Email** – It is now easier to make sure your SMTP settings are working with the ability to send a test email directly from the SMTP configuration screen.

Highlighted Improvements

- Sending results to the test repository will immediately take you to the test result page, eliminating the need for additional navigation to view a result.
- On the Results list, you can now select the Name of a test or job to be taken back to its configuration page.
- You can now see if a user is Global Admin or Test Author on the Global Settings Users list instead of having to drill-down into user details.
- We've improved the experience of granting users project-level permissions by updating the Users page to include an interactive permissions matrix.
- We've improved the way that users recognize profile definition dependencies on the Profile list under Global Database Engine settings.
- We've enhanced the object selection filter for Profile Sets to include table record count.
- We've improved the Profile Set Execution page in Data Source settings to allow for a better experience navigating execution errors.

Highlighted Bug Fixes

- Corrected an issue where email notifications settings weren't saved upon exiting the schedule configuration pop up window.
- The schedules tab on the Job configuration page now shows an accurate schedule count.
- Corrected a text field description bug that didn't allow a new line of text to be entered in a Description box.
- Corrected an issue where the Schedules table did not show an accurate Next Run date and time.
- Fixed a bug that incorrectly indicates a user is not a Test Author when that user is added to the Data Source Permissions list when they are in fact an eligible Test Author.
- Fixed a bug that prevented profile results in the Explorer section from displaying correctly.
- Fixed a bug that prevented the tree navigation from expanding and collapsing nodes correctly.
- Corrected an issue where the Profile Set name did not appear on the Job Result page.
- Fixed a bug that allowed you to refresh a data source's metadata without saving any changes on the page first.
- Fixed minor UI bugs.

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