



Datacenter User Guide

Version 2.5



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- **Real-Time Scanning:** Keep it enabled, but exclude any performance-sensitive operations involving Vizrt-specific folders, files, and processes. For example:
 - C:\Program Files\[Product Name]
 - C:\ProgramData\[Product Name]
 - Any custom directory where [Product Name] stores data, and any specific process related to [Product Name].
- **Risk Acknowledgment:** Excluding certain folders/processes may improve performance, but also create an attack vector.
- **Scan Scheduling:** Run full system scans during off-peak hours.
- **False Positives:** If behavior-based detection flags a false positive, mark that executable as a trusted application.

Technical Support

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Created on

2025/11/03

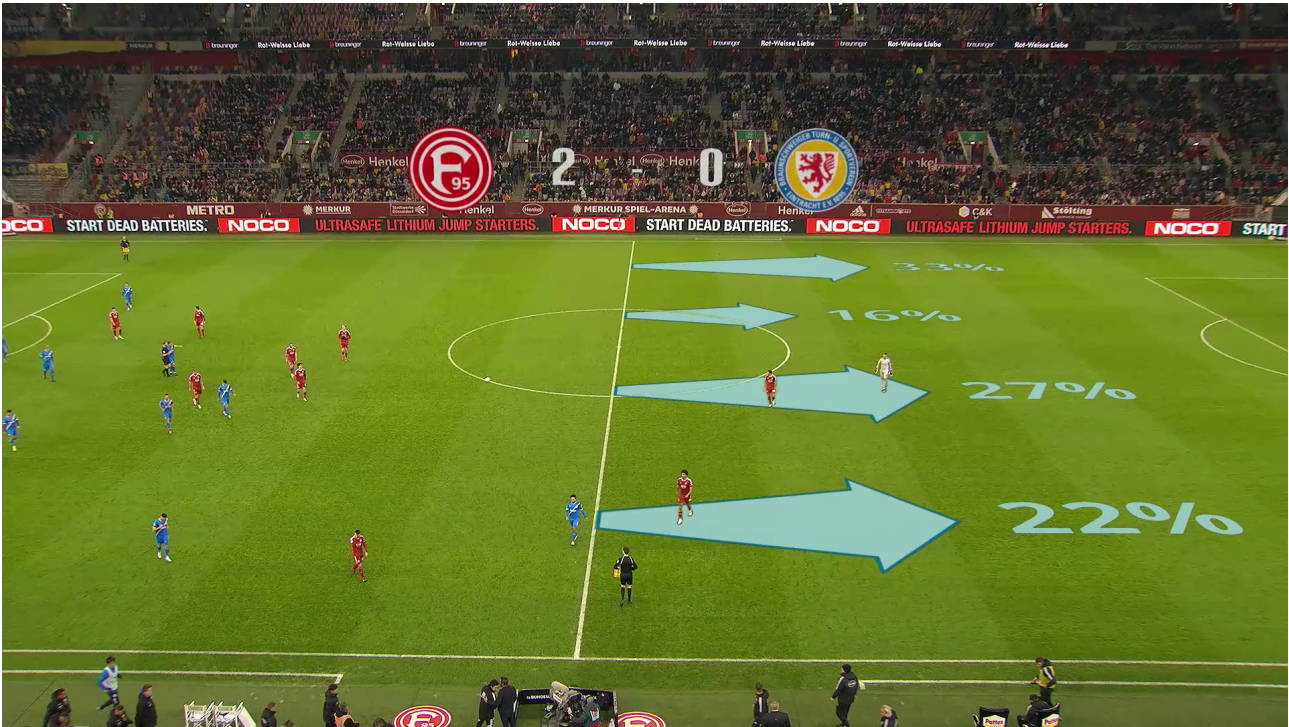
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1 Introduction

Datacenter is an end to end solution that allows you to connect live data sources to fields in your graphics, without the need of any special knowledge of the data at hand.





Datacenter acts as the gateway between data providers and the Viz ecosystem, automatically translating data coming from heterogeneous sources to format(s) understood by various Viz applications.

Its main purpose is to connect incoming live data, whether from a local source or an online data provider, to fields in your scenes, handling updates in real time. It is ideal to connect to, for instance, a scoreboard on a venue to clock-and-score graphics, or scene effects to data updating in real time.

1.1 Feedback and Suggestions

We encourage suggestions and feedback about our products and documentation. To give feedback and/or suggestions, please contact your local Vizrt customer support team at www.vizrt.com.

1.2 Support

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- [Vizrt Training Center](#)
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2 Overview

2.1 Accessing Datacenter

Datacenter runs automatically as a service on the host machine. It automatically starts on Windows startup, and its status can be monitored in **Task Manager > Services > VizrtDataCenter**.

While the service is always running in the background, the main user interface can be opened using a browser on the same machine hosting the service, using one of the following addresses:

- <http://127.0.0.1:5700>: This address is always available, regardless of the service mode being configured (see [HTTPS Certificate](#) configuration).
- <https://127.0.0.1:5701>: This address is only available if a valid HTTPS certificate has been configured (see [HTTPS Certificate](#) configuration).

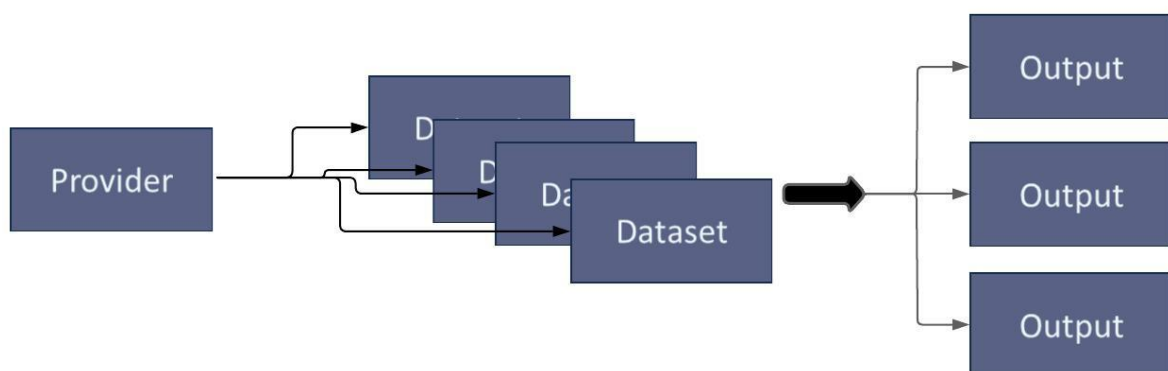
If Datacenter is correctly configured to run an HTTPS backend that listens to all network interfaces, then the user interface is also reachable from:

- <https://<host-machine-ip>:5701>, where *<host-machine-ip>* is the public IP of the host machine. This mode allows you to reach and monitor Datacenter from all machines in the same network, for example.

Info: The Admin page is only accessible when the Datacenter user interface is reached using the localhost address option.

2.2 Datacenter Main Entities

Datacenter connects data **Providers** to application **Outputs**, organizing the data flow into separate and editable **Datasets**. Specifically:

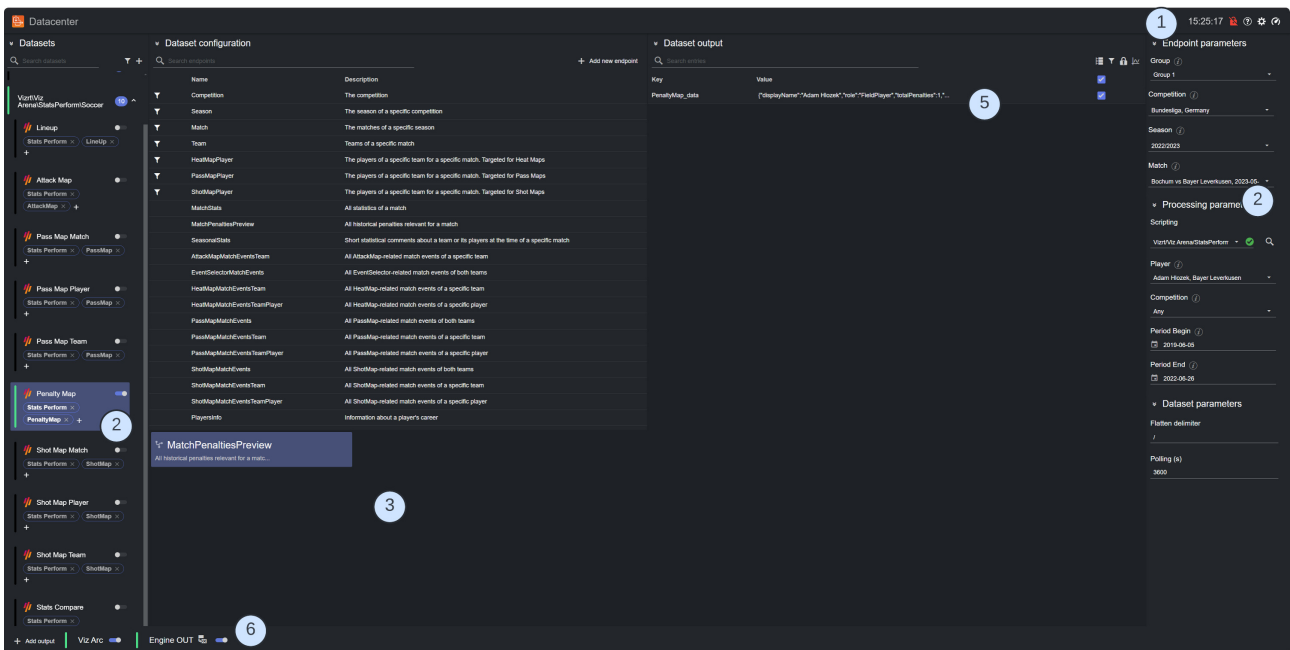


- A data **Provider** represents a data source to which Datacenter connects to. It can be a local (for example, a file) or a remote resource (for example, a server), and its unique (there is only one Provider of type File).
- A **Dataset** represents a collection of data entries from a specific Provider. It is created by the user, and there is no limit to the number of datasets of a specific provider that can exist. Each dataset holds one or more data entries, all coming from the same provider resource.

- An **Output** represents the sending end of the Datacenter data flow. There exists a finite number of output types (for example, Viz Engine or Viz Arc), but there is no limit to the number of instances.

2.3 The Datacenter Main Page

The Datacenter main user interface consists of six sections:



- 1. Application Bar:** Use this section to access the **Admin** page (⚙️), check the status of the service, as well as the service HTTP(s) mode (🔴), and limit the refresh rate of the UI (🔄). Documentation can also be opened from the status bar (❓).
- 2. Datasets pane:** Where all the configured datasets are listed. A dataset can be selected with its status shown on the status line on the left, and toggled off from here. Its entry can also be cloned to create a second independent dataset.
- 3. Dataset Configuration pane:** In the configuration pane a new dataset can be configured or an existing one edited. Specifically, a dataset source or a provider specific element can be selected in the configuration pane and edited in the Settings Editor. This view changes according to the Provider being used.
- 4. Settings Editor:** Edit specific provider elements or a dataset source parameters (for example, endpoint parameters or refresh rate for a source). This view is dynamic and adapts according to the Provider being used and the element being selected in the Dataset Configuration pane.
- 5. Dataset Output pane:** In this section, the key and value pairs that belong to the currently selected dataset are shown. These values are available in the configured output, they can be toggled, flattened or merged, and in the case of Manual Provider, values can be edited or keys added/removed.
- 6. Viz Outputs footer:** The configured outputs for the incoming data are configured and listed here. Click on an output name to open the edit dialog, the output status is shown on the status line on the left, while the toggle can switch an output ON/OFF.

Info: While limiting the refresh rate of the UI, the corresponding button in the Application Bar is shown in yellow 🟡.

3 Requirements

3.1 Applications

Datacenter integrates with various Vizrt applications, each with the following requirements:

Application	Version
Viz Engine	4.4.1 or newer
Viz Libero	8.2.0 or newer
Viz Arena	5.3.0 or newer
Viz Arc	1.7.0 or newer

Datacenter has been tested using the following browsers:

Browser	Version
Google Chrome	130.0.6723.60
Brave	1.71.144
Firefox	131.0.3

3.2 User Permissions

3.2.1 Read and Write Access

The user running the Datacenter requires read and write access to the following path locations:

Path	Read Access	Write Access
Folder: <i>C:\ProgramData\vizrt*</i>	required	required
Folder: <i>C:\Program Files\vizrt*</i>	required	Only during installation
*Indicates all subfolders		

3.3 Ports

Target Port	Protocol	Type	Feature	Required	Comment
<code>P</code> (see "Required")	UDP	inbound	Core	When creating a dataset of type Socket Listener UDP listening on port <i>P</i> .	Used to receive data.
<code>P</code> (see "Required")	TCP	inbound	Core	When creating a dataset of type Socket Listener UDP listening on port <i>P</i> .	Used to receive data.
<code>P</code> (see "Required")	UDP	outbound	Core	When creating an output of type Viz Engine sending to port <i>P</i> .	Used to send data via UDP.
<code>P</code> (see "Required")	TCP	outbound	Core	When creating an output of type Socket Connector connecting to host on port <i>P</i> .	Used to initiate data streaming via TCP.
<code>P</code> (see "Required")	TCP	outbound	Core	When creating an output of type Viz Arc or Generic TCP sending to port <i>P</i> .	Used to send data via TCP.
5700	TCP	inbound	Core	Always	Main backend on HTTP.
5701	TCP	inbound	Core	Always	Main backend on HTTPS.
443, 37718	TCP	outbound	Core	When creating a dataset of type Tracab.	Used to receive data.

Info: If the "Stream Port" parameter in the Tracab Provider configuration is changed from the default one (37718), then the user must ensure that there is no outbound firewall restriction on the newly setup port.

4 Admin System Configurations

This section provides information on how to configure the system running the Datacenter, which includes:

- [Configuring Datacenter](#)
- [Configuring Outputs](#)

4.1 Configuring Datacenter


Datacenter runs as a Windows service, and it starts automatically on startup. The main UI can be accessed by navigating to <http://127.0.0.1:5700>.

If Datacenter is started as an HTTPS service, the UI is reachable at (please note the change of port number):

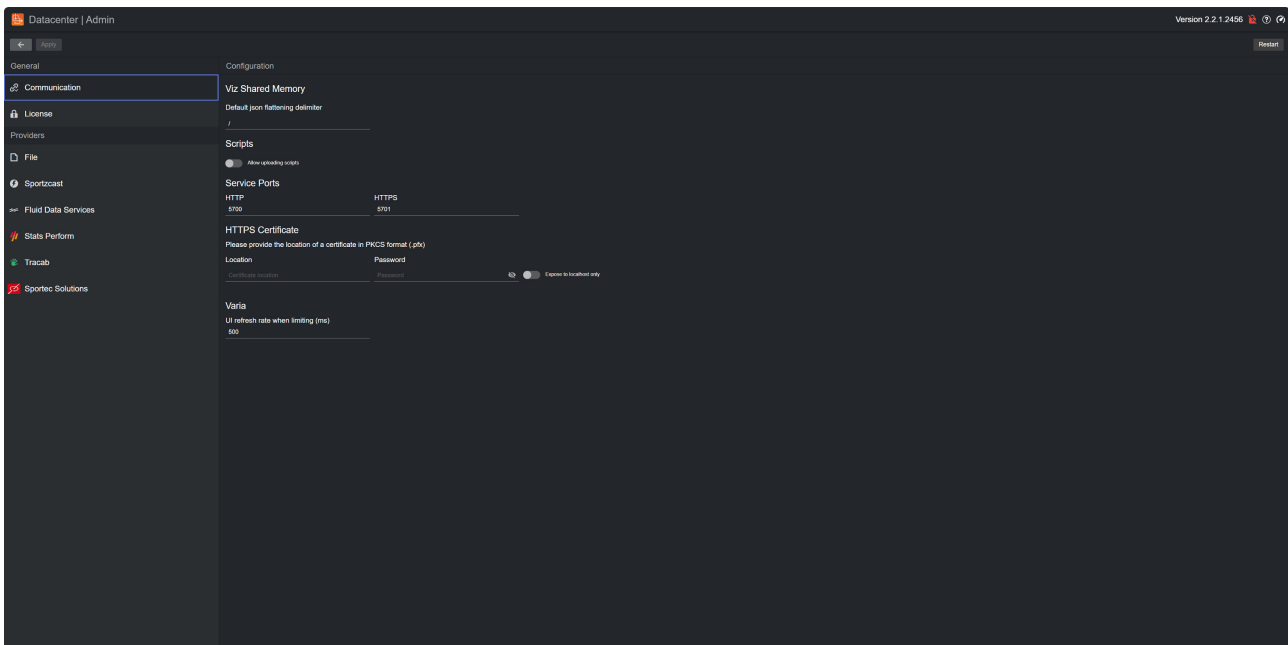
- <https://127.0.0.1:5701>
- <http://<computer-name>:5701>, where <computer-name> is the name registered in the configured HTTPS certificate for your machine. More information on how to configure a secure HTTPS service can be found in the General Configuration.


When accessing Datacenter via localhost (the same host that runs the Datacenter service, which also corresponds to the 127.0.0.1 IP address), you can also access the Admin page where a variety of options can be configured.


The Admin page can be reached using one of these options:



- Navigating to <http://127.0.0.1:5700/admin> (or alternatively <https://localhost:5701/admin>).
- By clicking on the cogwheel icon  in the main page UI.

When opening the Admin page, the following window is shown:



Note: The Datacenter Admin page can only be accessed via localhost. To confirm it can be accessed, please make sure the cogwheel icon  is present in the top-right corner of the Datacenter Main page.

Info: Changes made in the Admin page are not automatically applied. To apply any change made to the configuration, please make sure to press the **Apply** button in the top-left corner of the UI .

 **Info:** To restart the Datacenter service, please press the **Restart** button in the top-right corner of the UI . A dialog appears where you can confirm whether to restart the service or not. After confirming, the Datacenter service is restarted immediately, **causing the sending of output data to temporary stop**.

This section describes how to configure various aspects of the Datacenter, including:

- [Providers Configuration](#)
- [General Configuration](#)

4.1.1 Providers Configuration


Datacenter supports a variety of data Providers. Some of them have a global configuration that needs configuring.

This section explains how to use such configurations:

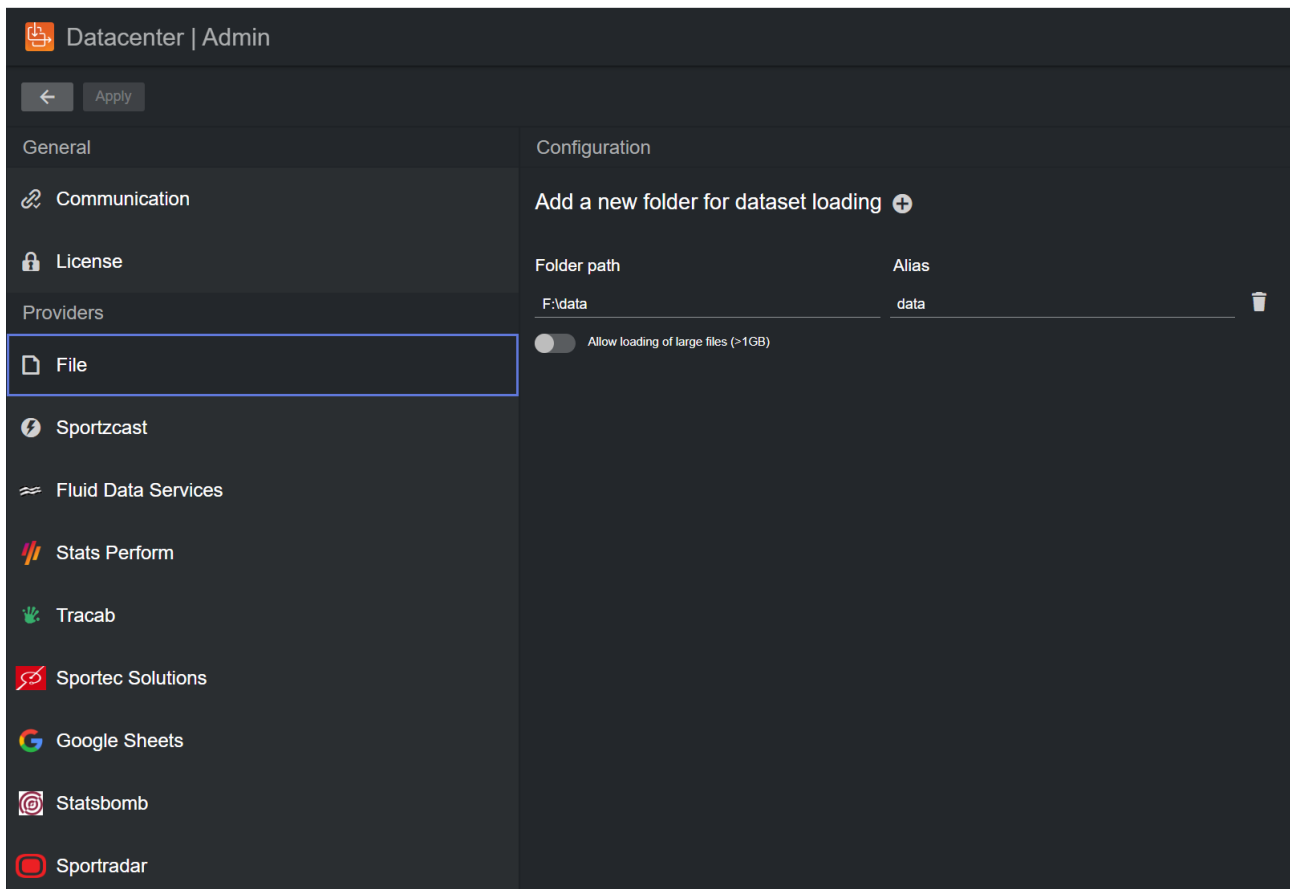
- [File](#)
- [Sportzcast](#)
- [Fluid Data Services](#)
- [Stats Perform](#)
- [Tracab](#)
- [Sportec Solutions](#)
- [Google Sheets](#)
- [Statsbomb](#)
- [Sportradar](#)

File

The Datacenter can be configured to read files from specific input folders. To be able to open and monitor files on these locations, those folders need to be added to the File provider configuration using the following steps:

1. Click on the **File** entry in the Provider list in the Admin page.
2. Click on the plus button .
3. Type the path in the **Folder Path** input field.
4. Enter an alias for this path to be used in the application.
5. Click the **Apply changes** button.

The alias submitted points to the specified folder path when used to create new datasets of type File.



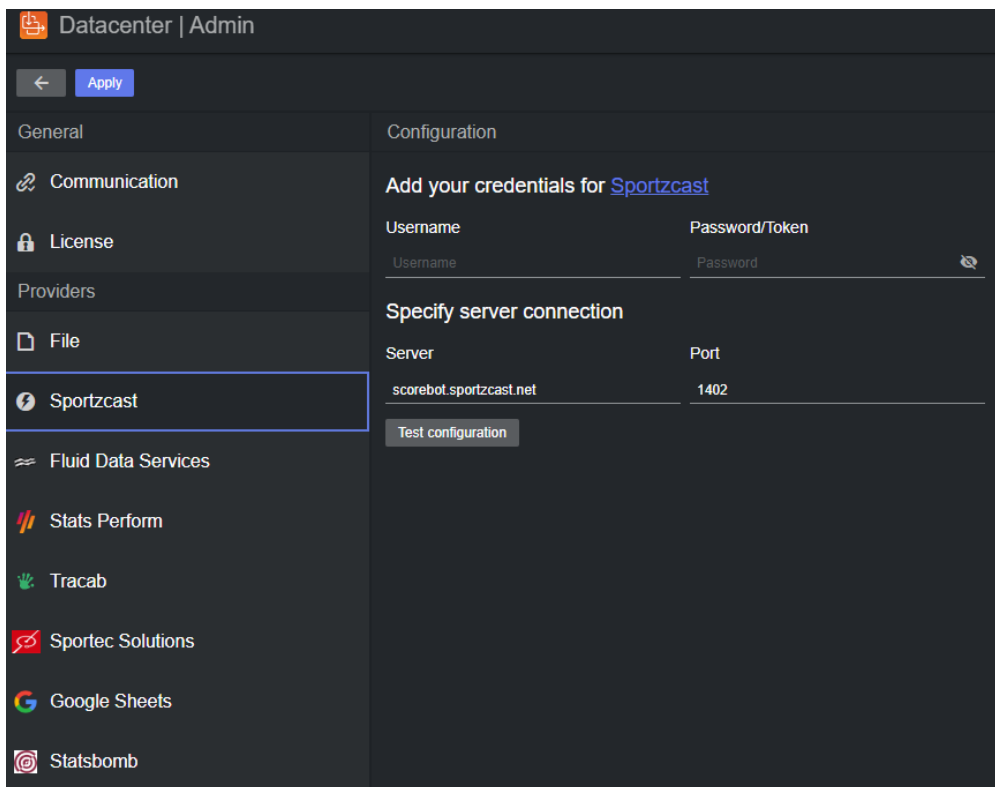
Note: Datacenter ships with example files that can be used to test a File provider. They are located at C:\ProgramData\vizrt\VizDatacenter\Data\Files.

Note: By default Datacenter only allows loading files up to 1GB. If you need to upload a file bigger than 1GB, you need to enable the setting *Allow loading of large files*. Be aware that loading big files can have an impact on the performance of Datacenter.

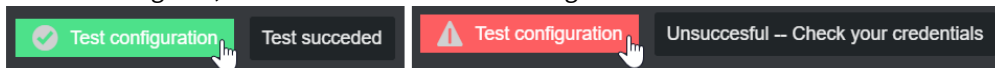
Sportzcast

Datacenter can be configured to fetch data from the [Sportzcast by Genius Sports](#) cloud service. Such service requires a username and password that must be obtained from the data Sportzcast.

To be able to fetch data from the [Sportzcast by Genius Sports](#) cloud service, the following configurations must be performed:

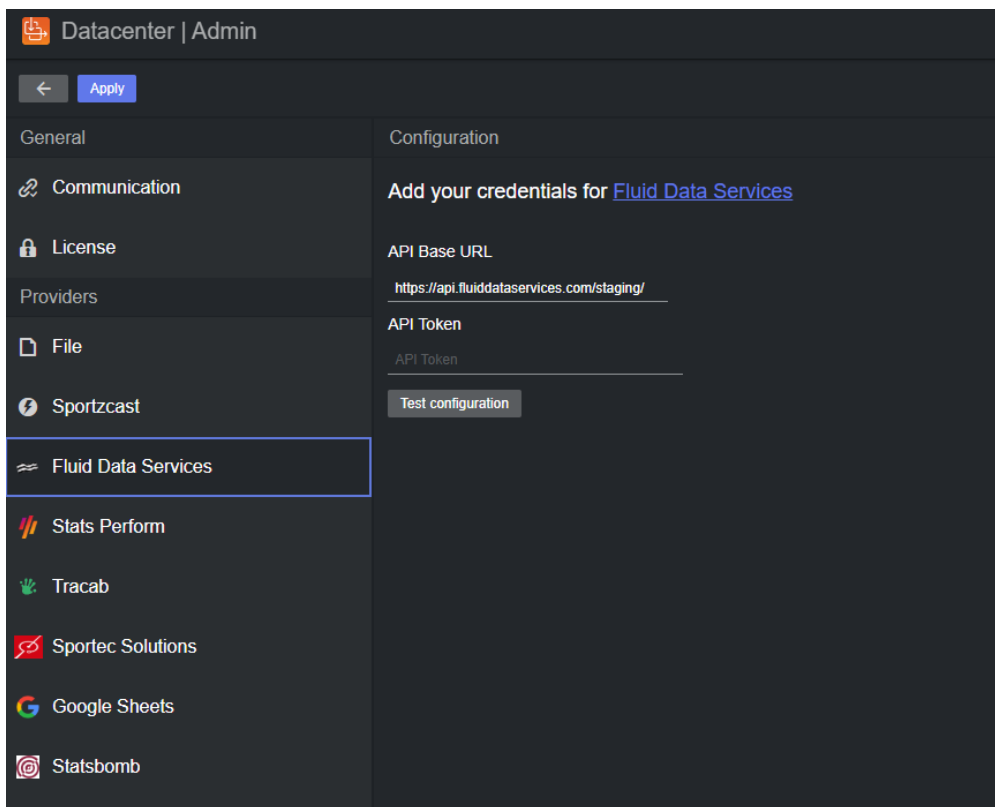


- **Username:** The username obtained by the Sportzcast data provider.
- **Password/Token:** The password (sometimes referenced as token) obtained by the Sportzcast data provider.
- **Server:** The hostname of the provider (use the default scorebot.sportzcast.net for the default service, or your own server location).
- **Port:** The port used to communicate with the host configured (default: 1402).
- **Test configuration:** Use this button to test whether the specified configuration is correct. If correct, the button turns green, otherwise it turns red. Hovering over the button reveals the error in a tooltip:

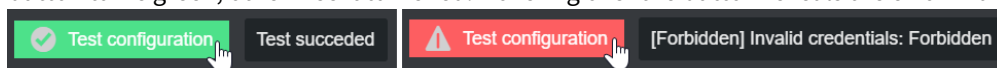


Fluid Data Services

Datacenter can be configured to fetch data from the [Fluid Data Services](#) data provider. For this integration to work, the following configurations must be performed:

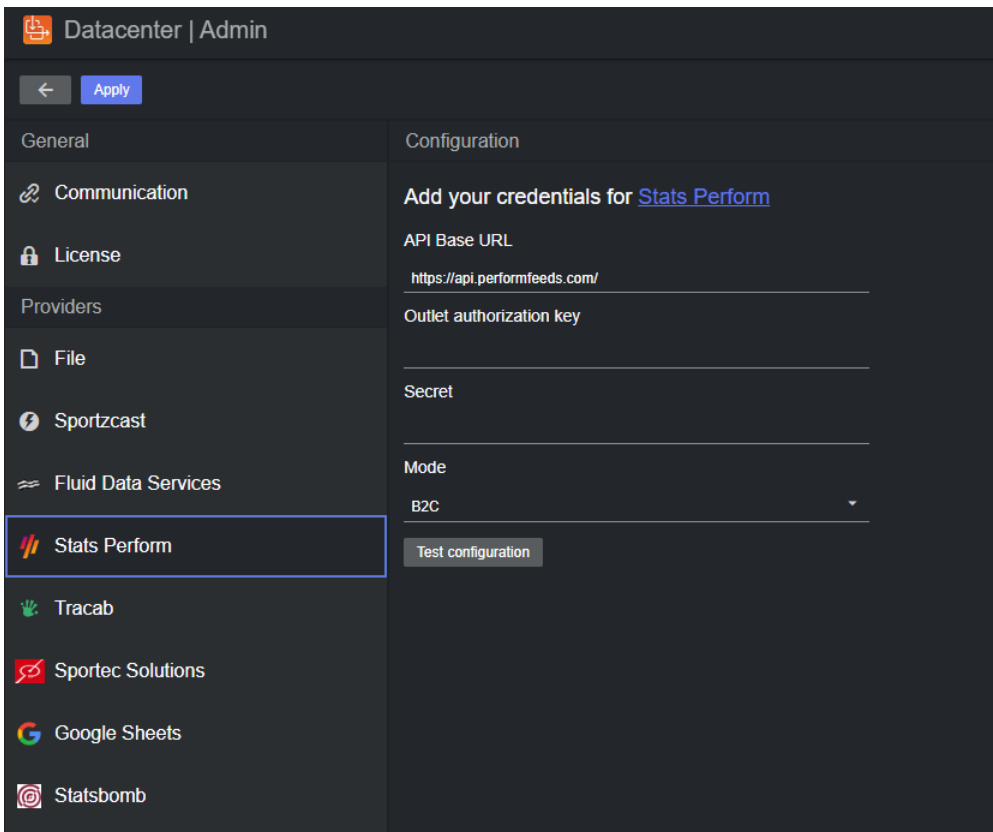


- **API Base URL:** The URL used to fetch data from the desired endpoints (for example, <https://api.fluiddataservices.com/staging/>).
- **API Token:** This input field is to specify the API token required to authenticate with the Fluid Data Services backend. The token must be obtained directly from the provider. When saved, the token is encrypted and its encrypted value is shown rather than the plain value (it is used when issuing HTTP(s) requests to the webserver).
- **Test configuration:** Use this button to test whether the specified configuration is correct. If correct, the button turns green, otherwise it turns red. Hovering over the button reveals the error in a tooltip:

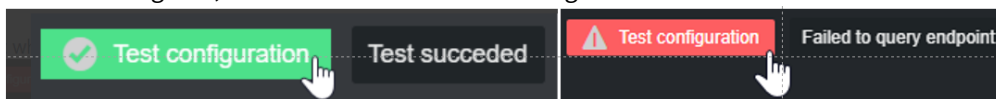


Stats Perform

Datacenter can be configured to fetch data from the [Stats Perform](#) data provider. For this integration to work, the following configurations must be performed:

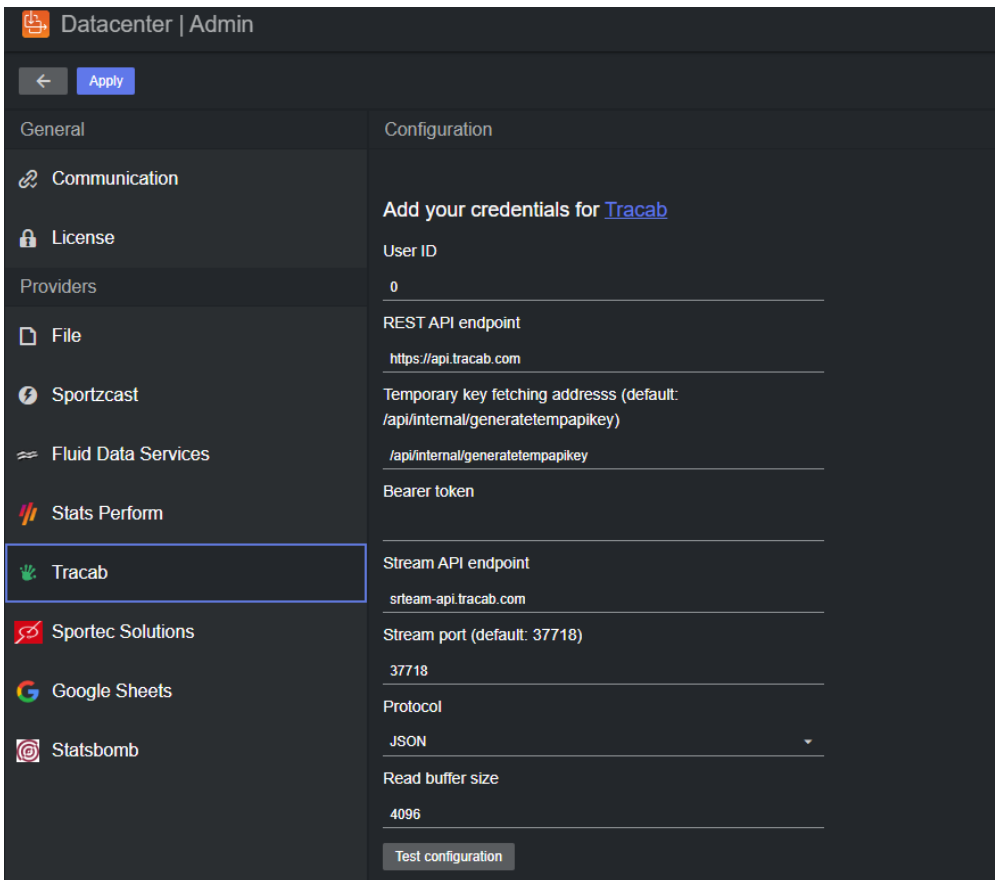


- **API Base URL:** The URL used to fetch data from the desired endpoints, needs to be configured to api.statsperform-hosted.com.cn when using the integration from a Chinese IP or domain.
- **Outlet authorization key:** Authorization key provided by StatsPerform.
- **Secret:** Secret provided by StatsPerform (if needed, depending on the account type).
- **Mode:** Business-to-Business (**B2B**) or Business-to-Customer (**B2C**), depends on the account type.
- **Test configuration:** Use this button to test whether the specified configuration is correct. If correct, the button turns green, otherwise it turns red. Hovering over the button reveals the error in a tooltip:

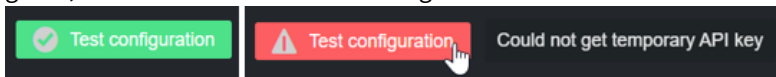


Tracab

Datacenter can be configured to receive data from the [Tracab](#) data provider. For this integration to work, the following configurations must be performed:



- **User ID:** User ID provided by Tracab.
- **REST API endpoint:** URL used to fetch metadata for a game.
- **Temporary key fetching address:** URL to fetch the authentication keys.
- **Bearer token:** Authentication bearer token provided by Tracab.
- **Stream API endpoint:** URL used to authenticate and request data streaming for a game.
- **Stream port:** Used to receive data.
- **Protocol:** Defines the received data format (JSON, ASCII or Binary).
- **Read buffer size:** Size of the buffer used to read data in.
- **Test configuration:** Used to test whether the specified configuration is correct. If correct, the button turns green, otherwise it turns red. Hovering over the button reveals the error in a tooltip:

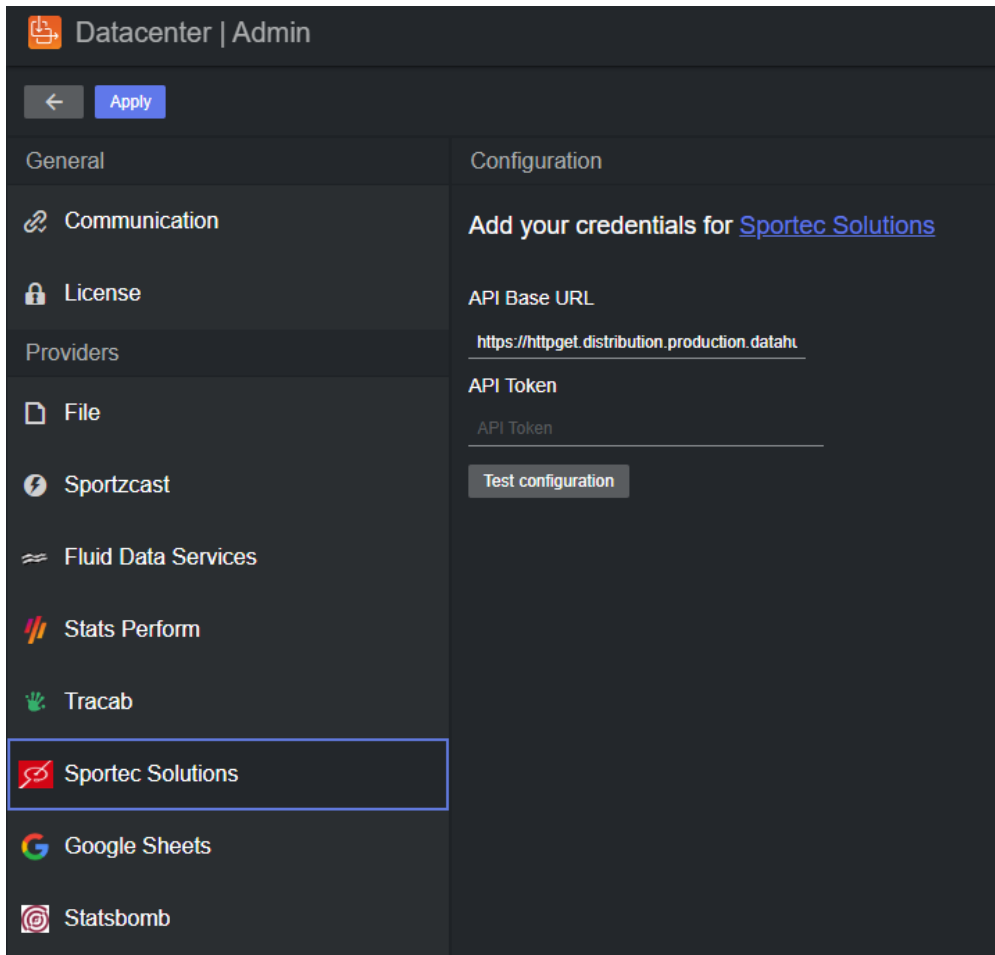


Note: Unless instructed otherwise, we recommend to leave the following options to their default value:

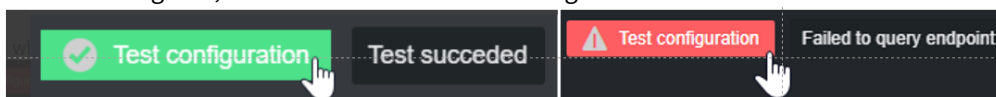
- **REST API Endpoint**
- **Temporary key fetching address**
- **Stream API endpoint**
- **Stream port**
- **Protocol**
- **Read buffer size**

Sportec Solutions

Datacenter can be configured to fetch data from the [Sportec Solutions](#) data provider. For this integration to work, the following configurations must be performed:

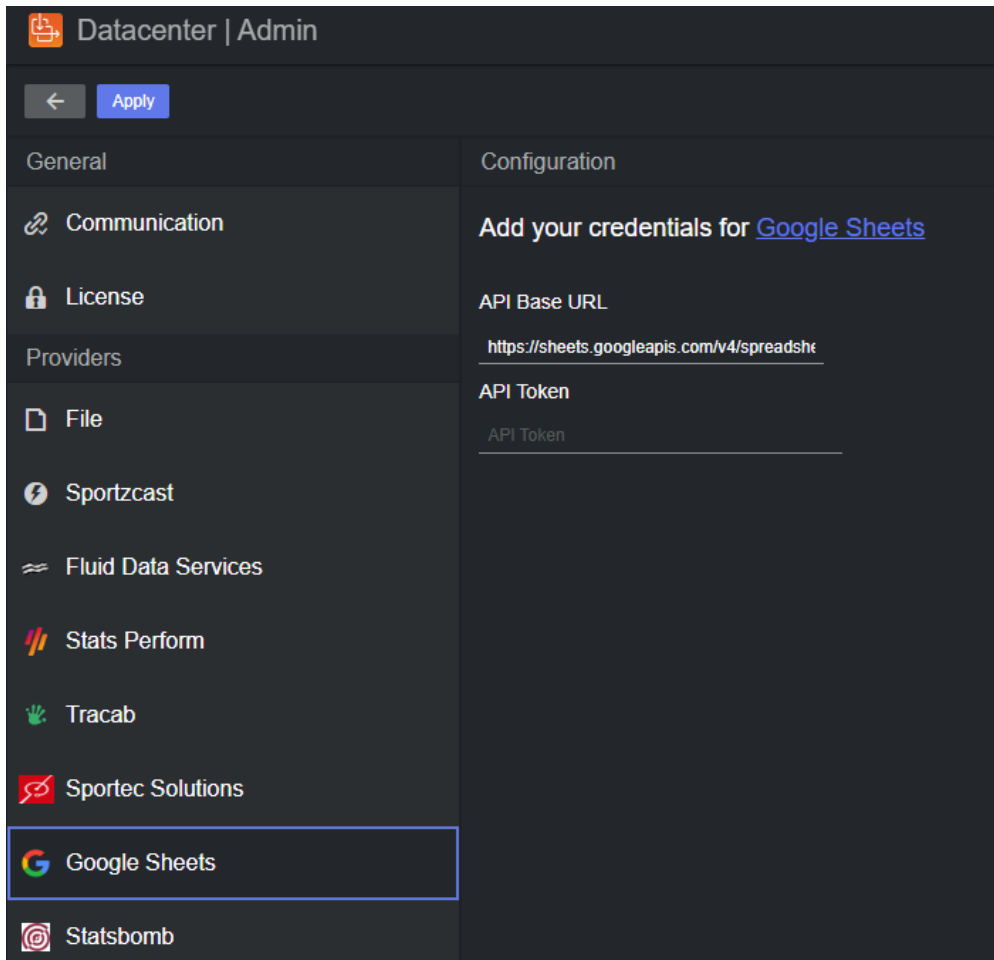


- **API Base URL:** The URL used to fetch data from the desired endpoints (default: <https://httpget.distribution.production.datahub-sts.de/DeliveryPlatform/REST/>).
- **API Token:** This input field is to specify the API token required to authenticate with the Sportec Solutions backend. The token must be obtained directly from the provider. When saved, the token is encrypted and its encrypted value is shown rather than the plain value (it is used when issuing HTTP(s) requests to the webserver).
- **Test configuration:** Use this button to test whether the specified configuration is correct. If correct, the button turns green, otherwise it turns red. Hovering over the button reveals the error in a tooltip:



Google Sheets

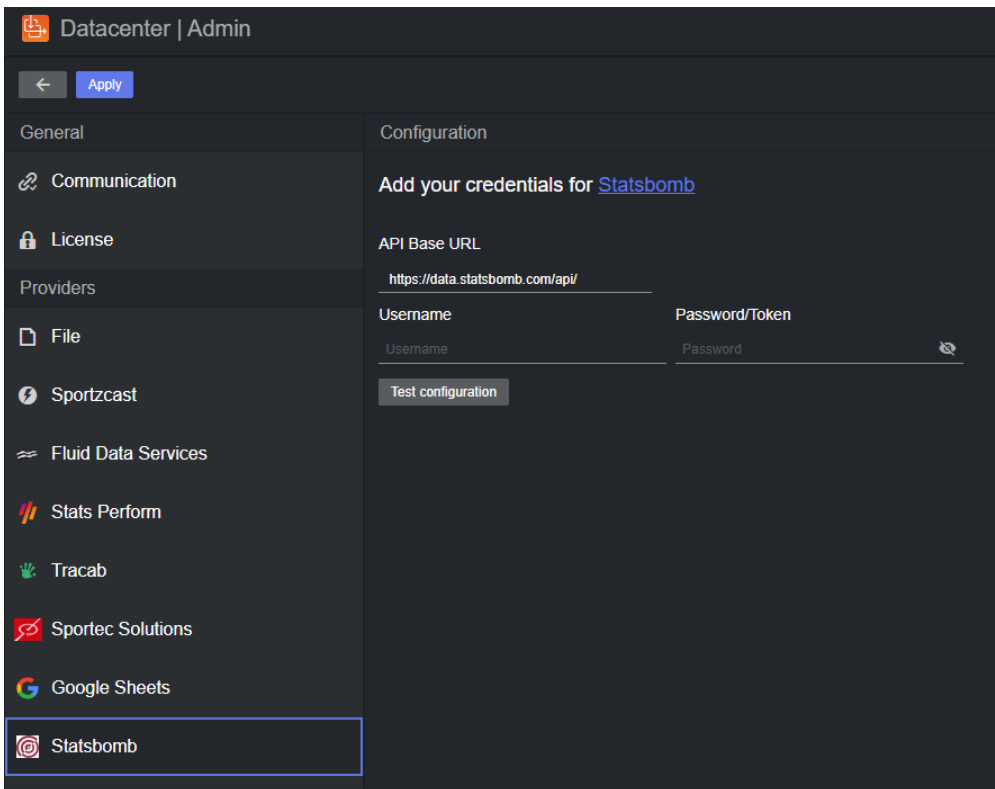
Datacenter can be configured to fetch data from existing spreadsheets from a Google Sheets account, via the [Google Sheets provider](#). For this integration to work, the following configurations must be performed:



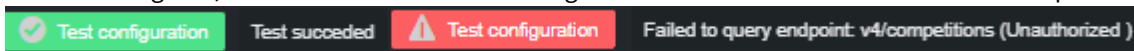
- **API Base URL:** The URL used to fetch data from (default: <https://sheets.googleapis.com/v4/spreadsheets/>).
- **API Token:** The API key used to query data from Google Sheets. Information on Google Sheets API keys, including how to enable and create them, can be found [here](#).

Statsbomb

Datacenter can be configured to fetch data from the [Statsbomb](#) data provider. For this integration to work, the following configurations must be performed:

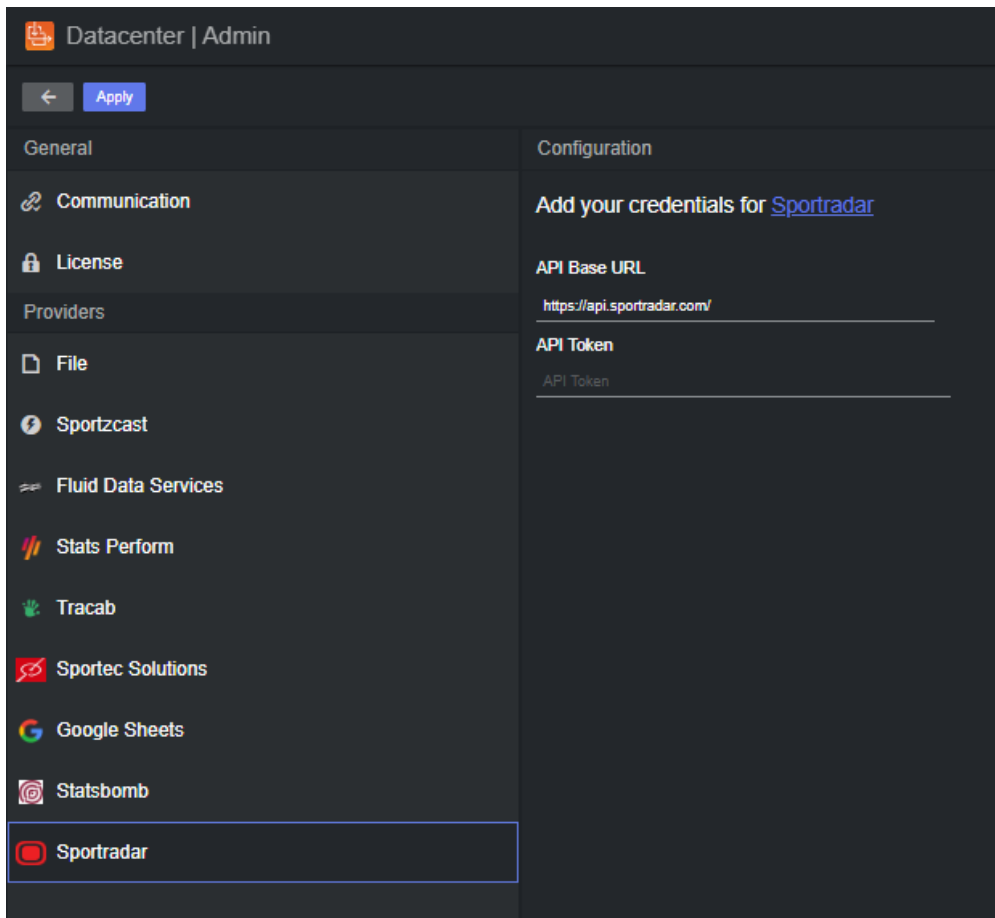


- **API Base URL:** The URL used to fetch data from the desired endpoints (default: <https://data.statsbomb.com/api>).
- **Username:** Specifies the username that has access to the API, usually the email address.
- **Password/Token:** Specifies the password associated with the username.
- **Test configuration:** Use this button to test whether the specified configuration is correct. If correct, the button turns green, otherwise it turns red. Hovering over the button reveals the error in a tooltip:



Sportradar

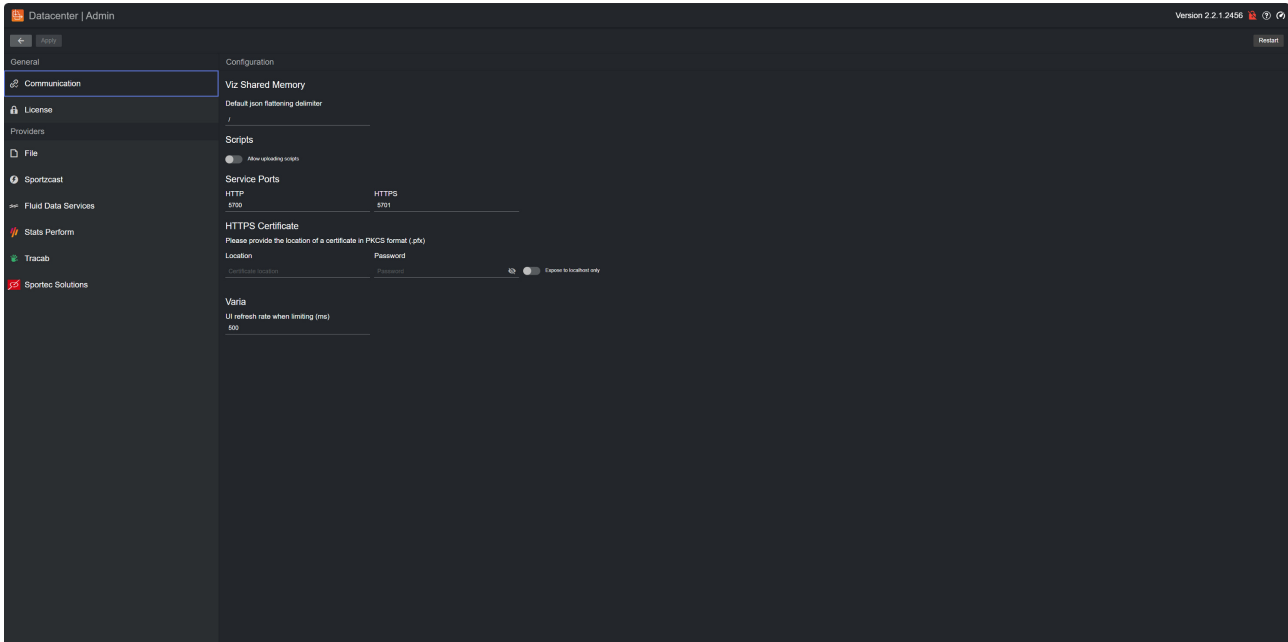
Datacenter can be configured to fetch data from the [Sportradar](#) data provider. For this integration to work, the following configurations must be performed:



- **API Base URL:** The URL used to fetch data from the desired endpoints (default: <https://api.sportradar.com/>).
- **API Token:** This input field is to specify the API token required to authenticate with the Sportradar backend. The token must be obtained directly from Sportradar.

4.1.2 General Configuration

The General configuration page is where you can configure settings related to the Datacenter service:



- [Communication](#)
 - [Viz Shared Memory](#)
 - [Script](#)
 - [Service Ports](#)
 - [HTTPS Certificate](#)
 - [Varia](#)
- [License](#)

Communication

Under communication you can configure the shared memory and your HTTPS certificate.

The screenshot shows the 'Configuration' page with the following sections:

- Viz Shared Memory**: 'Default json flattening delimiter' is set to a backslash character (\).
- Script**: A toggle switch for 'Allow uploading scripts' is currently turned off.
- Service Ports**: A table with two columns: 'HTTP' (port 5700) and 'HTTPS' (port 5701).
- HTTPS Certificate**: A section with a prompt 'Please provide the location of a certificate in PKCS format (.pfx)'. It includes input fields for 'Location' (containing 'Certificate location') and 'Password' (containing 'Password'). There are also icons for file selection and a toggle for 'Expose to localhost only' which is turned off.

Viz Shared Memory

The **json flattening delimiter** specifies the delimiter to use when [flattening an incoming JSON payload](#). The default value is |.

Note: The character | cannot be used in SHM keys used on Viz Engine with control channels. When control channels are used, nested channels in your scene can be accessed via the . character. Therefore, it can be used as a delimiter to map to control channels in the scene.

Script

Use the **Allow uploading scripts** toggle to enable or disable script uploading in the main page. Uploading a script can be useful when you have no access to the machine where Datacenter runs.

Script Uploading: Datacenter does not vet uploaded scripts, therefore, allowing the upload of arbitrary scripts to Datacenter can pose a security threat. We **strongly recommend** to enable scripts uploading, only when strictly necessary and for the time required.

Service Ports

By default, Datacenter uses ports 5700 and 5701 for HTTP and HTTPS communication, respectively. Should any of these ports be unavailable for the system, they can be changed in the dedicated text input field.

After clicking the **Apply** button, a dialog prompts you to confirm whether you want to restart the service using the newly configured ports. Please note the new addresses.

Restart required

Some of your changes require a restart of the Datacenter.

After rebooting, if configured the HTTPS service will be available at <https://127.0.0.1:5701>.


Invalid changes to the HTTPS certificate settings will downgrade the Datacenter to HTTP, making it available at <http://127.0.0.1:6700>.

In case you have changed any service ports, please ensure that the correct firewall rules are applied for the new ports.

Restart now?




No

Yes

 **Firewall Exceptions:** By default, the Datacenter installer, installs firewall rules for ports 5700 and 5701. When changing the service ports, you must ensure that correct firewall rules are applied for them, otherwise Datacenter may be unreachable.

HTTPS Certificate

Datacenter runs an HTTP service that is reachable by localhost only on port 5700, by default. This lowers security risks, and makes sure that unprotected communication is not exposed outside of the service machine.

When running as an HTTP service, a red, broken lock is shown in the top-right corner of the UI   . Although HTTP is the default service, Datacenter is capable of running an HTTPS secure service, which handles communication using the HTTPS protocol on port 5701. To do so, input the location of your signed certificate and its password in the dedicated text input fields, and click on **Apply changes**.

A dialog prompts you to confirm whether you want to restart the service, as it is required to upgrade to HTTPS.

Restart required

Some of your changes require a restart of the Datacenter.

After rebooting, if configured the HTTPS service will be available at <https://127.0.0.1:5701>.

Invalid changes to the HTTPS certificate settings will downgrade the Datacenter to HTTP, making it available at <http://127.0.0.1:5700>.

In case you have changed any service ports, please ensure that the correct firewall rules are applied for the new ports.

Restart now?

No

Yes

By default, the HTTPS service listens to all network interfaces on port 5701, as this allows communication in and out of the Datacenter service machine. However, also the HTTPS service can be limited to listen to the localhost only.

Use the **Expose to localhost only** toggle and apply changes if required.

When running Datacenter as an HTTPS service, a green, closed lock is shown in the top-right corner of the UI



Note: To setup Datacenter to run an HTTPS service, a signed certificate in PKCS format must be provided (this can usually be obtained by your system admin). Please note that the Datacenter does not provide signed certificates. Should you not already have a certificate-authority provided certificate, there exist several services that can issue signed certificates (for example, letsencrypt.org).

Note: When running Datacenter as an HTTPS service, an HTTP version of the service is also started on localhost on port 5700. As in the standard HTTP version of Datacenter, this service listens to localhost only.

Create Self-Signed Certificates

In case you are not able to obtain a certificate-authority provided certificate, a self-signed certificate can be used to run the Datacenter as a HTTPS service. This, however, is not the recommended nor preferred way to setup the Datacenter in HTTPS mode, and should be only done under the supervision of your IT team and following an informed decision to use self-signed certificates. While self-signed certificates are easy to obtain, they do not provide any trust value, and are rejected by many communicating actors, including some data providers. Nevertheless, should a self-signed certificate be required, the following steps can be followed.

Info: OpenSSL can be used to create a self-signed certificate. While OpenSSL is already installed on many major Linux distributions, on Windows workstations one may use the one shipped with Git, or install it from known package managers (for example, [chocolatey](https://chocolatey.org)).

On your workstation, open a Terminal and then follow the steps below:

1. Create a private key.

```
$ openssl genrsa -des3 -out domain.key 2048
```

Info: Make a note of the "PEM pass phrase", as this is used later in this guide.

2. Create a certificate sign request (CSR).

```
$ openssl req -key domain.key -new -out domain.csr
```

Enter pass phrase **for** domain.key:

You are about to be asked to enter information that will be incorporated into your certificate request.

What you are about to enter is what is called a Distinguished Name or a DN.

There are quite a few fields but you can leave some blank

For some fields there will be a default value,

If you enter '.', the field will be left blank.

Country Name (2 letter code) [AU]:XX

State or Province Name (full name) [Some-State]:YY

Locality Name (eg, city) []:YYyy

```

Organization Name (eg, company) [Internet Widgits Pty Ltd]:MY_ORG
Organizational Unit Name (eg, section) []:MY_UNIT
Common Name (e.g. server FQDN or YOUR name) []:MY_DATACENTER_HOST_NAME
Email Address []:

```

Please enter the following 'extra' attributes to be sent with your certificate request

A challenge password []:

An optional company name []:

3. Create a self-signed certificate. /info

```
openssl x509 -signkey domain.key -in domain.csr -req -days 365 -out domain.crt
```

i **Info:** If you are required to issue the "Common Name", you can use the same `MY_DATACENTER_HOST_NAME` as used above.

4. Create a Self-Signed Root CA.

```
$ openssl req -x509 -sha256 -days 1825 -newkey rsa:2048 -keyout rootCA.key -out rootCA.crt
```

i **Info:** Make note of the PEM pass phrase, as this is used in the next step when signing certificates requests.



Common Name for CA

Info: Use a different "Common Name" than the one used previously, for example `ROOT_HOST_NAME`.

5. Sign the CSR with the Root CA.

```
$ openssl x509 -req -CA rootCA.crt -CAkey rootCA.key -in domain.csr -out domain.crt -days 365 -CAcreateserial
```


6. Convert the PEM to PKCS12 (as needed by Datacenter).

```
$ openssl pkcs12 -inkey domain.key -in domain.crt -export -out domain.pfx
```

i **Info:** Make a note of the password used as "Export Password", this is required in the [Datacenter Settings](#) page.

7. Copy the `.pfx` file to the machine running Datacenter if required and use it to [launch the Datacenter in HTTPS mode](#).

Varia

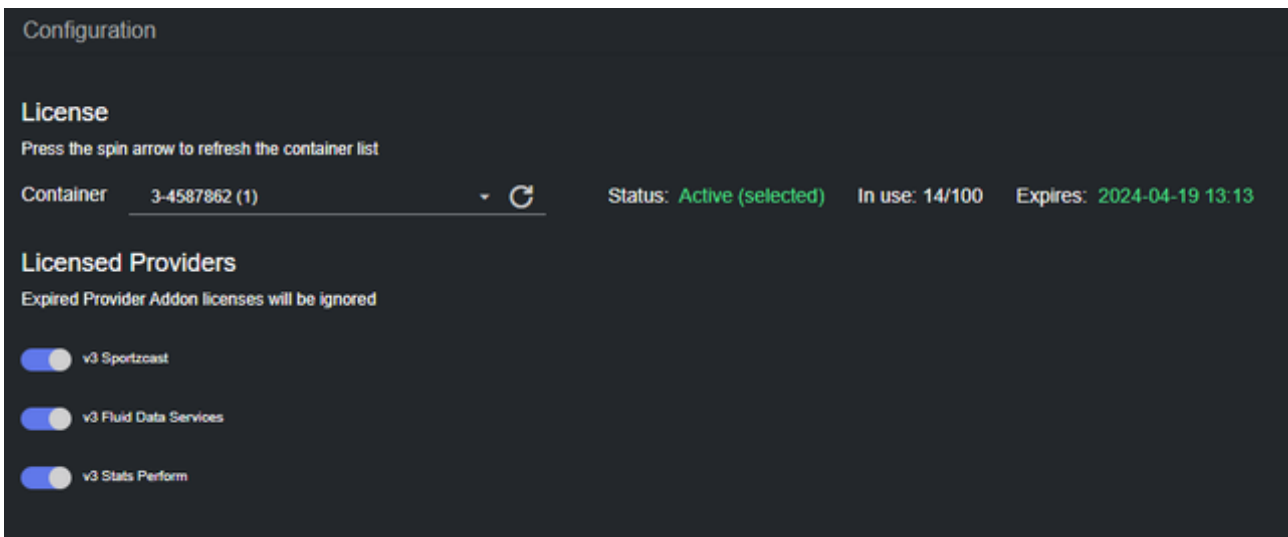
Set the **UI refresh rate when limiting (ms)** to the desired milliseconds to control the slowing-down factor of the UI refresh rate when running in limited refresh rate mode (the Application Bar shows the speedometer icon in yellow ).


License

In this section you can configure the license to use with Datacenter, as well as the licensed providers. Without a valid Datacenter Core V3 license, no outputs can be configured, nor datasets created, thus no data is streamed out of Datacenter. Additionally, certain providers require specific addons license.

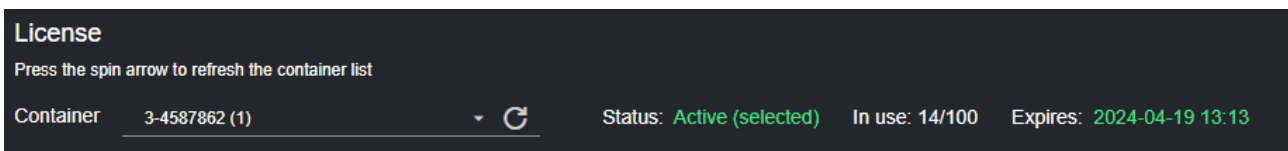
Datacenter requires a WIBU based software license. The CodeMeter license service checks for available licenses and presents the relevant license containers in a dropdown menu next to the License label.

When selecting a license from the list, its information is shown on the right. Additionally, the available (and not expired) Providers license addons on the container, are listed as toggles.

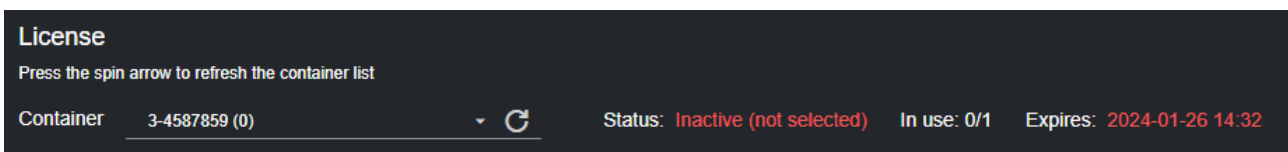


If you do not see the container you wish to use, click the refresh button  to trigger a new scan of available licenses.

The currently selected container is listed as **Active (selected)** in the information line. The available containers and expiration date are also shown in the same line. If the license is not expired, its expiration date is shown in green:



Conversely, expired licenses list their expiration date in red. Similarly, licenses that are not selected, are listed as **Inactive (not selected)**.



After choosing a container, please allow the software to fetch the licensed providers addons, and then select the ones you want to use from the list of toggle buttons that appears next to the **Licensed Providers** label. When done, click on **Apply changes**.

4.2 Configuring Outputs

To correctly send data to various Outputs from the Datacenter, the receiving end(s) need to be configured correctly.

This section describes how to configure all of the Outputs in Datacenter, including:

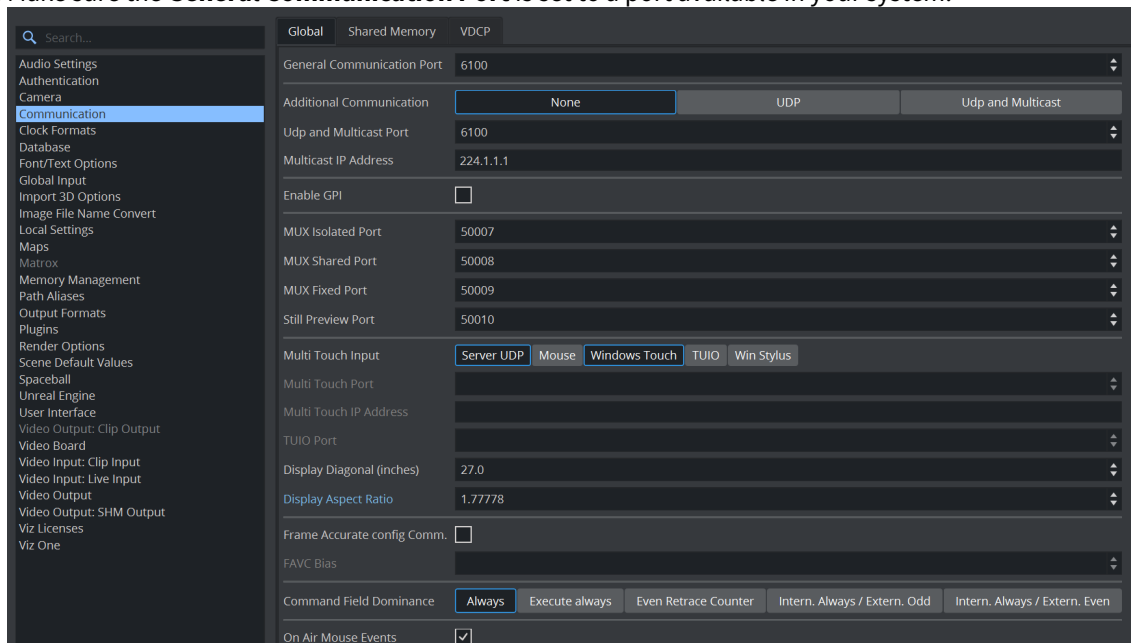
- [Viz Engine Configuration](#)
- [Viz Libero Configuration](#)
- [Viz Arena Configuration](#)
- [Viz Arc Configuration](#)

4.2.1 Viz Engine Configuration

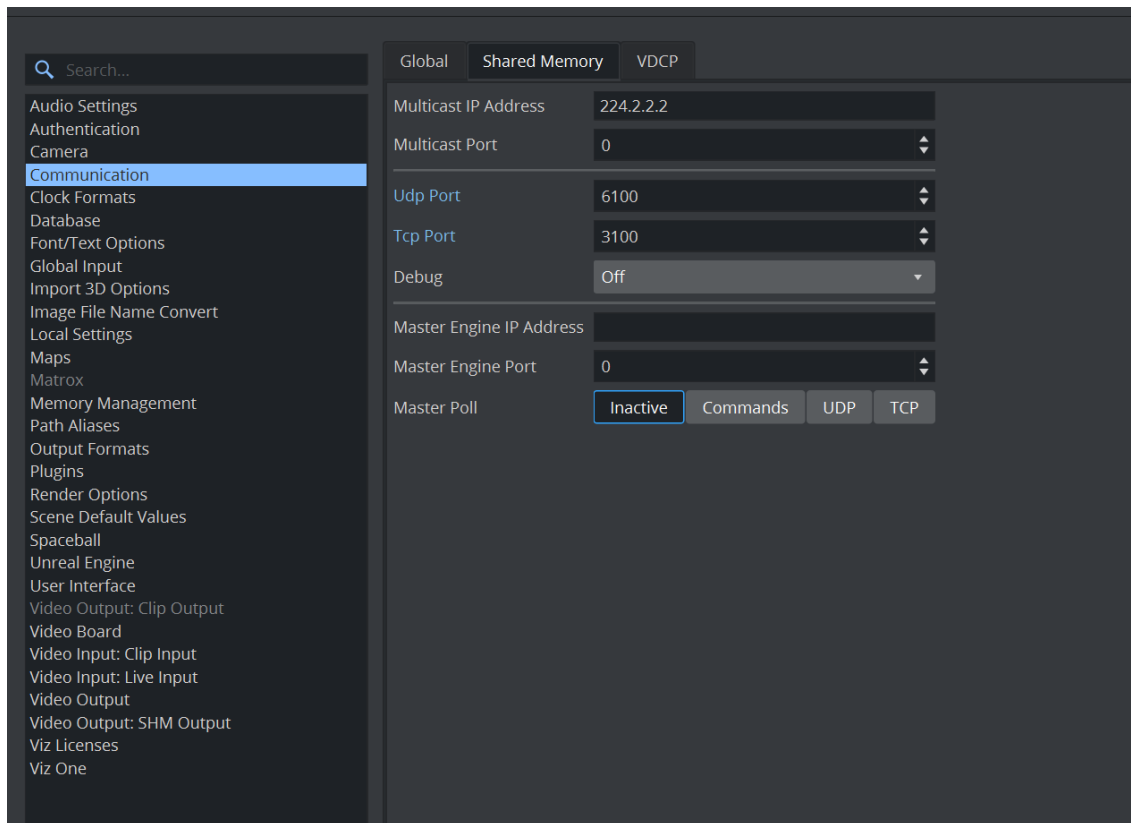
Each Viz Engine receives live data from Datcenter, and it must be configured to listen to the **Shared Memory** input over the [configured communication protocol](#). This should also be done for any preview Viz Engine that may be in use.

To configure a Viz Engine to receive incoming data from Datcenter, please follow these steps:

1. Open the Viz Engine configuration.
2. Go to **Communication > Global**.
 - a. Make sure the **General Communication Port** is set to a port available in your system.



3. Go to **Communication > Shared Memory**.
 - a. Depending on the [communication protocol chosen for the Viz Engine outputs](#) in Datcenter, enter either a UDP or a TCP port number (or both if a AUTO-selecting protocol output is used).



4. Save the configuration and restart.

Note: Take note of the **General Communication Port** specified in the Viz Engine configuration panel, as this is required when [configuring the relevant port for the output](#) in Datacenter.

Your Viz Engine is now ready for the Datacenter live input.

Monitor the Incoming Data on a Viz Engine

To monitor the incoming data on a Viz Engine Shared Memory channel, a REST webservice can be installed from the Viz Engine Settings. To do so:

- Open the Viz Engine Configuration, navigate to **Communication > Global**.
- Locate the **REST Webservice** field and enter a port number available on your system.
- Click **Install** and close the settings.

You should be able to monitor the various Shared Memory channels at the address `http://localhost:<YOUR_PORT>#/sharedmemory`.

Viz Engine Status Shared Memory Documentation

Shared Memory

Refresh

System VizCommunication Scene

System Map

Key	Value	
SHMCLIP0	0	delete
SHMCLIP0Mode	0	delete
SHMCLIP1	0	delete
SHMCLIP10	0	delete
SHMCLIP10Mode	0	delete
SHMCLIP11	0	delete
SHMCLIP11Mode	0	delete
SHMCLIP12	0	delete
SHMCLIP12Mode	0	delete
SHMCLIP13	0	delete
SHMCLIP13Mode	0	delete
SHMCLIP14	0	delete
SHMCLIP14Mode	0	delete

Key:

Value:

Add

4.2.2 Viz Libero Configuration

The outputs required to integrate with Viz Libero are created by Viz Libero upon connection.

Please check the *Viz Libero User Guide* for relevant configuration options.

4.2.3 Viz Arena Configuration

Viz Arena requires a Datacenter output configuration, for each of its configured Viz Engines (both preview and programs(s)).

Please check the *Viz Arena User Guide* to learn where to retrieve the relevant configuration options.

4.2.4 Viz Arc Configuration

Each Viz Arc configured as an output in Datacenter, receives live data from it. As data is posted to Viz Arc using an HTTP POST protocol, a valid port must be specified for the **Arc Web Server Port** field found in **Setting > General > Communication** of the Viz Arc Configuration panel:



Communication	
{ } REST Port	9004
☒ Arc TCP Server Port	9204
📶 MQTT Broker Port	1883
☒ Arc Web Server Port	5004
📄 Whitelist IP Range	0.0.0.0/0

Rest service restart required for change to take effect

When changing the Web server port, restart Viz Arc to make sure the new changes are applied.

Your Viz Arc is now configured to received data from Datacenter.

Note: Take note of the port specified in the Viz Arc configuration panel, as this is required when [configuring the relevant port for the output](#) in Datacenter.

5 Operating Datacenter


This section provides information on how to operate correctly the Datacenter system:

- [Getting Started](#)
- [Accessing Datacenter](#)
- [Creating Datasets](#)
- [Configuring Datasets](#)
- [Outputs](#)

5.1 Getting Started

To add live data to your graphics with Datacenter, follow these simple steps:

1. [Configure your output\(s\)](#) application to be ready to receive incoming data. Make sure to configure or load a correct [Viz Engine scene](#) that works with Datacenter.
2. [Access](#) the Datacenter main UI and [configure](#) it to add information, such as provider APIs or folders to monitor.
3. [Create one or more datasets](#) and [configure them](#).
 - a. Each data set contains a list of key/value-pairs that you can [filter](#) , [edit](#) and [control](#) in real-time, deciding which values should be sent to your output(s) to populate their graphics.
4. [Create and configure one or more Outputs](#) to receive live data.

 **Note:** Viz Libero and Viz Arena configure the necessary datasets upon installation, and Viz Libero also creates the necessary output when connecting. Therefore, only the relevant provider access tokens need to be configured for a successful Viz Libero integration. However, for a successful Viz Arena integration, the desired output(s) need to be configured.

5.2 Accessing Datacenter

5.2.1 Accessing Datacenter

The Datacenter runs automatically as a service on the host machine. It automatically starts on Windows startup, and its status can be monitored in **Task Manager > Services > VizrtDataCenter**.

While the service is always running in the background, the main user interface can be opened by navigating, using a browser on the same machine hosting the service, to one of the following addresses:

- <http://127.0.0.1:5700>: This address is always available, regardless of the service mode configured (see [HTTPS Certificate](#) configuration).
- <https://127.0.0.1:5701>: This address is only available if a valid HTTPS certificate has been configured (see [HTTPS Certificate](#) configuration).

If Datacenter is correctly configured to run an HTTPS backend that listens to all network interfaces, then the user interface is also reachable from:

- <https://<host-machine-ip>:5701>, where *<host-machine-ip>* is the public facing IP of the host machine. This mode allows you to reach and monitor Datacenter from all of the machines in the same network.



Info: The Admin page is only accessible when the Datacenter user interface is reached using the localhost address option.

5.3 Creating Datasets

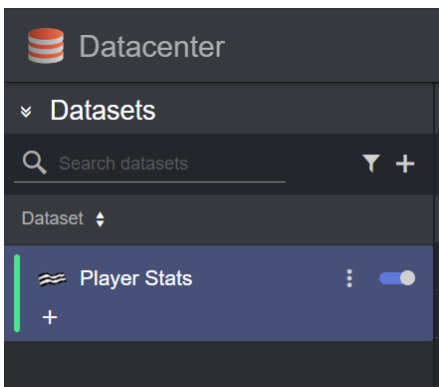
The Datasets panel list, shows all the existing datasets and allows you to create new ones. Existing datasets can be filtered or searched using the respective elements at the top of the list.

The following section explains how to interact with datasets in Datacenter, including:

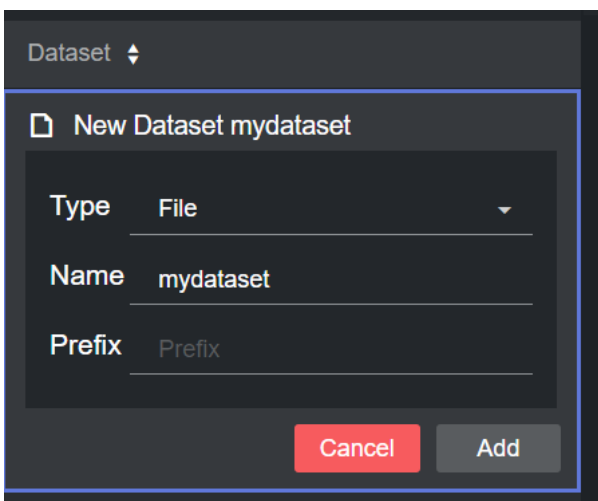
- [Creating a Dataset](#)
- [Tagging a Dataset](#)
- [Duplicate an Existing Dataset](#)
- [Disabling or Deleting a Dataset](#)
- [Monitoring a Dataset State](#)

5.3.1 Creating a Dataset

To create a new dataset, use the Dataset pane and press the **+** button to start.



A new panel is shown where you can fill the necessary information.



- **Type:** Choose the Provider type for this dataset.
- **Name:** Type a (unique) name for this dataset.

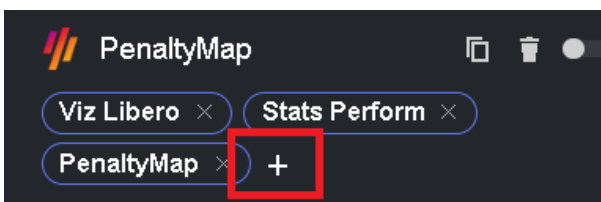
- **Prefix:** This field can be used if keys from different datasets are equal and you need to make them unique. This option is particularly useful when two datasets contain the same key (for example player stats for different players) and should be used simultaneously for the same output. Without using a prefix for one (or both) of the datasets, the values in the scene associated to the duplicate keys would be randomly taken from one of the datasets.

Click the **Add** button to create the dataset, or **Cancel** to abort.


Please refer to the [Providers](#) page for specific providers information on how to create a dataset.

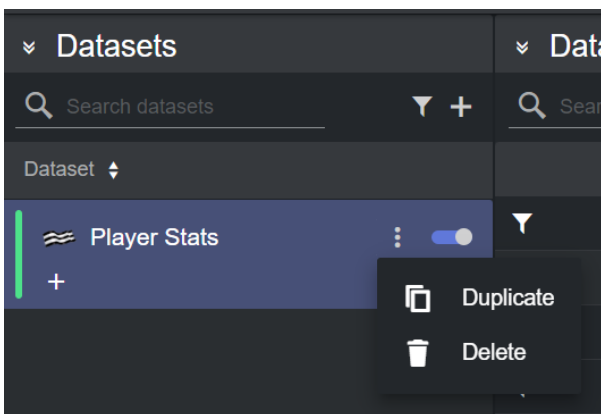
5.3.2 Tagging a Dataset

In order to access individual datasets via the [simple page](#), tags can be given to a dataset. To do so, use the "+" icon on the dataset:

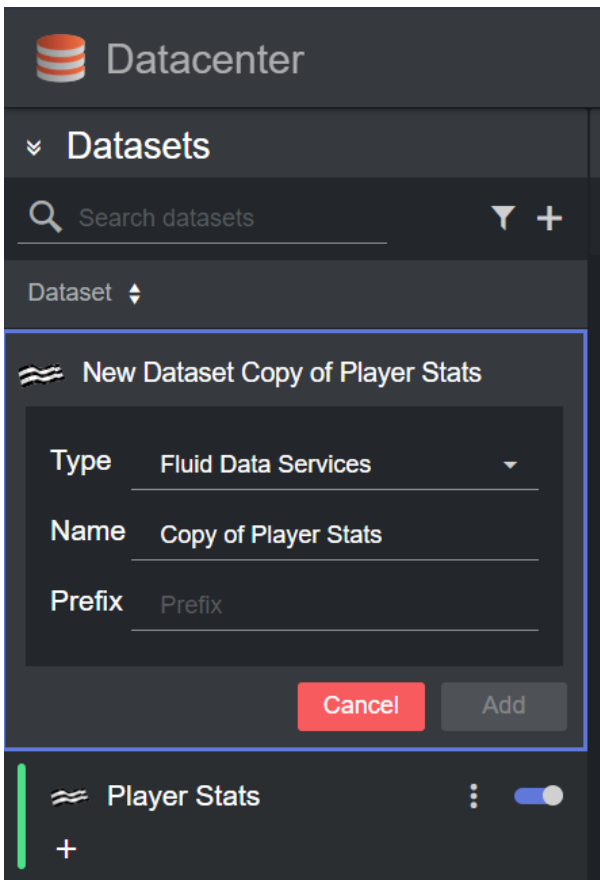


5.3.3 Duplicate an Existing Dataset

Instead of creating each dataset from scratch, you can duplicate existing datasets, and subsequently change some of their properties (for example, change a prefix or add a new endpoint to pull data from). To do so, locate the dataset to clone, expand the hamburger menu next to the name and click on the Duplicate icon .



A new dataset is created with the default name *Copy of <original dataset name>*.

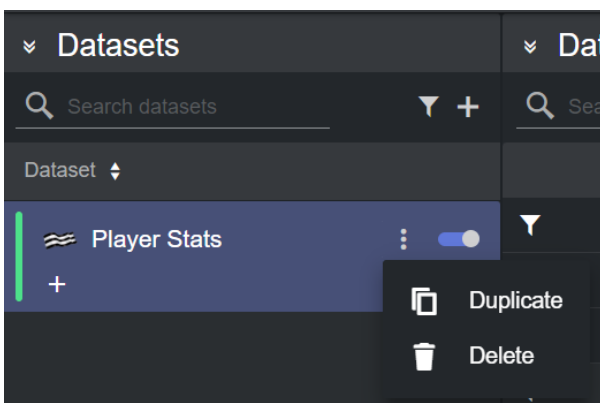


Info: When cloning a dataset, all the properties of the original datasets including data sources and specific settings, are assigned to the new datasets.

5.3.4 Disabling or Deleting a Dataset

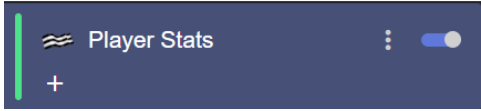
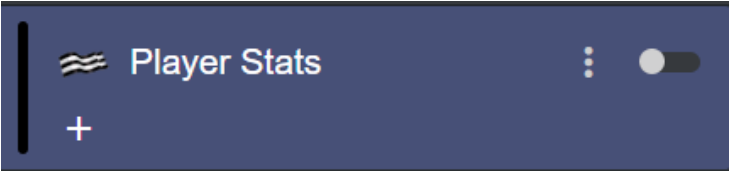
A dataset can be permanently deleted or temporary disabled. These are the steps for each:

- To delete a dataset, expand the hamburger menu next to its name and click on the Delete icon. The dataset is removed, and all its data is removed immediately from the outputs.



Note: This operation is destructive, as the dataset cannot be recovered after deleting it.

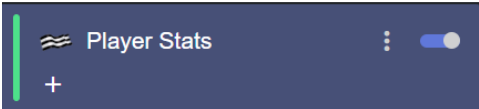
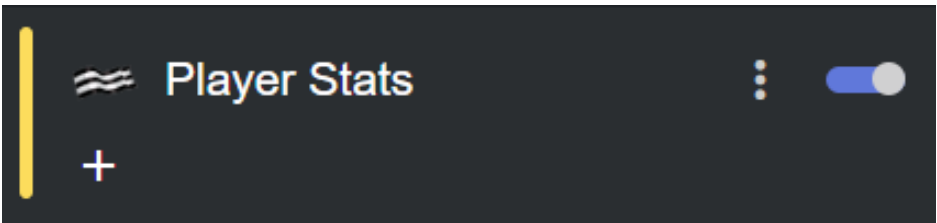
- To disable a dataset, click on the toggle next to its name:
 - A blue toggle means that the dataset is currently active.
 - A grey toggle means that the dataset is currently inactive.

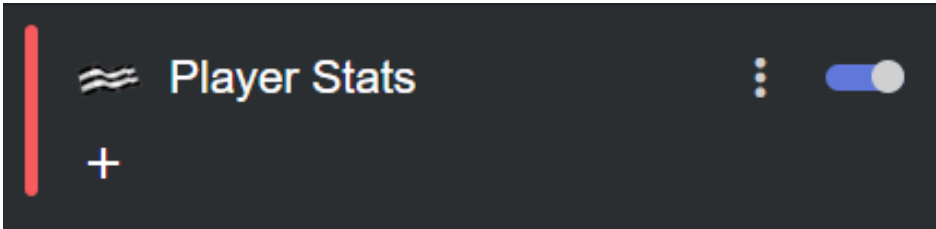
Status	
Active	
Inactive	

5.3.5 Monitoring a Dataset State

A dataset can be in three distinct states:

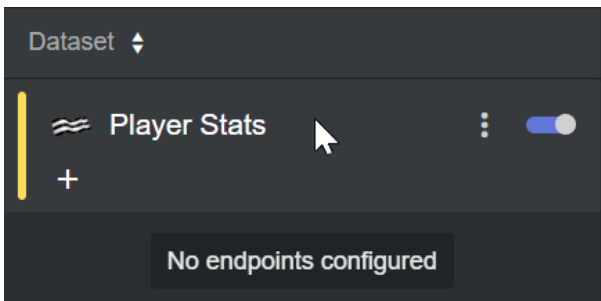
- OK:** The dataset is correctly configured and has data entries.
- Warning:** The dataset is not correctly configured and has (potentially) no data entries.
- Error:** The dataset source or the dataset itself has blocking errors which prevents the dataset from working correctly.

Status	
OK	
WARNING	

Status	
ERROR	

When one or more datasets are in warning or error state, the app bar shows a red or yellow icon in the top-right corner.

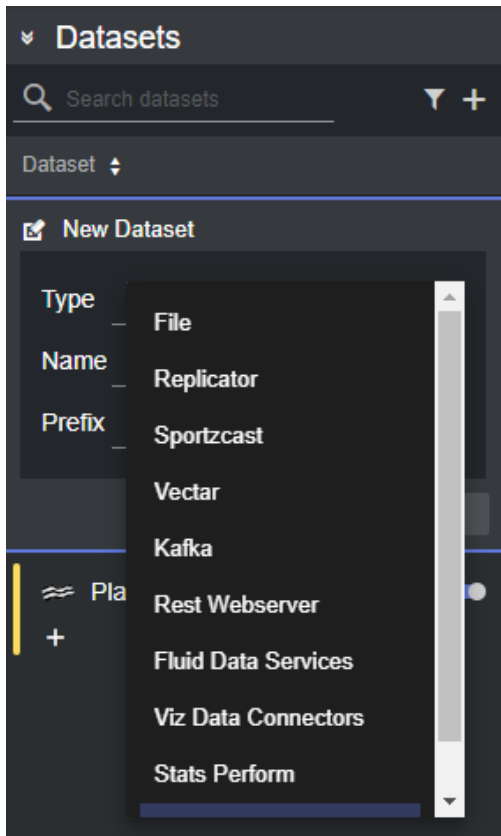
To obtain more information on a dataset in either Warning or Error state, hover the mouse on the dataset name to reveal a tooltip with further information and potential fixes.



Once all datasets are in the OK state, the app bar shows a green icon 15:36:18 ✓ 🚫 ? ⚙️.

5.4 Configuring Datasets

The Datacenter allows communication with a variety of Providers, supporting a variety of technologies used to retrieve data.



The following Providers can be used to acquire live data from:

- **Manual:** You can specify the key/value pairs manually.
- **File:** Reads and monitors data from the configured files.
- **Replicator:** Replicates data from a specific dataset from a Datacenter instance that runs on a different machine.
- **Sportzcast:** Provides live data from electronic scoreboards in stadiums, as offered by [Sportzcast by Genius Sports](#).
- **Vectar:** Accesses the DataLink data source configured in Viz Vectar.
- **Kafka:** Provides data from a configured [Apache Kafka](#) broker.
- **Rest Webserver:** Fetches data from a generic REST-based webserver.
- **Fluid Data Services:** Provides live and telemetry as offered by the [Fluid Data Services](#) data provider.
- **Stats Perform:** Provides live and statistical data as offered by the [Stats Perform](#) data provider.
- **Viz Data Connectors:** Provides data from a configured [Viz Flowics](#) existing account. This mode requires a valid Flowics Middleware to be correctly configured and running.
- **Socket Listener:** Listens for incoming data via a UDP or TCP socket.
- **Socket Connector:** Connects to a TCP server and initiate data streaming (incoming) via TCP.
- **Tracab:** Provides live and statistical data as offered by the [Tracab](#) data provider.

Depending on the Provider chosen, the configuration of each Dataset differs.

The rest of this section illustrates how to configure datasets for each of the supported providers:

- [Supported Providers](#)
- [Filtering and Manipulating a Dataset Entries](#)
- [Enabling or Disabling Dataset Entries](#)
- [Inspecting Dataset Entries](#)
- [Working with Live Data: the Performance Dashboard](#)
- [Joining Endpoints Parameters](#)

5.4.1 Supported Providers

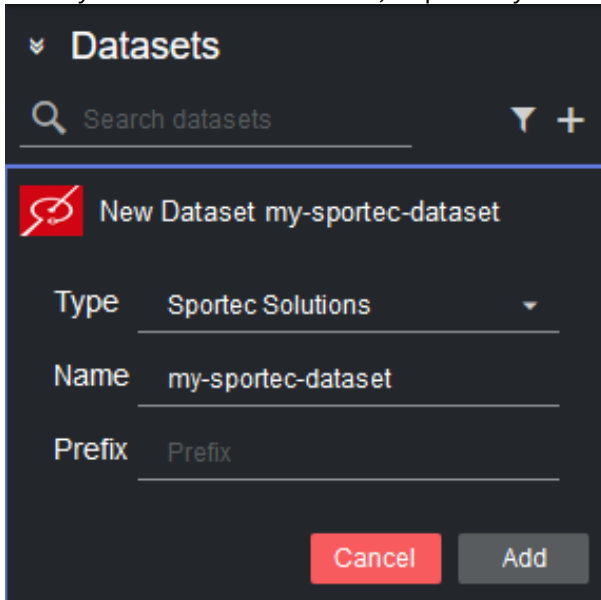
This section provides information on how to configure the supported datasets:

- [Sportec Solutions](#)
- [Stats Perform](#)
- [Fluid Data Services Dataset](#)
- [Rest Webserver Dataset](#)
- [Viz Data Connectors](#)
- [Manual Dataset](#)
- [File Dataset](#)
- [Replicator Dataset](#)
- [Sportzcast Dataset](#)
- [Tricaster Vectar](#)
- [Kafka Dataset](#)
- [Socket Listener](#)
- [Socket Connector](#)
- [Tracab](#)
- [Google Sheets](#)
- [Statsbomb](#)
- [Sportradar](#)

Sportec Solutions

These are the steps to configure a [Sportec Solutions](#) dataset.

1. Create a new dataset of type **Sportec Solutions**, specifying a name and (optionally) a prefix to use to identify the dataset and its values, respectively:




The screenshot shows a dark-themed 'Datasets' panel. At the top, there is a search bar labeled 'Search datasets' with a magnifying glass icon and a filter icon. Below the search bar, a 'New Dataset my-sportec-dataset' card is displayed. The card has a red icon with a white lightning bolt. It contains three input fields: 'Type' with a dropdown menu set to 'Sportec Solutions', 'Name' with the text 'my-sportec-dataset', and 'Prefix' with the text 'Prefix'. At the bottom of the card, there are two buttons: a red 'Cancel' button and a grey 'Add' button.

2. Click **Add**. The dataset is added to the list, and it has an initial WARNING status as it contains no configured endpoints yet.



3. Select one or more endpoints from the table in the **Dataset configuration** panel by double clicking a row. A new endpoint card is then created.

Name	Description
Competition	The competition
Season	The season of a specific competition
Club	The clubs of a specific season
Matchday	Matchdays of a specific competition
Match	The matches scheduled in a specific matchday
MatchInformation	Information about a specific match
AttackingZones	Attacking zones data of a specific match
MatchEvents	Raw events of a match
HeatMap	HeatMap of player positions for a specific match
ClubStatisticsMatch	Statistics of a specific club and its players within a season, and up to a specific matchday
PenaltiesGoalmouth	The last ten penalties of players in a specific competition



HeatMap

HeatMap of player positions for a specific m...

Alternatively, you can enter a new endpoint by clicking **Add new endpoint**, and then clicking on the empty endpoint that is added at the bottom of the table to configure it.

Dataset configuration

+ Add new endpoint

Doing so, reveals the new endpoint details in the Endpoint template parameters on the right side, where its properties can be entered.

✕ **Endpoint template parameters**

Name

New Endpoint

Description

Description

Endpoint

DFL-04.06-Heatmaps-Match/{Match}

Dependency filter

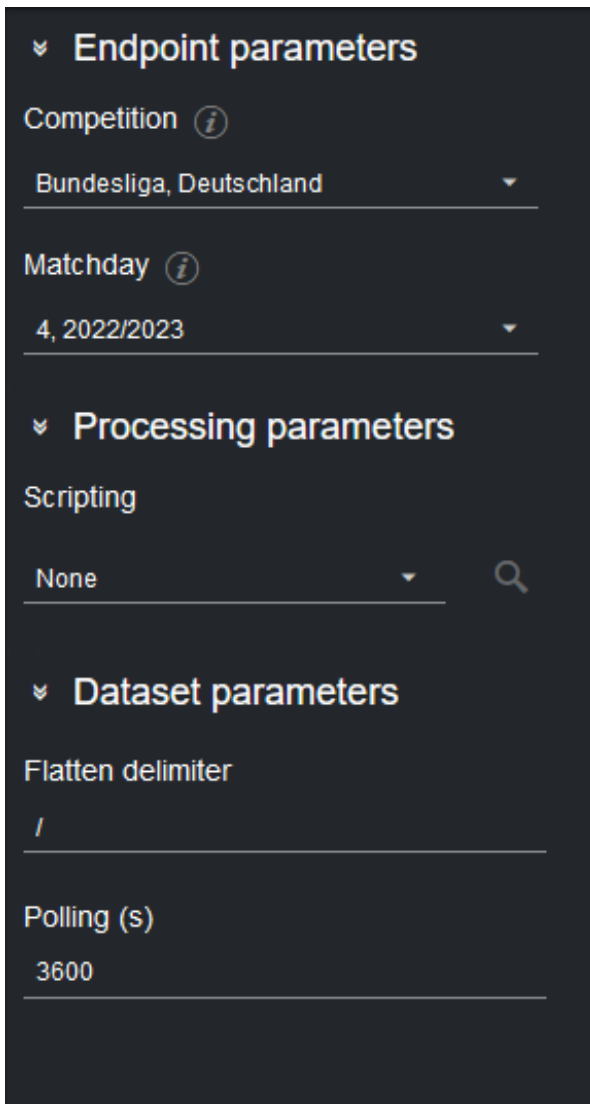
✕ **Endpoint fixed options**

Name

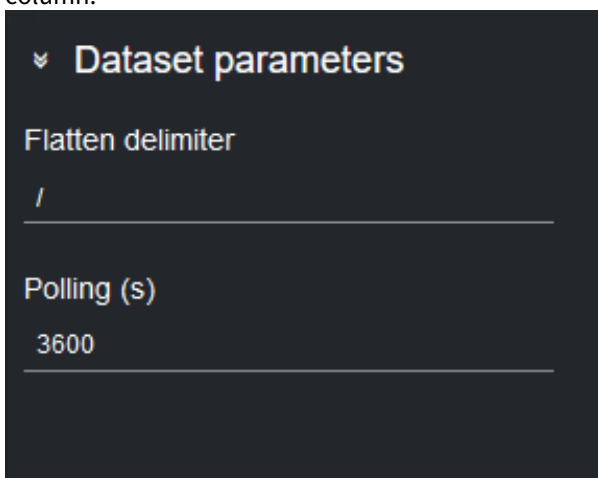
i Endpoint Options: When adding a new endpoint, parameters (for example, parts of the endpoint whose value should be fetched from other endpoints) should be encapsulated in curly braces: {part_name}. The value inside curly braces is resolved either by using other endpoints present in the **Dataset configuration** table, or the ones specified in the **Endpoint fixed options** section of the right-most column in the main view.

Using as an example the images above, the following endpoint `/DFL-04.06-Heatmaps-Match/{Match}`, would use the {Match} options from the respective endpoint in the table.

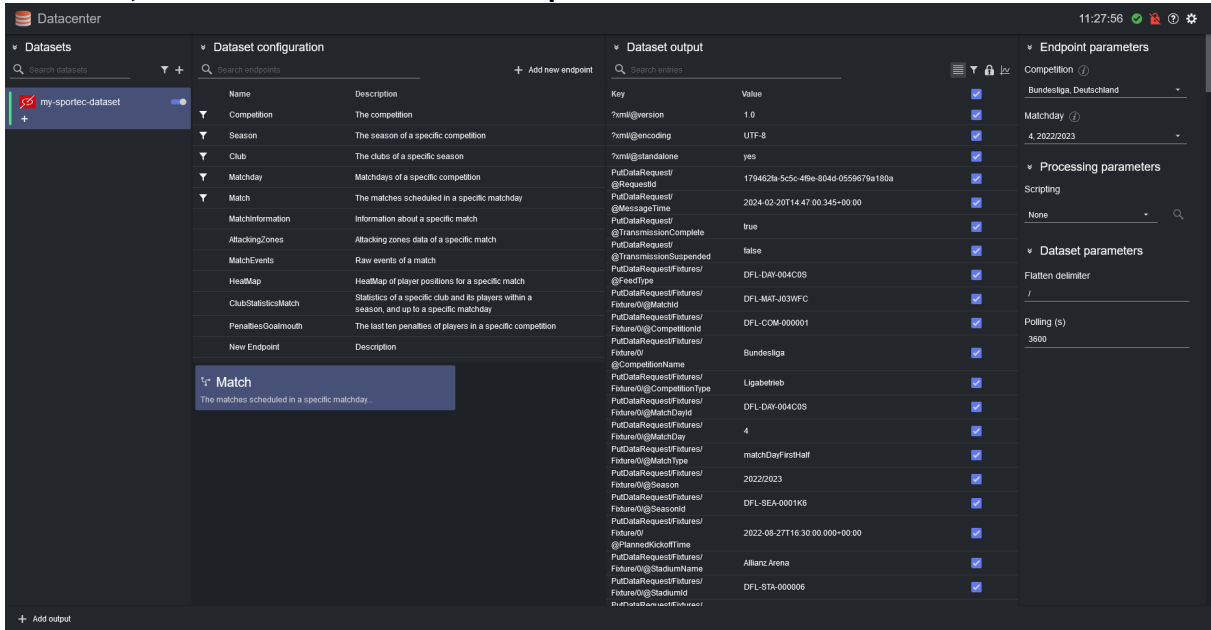
- Once an endpoint is added to a dataset, you can select the endpoint card. This reveals the Endpoint parameters panel on the right side, where its properties can be entered. You can now edit the endpoint configuration (**Competition** and **Matchday**, as shown in the image below):



5. To change the polling rate (how often the Sportec Solutions remote host is polled for data, in seconds) for the dataset, select a card from the list and edit the **Polling** field in the Dataset parameters on the right-most column.

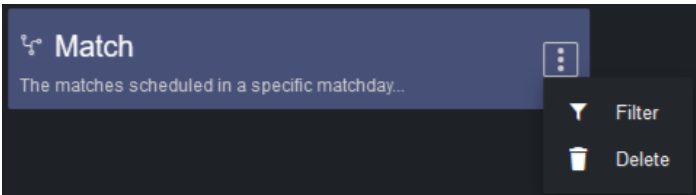


6. When done, the data is added to the **Dataset output** table.

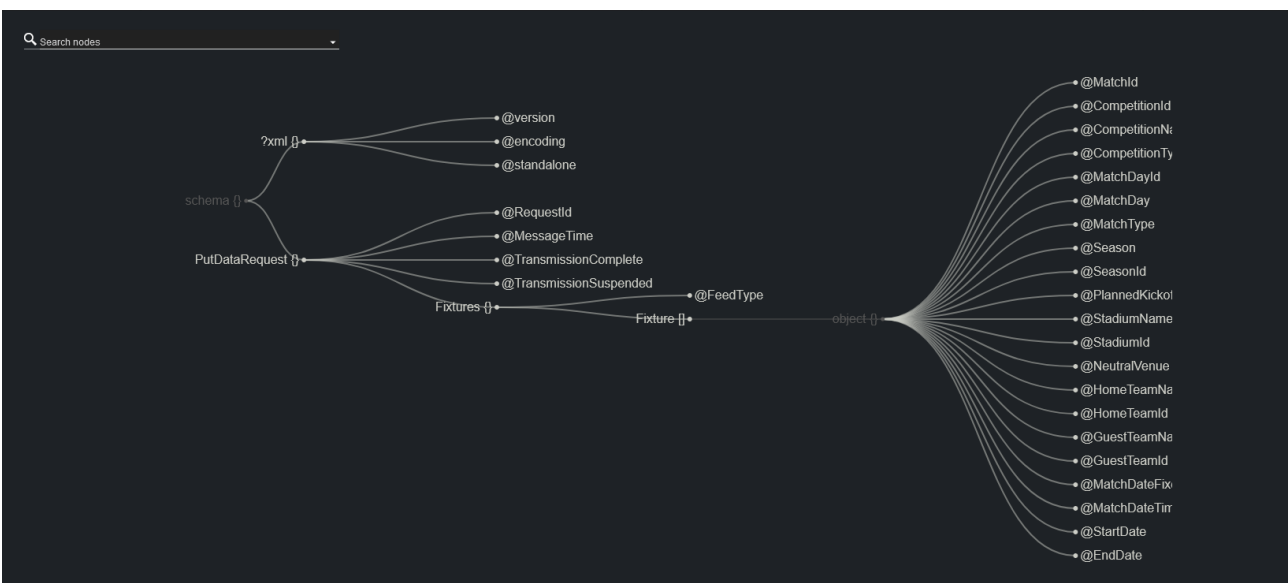


Filtering a Dataset

Values read from a file into a dataset can be filtered via the Filtering tool. To do so, select the dataset card, click on the hamburger menu and then press the **Filter** button.



A dialog visualizing the file's payload schema opens, where you can filter the source data.

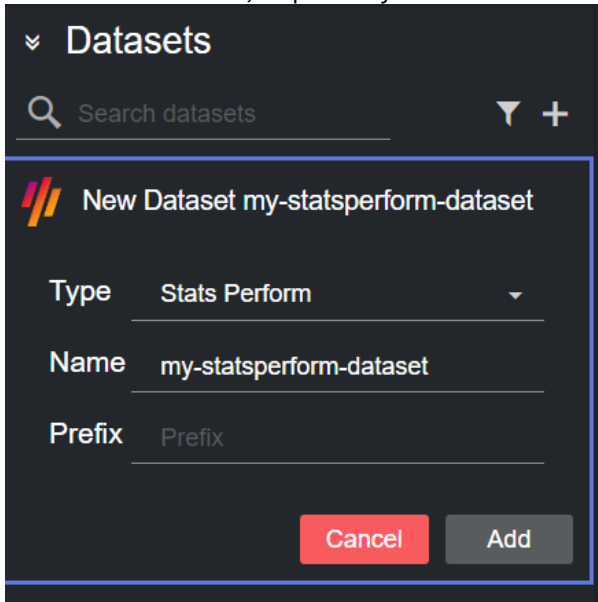


Please refer to the [Filtering and Manipulating a Dataset Entries](#) page to learn how to enable, disable and edit the entries added.

Stats Perform

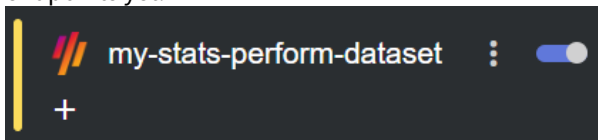
These are the steps to configure a **Stats Perform** dataset.

1. Create a new dataset of type **Stats Perform**, specifying a name and (optionally) a prefix to use to identify the dataset and its values, respectively:




The screenshot shows a dark-themed interface for creating a new dataset. At the top, there is a 'Datasets' header with a search bar labeled 'Search datasets' and a filter icon. Below this, a modal window titled 'New Dataset my-statsperform-dataset' is open. It contains three input fields: 'Type' set to 'Stats Perform', 'Name' set to 'my-statsperform-dataset', and 'Prefix' set to 'Prefix'. At the bottom of the modal are two buttons: a red 'Cancel' button and a grey 'Add' button.

2. Click **Add**. The dataset is added to the list, and it has an initial WARNING status as it contains no configured endpoints yet.



3. Select one or more endpoints from the table in the **Dataset configuration** panel by double clicking a row. A new endpoint card is then created.

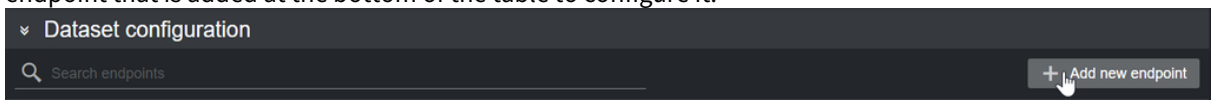
▼	Competition	The league (Competition)	🗑️
▼	Season	The season of a specific competition	🗑️
▼	Match	The matches (Fixtures) of a specific season	🗑️
▼	Team	Teams of a specific match	🗑️
▼	Player	The players of a specific team of a specific match	🗑️
	MatchEvents	All match events of both teams	🗑️
	MatchEventsTeam	All match events of a specific team	🗑️
	MatchEventsTeamPlayer	All match events of a specific player	🗑️
	MatchStats	All statistics of a match	🗑️
	MatchPenaltiesPreview	All historical penalties relevant for a match	🗑️
	Id_10	Description	🗑️



MatchEvents

All match events of both teams

Alternatively, you can enter a new endpoint by clicking **Add new endpoint**, and then clicking on the empty endpoint that is added at the bottom of the table to configure it.



Doing so, reveals the new endpoint details in the Endpoint template parameters on the right side, where its properties can be entered.

⌵ Endpoint template parameters

Name

Id_26

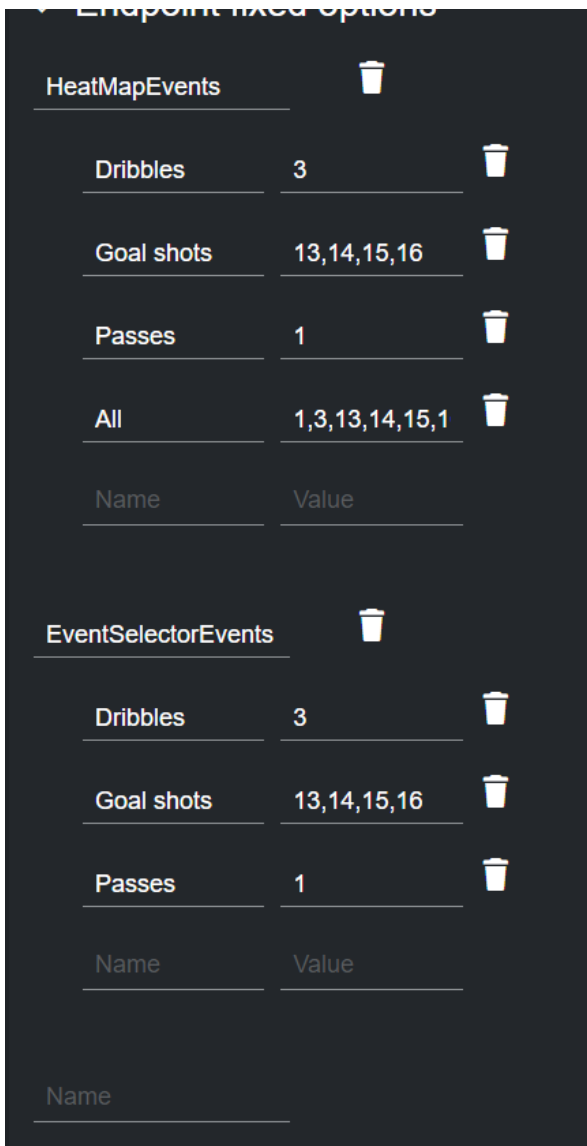
Description

Description

Endpoint

Dependency filter

⌵ Endpoint fixed options



Endpoint Options: When adding a new endpoint, parameters (for example, parts of the endpoint whose value should be fetched from other endpoints) should be encapsulated in curly braces: {part_name}. The value inside curly braces is resolved either by using other endpoints present in the **Dataset configuration** table, or the ones specified in the **Endpoint fixed options** section of the right-most column in the main view.

Using the images above as an example, the following endpoint `/soccerdata/matchevent/{outletAuthKey}/{Match}?ctst={Team}&type={EventType}`, would use the {Match} and {Team} options from the respective endpoint in the table, and the {EventType} option from the fixed options. The {outletAuthKey}, on the other hand, is fetched from the [Provider](#) configuration in the Admin page.

- Once an endpoint is added to a dataset, you can select the endpoint card. This reveals the Endpoint parameters panel on the right side, where its properties can be entered. You can now edit the endpoint configuration (**Competition** and **Season**, as shown in the image below):

⌵ **Endpoint parameters**

Competition ⓘ
 Liga Profesional Argentina, Argentina ▾

Season ⓘ
 2023 ▾

⌵ **Processing parameters**

Scripting
 None ▾ 🔍

⌵ **Dataset parameters**

Flatten delimiter
 /

Polling (s)
 3600

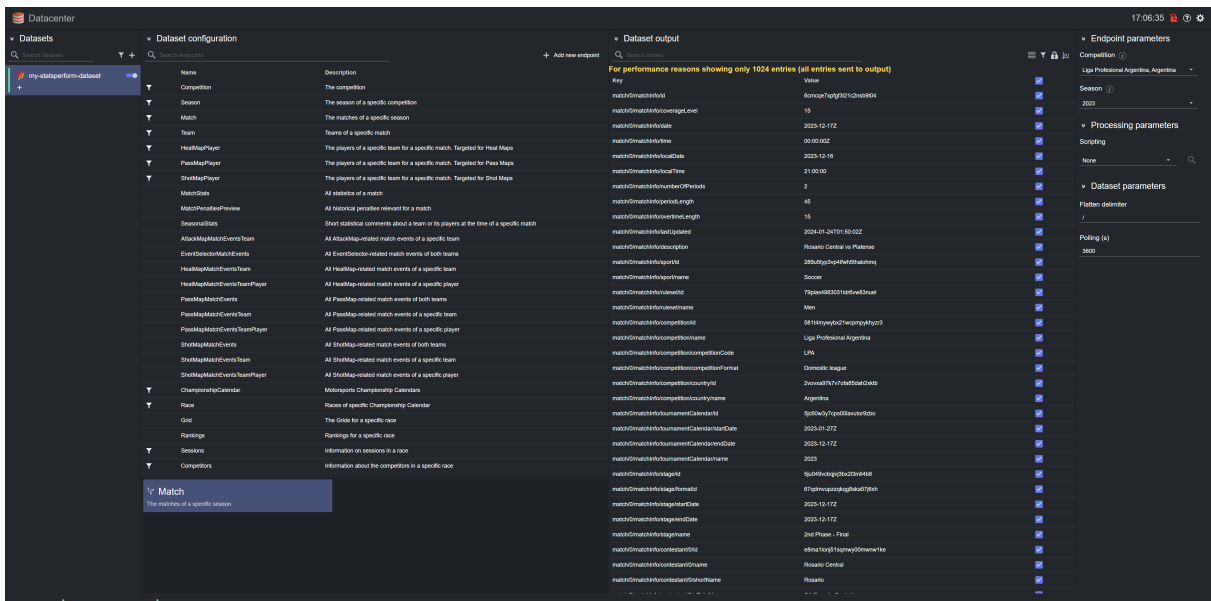
5. To change the polling rate (how often the Stats Perform remote host is polled for data, in s) for the dataset, select a card from the list and edit the **Polling** field in the Dataset parameters on the right-most column.

⌵ **Dataset parameters**

Flatten delimiter
 /

Polling (s)
 3600

6. When done, the data is added to the **Dataset output** table.

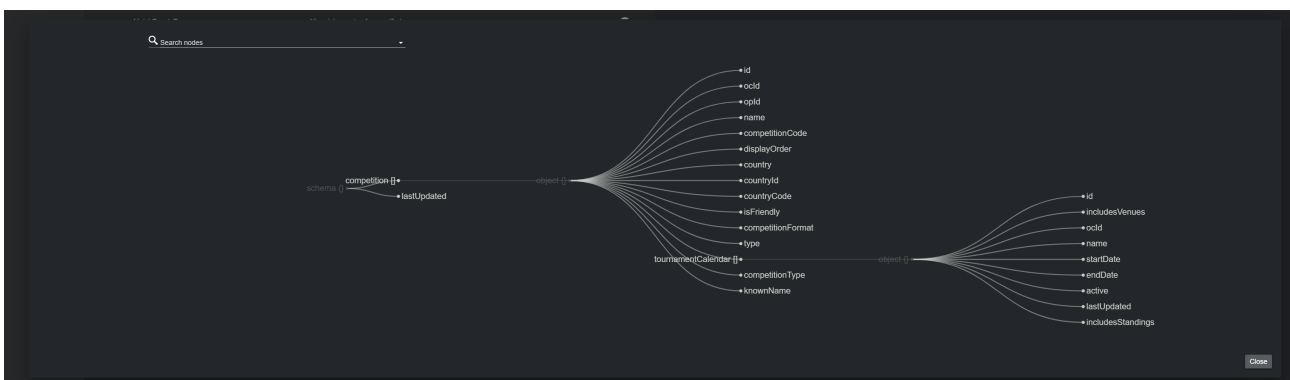


Filtering a Dataset

Values read from a file into a dataset can be filtered via the Filtering tool. To do so, select the dataset card, click on the hamburger menu and then press the **Filter** button.



A dialog visualizing the file's payload schema opens, through which a user can filter the source data.



Please refer to the [Filtering and Manipulating a Dataset Entries](#) page to learn how to enable, disable and edit the entries added.

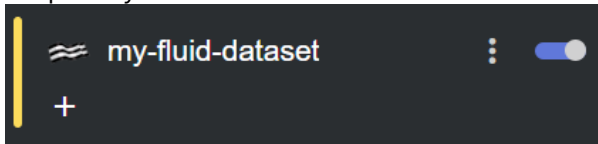
Fluid Data Services Dataset

This section provides the steps to configure a **Fluid Data Services** dataset.

1. Create a new dataset of type **Fluid Data Services**, specifying a name and (optionally) a prefix to use to identify the dataset and its values, respectively:

The screenshot shows a dark-themed 'Datasets' panel. At the top, there is a search bar labeled 'Search datasets' and a filter icon. Below this, a modal window titled 'New Dataset my-fluid-dataset' is open. It contains three input fields: 'Type' with a dropdown menu set to 'Fluid Data Services', 'Name' with the text 'my-fluid-dataset', and 'Prefix' with the text 'Prefix'. At the bottom of the modal are two buttons: a red 'Cancel' button and a grey 'Add' button.

2. Click **Add**. The dataset is added to the list, and it has an initial WARNING status as it contains no configured endpoints yet.



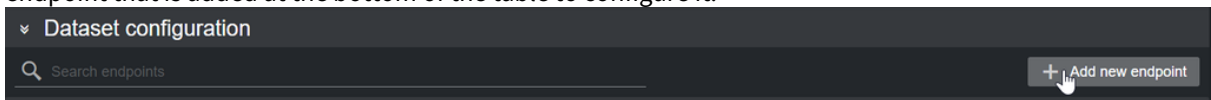
3. Select one or more endpoints from the table in the **Dataset configuration** panel by double clicking a row. A new endpoint card is then created.

Dataset configuration

Search endpoints + Add new endpoint

Name	Description
Sport	Available sports
Competition	Available competitions
EventGroup	Event group
Event	Event
Team	Team
Player	The players for a given team in a competition in a given year
Players passmap	The players passmaps for a given event
Players shotmap	The players shotmap for a given event
Penalty preview	The penalty preview for a given event
Attacks Distribution	The attacks distribution for a given event
Teams HeatMap	The heatmaps for the teams in a given event
Actors Details	The players details for a given team in a competition in a given year
Actors Stats	The players stats for a given event
Team Stats	The team stats for a given competition

Alternatively, you can enter a new endpoint by clicking **Add new endpoint**, and then clicking on the empty endpoint that is added at the bottom of the table to configure it.



This reveals the new endpoint details, where its properties can be entered.

⌵ Endpoint template parameters

Name

Id_14

Description

Description

Endpoint

Dependency filter

⌵ Endpoint fixed options

Name

i **Endpoint Options:** When adding a new endpoint, parameters (for example, parts of the endpoint whose value should be fetched from other endpoints) should be encapsulated in curly braces: {part_name}. The value inside curly braces is then resolved either using other endpoints present in the **Dataset configuration** table, or the ones specified in the **Endpoint fixed options** section of the main view. Using as example the images above, the following endpoint `/Competitions/{Competition}/{%year%}/teams/{Team}/actors`, would use the {Competition} and {Team} options from the respective endpoint in the table. The {%year%} option, on the other hand, is a special token used to list years as date.

- Once an endpoint is added to a dataset, you can select the endpoint card in the Dataset configuration panel. You can now edit the endpoint configuration (for example, **Sport**, **Competition** and **Year** shown in the picture below) in the Endpoint parameters panel on the right.

⌵ Endpoint parameters

Sport ⓘ
formula 1

Competition ⓘ
FIA F1 World Championship

Year ⓘ
2024

⌵ Processing parameters

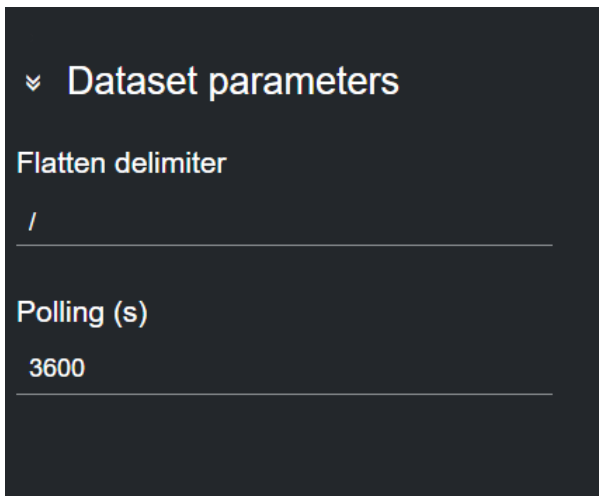
Scripting
None

⌵ Dataset parameters

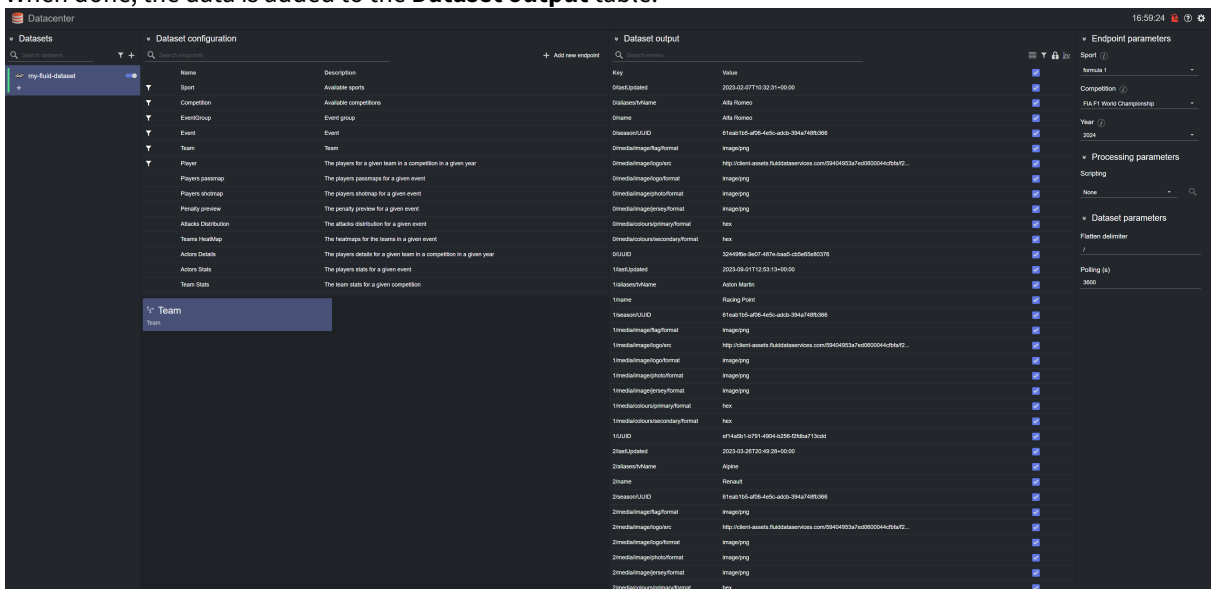
Flatten delimiter
/

Polling (s)
3600

5. To change the polling rate (how often the Fluid remote host is polled for data, in s) for the dataset, select an endpoint card from the list and edit the **Polling** field in the Dataset parameters on the right-most column.

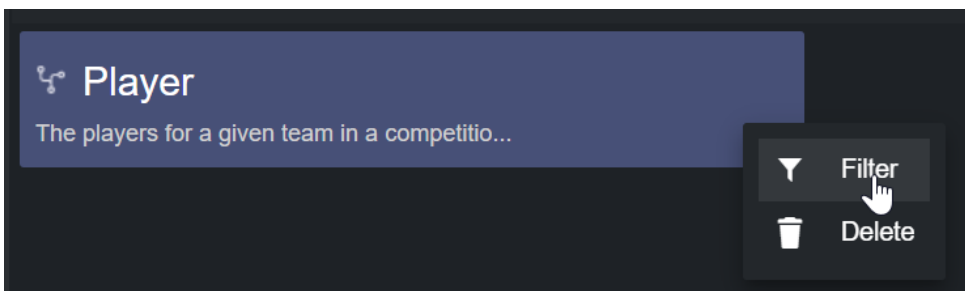


6. When done, the data is added to the **Dataset output** table.

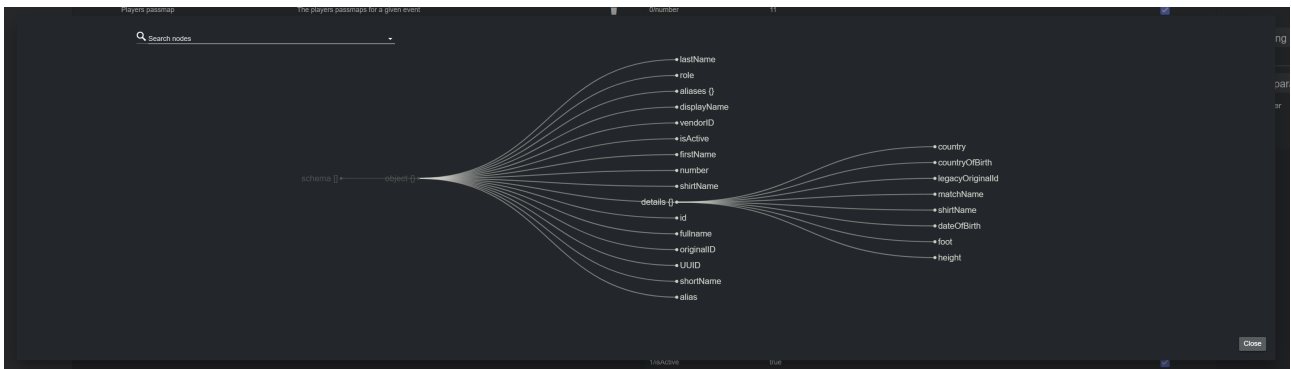


Filter a Dataset

Values read from a file into a dataset can be filtered with the Filtering tool. To do so, select the dataset card, click on the hamburger menu and then press the **Filter** button.



A dialog visualizing the file's payload schema opens, through which a user can filter the source data.

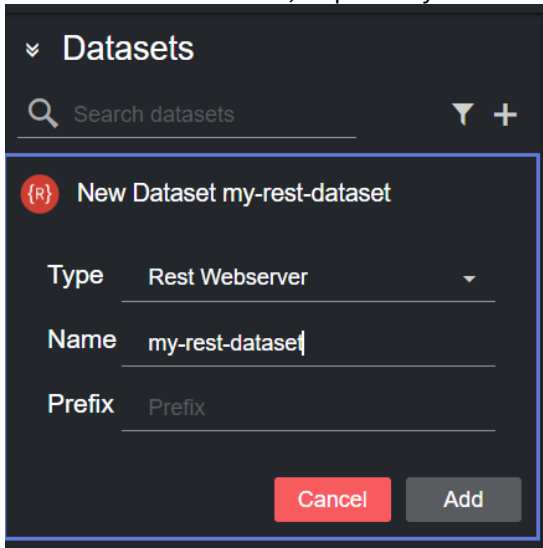


Please refer to the [Filtering and Manipulating a Dataset Entries](#) page to learn how to enable, disable and edit the entries added.

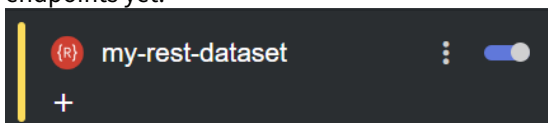
Rest Webserver Dataset

This section provides the steps to configure a **Rest Webserver** dataset, to poll data from a generic REST provider.

1. Create a new dataset of type **Rest Webserver**, specifying a name and (optionally) a prefix to use to identify the dataset and its values, respectively:



2. Click **Add**. The dataset is added to the list, and it has an initial WARNING status as it contains no configured endpoints yet.



3. Click on the dataset card and configure the webservice options in the **Dataset parameters** section of the main UI./info

Processing parameters
 Scripting
 None

Dataset parameters
 Flatten delimiter
 /

Host
 http://localhost

Port
 0

Polling (s)
 6000

Authentication type
 X-API-Key

API Token
 Token

If the host to connect to does not require a port to be specified, please leave the **Port** field as zero. If needed, use the **API Token** and **Authentication type** fields to specify how an API token should be passed in the request:

Authentication type

- X-API-Key
- Custom header key
- Bearer token
- Query parameter
- Append to base address
- Http Basic Authentication

- **X-API-Key:** Embeds the API token in the *X-API-Key* key of the request header.

- **Custom header key:** Embeds the API token in the request header key specified in the **Custom Key** field.
- **Bearer token:** Embeds the API token in the *Authorization* key of the request header, and prefixes it with "Bearer".
- **Query parameter:** Embeds the API token in the query parameter specified in the **Custom Key** field.
- **Append to base address:** Appends the API token to the host address, for example <http://my-api-address/<my-api-key>>.
- **Http Basic Authentication:** Embeds in a header field the username and password encoded in Base64.

Info: More information on authentication and authorization can be found on the following link: <https://swagger.io/docs/specification/authentication/>.

4. Select one or more endpoints from the table in the **Dataset configuration** panel by double clicking a row. A new endpoint card is then created.

Dataset configuration	
Name	Description
orders	Some description
authors	All authors
author	An author
Competitions	All competitions

Alternatively, you can enter a new endpoint by clicking **Add new endpoint**, and then clicking on the empty endpoint that is added at the bottom of the table to configure it.

Dataset configuration	
Name	Description

Doing so reveals the new endpoint details, where its properties can be entered.

Endpoint template parameters

Name

Id_4

Description

Description

Endpoint

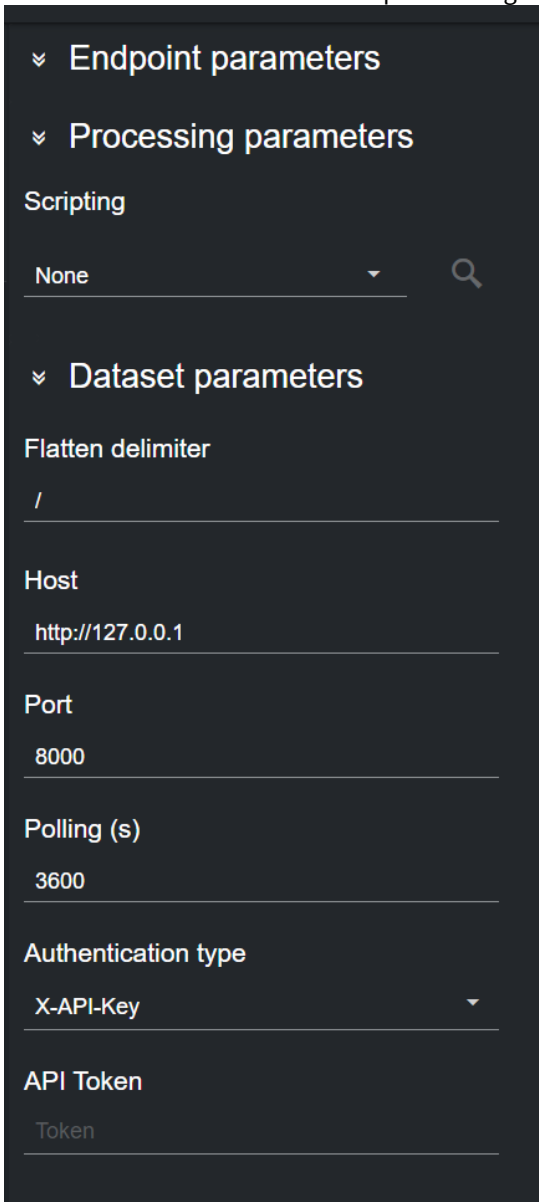
Dependency filter

Endpoint fixed options

Name

When adding a new endpoint, parameters (parts of the endpoint whose value should be fetched from other endpoints) should be encapsulated in curly braces: *{part_name}*. The value inside curly braces is resolved either by using other endpoints present in the **Dataset configuration** table, or the ones specified in the **Endpoint fixed options** section of the main view. Using as example the images above, when adding a new endpoint *"/authors/{authors}"*, the *{authors}* option would be resolved by using the endpoint named "authors" in the table to then present the user a dropdown with various authors to configure the newly added endpoint.

5. Once an endpoint is added to a dataset, you can select the endpoint card, where its properties can be entered. You can now edit the endpoint configuration.



6. To change the polling rate (how often the remote REST host is polled for data, in seconds) for the dataset, select if from the list and edit the **Polling (s)** field in the **Dataset parameters** on the right-side column.

Dataset parameters

Flatten delimiter

/

Host

http://localhost

Port

0

Polling (s)

6000

Authentication type

X-API-Key

API Token

Token

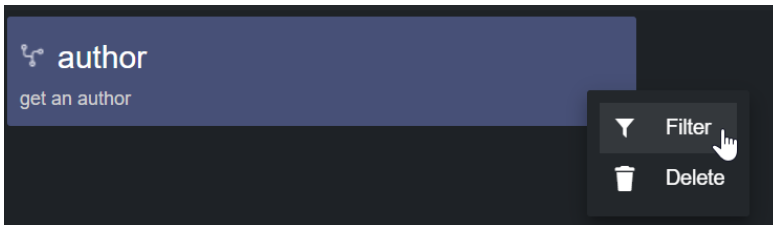
7. When done, the data is added to the **Dataset output** table.

The screenshot displays the Datacenter interface with several panels:

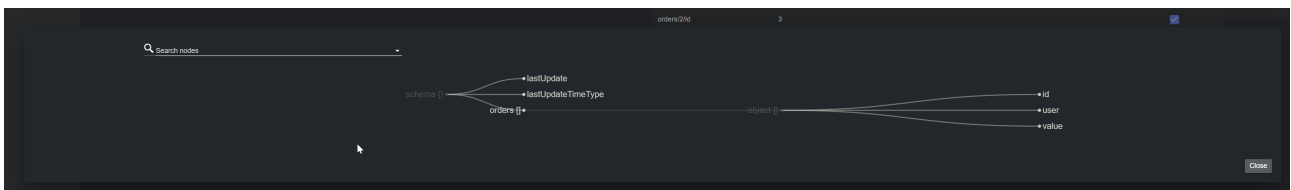
- Datasets:** A list of datasets including 'orders', 'authors', and 'my-test-dataset'.
- Dataset configuration:** A table with columns 'Name' and 'Description'. The 'author' dataset is selected, showing its configuration.
- Dataset output:** A table with columns 'Key' and 'Value'. It contains three rows: 'name' with value 'Fabrizio', 'age' with value '37', and 'uid' with value '1'.
- Endpoint parameters:** A panel showing parameters for the 'authors' endpoint, including 'Flatten delimiter', 'Host' (http://172.0.0.1), 'Port' (5000), 'Polling (s)' (3000), 'API Token' (api-token), and 'Use API Token in' (Query parameter).

Filter a Dataset

Values read from a file into a dataset can be filtered with the Filtering tool. To do so, select the dataset card, click on the hamburger menu and then press the **Filter** button.



A dialog visualizing the file's payload schema opens, through which a user can filter the source data.



Please refer to the [Filtering and Manipulating a Dataset Entries](#) page to learn how to enable, disable and edit the entries added.

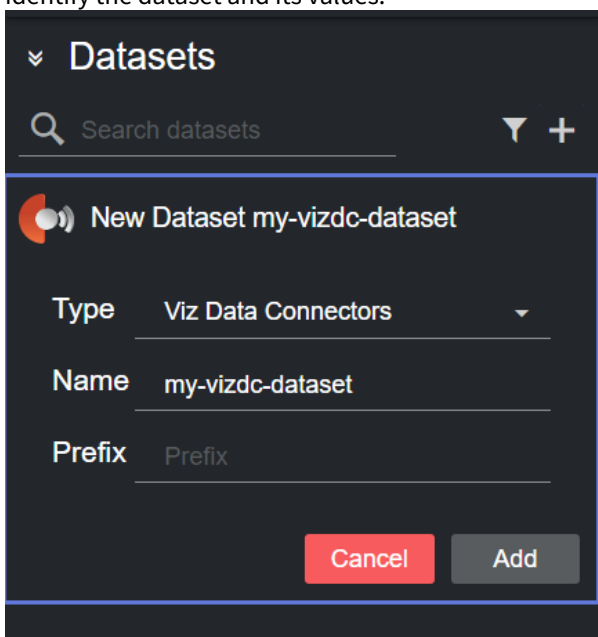
Viz Data Connectors

For a Viz Data Connectors dataset to work correctly, an existing account with Flowics by Vizrt must be obtained (separately) by the customer. Additionally, the connectors to forward to Datacenter via the Flowics Middleware, as well as its setup, must be performed via the Flowics web-ui. Please refer to the [Flowics by Vizrt documentation](#) for further information on how to install the Flowics Middleware.

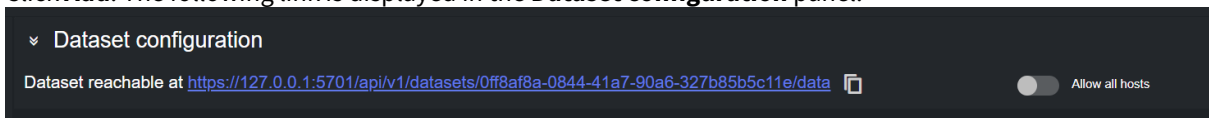
Note: The Viz Data Connectors integration requires Datacenter to run in HTTPS mode. Please refer to the [General Configuration](#) page for instructions on how to setup a HTTPS service.

This section provides the steps to configure a [Viz Data Connectors](#) dataset using [Flowics Middleware](#).

1. Create a new dataset of type **Viz Data Connectors**, specifying a name and (optionally) a prefix to use to identify the dataset and its values:



2. Click **Add**. The following link is displayed in the **Dataset configuration** panel:



This link can be used in the Flowics web-ui, [to configure the Middleware to forward data to Datacenter](#). The basic setup assumes that both Datacenter and the Flowics Middleware run on the same machine. When this is the case, no further steps are required to setup a Flowics dataset, and any data configured to be forwarded by the Middleware, should also appear in the Dataset Entries panel. However, for setups where Datacenter runs on a different machine than the Flowics Middleware, the following additional steps have to be performed:

3. In Datacenter's **Dataset configuration** panel, enable the **Allow all hosts** toggle.
 - a. Substitute the *localhost/127.0.0.1* part of the address shown in the **Dataset configuration** panel with the machine public IP, and use this new address to configure the Middleware to forward data to Datacenter.

i **Info:** On Windows, a machine IP can be found by running the `ipconfig` command from a command line terminal (CMD), or the `Get-NetIPAddress` cmdlet in Powershell.

Please refer to the [Filtering and Manipulating a Dataset Entries](#) page to learn how to enable, disable and edit the entries added.

Configuring Middleware to Send Data to Datacenter

! **Note:** This guide assumes the Flowics Middleware has been installed on a machine in the following location: `/home/user/dev/middleware-cli`. Please refer to the [Flowics by Vizrt documentation](#) for further information on how to install the Flowics Middleware.

! **Middleware Token**

Note: The token used when configuring Middleware can be found in the Flowics web-ui, under **Settings > Middleware > General Settings > Token**. This value needs to be associated to the entry `flowics.middleware.id` in the file `middleware.properties`, found in `/home/user/dev/middleware-cli/conf`.

The Middleware can be accessed via the [Flowics platform](#). For that, a registered user account is required.

To start sending data to Datacenter:

- Once logged in, navigate to **Data Connectors > Data Middleware Sources** and select the source from the list where relaying to Datacenter needs to be enabled.
- On the Data Source page, locate the **Middleware Integration** section and click on the Edit button. In the dialog that opens, make sure to enable **Push to an HTTP Webhook** and in the **Endpoint** input the Datacenter dataset link shown in the **Dataset configuration** panel.

i **Info:** If the Middleware runs on a separate machine than the one running Datacenter, substitute the `localhost/127.0.0.1` part of the address in the **Dataset configuration** panel, with the machine public IP.

- Click **Save**. The configuration should be downloaded to the Middleware, and shortly after the dataflow should start towards Datacenter.

Using Signed Certificates

Note: Please refer to the [General Configuration](#) page for instruction on how to setup Datacenter to run as an HTTPS service.

The Flowics Middleware requires Datacenter to run an HTTPS service to correctly forward data to it. Please note that Datacenter does not provide signed certificates. Should you not already have a certificate-authority provided certificate, there are several services that can issue signed certificates (for example, letsencrypt.org). When using a TLS certificate signed by a valid authority, no further steps are required to integrate Middleware to Datacenter (this is the recommended way to integrate both).

Using Self-Signed Certificates



Editing a Trust Store

Warning: The following guide requires you to edit the **Java Virtual Machine** (JVM) trust store. This can potentially expose your machine to malicious actors and attacks, therefore, we recommend carrying the following steps with care. Please have your IT team assist you during this process.

In case you are not able to obtain a certificate-authority provided certificate, a self-signed certificate can be used to run Datacenter as an HTTPS service. This, however, is not the recommended way to setup Datacenter in HTTPS

mode, and should only be done under the supervision of your IT team and following an informed decision to use self-signed certificates.

While self-signed certificates are easy to obtain, they do not provide any trust value, and are therefore rejected by default by many communicating actors, including Flowics Middleware. To allow the Middleware to accept self-signed certificates from Datacenter, some additional work is required.

Note: Please refer to the [General Configuration](#) page for instructions on how to create a self-signed certificate.

Info: This guide assumes the JVM used to run Middleware is installed in `/home/user/jre-21`, while Flowics Middleware is installed in `/home/user/dev/middleware-cli`.

To enable Middleware to accept self-signed certificates, one needs to ensure that:

- The self-signed certificate is imported in the **Java Virtual Machine (JVM)** trust store.
 - We **strongly recommend** to first create a copy of the default JVM trust store, and add the self-signed certificate to the copy **only**. This prevents making permanent changes to the machine's trust store

Warning: Avoid changing the default JVM trust store, instead, work on a copy. We strongly recommend to carry out this step only under the supervision of your IT team.


- If a copy of the JVM trust store has been used (for example, in `/home/user/jre-21/cacert_bk/cacerts`), Middleware needs to be made aware of its location. This can be done by adding a line pointing to the modified trust store in the config file `/home/user/dev/middleware-cli/conf/middleware.conf`. To do so, open this config file and replace the line starting with `wrapper.java.additional.6` with the following line:


```
wrapper.java.additional.6=-Djavax.net.ssl.trustStore=/home/user/jre-21/cacert_bk/cacerts
```


```
# Java Additional Parameters
wrapper.java.additional.1=-client
wrapper.java.additional.2=-Djava.net.preferIPv4Stack=true
wrapper.java.additional.3=-Dsun.net.inetaddr.ttl=0
wrapper.java.additional.4=-Djava.io.tmpdir=tmp/
wrapper.java.additional.5=-Dwebapp.env_override=true
wrapper.java.additional.6=-Djavax.net.ssl.trustStore=/home/user/jre-21/cacert_bk/cacerts
#wrapper.java.additional.6=-Djava.security.policy=conf/policy.all
#wrapper.java.additional.7=-Dcom.sun.management.jmxremote
#wrapper.java.additional.8=-Dcom.sun.management.jmxremote.port=8997
#wrapper.java.additional.9=-Dcom.sun.management.jmxremote.authenticate=false
#wrapper.java.additional.10=-Dcom.sun.management.jmxremote.ssl=false
```

- Create an alias for the IP address of the machine running Datacenter by opening the operating system hostfile `/etc/hosts` file and adding the line (assuming Datacenter runs at `1.2.3.4:5701`):

```
1.2.3.4 YOUR_DATACENTER_HOST_NAME
```

 **Note:** The *YOUR_DATACENTER_HOST_NAME* value **must** match the CN field listed in the self-signed certificate used on the Datacenter machine.

 **Info:** Typically, the host file in the Windows installation can be located under C:
|*windows\system32\drivers\etc*, while in Linux, the same file can be found in */etc/hosts*.

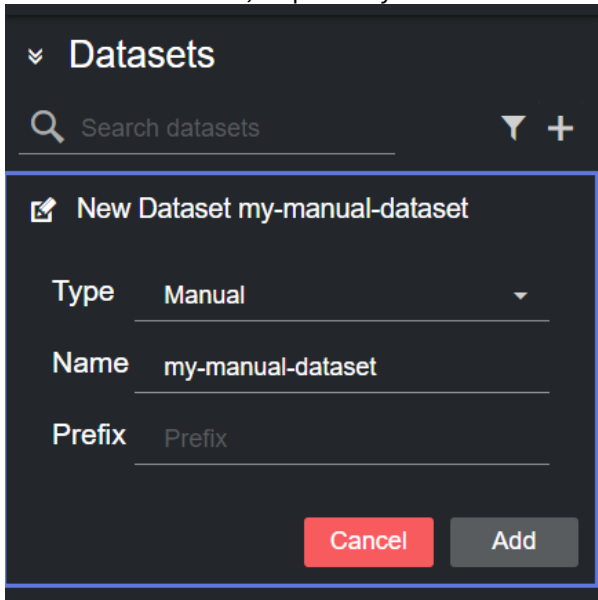
 **Warning:** We strongly recommend to carry out this step only under the supervision of your IT team.

- Finally, restart Middleware.

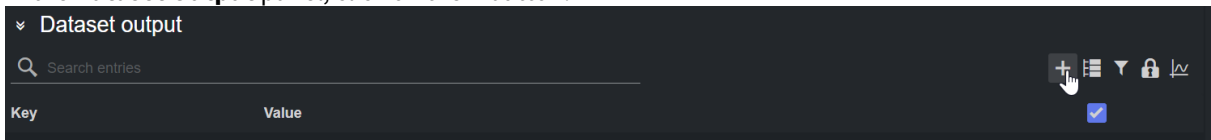
Manual Dataset


These are the steps to configure a **Manual** dataset:

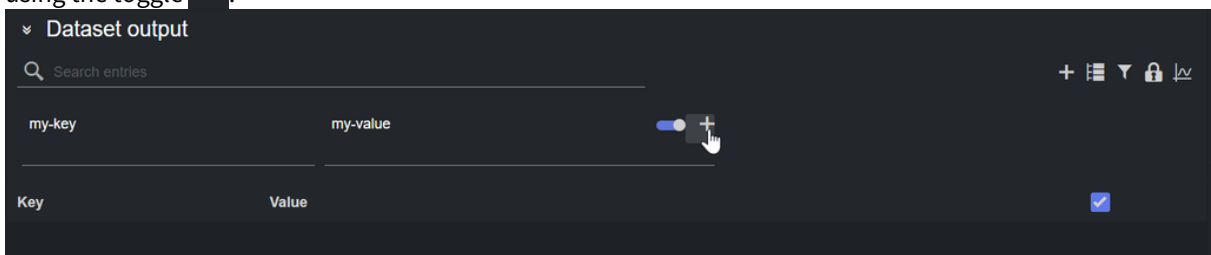
1. Create a new dataset of type **Manual**, specifying a name and (optionally) a prefix to use to identify the dataset and its values, respectively:



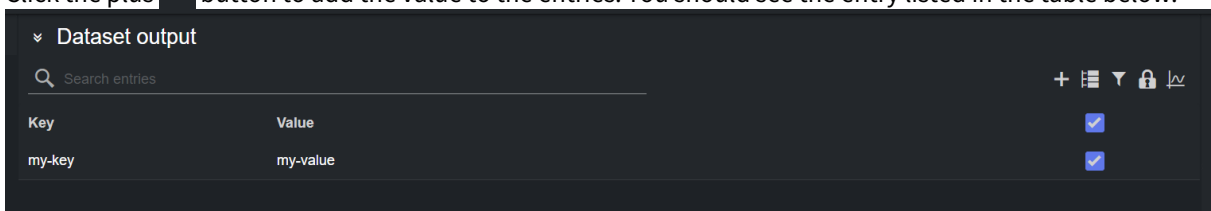
2. Click **Add**. You can now manually add new key-value data entries that work together with other datasets.
3. In the **Dataset Output** panel, click on the **+** button:



4. Fill the **Key/Value** pair in the panel that just opened. You can toggle the start activation state of the entry by using the toggle .



5. Click the plus **+** button to add the value to the entries. You should see the entry listed in the table below.

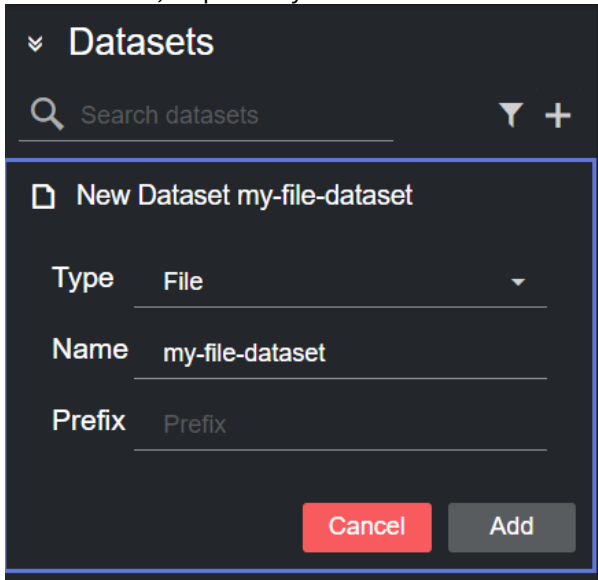


Please refer to the [Filtering and Manipulating a Dataset Entries](#) page to learn how to enable, disable and edit the entries added.

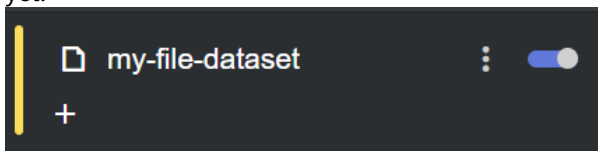
File Dataset

This section provides the steps to configure a **File** dataset.

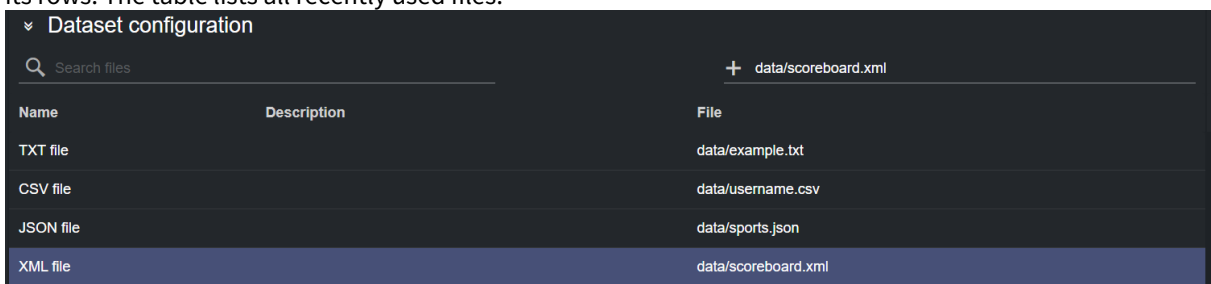
1. Create a new dataset of type **File**, specifying a name and (optionally) a prefix to use to identify the dataset and its values, respectively:



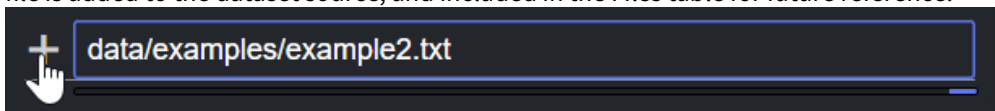
2. Click **Add**. The dataset is added to the list, and it has an initial WARNING status as it contains no source file yet.



3. You can now select a source file from the table in the **Dataset configuration** panel, by double clicking one of its rows. The table lists all recently used files.



4. Alternatively, you can type a file location in the input box at the top of the table and press the plus sign. The file is added to the dataset source, and included in the Files table for future reference.



The input box supports autocomplete, listing the files in the folder alias that were setup while configuring the File provider in the [Admin](#) page. Datacenter supports the following file types:

- a. **Text** (These are key-value pairs, using the '=' or ':' char as separators. The separators can be mixed.)

- b. **Ini-file**
- c. **JSON**
- d. **CSV** (comma-separated)
- e. **XML**

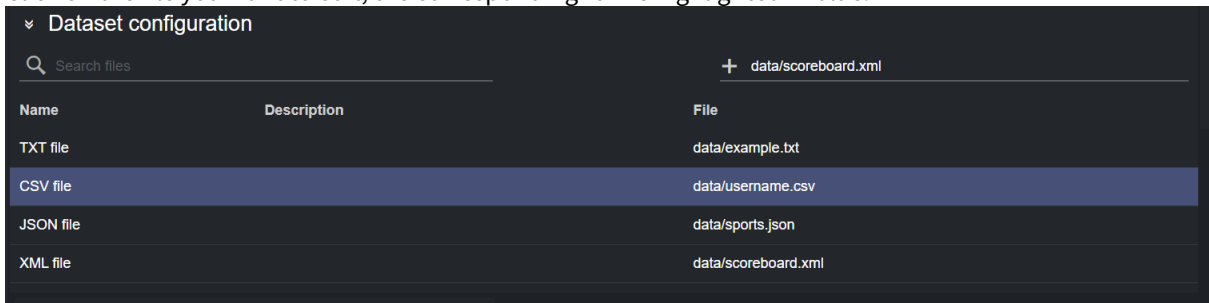
Info: TXT files accept two separators: '=' or ':', which can be mixed. White space added *after* the separator, is preserved in the *value*. White space added *before* the separator is stripped from the *key*.

Editing Recently Added Files

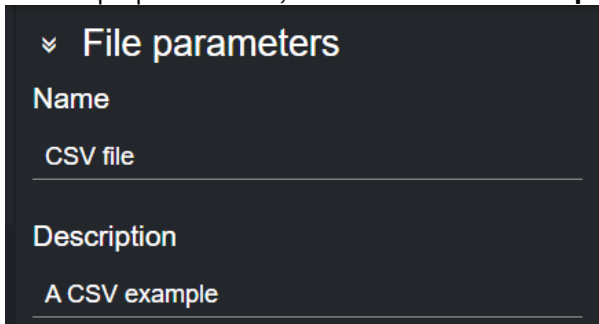
The table in the **Dataset configuration** panel lists all the recently added files. When adding a file, its values are set to default.

Follow these steps to edit those properties:

1. Click on the file you want to edit, the corresponding row is highlighted in blue:



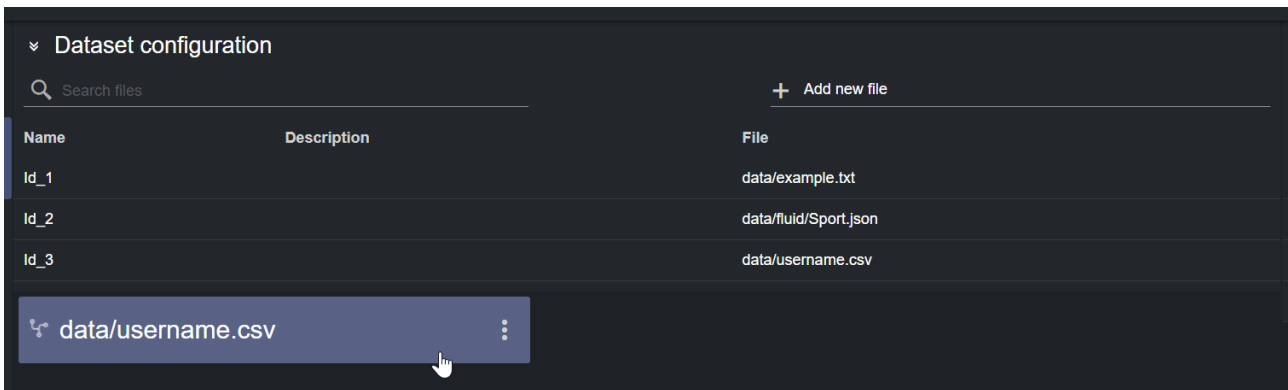
2. Edit the properties listed, such as **Name** and **Description**.



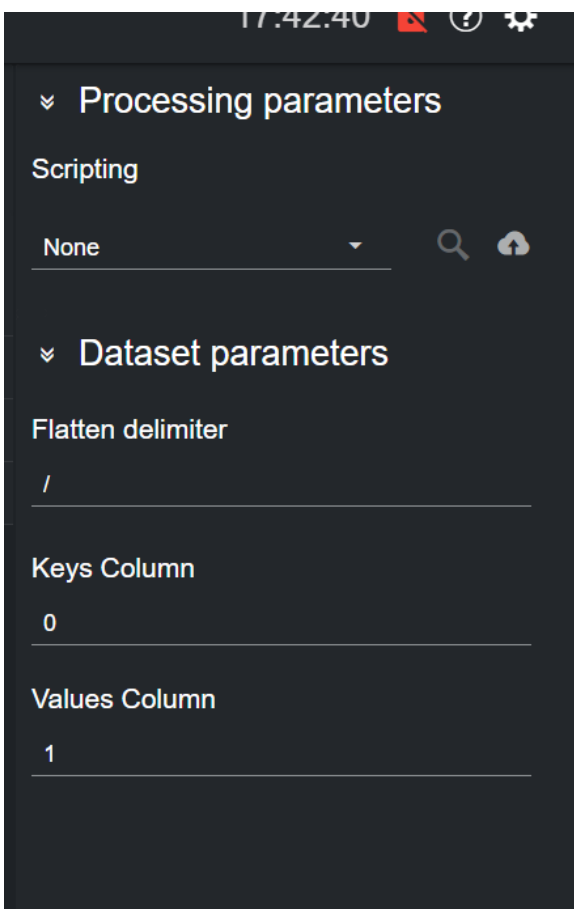
Working with CSV Files

When adding a CSV file, Datacenter attempts to read the keys from the first column in the file and the values from the second.

To change this behavior, click on the filename in the Dataset Configuration panel:



Change the **Keys Column** or **Values Column** options in the Setup Panel.



Working with XML Files

When adding a XML file, Datacenter attempts to create for each XML element a key/pair value, where the XML tag name is used as the key. Nested elements are converted as follows:

XML Example

```
<MyTag>
<NewTag1>value1</NewTag1>
```

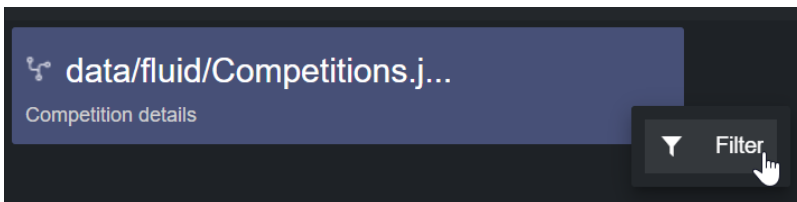
```
<NewTag2>value2</NewTag2>
<NewTag3>value3</NewTag3>
</MyTag>
```

Datacenter Output

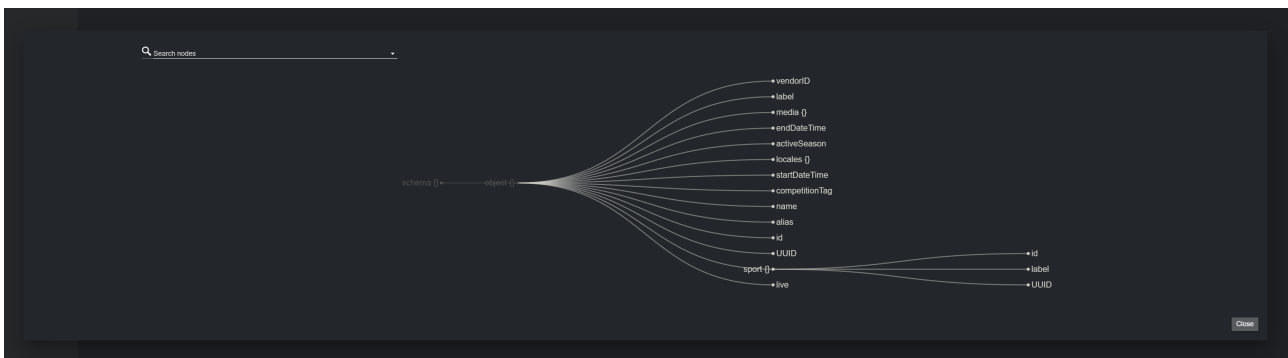
Keys	Values
MyTag/NewTag1	value1
MyTag/NewTag2	value2
MyTag/NewTag3	value3

Filtering a Dataset

Values read from a file into a dataset, can be filtered via the Filtering tool. To do so, select the dataset card, click on the hamburger menu and then press the **Filter** button.



A dialog visualizing the file's payload schema opens, where a user can filter the source data.



Please refer to the [Filtering and Manipulating a Dataset Entries](#) page to learn how to enable, disable and edit the entries added.

Replicator Dataset

Datacenter supports datasets of type **Replicator**, and such data can be used to use one Datacenter as input for another.

This is particularly useful when a Datacenter machine has to be removed from public internet, but still needs to fetch data from an online Provider. In this scenario, a Datacenter machine can be connected to the internet and the provider, and the protected machine, not on the internet but reachable from the first machine, setup with one or more Replicator datasets pointing to the online machine.

Info: For security reasons, to allow a Datacenter service to be reachable by other machines, a [HTTPS certificate must be correctly configured](#). Therefore, currently only Datacenter machines that run a secure (HTTPS) service can be replicated. A service running an unsafe HTTP service can still be replicated, but only on the localhost (on the same machine).

Note: When connecting to a Datacenter service that runs as HTTPS, the certificate used on that machine must be valid, signed by an authority and in general, must pass a standard authentication procedure. Failing to do so, may result in the connection to that machine being refused by the connecting Replicator dataset, due to security issues.

Follow these steps to configure a Replicator dataset:

1. Create a new dataset of type **Replicator**, specifying a name and (optionally) a prefix to use to identify the dataset and its values:

2. Click **Add**. The dataset is added to the list, and it has an initial WARNING status as it contains no dataset to replicate yet.

3. You can now select a host to replicate from the table in the **Dataset configuration** panel by double clicking a row. The table lists all the recently used hosts.

Dataset configuration

Search hosts + Add new host

Name	Description	Host	Port
My machine	127.0.0.1	localhost	5700
A remote machine	1.2.3.4	localhost	5700

Alternatively, you can add a new host by clicking on **Add new host**, and then clicking on the empty host that is added at the bottom of the table.

Search hosts + Add new host

Name	Description	Host	Port

Doing so, reveals the new host details, where its properties can be entered.

Host parameters

Name

Id_6

Description

Host

Port

0

You can now double click on the configured host in the host table to select it as source to replicate.

Dataset configuration

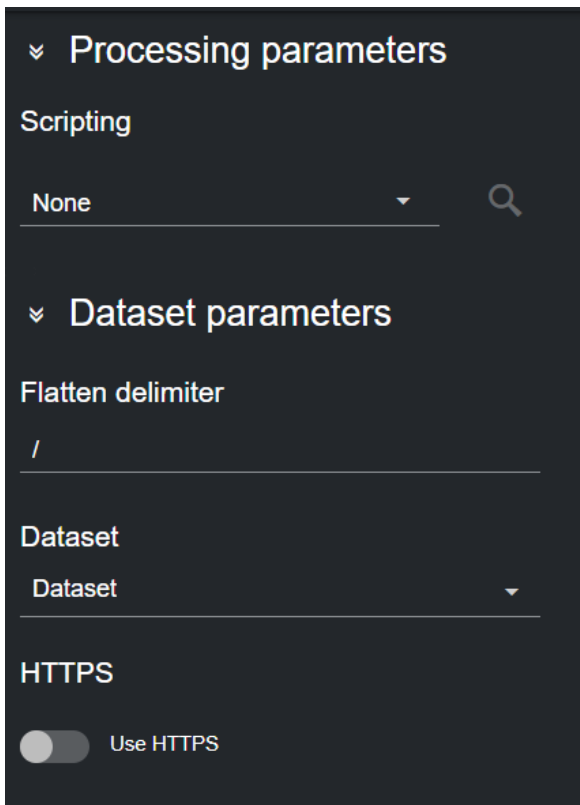
Search hosts + Add new host

Name	Description	Host	Port
My machine	localhost	127.0.0.1	5700
Remote	A remote machine	1.2.3.4	10
newhost	localhost	127.0.0.1	690

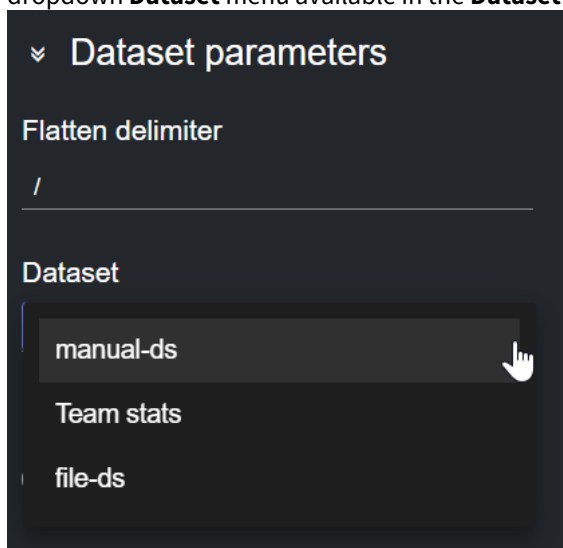
127.0.0.1:5700

Please select a dataset.

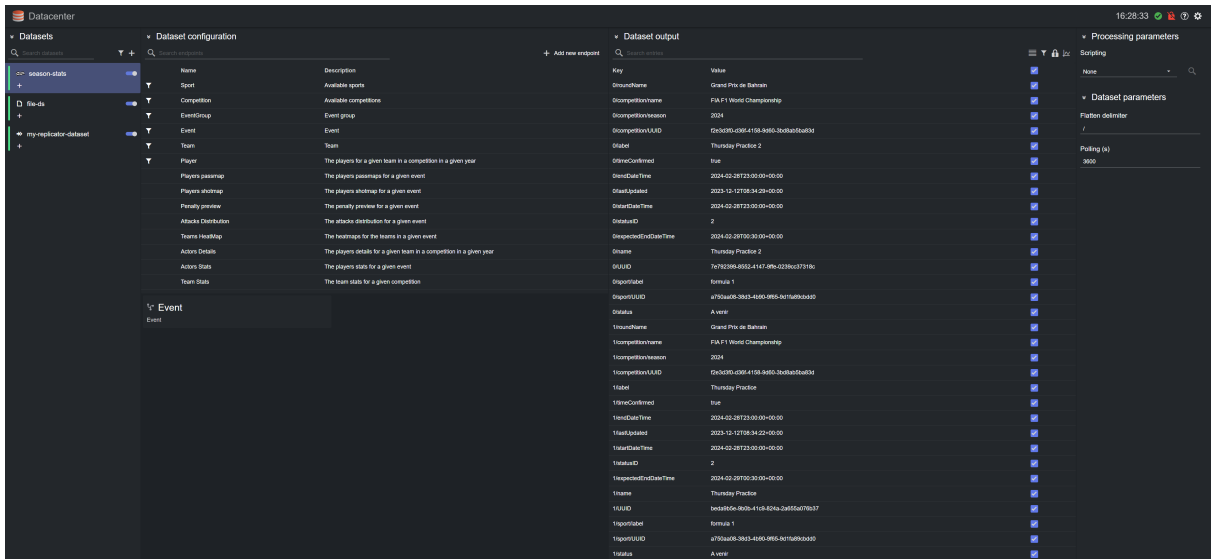
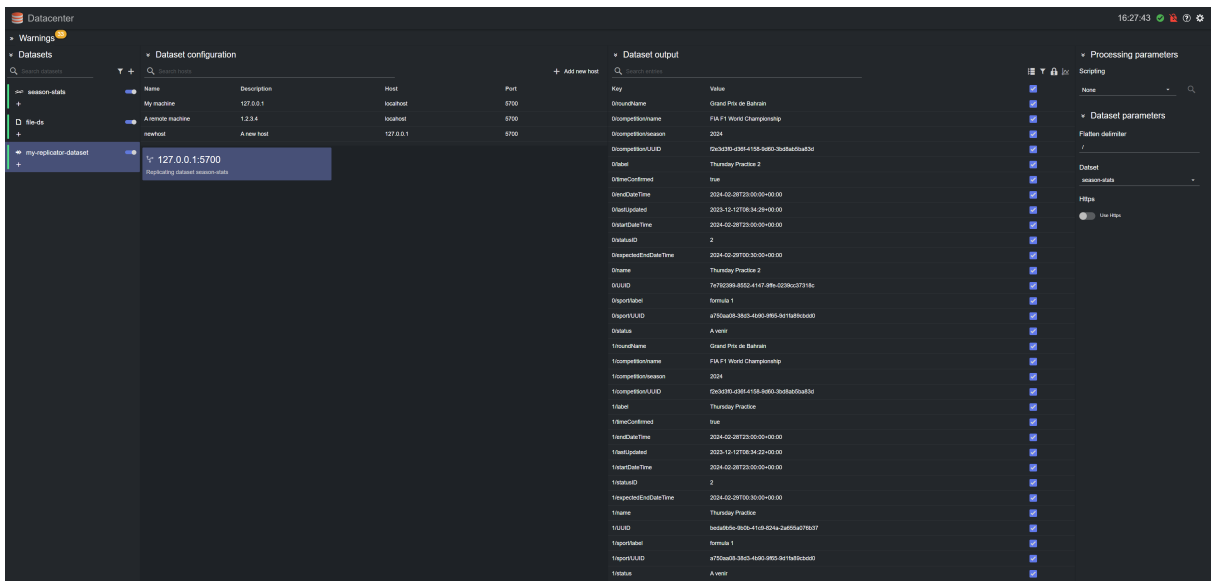
- By clicking on the card in the Dataset configuration panel, the Dataset parameters are visible on the right side of the screen.



- a. The **HTTPS** toggle can be used to specify a host that runs an HTTPS Datacenter service.
- b. If the specified host runs a Datacenter, the datasets created on that machine are listed in the dropdown **Dataset** menu available in the **Dataset parameters** section.



5. After selecting a dataset, its entries are added to the **Dataset Entries** table. For example, the images below show a Replicator dataset (top) replicating entries from a Fluid dataset (bottom):



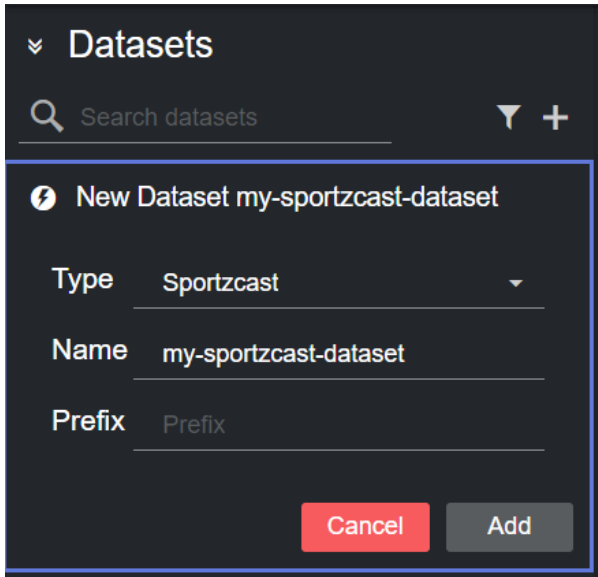
Info: When replicating a Dataset, each edit on the original dataset source (for example, disabling an entry or modifying a value) is immediately reflected in the Replicator dataset. Changes done on the Replicator dataset, however, do not reflect on the original source dataset.

Please refer to the [Filtering and Manipulating a Dataset Entries](#) page to learn how to enable, disable and edit the entries added.

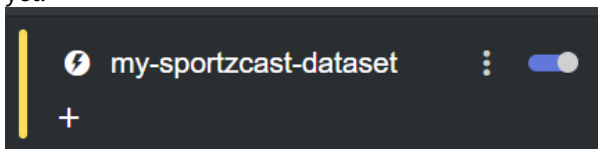
Sportzcast Dataset

This section provides the steps to configure a **Sportzcast** dataset.

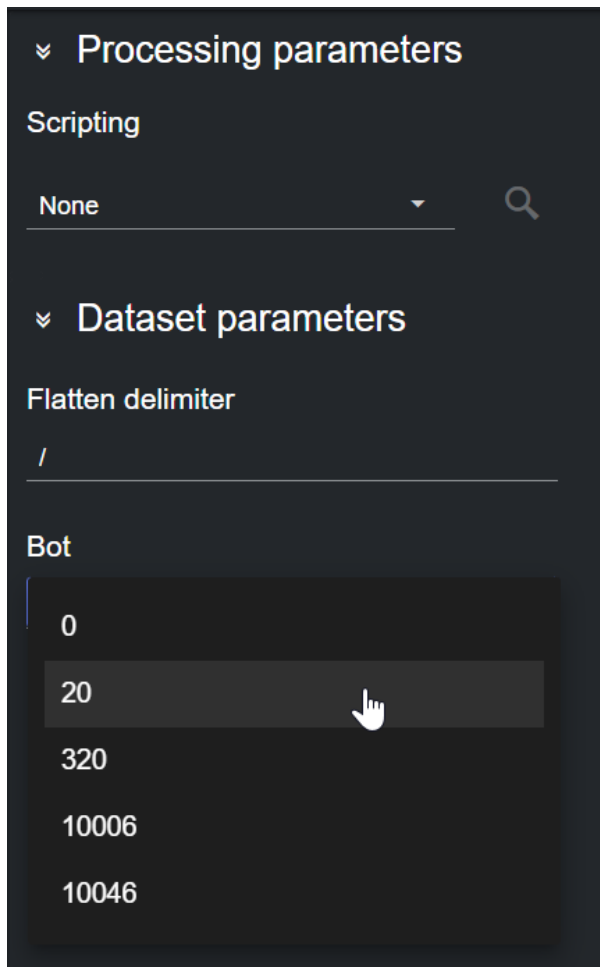
1. Create a new dataset of type **Sportzcast**, specifying a name and (optionally) a prefix to use to identify the dataset and its values:



2. Click **Add**. The dataset is added to the list, and it has an initial WARNING status as it contains no source bots yet.

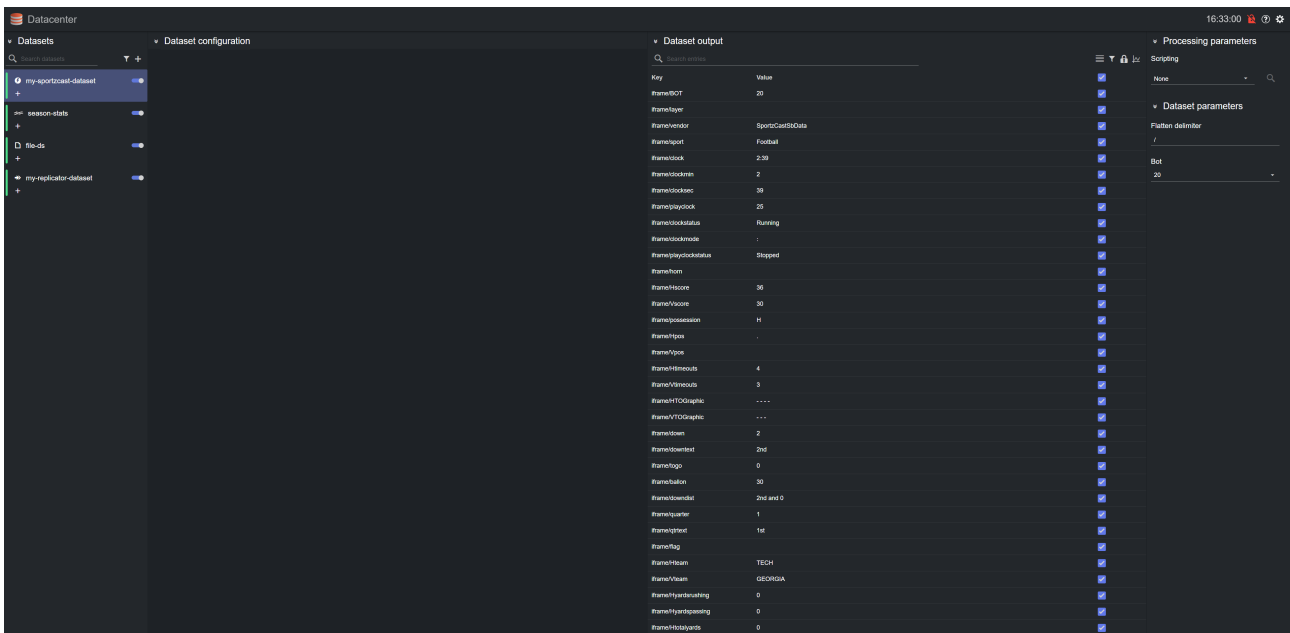


3. You can now select a bot from the **Bot** dropdown in the **Dataset parameters** panel:



Note: In the Sportzcast API, you are required to select the bot number that corresponds to a specific venue. These bots vary depending on the Sportscast bot server used while configuring the Provider in the [Admin](#) page.

After adding a source bot, its content is added to the **Dataset Entries** table.



Note: Data from the Sportcast data provider is event based, meaning that the data is pushed to Datacenter and the output is updated instantly when data changes.

Please refer to the [Filtering and Manipulating a Dataset Entries](#) page to learn how to enable, disable and edit the entries added.

Tricaster Vectar

This section provides the steps to configure a **TriCaster Vectar** dataset, using **Datalink**.

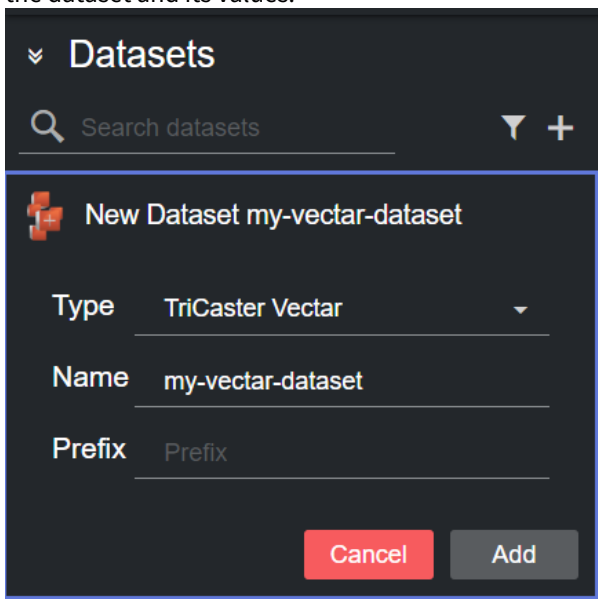
Datalink in TriCaster Vectar allows live data input from a wide range of data sources, such as:

- Daktronics devices
- DSI devices
- Nevco devices
- OES devices
- Ranbow devices
- Translux devices
- Whiteway devices
- Access to all external databases (anything supported by ODBC).
- All sorts of internal clocks.
- External CSV files, Excel Files, Text files and XML files.
- Web based score controllers.
- Web page real-time updates.

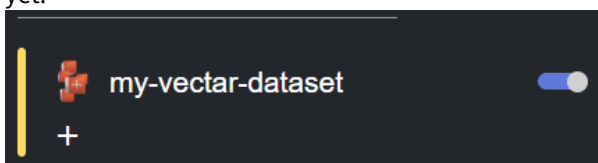
The data is available in a TriCaster Vectar system, therefore, it can be used in Datacenter datasets.

Configuring a **TriCaster Vectar** dataset requires the following steps:

1. Create a new dataset of type **TriCaster Vectar**, specifying a name and (optionally) a prefix to use to identify the dataset and its values:



2. Click **Add**. The dataset is added to the list, and it has an initial WARNING status as it contains no source file yet.



3. You can now select a host from the table in the **Dataset configuration** panel by double clicking a row. The table lists all the recently used hosts.

The screenshot shows a dark-themed interface with a search bar at the top left labeled 'Search hosts' and a '+ Add new host' button at the top right. Below is a table with the following data:

Name	Description	Host	Port
bgomse	Vectar test server	bgomsevizeng3	80
bgomse_v2	Wrong port!	bgomsevizeng3	800

Alternatively, you can add a new host by clicking on **Add new host**, and then clicking on the empty host that is added at the bottom of the table.

This screenshot is similar to the previous one, but a mouse cursor is pointing at the '+ Add new host' button in the top right corner.

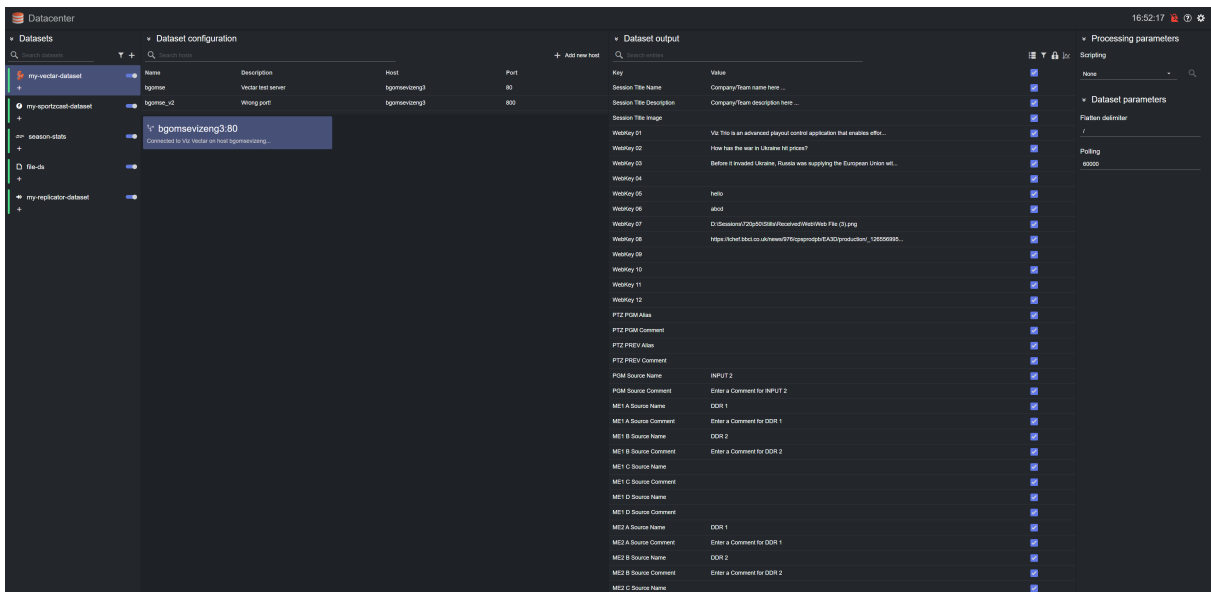
Doing so reveals the new host details on the right column, where its properties can be entered.

The screenshot shows a dark-themed form titled 'Host parameters'. It contains the following fields:

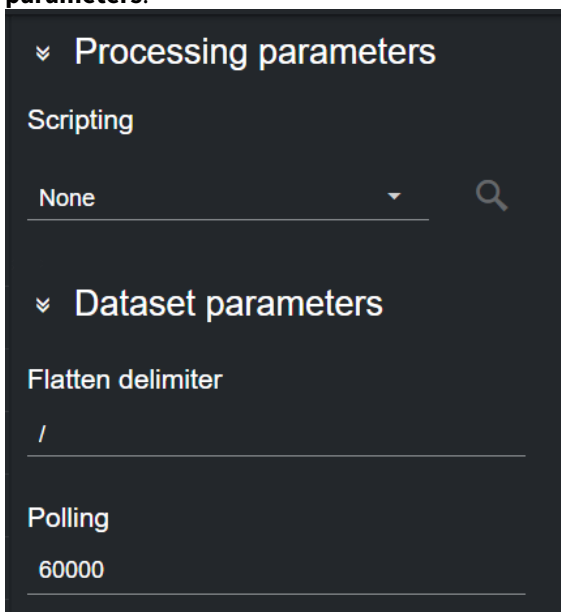
- Name**: A text input field containing 'Id_11'.
- Description**: A text input field that is currently empty.
- Host**: A text input field that is currently empty.
- Port**: A text input field containing '0'.

You can now double click on the configured host in the host table, to select a source.

4. After adding a host machine and establishing a successful connection to it, the data from the TriCaster Vectar system is added to the **Dataset output** table.



- To change the polling rate (how often the TriCaster Vectar host machine is polled for data, in s) for the dataset, click on the dataset card in the Dataset configuration panel and edit the **Polling** field in the **Dataset parameters**.

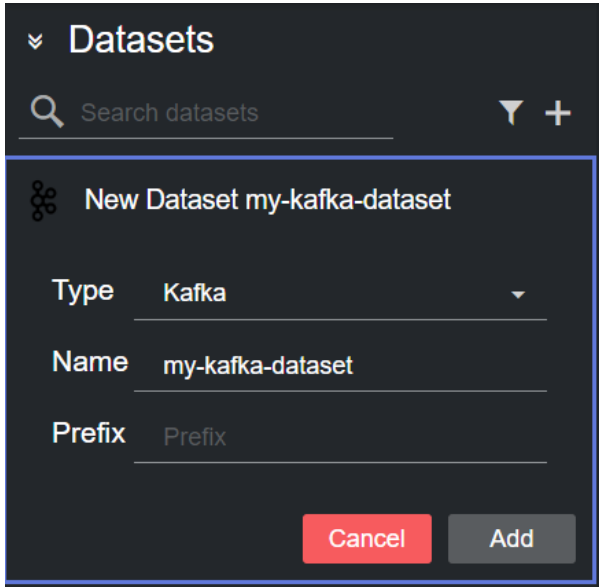


Please refer to the [Filtering and Manipulating a Dataset Entries](#) page to learn how to enable, disable and edit the entries added.

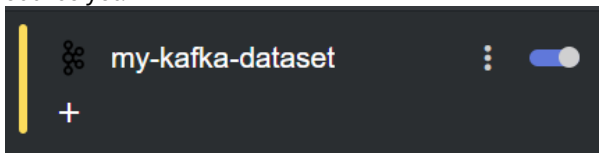
Kafka Dataset

This section provides the steps to configure a **Kafka** dataset, which can be used to connect your outputs to data incoming from one of more [Apache Kafka](#) Brokers.

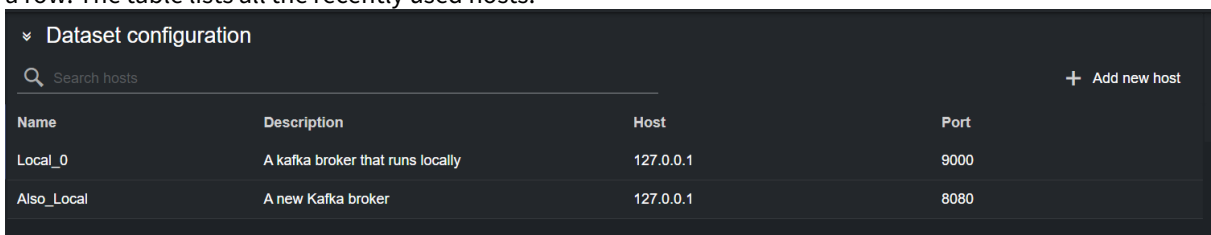
1. Create a new dataset of **Type** Kafka, specifying a name and (optionally) a prefix to use to identify the dataset and its values:



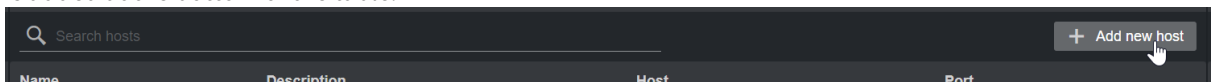
2. Click **Add**. The dataset is added to the list, and it has an initial WARNING status as it contains no Kafka broker source yet.



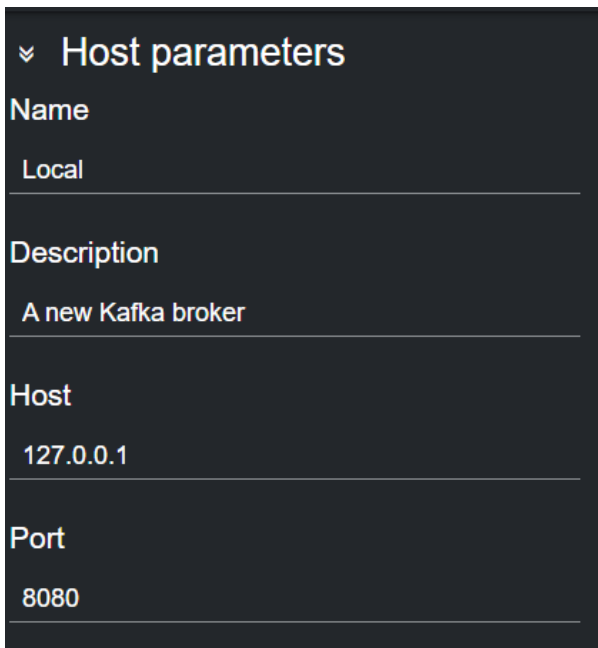
3. You can now select a host to replicate from the table in the **Dataset configuration** panel by double clicking a row. The table lists all the recently used hosts.



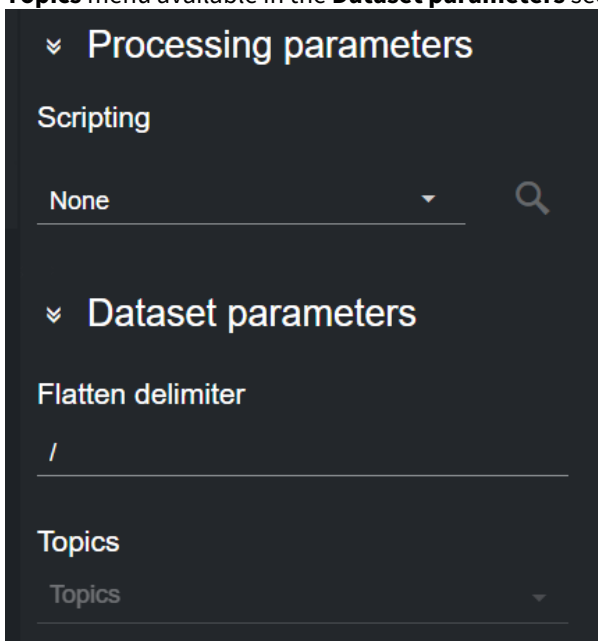
Alternatively, you can add a new host by clicking on **Add new host**, and then clicking on the empty host that is added at the bottom of the table.

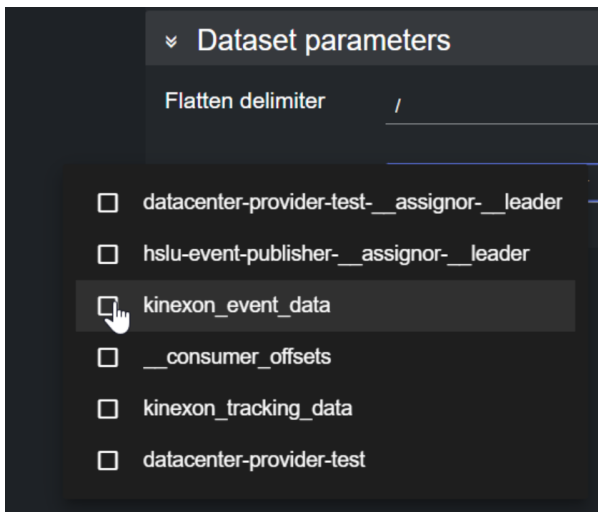


4. Doing so reveals the new host details, where its properties can be entered.



5. If the specified host runs a Kafka Broker, the topics advertised by the broker are listed in the dropdown **Topics** menu available in the **Dataset parameters** section.





Select one or more topics from this list. The data published on these topics are added to the Dataset Entries table.

Info: Datacenter expects from the Kafka broker messages to contain valid JSON as payload. All other formats are discarded and the dataset state is set to Warning.

Note: Data from a Kafka data provider is typically event based. Therefore, if your broker publishes updating data (values of the same key that change over time), the data that is pushed to Datacenter updates the graphics instantly.

Please refer to the [Filtering and Manipulating a Dataset Entries](#) page to learn how to enable, disable and edit the entries added.

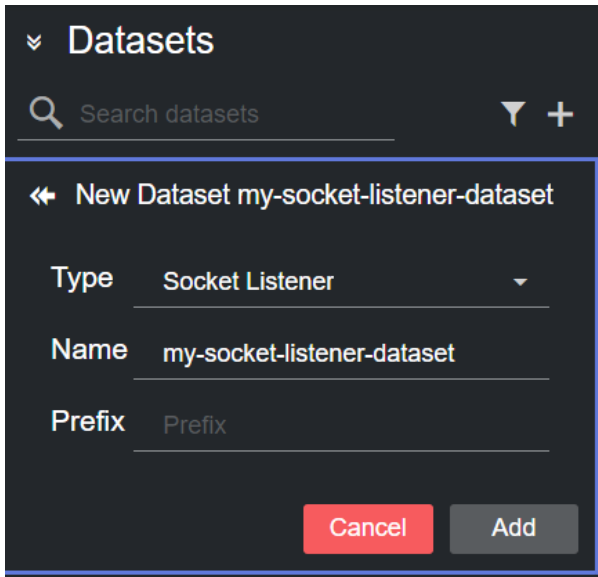
Socket Listener

Datacenter supports datasets of type **Socket Listener**, allowing user to stream data into Datacenter via UDP or TCP. This provider effectively create a server that listens for incoming data.

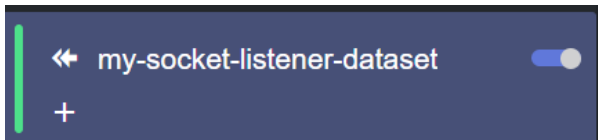
This is particularly useful for scenarios when a user needs to stream frequently updating data to the Datacenter.

Follow these steps to configure a Socket dataset:

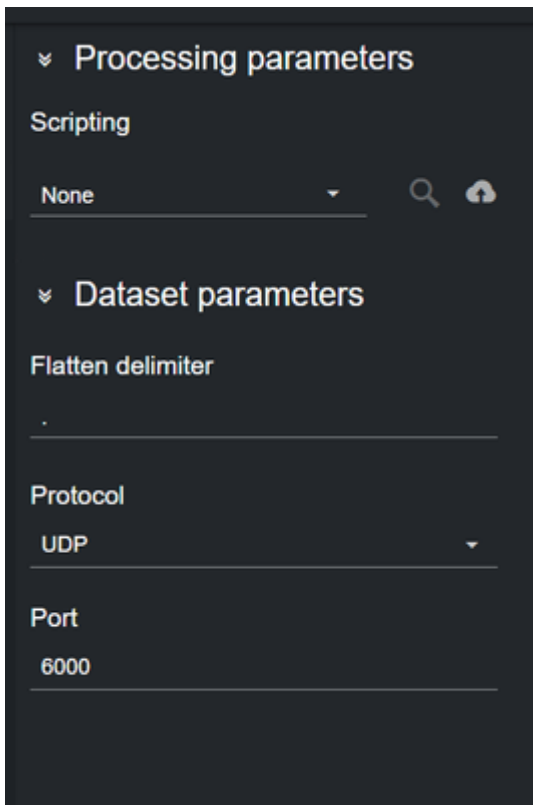
1. Create a new dataset of type **Socket Listener**, specifying a name and (optionally) a prefix to use to identify the dataset and its values:



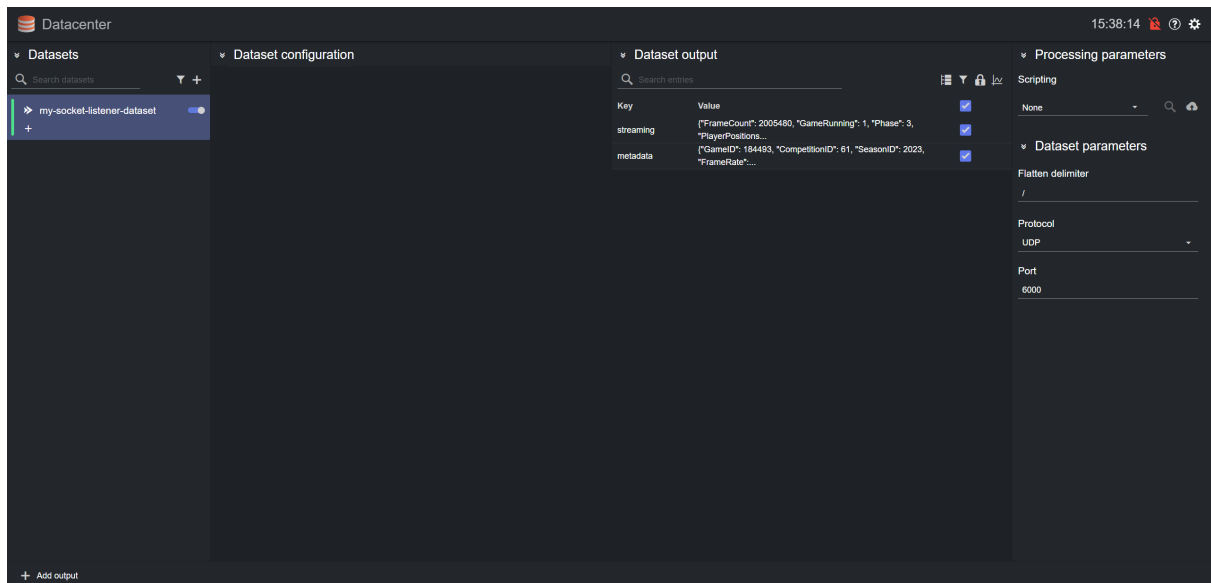
2. Click **Add**. The dataset is added to the list, and it has an initial *OK* status as its default protocol is UDP, for which is impossible to establish whether a connection to the socket has been made. However, in case another existing dataset is using the same default port (`60000`), then the newly added dataset is in an initial *ERROR* state.



3. You can now configure the dataset in the **Dataset parameters** section panel by double clicking a row. Here you can specify a **Protocol** and a **Port** to start receiving data.



4. Depending on the protocol selected, the dataset can be in one of the following states:
 - a. **UDP**
 - i. *OK*: The specified port can be bound and (optionally) Datacenter receives data on it.
 - ii. *Error*: The specified port cannot be bound (already in use), a socket error happened or Datacenter is receiving malformed data.
 - b. **TCP**
 - i. *OK*: The specified port can be bound, a connection to it is established and (optionally) Datacenter receives data on it.
 - ii. *Warning*: Awaiting incoming connection.
 - iii. *Error*: A connection/socket error happened or Datacenter is receiving malformed data.
5. Given that the dataset is in an *OK* state, as soon as Datacenter receives data, the corresponding entries are added to the **Dataset Entries** table.



Please refer to the [Filtering and Manipulating a Dataset Entries](#) page to learn how to enable, disable and edit the entries added.

Info: A Socket Listener provider expects data formatted as a valid **JSON**.

Info: A Socket Connector provider, when using the TCP protocol, expects the data payload to terminate with a **new line** (that is, '\n') separator character.

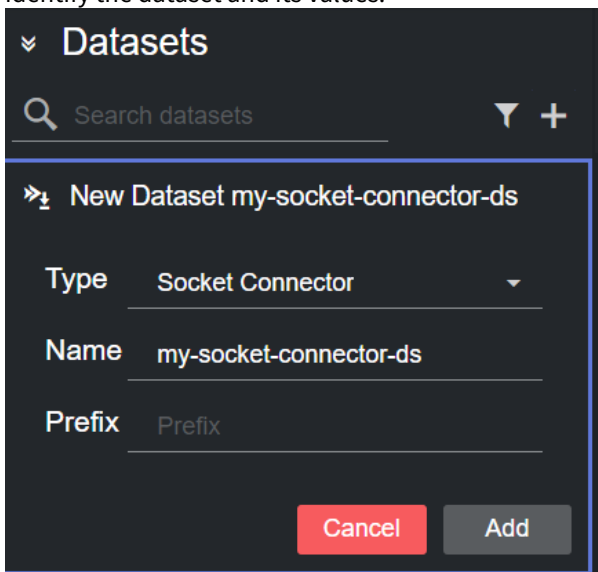
Socket Connector

Datacenter supports datasets of type **Socket Connector**, allowing user to initiating streaming data to Datacenter from a TCP streaming server. Unlike a Socket Listener dataset, a dataset of this provider connects to an existing TCP server to initiate the streaming.

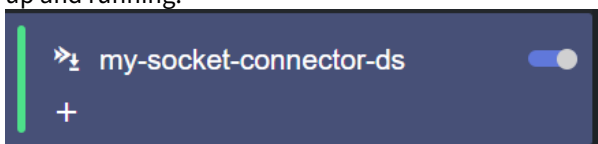
This is particularly useful for scenarios when a user needs to receive frequently updating data.

Follow these steps to configure a Socket dataset:

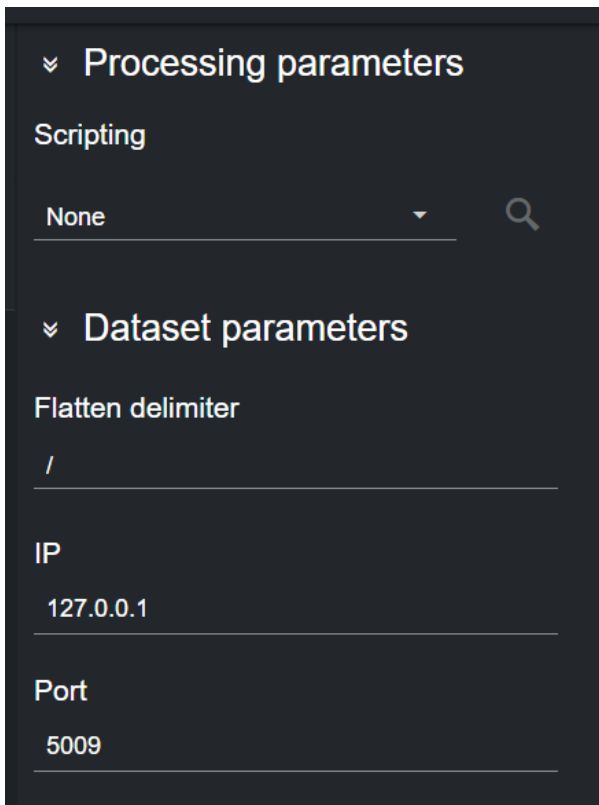
1. Create a new dataset of type **Socket Connector**, specifying a name and (optionally) a prefix to use to identify the dataset and its values:



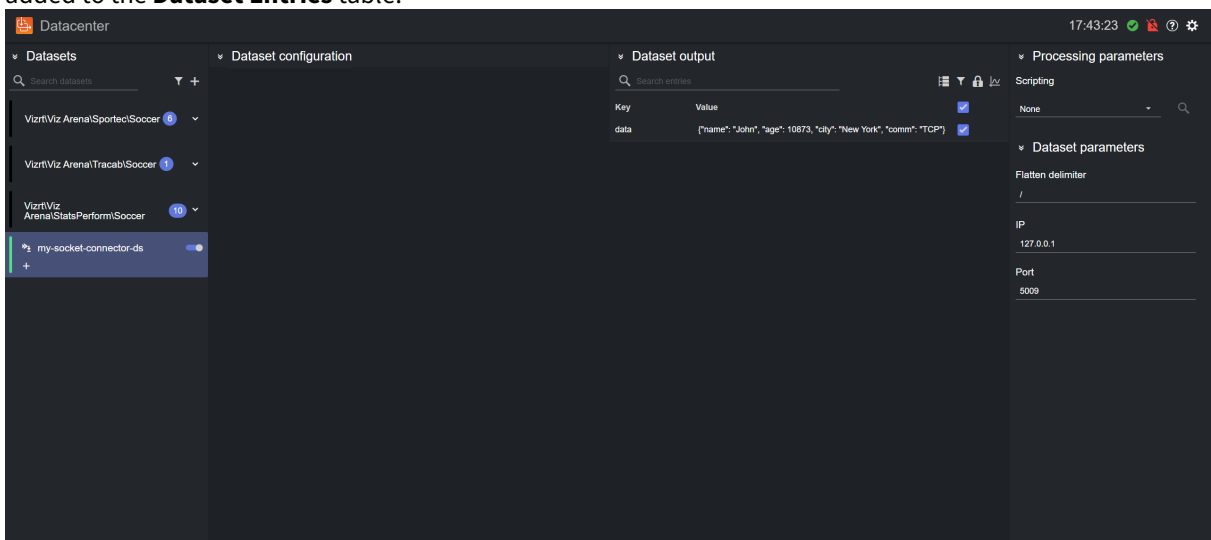
2. Click **Add**. The dataset is added to the list, and its status depends on whether the server it is connecting to is up and running.




3. You can now configure the dataset in the **Dataset parameters** section panel by double clicking a row. Here you can specify a **IP** and a **Port** to start receiving data.




4. Depending on the state of the connecting sever, the dataset can be in one of the following states:
 - a. *OK*: a connection to it is established and (optionally) Datacenter receives data on it.
 - b. *Warning*: Awaiting connection.
 - c. *Error*: A connection error happened or Datacenter is receiving malformed data.
5. Given that the dataset is in an *OK* state, as soon as Datacenter receives data, the corresponding entries are added to the **Dataset Entries** table.



Please refer to the [Filtering and Manipulating a Dataset Entries](#) page to learn how to enable, disable and edit the entries added.

 **Info:** A Socket Connector provider expects data formatted as a valid **JSON**.

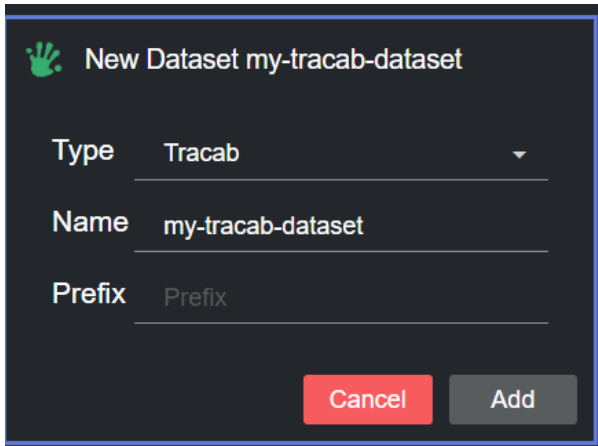
 **Info:** A Socket Connector provider expects the data payload to terminate with a **new line** (that is, '**\n**') separator character.

Tracab

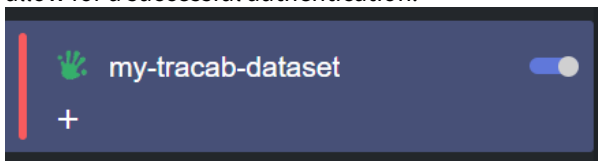
Datacenter supports datasets of type **Tracab**, allowing you to stream data into Datacenter from [Tracab](#) data streams.

Follow these steps to configure a Tracab dataset:

1. Create a new dataset of type **Socket Listener**, specifying a name and (optionally) a prefix to use to identify the dataset and its values:



2. Click **Add**. The dataset is added to the list, and it has an initial *ERROR* status as its default values are to not allow for a successful authentication.



3. You can configure the dataset in the **Dataset parameters** section panel by double clicking a row.

Processing parameters

Scripting

None

Dataset parameters

Flatten delimiter

/

Vendor ID

0

Competition ID

0

Game ID

0

Data to Fetch

Streaming

Data Type

Live

Data Quality

Live

Extraction Version

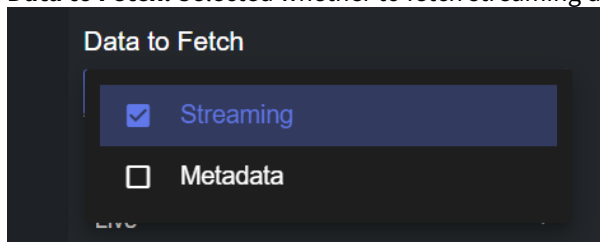
4

Metadata polling (s)

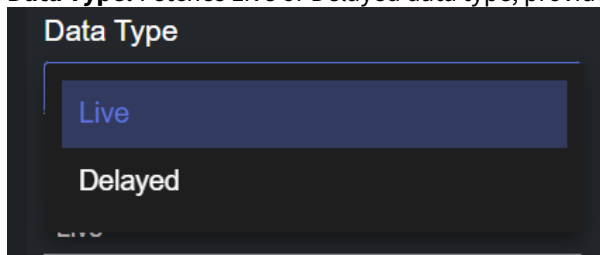
60

4. Values provided by Tracab that need to be adjusted each game:
- Vendor ID:** ID of the vendor provided by Tracab.
 - Competition ID:** ID of the competition provided by Tracab.

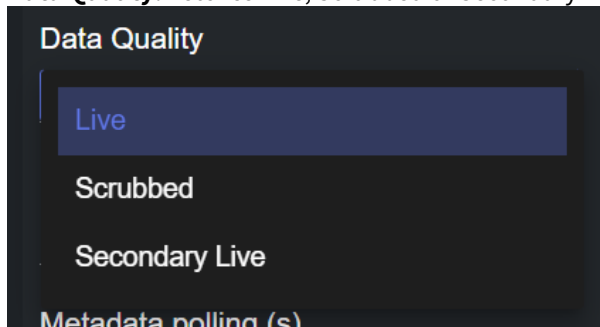
- c. **Game ID:** ID of the game provided by Tracab.
- 5. These values can be used to configure the type of data to get:
 - a. **Data to Fetch:** Selected whether to fetch streaming data only, metadata only, or both.



- b. **Data Type:** Fetches Live or Delayed data type, provided by Tracab.



- c. **Data Quality:** Fetches Live, Scrubbed or Secondary Live data quality, provided by Tracab.



- d. **Extraction Version:** Version of the data to use provided by Tracab. Default to 4.
- e. **Metadata polling (s):** How often the metadata should be polled from the Tracab Statistical API backend. This value has only effect if **Data to Fetch** includes **Metadata**.
- 6. Depending on the settings, the dataset can be in one of the following states:
 - a. *OK:* The settings are correct and the Tracab authentication was performed correctly. A stream is opened and Datcenter receives data (if any is sent). If specified, metadata is polled from the Statistical REST API.
 - b. *Error:* The settings are incorrect (either in the **Dataset parameters** or in the [Provider Configuration](#)). Hover on the dataset name to reveal the error.
- 7. Given that the dataset is in an *OK* state, as soon as Datcenter receives data, the corresponding entries are added to the **Dataset Entries** table.

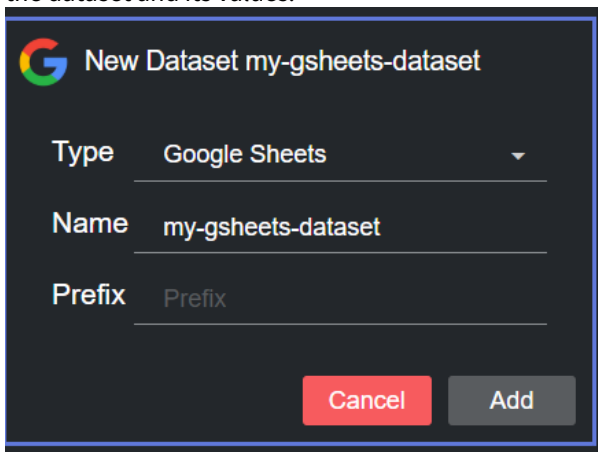
Please refer to the [Filtering and Manipulating a Dataset Entries](#) page to learn how to enable, disable and edit the entries added.

Google Sheets

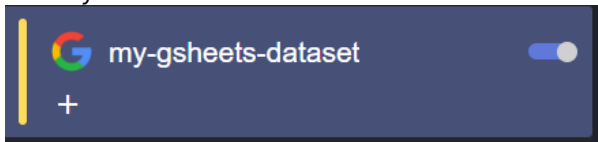
Datacenter supports datasets of type **Google Sheets**, allowing you to pull data from existing workbooks in your [Google Sheets](#) data sheets. This is particularly useful for scenarios when a user needs to pull data from existing tables stored in data sheets format, for example when working directly with Google Sheets projects or with imported Excel files.

Follow these steps to configure a Google Sheets dataset:

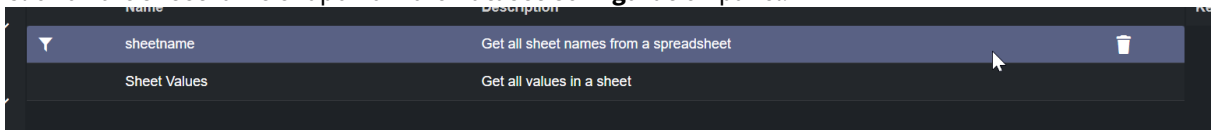
1. Create a new dataset of type **Google Sheets**, specifying a name and (optionally) a prefix to use to identify the dataset and its values:



2. Click **Add**. The dataset is added to the list, and it has an initial *WARNING* status as no endpoints have been added yet:



3. Click on the **sheetname** endpoint in the **Dataset Configuration** panel:



4. Enter the spreadsheets ID of the file you want to pull data from into the **SpreadsheetId** field of the **Endpoint Fixed Options** section on the right panel:

⌵ **Endpoint template parameters**

Name

sheetname

Description

Get all sheet names from a spreadsheet


Endpoint


https://sheets.googleapis.com/v4/spreadsheets/

Dependency filter

.sheets[].properties.(.title,.title)

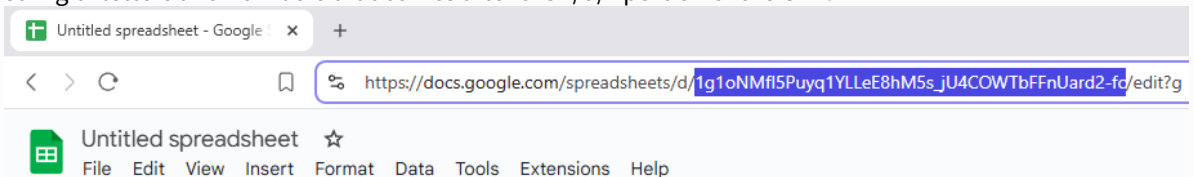
⌵ **Endpoint fixed options**

SpreadsheetId 

SpreadsheetId YOUR_SPRE 

Name	Value
------	-------

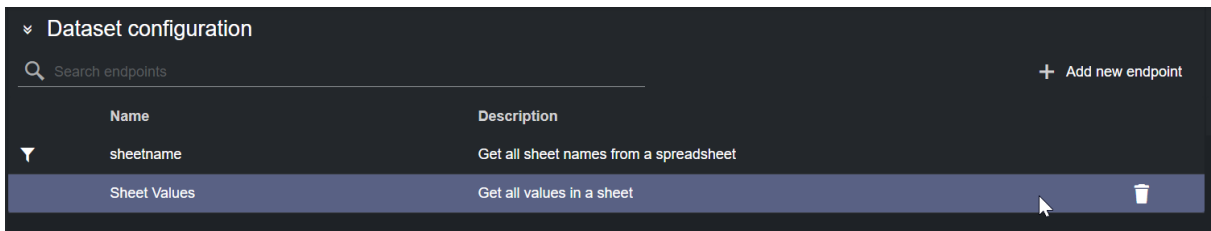
Info: The Google Sheet **spreadsheets ID** can be found on the spreadsheet URL. It is the alphanumeric string of letters and numbers that comes after the “/d/” portion of the URL:



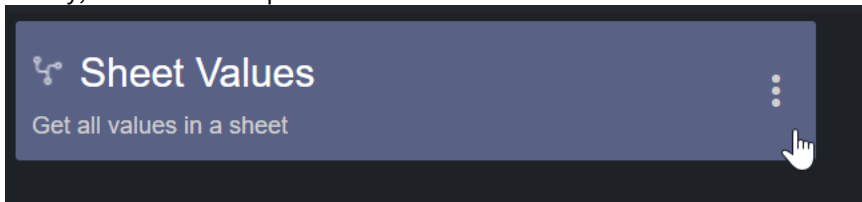
Another option is to use an [App Script](#) custom function that uses the `getActiveSpreadsheet` method of `SpreadsheetApp`, returning the id of the spreadsheet using the `getId()` method:

```
function GET_CURRENT_SHEET_ID () {
  return SpreadsheetApp.getActiveSpreadsheet().getId()
}
```

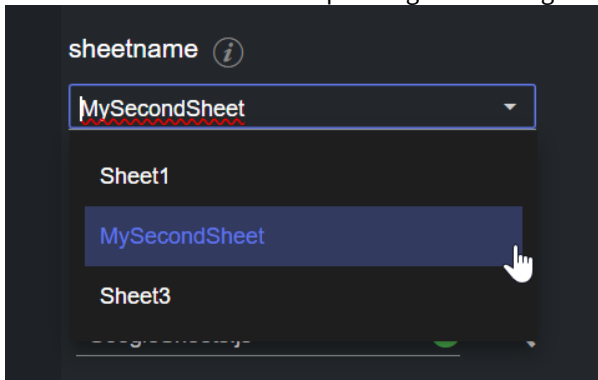
5. Back to the **Dataset Configuration** panel, double click on the **Sheet Values** endpoint. This adds an endpoint card in the Dataset view.



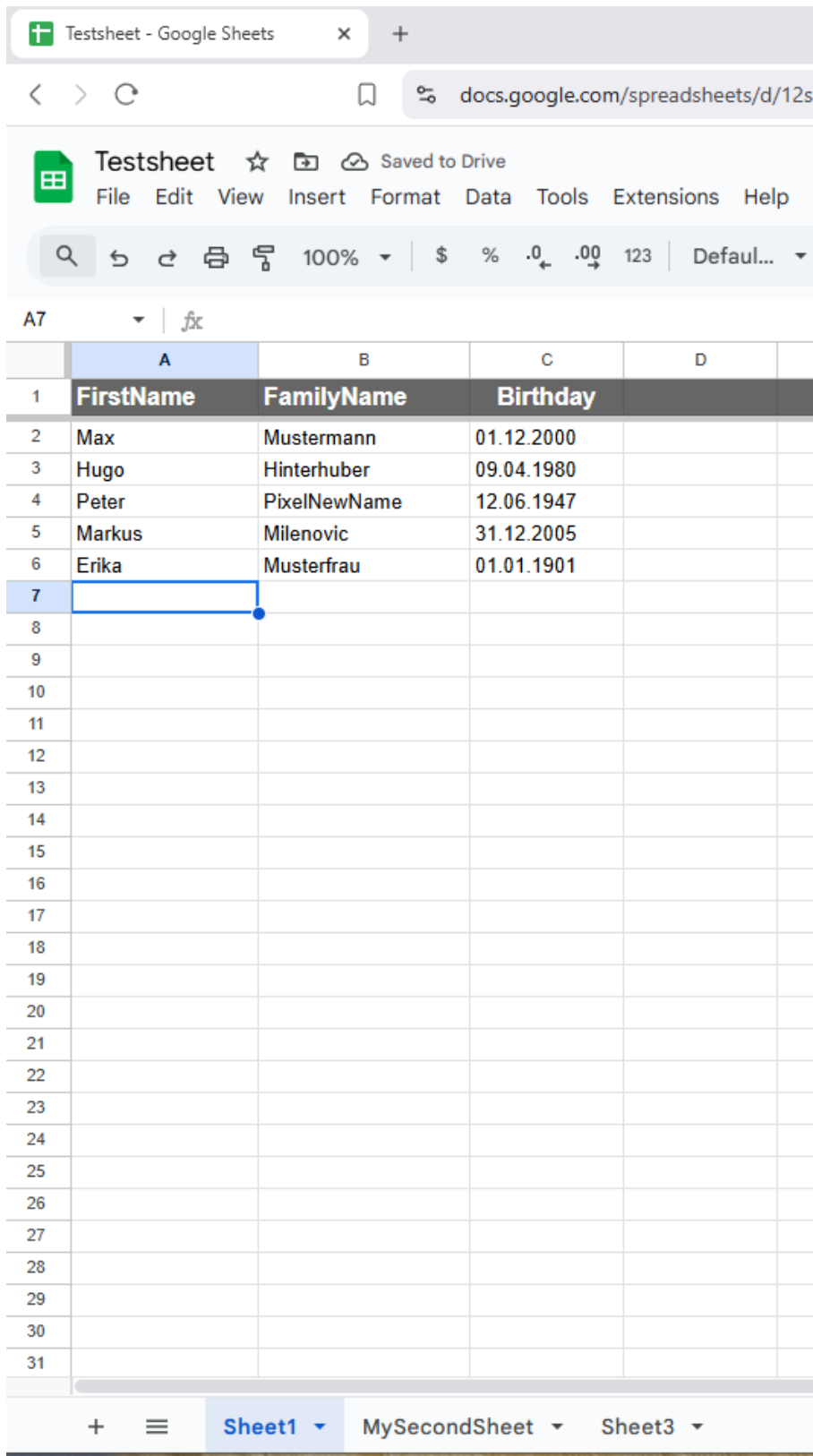
6. Finally, click on the endpoint dataset card.



7. Select the sheet name corresponding to the Google Sheet tab your data is store into:



Due to the dataset's pre-selected script *GoogleSheets.js*, the entries in the first row of the sheet are interpreted as headers and are automatically used to define the keys of the extracted values. For example, when working with the following sheet:



The (flattened) dataset output in Datacenter is:

Dataset output

Search entries

Key	Value	<input checked="" type="checkbox"/>
data/0/FirstName	Max	<input checked="" type="checkbox"/>
data/0/FamilyName	Mustermann	<input checked="" type="checkbox"/>
data/0/Birthday	01.12.2000	<input checked="" type="checkbox"/>
data/1/FirstName	Hugo	<input checked="" type="checkbox"/>
data/1/FamilyName	Hinterhuber	<input checked="" type="checkbox"/>
data/1/Birthday	09.04.1980	<input checked="" type="checkbox"/>
data/2/FirstName	Peter	<input checked="" type="checkbox"/>
data/2/FamilyName	PixelNewName	<input checked="" type="checkbox"/>
data/2/Birthday	12.06.1947	<input checked="" type="checkbox"/>
data/3/FirstName	Markus	<input checked="" type="checkbox"/>
data/3/FamilyName	Milenovic	<input checked="" type="checkbox"/>
data/3/Birthday	31.12.2005	<input checked="" type="checkbox"/>
data/4/FirstName	Erika	<input checked="" type="checkbox"/>
data/4/FamilyName	Musterfrau	<input checked="" type="checkbox"/>
data/4/Birthday	01.01.1901	<input checked="" type="checkbox"/>

If, however, the *GoogleSheets.js* script is removed from the dataset processing options, then the raw (flattened) dataset output in Datcenter looks like this:

Dataset output

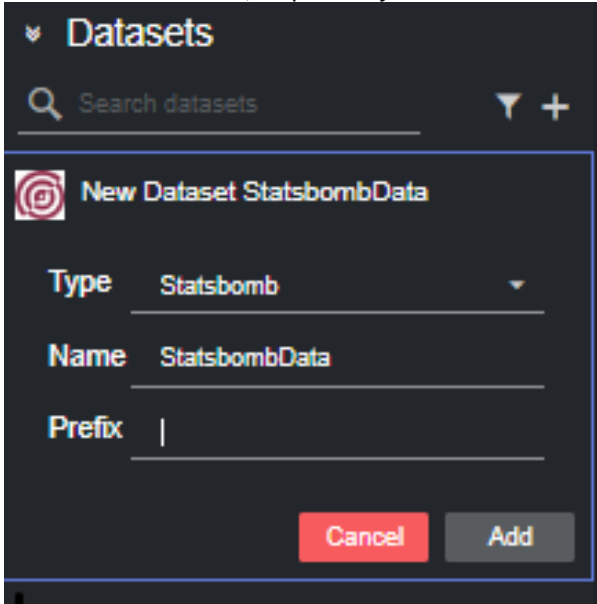
Search entries

Key	Value	<input checked="" type="checkbox"/>
range	Sheet1!A1:Y1000	<input checked="" type="checkbox"/>
majorDimension	ROWS	<input checked="" type="checkbox"/>
values/0/0	FirstName	<input checked="" type="checkbox"/>
values/0/1	FamilyName	<input checked="" type="checkbox"/>
values/0/2	Birthday	<input checked="" type="checkbox"/>
values/1/0	Max	<input checked="" type="checkbox"/>
values/1/1	Mustermann	<input checked="" type="checkbox"/>
values/1/2	01.12.2000	<input checked="" type="checkbox"/>
values/2/0	Hugo	<input checked="" type="checkbox"/>
values/2/1	Hinterhuber	<input checked="" type="checkbox"/>
values/2/2	09.04.1980	<input checked="" type="checkbox"/>
values/3/0	Peter	<input checked="" type="checkbox"/>
values/3/1	PixelNewName	<input checked="" type="checkbox"/>
values/3/2	12.06.1947	<input checked="" type="checkbox"/>
values/4/0	Markus	<input checked="" type="checkbox"/>
values/4/1	Milenovic	<input checked="" type="checkbox"/>
values/4/2	31.12.2005	<input checked="" type="checkbox"/>
values/5/0	Erika	<input checked="" type="checkbox"/>
values/5/1	Musterfrau	<input checked="" type="checkbox"/>
values/5/2	01.01.1901	<input checked="" type="checkbox"/>

Statsbomb

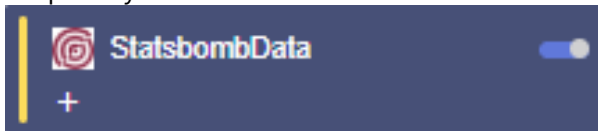
These are the steps to configure a [Hudl Statsbomb](#) dataset.

1. Create a new dataset of type **Statsbomb**, specifying a name and (optionally) a prefix to use to identify the dataset and its values, respectively:




The screenshot shows a 'New Dataset StatsbombData' dialog box. It has a search bar at the top with the text 'Search datasets'. Below the search bar, there are three input fields: 'Type' with a dropdown menu showing 'Statsbomb', 'Name' with the text 'StatsbombData', and 'Prefix' which is currently empty. At the bottom of the dialog, there are two buttons: a red 'Cancel' button and a grey 'Add' button.

2. Click **Add**. The dataset is added to the list, and it has an initial WARNING status as it contains no configured endpoints yet.



3. Select one or more endpoints from the table in the **Dataset configuration** panel by double clicking a row. A new endpoint card is then created.

Name	Description
Competition	The competitions
Season	The seasons
Match	Matches of a specific competition and season
MatchLineups	The lineups for a specific match
MatchEvents	The events for a specific match
PlayerMatchStats	The aggregated statistics of players participating in a match
PlayerSeasonStats	The aggregated statistics of players in a competition and season
TeamMatchStats	The aggregated statistics of teams participating in a match
TeamSeasonStat	The aggregated statistics of teams in a competition and season



MatchEvents

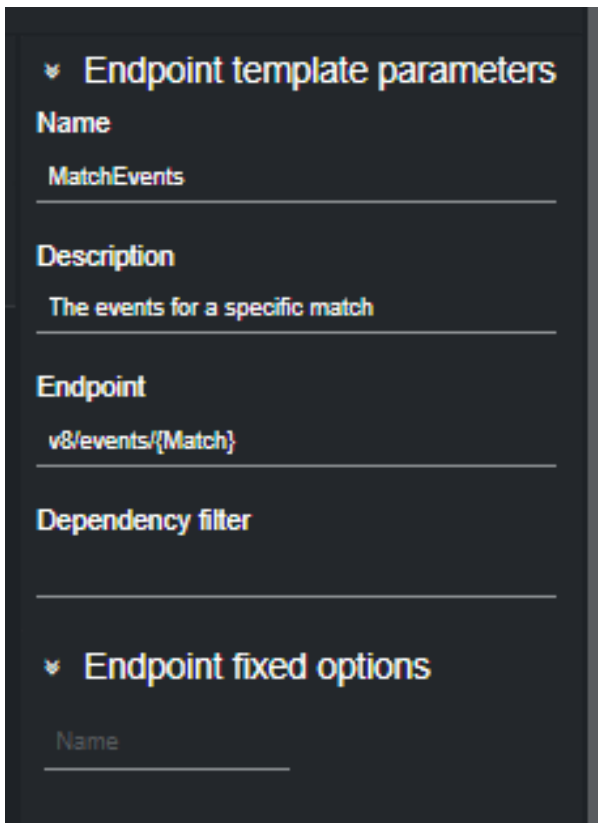
The events for a specific match

Alternatively, you can enter a new endpoint by clicking **Add new endpoint**, and then clicking on the empty endpoint that is added at the bottom of the table to configure it.

Dataset configuration

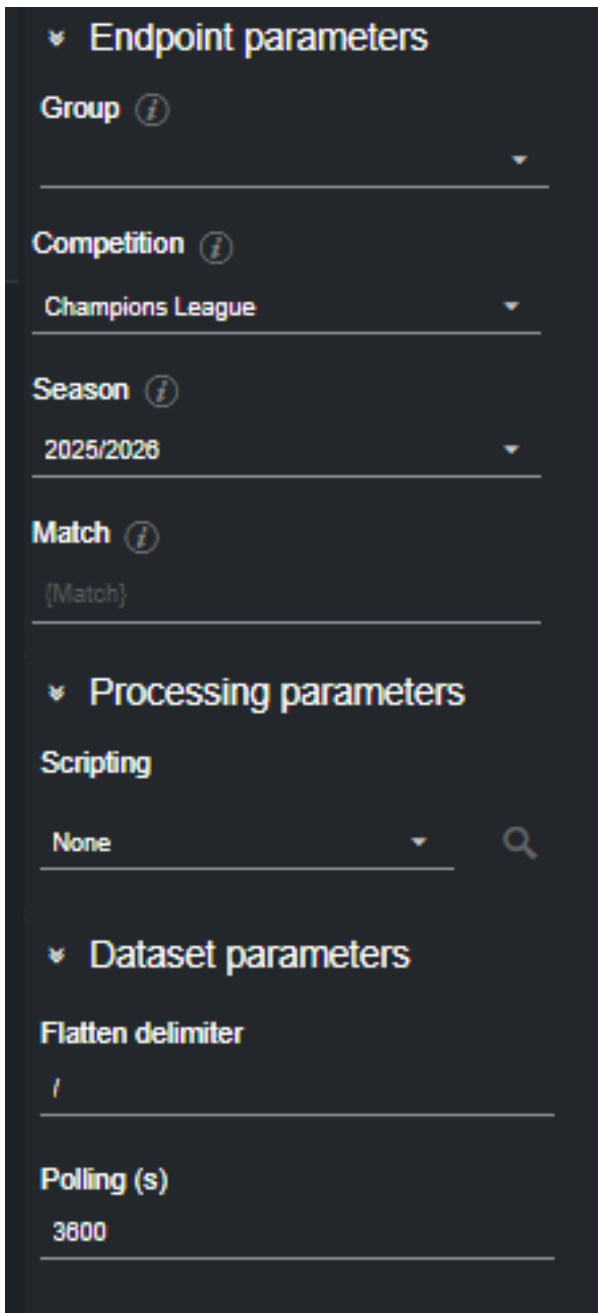
Search endpoints + Add new endpoint

Doing so reveals the new endpoint details in the Endpoint template parameters on the right side, where its properties can be entered.



Endpoint Options: When adding a new endpoint, parameters (for example, parts of the endpoint whose value should be fetched from other endpoints) should be encapsulated in curly braces: {part_name}. The value inside curly braces is resolved either by using other endpoints present in the **Dataset configuration** table, or the ones specified in the **Endpoint fixed options** section of the right-most column in the main view. Using the images above as an example, the following endpoint `v8/events/{Match}`, would use the {Match} options from the respective endpoint in the table.

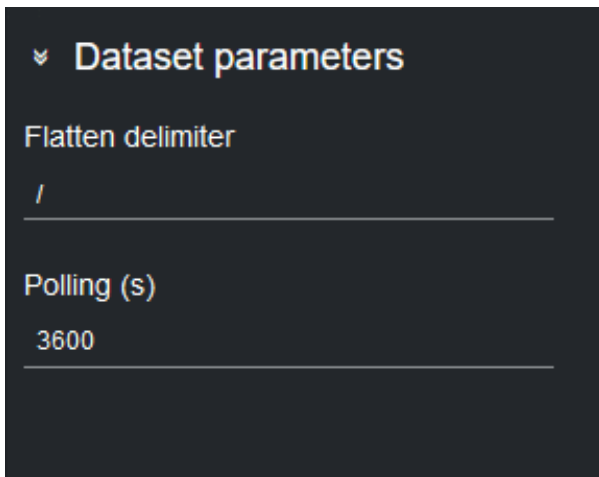
- Once an endpoint is added to a dataset, you can select the endpoint card. This reveals the Endpoint parameters panel on the right side, where its properties can be entered. You can now edit the endpoint configuration (**Competition** and **Season**, as shown in the image below):



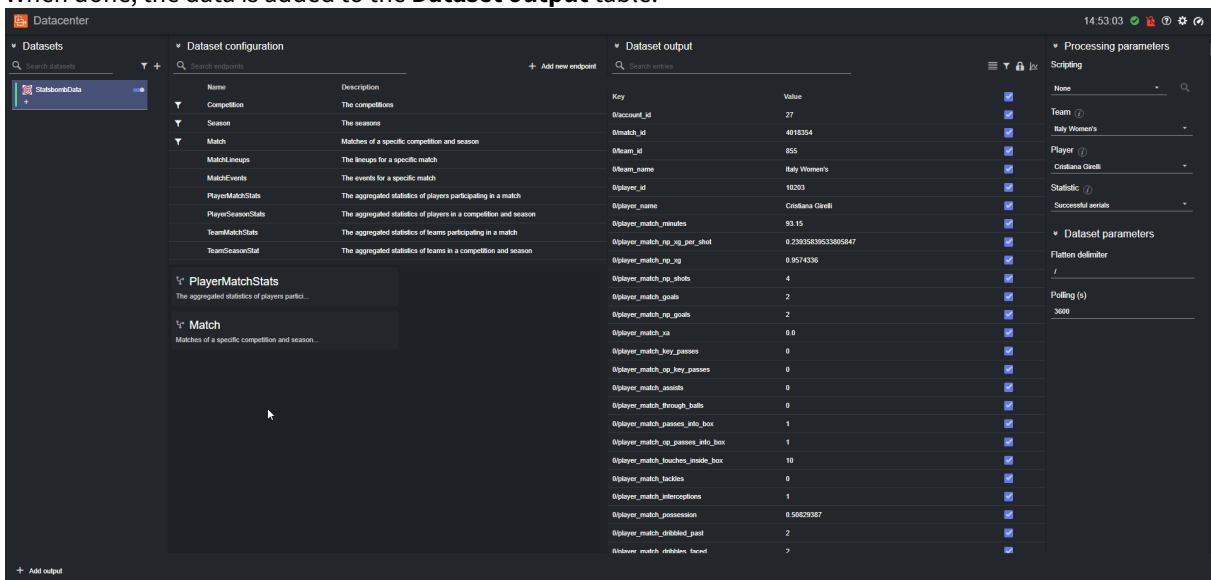
The image shows a dark-themed configuration panel with three main sections:

- Endpoint parameters:** Includes dropdown menus for Group, Competition (set to Champions League), and Season (set to 2025/2026). A Match field contains the placeholder text {Match}.
- Processing parameters:** Includes a Scripting dropdown menu currently set to None, with a search icon to its right.
- Dataset parameters:** Includes a Flatten delimiter field set to / and a Polling (s) field set to 3600.

5. To change the polling rate (how often the Statsbomb remote host is polled for data, in s) for the dataset, select a card from the list and edit the **Polling** field in the Dataset parameters on the right-most column.

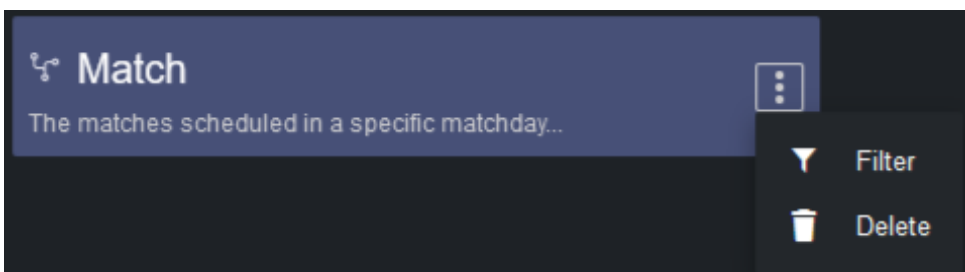


6. When done, the data is added to the **Dataset output** table.

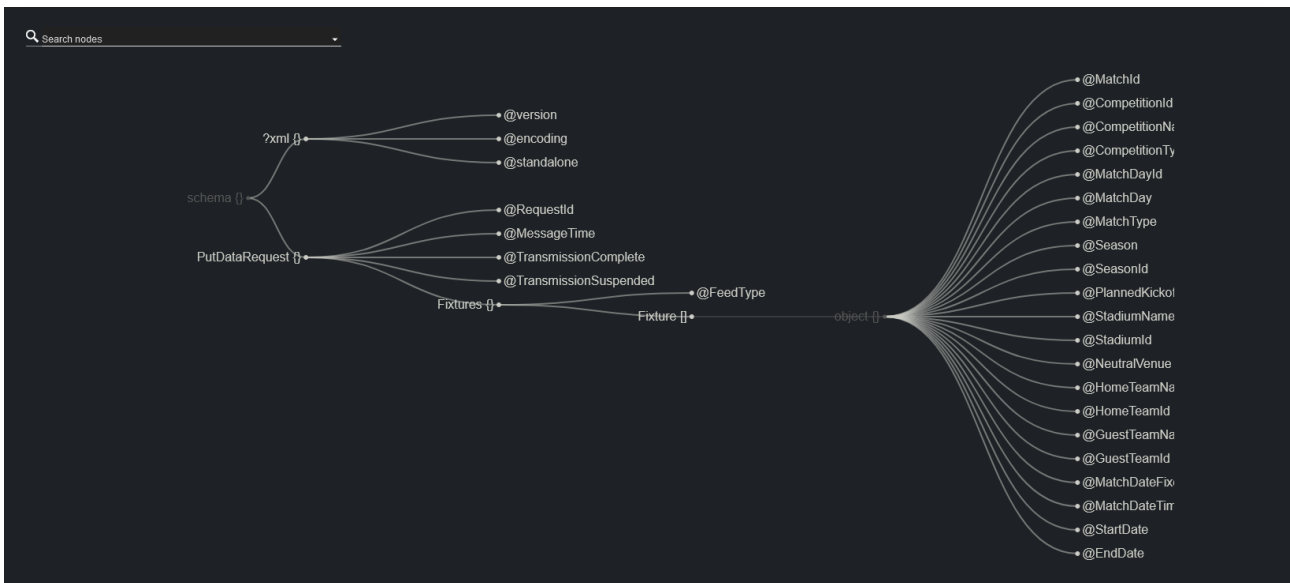


Filtering a Dataset

Values read from a file into a dataset can be filtered via the Filtering tool. To do so, select the dataset card, click on the hamburger menu and then press the **Filter** button.



A dialog visualizing the file's payload schema opens, where you can filter the source data.



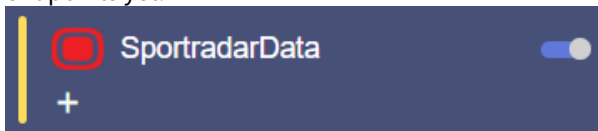
Please refer to the [Filtering and Manipulating a Dataset Entries](#) page to learn how to enable, disable and edit the entries added.

Sportradar

These are the steps to configure a [Sportradar](#) dataset.

1. Create a new dataset of type **Sportradar**, specifying a name and (optionally) a prefix to use to identify the dataset and its values, respectively:

2. Click **Add**. The dataset is added to the list, and it has an initial WARNING status as it contains no configured endpoints yet.



3. Select one or more endpoints from the table in the **Dataset configuration** panel, by double clicking a row. A new endpoint card is then created.

Dataset configuration

Search endpoints + Add new endpoint

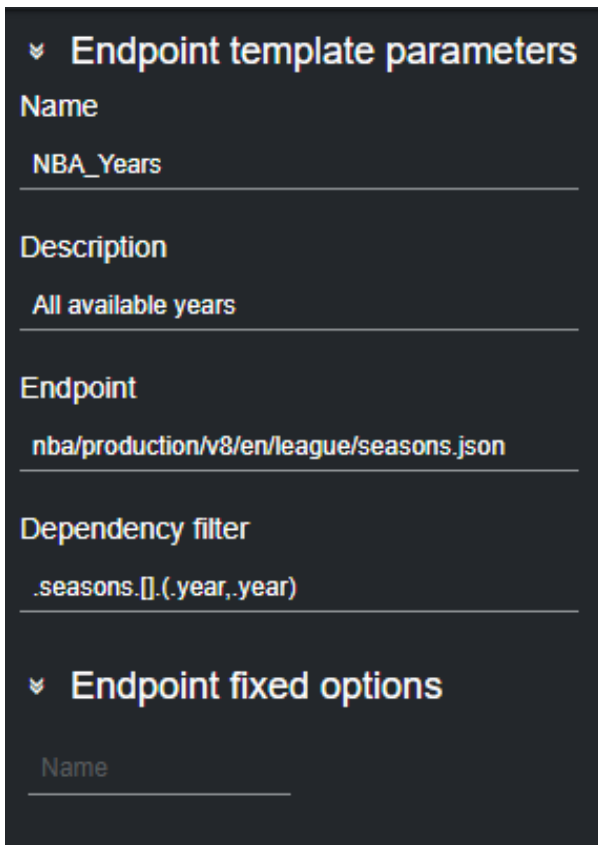
Name	Description
NBA_Years	All available years
NBA_Season_Type	All available season types
NBA_Matches	Every match taking place in the full league season
NBA_Teams	All available teams
NBA_Match_Info	Summary of a match
NBA_Season_Statistics	Team and player statistics for a season
NBA_Match_Events	Detailed information on match events and team possession

Alternatively, you can enter a new endpoint by clicking **Add new endpoint**, and then clicking on the empty endpoint that is added at the bottom of the table to configure it.

Dataset configuration

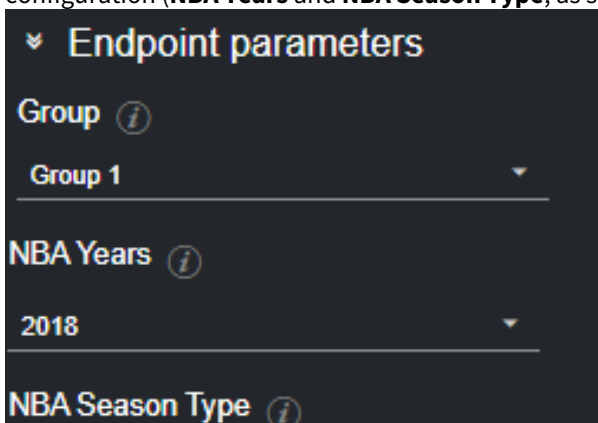
Search endpoints + Add new endpoint

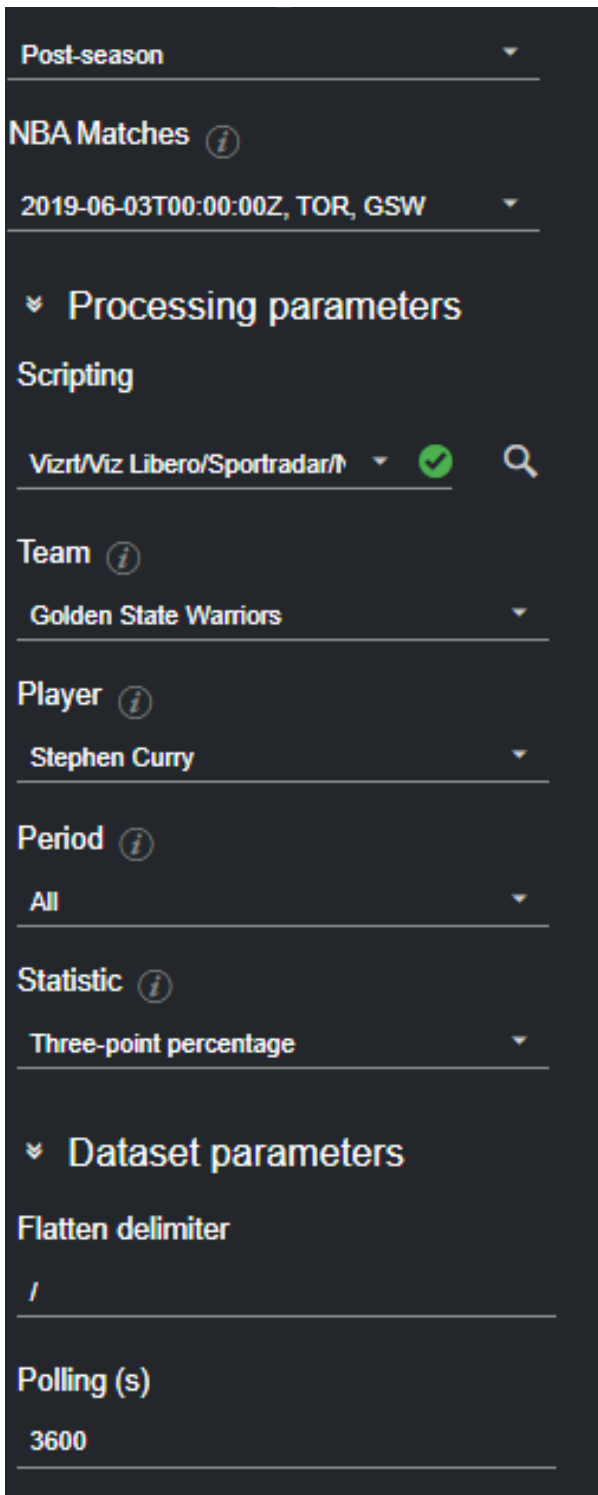
Doing so, reveals the new endpoint details in the Endpoint template parameters on the right side, where its properties can be entered.



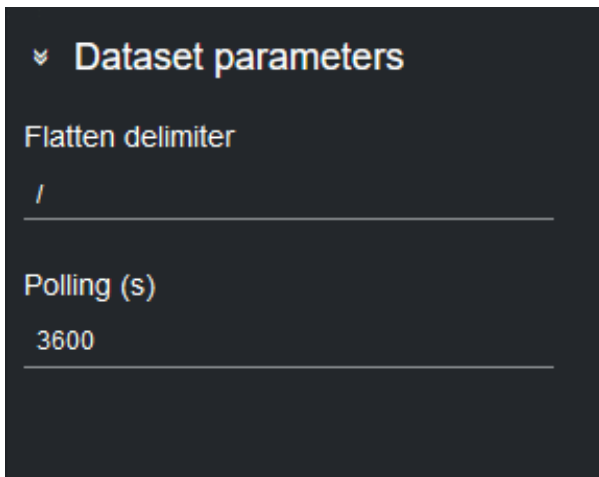
Endpoint Options: When adding a new endpoint, parameters (for example, parts of the endpoint whose value should be fetched from other endpoints) should be encapsulated in curly braces: *{part_name}*. The value inside curly braces is resolved either by using other endpoints present in the **Dataset configuration** table, or the ones specified in the **Endpoint fixed options** section of the right-most column in the main view. Using the images above as an example, the following endpoint *nba/production/v8/en/games/{NBA_Years}/{NBA_Season_Type}/schedule.json*, would use the *{NBA_Years}* options from the respective endpoint in the table.

- Once an endpoint is added to a dataset, you can select the endpoint card. This reveals the Endpoint parameters panel on the right side, where its properties can be entered. You can now edit the endpoint configuration (**NBA Years** and **NBA Season Type**, as shown in the image below):

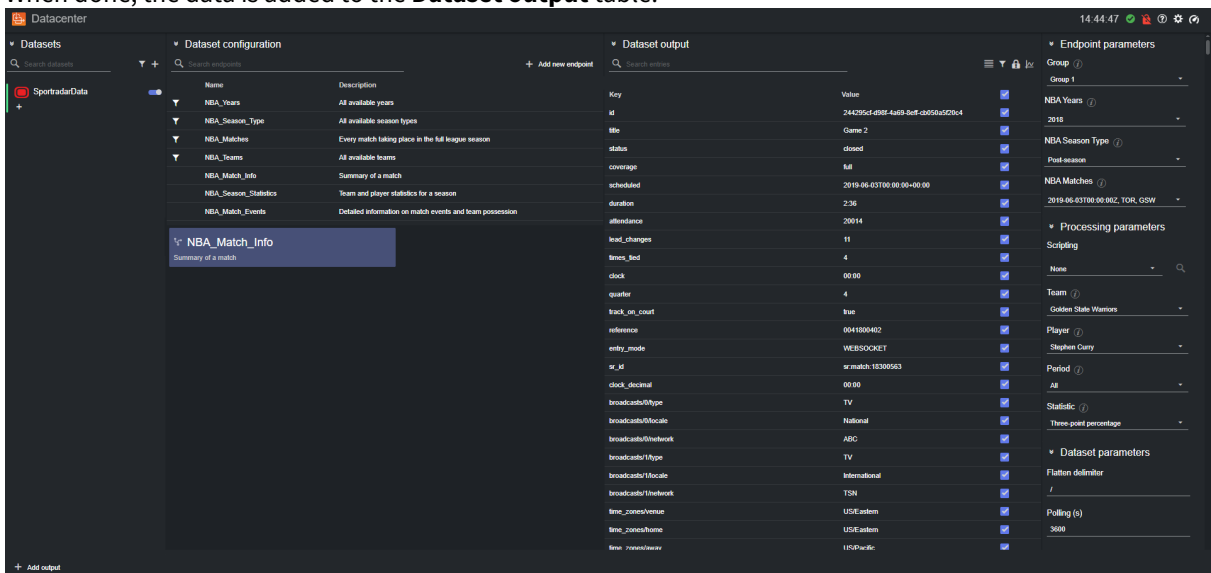




5. To change the polling rate (how often the Sportradar remote host is polled for data, in s) for the dataset, select a card from the list and edit the **Polling** field in the Dataset parameters on the right-most column.

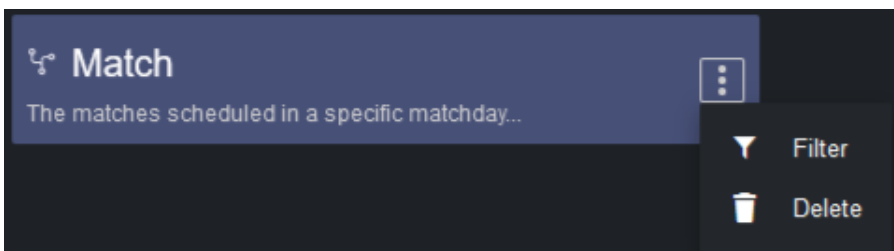


6. When done, the data is added to the **Dataset output** table.

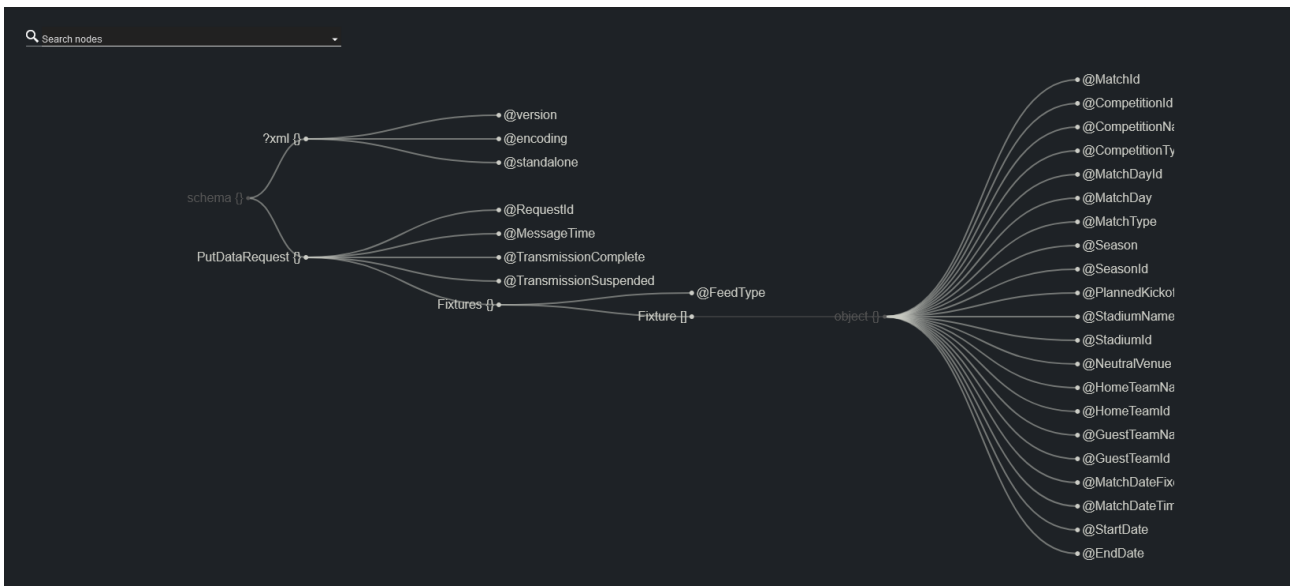


Filtering a Dataset

Values read from a file into a dataset can be filtered via the Filtering tool. To do so, select the dataset card, click on the hamburger menu and press the **Filter** button.



A dialog visualizing the file's payload schema opens, where you can filter the source data.

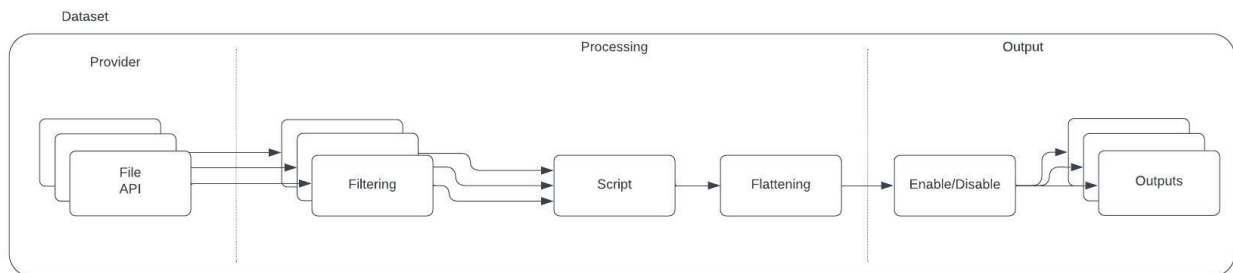


Please refer to the [Filtering and Manipulating a Dataset Entries](#) page to learn how to enable, disable and edit the entries added.

5.4.2 Filtering and Manipulating a Dataset Entries

The data contained in each dataset can be filtered or modified with tools provided by Datacenter. This way, a user can control in real-time, which values are sent to the output(s) and in which format.

Data manipulation can be done by [filtering](#), [scripting](#) and [flattening](#). Each step acts on the dataflow, whether it is globally (filtering) or locally (scripting and flattening), and is applied in a specific order, as shown in the diagram below:



This section describes how to filter and manipulate dataset entries in Datacenter, including:

- [Filtering a Dataset](#)
- [Manipulating Dataset Entries via Scripting](#)
- [Flattening a Dataset](#)

Filtering a Dataset

Introduction

Filtering can be used to process the incoming data before it is sent to the outputs, allowing flexible data manipulation.

These are the following topics:

- [Introduction](#)
- [Accessing the Filter Page](#)
- [Interacting with the Tree: Filtering Nodes](#)
- [Searching Nodes and Inspecting Sample Values](#)

Unlike other data manipulation operations ([scripting](#) and [flattening](#)), filtering acts on the data schema rather than the payload. That is, filtering acts on an object representation rather than on its instance.

Info: When filtering a dataset, the incoming data must be a valid JSON object. When this is not the case, filtering cannot be applied to a dataset.

For example, given the incoming data below:

Incoming Object

```
[
  {
    "id": "457e14f6-6244-4fb5-882a-eafc874ac384",
    "label": "Soccer",
    "UUID": "457e14f6-6244-4fb5-882a-eafc874ac384"
  },
  {
    "id": "1f66f5cf-978e-4fc1-9c39-7f2bde73778c",
    "label": "Basketball",
    "UUID": "1f66f5cf-978e-4fc1-9c39-7f2bde73778c"
  },
  {
    "id": "fb238641-7e4b-4578-b34f-bdd172be03bf",
    "label": "Tennis",
    "UUID": "fb238641-7e4b-4578-b34f-bdd172be03bf"
  }
]
```

Filtering it to remove "id" and "UUID" results in the data held in the Datacenter to be:

Incoming Object

```
[
  {
```

```

    "label": "Soccer"
  },
  {
    "label": "Basketball"
  },
  {
    "label": "Tennis"
  }
]

```

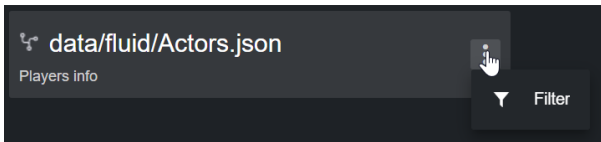
On subsequent data, should the array contain more entries and assuming the same filtering is applied, then the Datacenter only reads the property "label" for all entries.

Currently, the following providers support filtering:

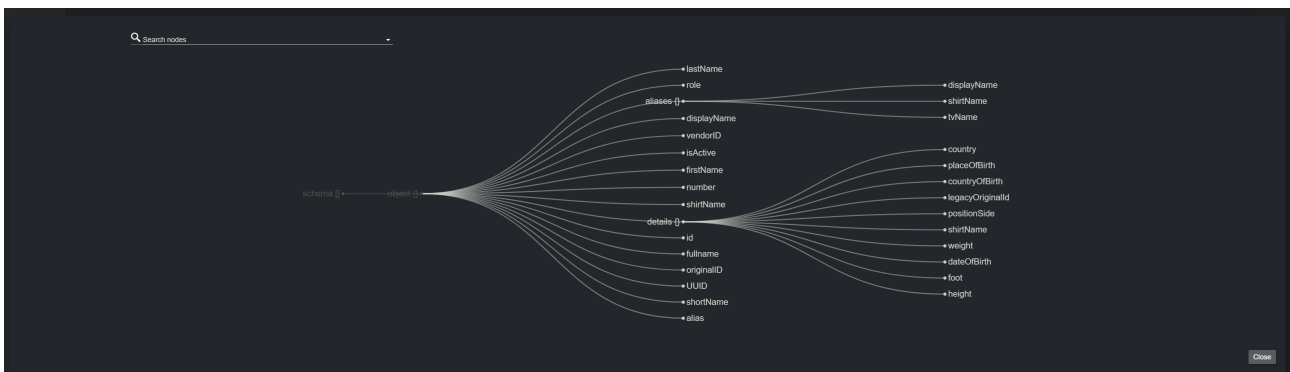
Provider	Filtering Supported
Manual Dataset	✓
File Dataset	✗
Replicator Dataset	✗
Sportzcast Dataset	✗
Tricaster Vectar	✗
Kafka Dataset	✗
Rest Webserver Dataset	✓
Fluid Data Services Dataset	✓
Stats Perform	✓
Viz Data Connectors	✗
Socket Listener	✗
Socket Connector	✗
Tracab	✗
Sportec Solutions	✓

Accessing the Filter Page

To access the filtering page, select a dataset of one of the supported providers, hover on an instance of a template and in the hamburger menu that appears, select **Filter**:



This opens a dialog, where the "schema" (an abstract representation that describes your existing data format) is shown as an interactive tree.



Interacting with the Tree: Filtering Nodes

The tree shown in the filtering dialog can be panned and zoomed: use your mouse's left-button to pan, and the mouse scroll wheel to zoom.

A node in the tree can be in one of the following three states:

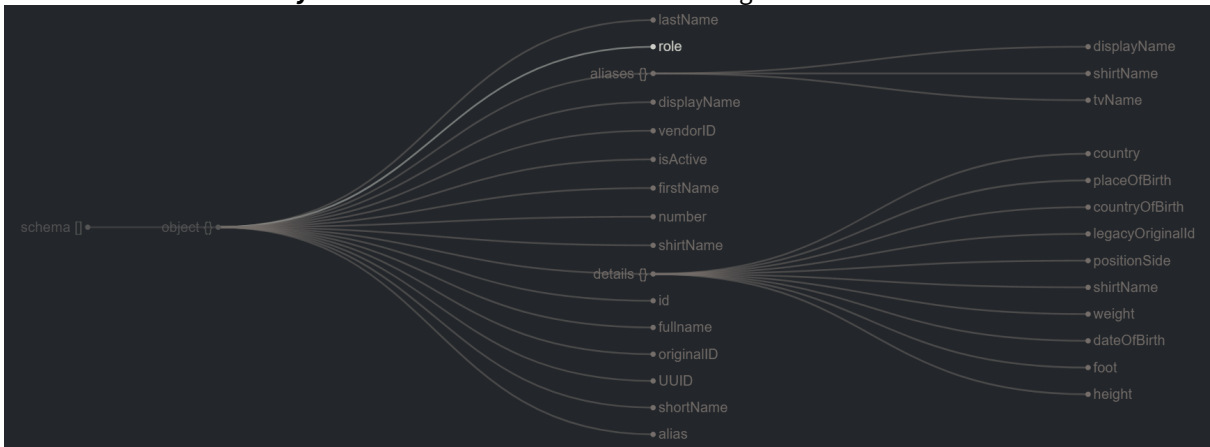
State	
Active (filtered in)	• lastName
Inactive (filtered out)	• lastName
Disabled	schema [] •

- **Active:** The node is added to the dataset data. If a node represents an object, its children are also added if no further filtering is applied, or the individual filtering on the children is considered.
- **Inactive:** The node is not added to the dataset data. If a node represents an object, all children are excluded from the dataset.
- **Disabled:** No interaction is possible with the node.

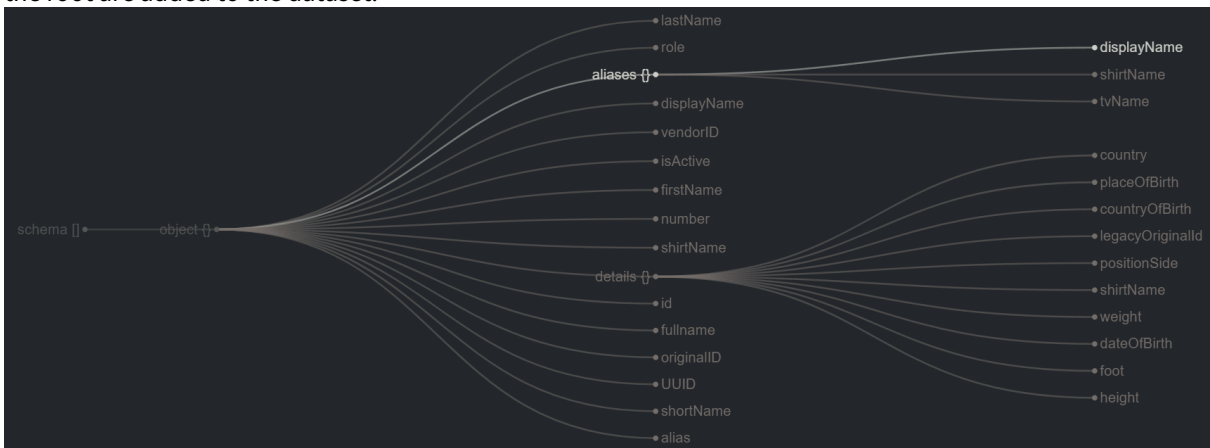
When adding a new data source, by default, the incoming data is set to active. That is, all fields in the incoming object are added to the dataset data. To start filtering nodes in the tree, click on the nodes you wish to add to the dataset.

When clicking on a node, there are three possible scenarios:

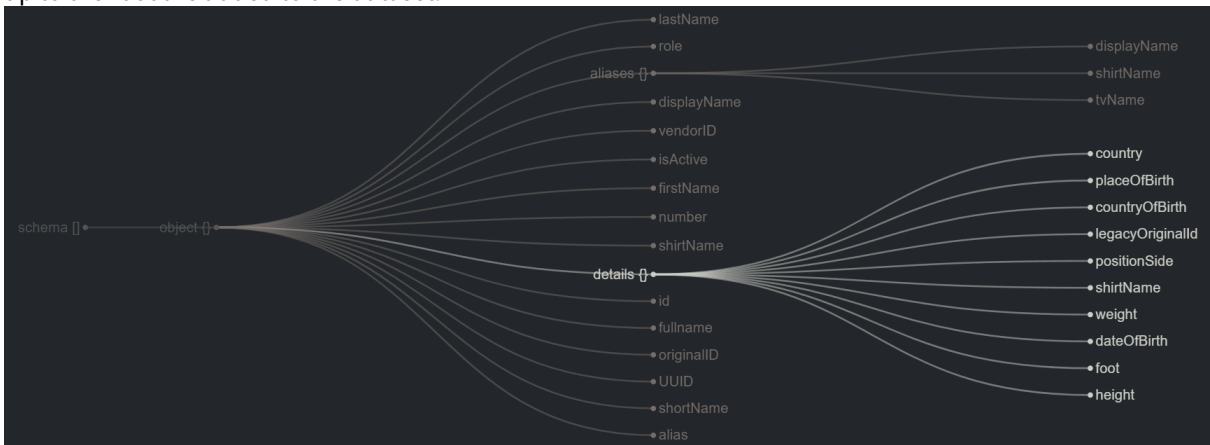
1. A leaf node that is directly connected to the root is clicked: a single node is added to the dataset.



2. A leaf node that is a children of an object is clicked: the leaf node, its parents, and all other parents up to the root are added to the dataset.

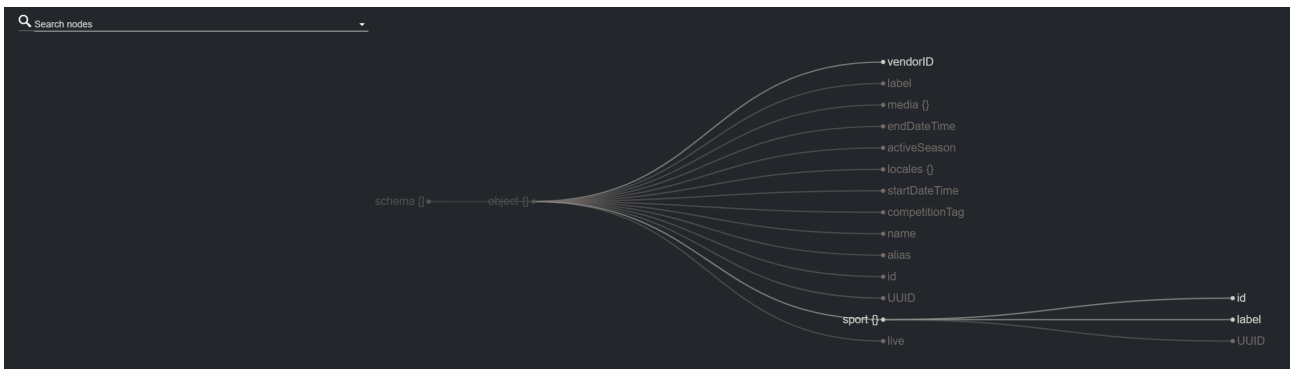


3. A node representing an object is clicked: the object node, its children, and its parents and all other parents up to the root are added to the dataset.



Once you start filtering a dataset, you can click on a node to toggle its state. That is, clicking on a node for the first time sets its state to active. Clicking on it again sets its state to inactive.

To further illustrate how filtering works, consider the following filtered tree:

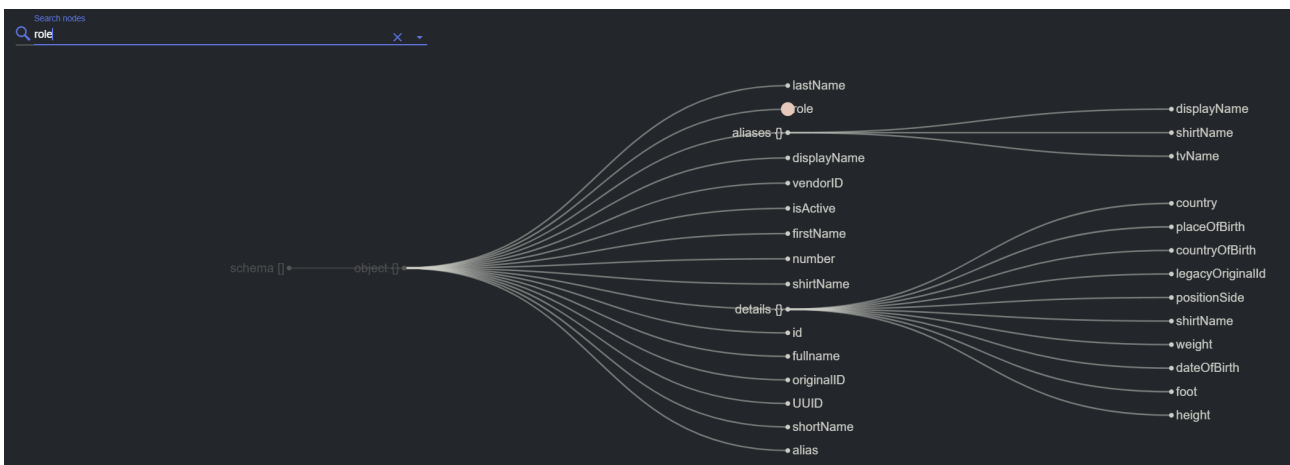


This selection results in the dataset to hold the following (flattened) values.

Dataset output		
Search entries		
Key	Value	
0/sport/label	soccer	<input checked="" type="checkbox"/>
0/sport/id	457e14f6-6244-4fb5-882a-eafc874ac384	<input checked="" type="checkbox"/>
0/vendorID	Opta	<input checked="" type="checkbox"/>

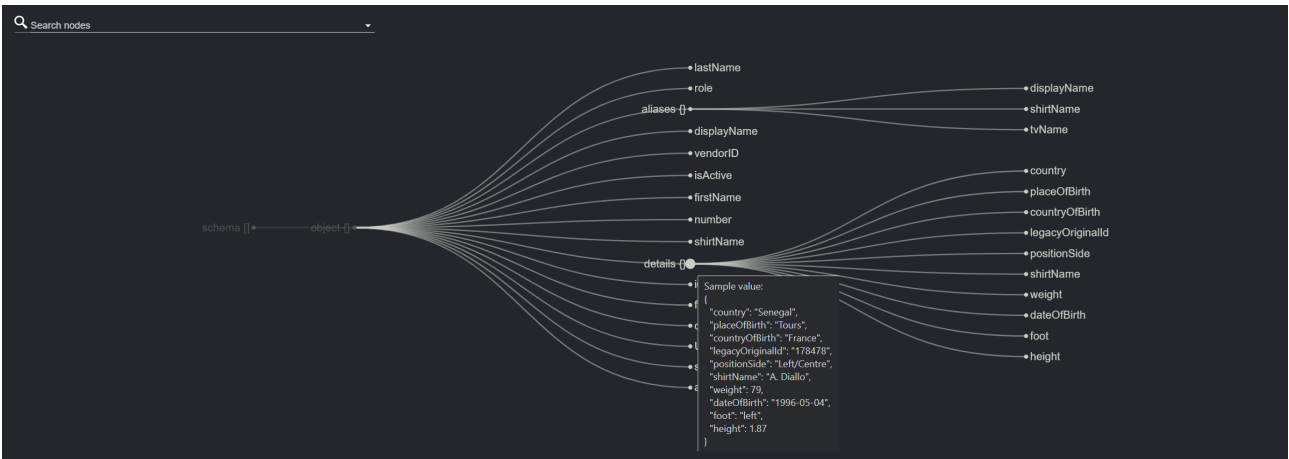
Searching Nodes and Inspecting Sample Values

Nodes in the tree can be searched using the **Search nodes** field in the top-left of the dialog. Start typing a node name in the text field to see all possible matches. By selecting one of the results, the corresponding node briefly changes color and size.



Note: Searching a node triggers highlighted animations on the tree and has no effect on the final dataset. That is, selecting a node name from the search text field does not add the node to the dataset output.

To get an idea of the incoming data, sample payload can be inspected for each node in the tree. To reveal the sample content of a node, hover on its name.



Manipulating Dataset Entries via Scripting

Introduction

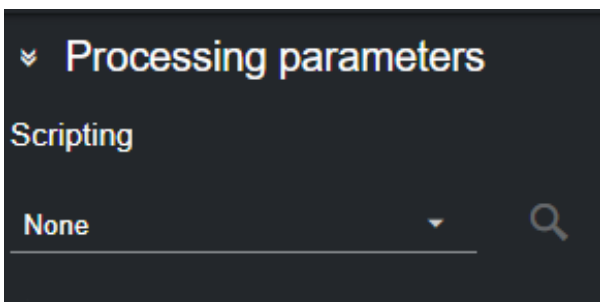
Scripting can be used to process the incoming data before it is sent to the output, allowing flexible data manipulation. For example, data can be normalized to an expected format / units, and new entries can be computed from incoming data.

These are the following topics:

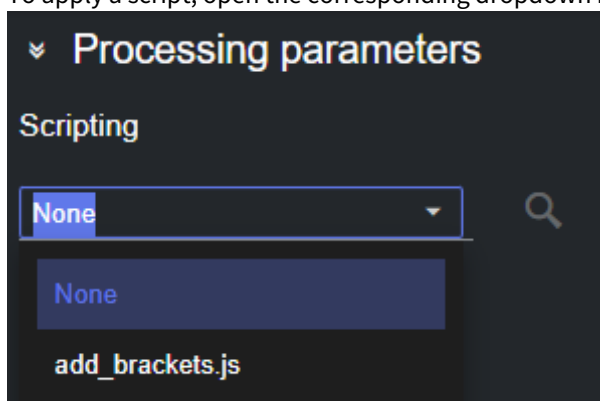
- [Introduction](#)
- [Applying a Script](#)
- [Development](#)
- [Process](#)
- [Arguments](#)
- [Imports](#)
- [Caching Data](#)
- [Debugging](#)

Applying a Script

Scripts can be applied to a dataset via the **Processing parameters** panel:



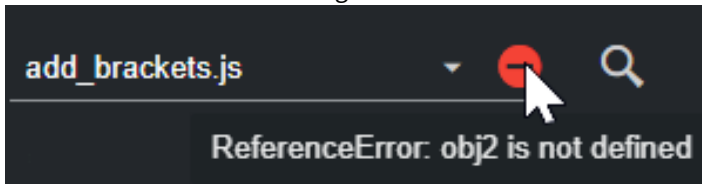
- To apply a script, open the corresponding dropdown menu and select the script to apply.




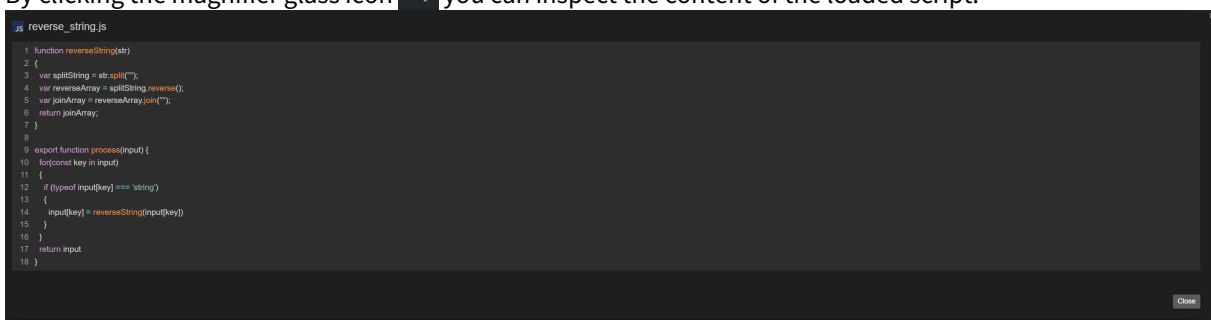
- Scripts are applied immediately on the dataset output. When applied successfully, the icon next to the script name turns green.



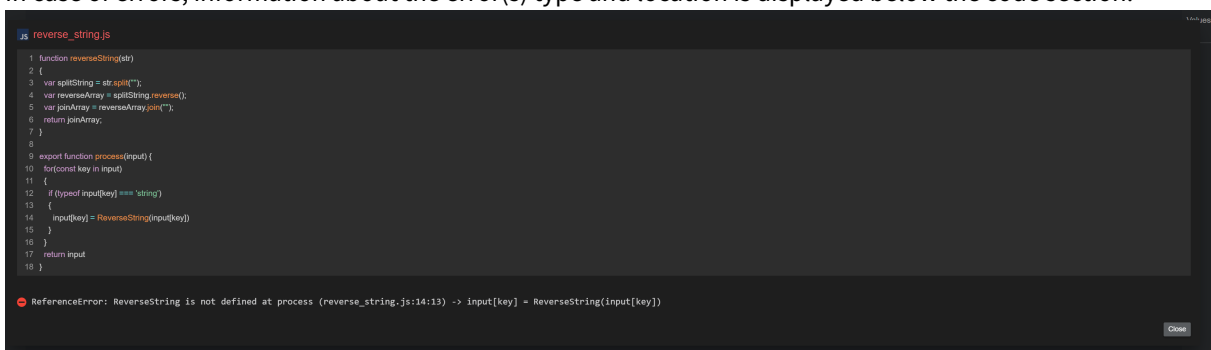
- Conversely, scripts that are not applied successfully show a red icon next their name. You can hover over the icon to reveal the error message.



- By clicking the magnifier glass icon  you can inspect the content of the loaded script.



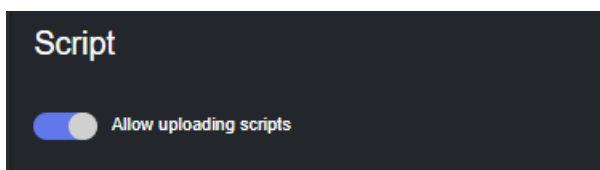
- In case of errors, information about the error(s) type and location is displayed below the code section.



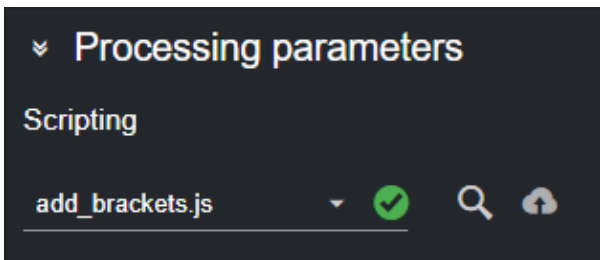
Adding a New Script

Datacenter, constantly monitors all the scripts located in `C:\ProgramData\vizrt\Datacenter\scripts`, and therefore, the new scripts added to that folder are immediately visible in the Datacenter script list.

Another option to add a new script is to enable the **Allow uploading scripts** toggle in the **General/Communication** section of the Admin page.



Doing so, enables an upload button next to the scripts list in the main page, which can be use to load new scripts.



Warning: Datacenter does not vet uploaded scripts, therefore, allowing the upload of arbitrary scripts to Datacenter can pose a security threat. We **strongly recommend** to enable scripts uploading, only when strictly necessary and for the time required.

Development

Scripts are JavaScript programs located in `C:\ProgramData\vizrt\Datacenter\scripts`, and they must be named as `*.js` (sub-directories are supported).

Scripts are constantly monitored by Datacenter, and are reloaded every time there is a change.

To start developing a script, simply open a Visual Studio Code (or any other text editor) in `C:\ProgramData\vizrt\Datacenter\scripts`, create a script and see your changes applied as soon as the file is saved.

Warning: Because of the file watcher, when saving a script with VS Code, the file might suddenly become empty. Undo (**CTRL + Z**) the last action and save the file again.

Process

All scripts must export a function named `process`, which is then called whenever data is received from a provider.

When multiple inputs are configured (for example multiple endpoints for a REST provider), the input variable holds the incoming data in multiple members named `data`, `data_1`, `data_2`.

Example

Here is an example of a script with the following inputs:

Input

```
raw_endpoint_data_1 = { // in the script, this is readable from input.data
  "key11": 1,
  "key12": 2
}

raw_endpoint_data_2 = { // in the script, this is readable from input.data_1
  "key21": 3,
  "key22": 4
}
```

Script

```

export function process(input) {
  var obj1 = JSON.parse(input.data);
  var obj2 = JSON.parse(input.data_1);
  return {
    a: obj1.key11,
    b: obj2.key21,
    c: obj1.key12 + obj2.key22
  }
}

```

The output data is then three keys (a, 1), (b, 3) and (c, 6).

Arguments

To allow more flexible scripts, arguments can be added to the code and are shown in the UI.

It is possible to add numbers, strings, enums and date arguments that are then passed to the script during execution.

A function named *getProcessArguments* must be exported from the script and must return the arguments created with helper functions (see example). This function takes an optional parameter of the current provider input, allowing to create arguments dependent on the currently received values.

Argument Declaration Helper Functions

The following helpers can be used to declare scripts arguments:

```

function argumentEnum(name, defaultIndex, values, description="") { /*... */ }
function argumentString(name, defaultValue, description="") { /*... */ }
function argumentInt(name, defaultValue, min = Number.MIN_VALUE, max =
Number.MAX_VALUE, description="") { /*... */ }
function argumentFloat(name, defaultValue, min = Number.MIN_VALUE, max =
Number.MAX_VALUE, description="") { /*... */ }
function argumentDate(name, defaultValue, description="") { /*... */ }
function argumentIntegerRange(name, min = Number.MIN_VALUE, max = Number.MAX_VALUE,
stepSize, description = "") { /*... */ }

```

The enum values can be of type *string*, or an object of type *{label: string, data: string}*. On the second case, the label is displayed to the user and the script receives the data.

Example

Example with Hard-coded Arguments

```

export function getProcessArguments() {
  return [
    argumentEnum("enumArg", 0, ["option1", "option2"], "An enum argument"),
    argumentEnum("enumWithValuesArg", 1, [{"label": "option3", "data":
"value3"}, {"label": "option4", "data": "value4"}], "Another enum argument"),
    argumentString("stringArg", "default value", "A string argument"),
    argumentInt("intArg", 2, 0, 5, "An int argument"),

```

```

    argumentFloat("floatArg", 3.1, 1.2, 5.6, "A float argument"),
    argumentDate("dateArg", "2023-07-01", "A date argument"),
    argumentIntegerRange("integerRangeArg", 0,90,1, "A range argument"),
  ];
}

export function process(input, args) {
  var result = {}
  result["receivedInput"] = input.data;
  result["receivedEnumArg"] = args.enumArg;
  result["receivedEnumWithValuesArg"] = args.enumWithValuesArg;
  result["receivedStringArg"] = args.stringArg;
  result["receivedIntArg"] = args.intArg;
  result["receivedFloatArg"] = args.floatArg;
  result["receivedDateArg"] = args.dateArg;
  result["receivedIntegerRangeArg"] = args.integerRangeArg;

  return result;
}

```

Example with Arguments Generated from Input

```

/** Function called by the Viz Datacenter scripting stage. The script's input
arguments are defined with this function.
 * @param {object} input The input object
 * @returns {object[]} An Array of arguments
 */
export function getProcessArguments (input) {
  const events = getEvents(input)
  const options = getEventOptions(events)

  return [argumentEnum('Event', 0, options, 'The event to select')]
}

/** Retrieves the list of events from the input object
 * @param {object} input The input object
 * @returns {object[]} A list of all the events
 */
function getEvents (input) {
  let events = []
  if (input.data) {
    const obj = parseInputObject(input)
    for (const event of obj.liveData.event) {
      events.push(event)
    }
  }
  return events
}

```

Assuming some kind of input and if the user does not modify the default arguments, the dataset would contain the following values:

```

receivedInput          { "inputData": "something" }
receivedEnumArg        option1
receivedEnumWithValuesArg value4
receivedStringArg      default value
receivedIntArg          2
receivedFloatArg        3.1
receivedDateArg         2023-07-01

```

Imports

In order to allow code reuse, it is possible for a script to import another file. Those imported files must be named **.import.js*, so they are not shown as scripts in the Datacenter UI.

The imports are relative to the scripts root directory *C:\ProgramData\vizrt\Datacenter\scripts*, not the current script directory.

Example

utils/helpers.import.js

```

export function doNothing(input) {
  return input;
}

```

provider/script.js

```

import { doNothing } from "utils/helpers.import.js"

export function process(input) {
  return doNothing(input);
}

```

Caching Data

The Scripting module allows to cache data across executions. This is particularly useful when handling time-series, or when statistics across several executions need to be computed. Similarly, the value from one time slice can be saved and fetched at later stages. The cache can be directly accessed from within scripts and it is allocated per-script (two scripts cannot access the same cache values).

As the cache is implemented as an unordered map, you can **update** a value by writing in the same key on each run, or can **store** the value of an item in *different runs* by using a time-increasing key.

The following utility functions can be used to manipulate the cache:

- **Cache.Read():** Reads the current cache. Returns a dictionary Dictionary<string, object>.
- **Cache.Remove(key: string):** Removes the entry with key 'key' from the cache.
- **Cache.Write(newCache: Dictionary<string, object>):** Swaps the current cache with 'newCache'.
- **Cache.Keys():** Gets all cache keys, as an Array<string>.

Example

utils/helpers.import.js

```

function getCachedData(key: string)
{
  const cachedData = Cache.Read(key);
  return cachedData !== null ? cachedData : undefined;
}

function writeCachedData(key: string, value: string)
{
  let cache = Cache.Read();
  cache [key] = value;
  Cache.Write(cache);
}

function cleanCache()
{
  var cacheKeys = Cache.Keys();
  for(let i=0; i<cacheKeys.length; ++i)
  {
    let key = cacheKeys[i];
    Cache.Remove(cacheKeys[i]);
  }
}

export function manipulateCache() {
  const key = "my_key";
  const data = 10;
  writeCachedData(key, data);
  const cached_data = getCachedData(key);
  console.log(cached_data); // 10
  cleanCache();
  const cached_data2 = getCachedData(key);
  console.log(cached_data2); // undefined
}

```

Debugging

To debug a script add the following launch configuration to VS Code:

Launch Configuration

```

{
  "launch": {
    "configurations": [
      {
        "name": "ClearScript",

```

```
        "type": "node",
        "request": "attach",
        "address": "localhost",
        "port": 9757
    },
    ],
    "compounds": []
}
```

Then add the following line to the script to debug:

```
//SCRIPT_DEBUG_PORT=9757
```

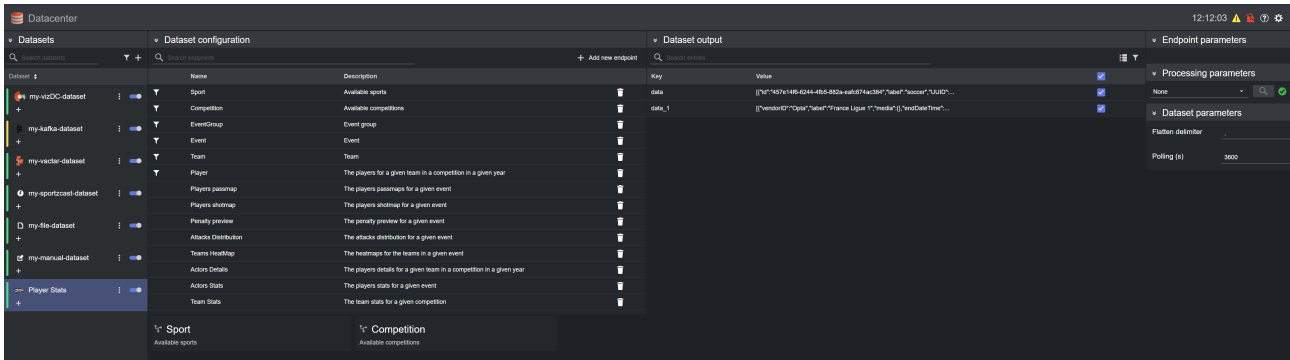
In VS code, execute **Run and debug** with the ClearScript configuration. The debugger attaches to the running script and breakpoints can be set in the **Loaded scripts** section.


i **Info:** Because of some internal limitations, the debug port is not immediately freed after modifying a script. Therefore, it is necessary to adapt the debug port in the script and launch configuration when modifying and saving the debugged script.

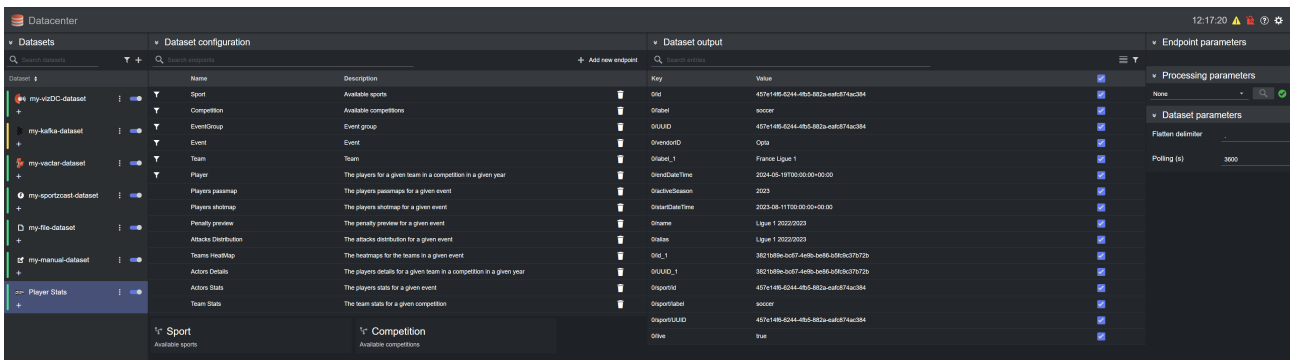
Flattening a Dataset

By default, datasets connected to providers providing data in valid JSON format (for example, Fluid Data Services) hold the incoming payload using the key-value pair `[data_N][Data_as_JSON_object]`, where N is the index of the dataset source where the data originates from (for example, in Fluid Data Services, the index of the endpoint configured for the dataset).

In the following scenario, a Fluid Data Services dataset is configured to accept data from two endpoints (Sport and Competition), and subsequently the data is organized in two key-value pairs (data and data_1), one per endpoint:



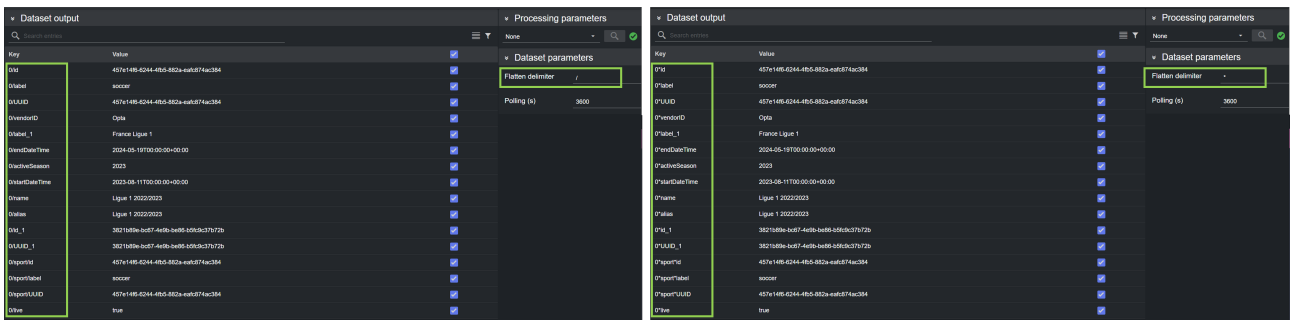
However, in certain scenarios, all values in the JSON objects need to be associated with a specific key. For these cases, one can automatically flatten the incoming data for a given dataset, by clicking on the flatten icon  in the top-right corner of the **Dataset output** panel. Doing so results in a flattened version of all the values of the incoming payload, where each atomic value in the JSON object(s) is associated to its own key:




Note: When flattening several objects there is a chance of running into key duplication. Datacenter automatically detects such keys and appends a number to them, to make them unique again (for example, 0/label and 0/label_1 in the image above).

Note: When flattening a payload that contains arrays, the index of the array element is prepended to the the element key, such that unique keys are created (for example, 0/id in the image above).

The default separator used to flatten the incoming data is specified in the [General configuration](#) in the Admin page. However, the delimiter can be changed per dataset, by using the **Flatten delimiter** field in the **Dataset parameters** section of the main view.



To unflatten the data back to the original [data_N][Data_as_JSON_object] format, click on the unflatten icon  in the top-right corner of the **Dataset output** panel.

Note: The flattening operation is only successful if the data to flatten is in JSON format. If you apply a script prior flattening, make sure the resulting script output is still a valid JSON objects for the flattening to have effect.

Info: For performance reasons, the number of flattened data elements that can be displayed is limited to 1024. This is also true for the search mechanism. All flattened keys are forwarded to the outputs, however.

5.4.3 Enabling or Disabling Dataset Entries

Once added, dataset entries are immediately enabled on all connected outputs. This results in all entries in the **Dataset output** to have a checked checkbox.

Key	Value	<input checked="" type="checkbox"/>
0/live	false	<input checked="" type="checkbox"/>
0/sport/UUID	457e14f6-6244-4fb5-882a-eafc874ac384	<input checked="" type="checkbox"/>
0/sport/label	soccer	<input checked="" type="checkbox"/>
0/sport/id	457e14f6-6244-4fb5-882a-eafc874ac384	<input checked="" type="checkbox"/>
0/UUID	3821b89e-bc67-4e9b-be86-b5fc9c37b72b	<input checked="" type="checkbox"/>
0/id	3821b89e-bc67-4e9b-be86-b5fc9c37b72b	<input checked="" type="checkbox"/>
0/alias	Ligue 1 2020/2021	<input checked="" type="checkbox"/>
0/name	Ligue 1 2020/2021	<input checked="" type="checkbox"/>
0/competitionTag	3821b89e-bc67-4e9b-be86-b5fc9c37b72b	<input checked="" type="checkbox"/>
0/startDateTime	2022-08-05T00:00:00+00:00	<input checked="" type="checkbox"/>
0/activeSeason	2022	<input checked="" type="checkbox"/>
0/endDateTime	2023-06-04T00:00:00+00:00	<input checked="" type="checkbox"/>
0/label	France Ligue 1	<input checked="" type="checkbox"/>
0/vendorID	Opta	<input checked="" type="checkbox"/>

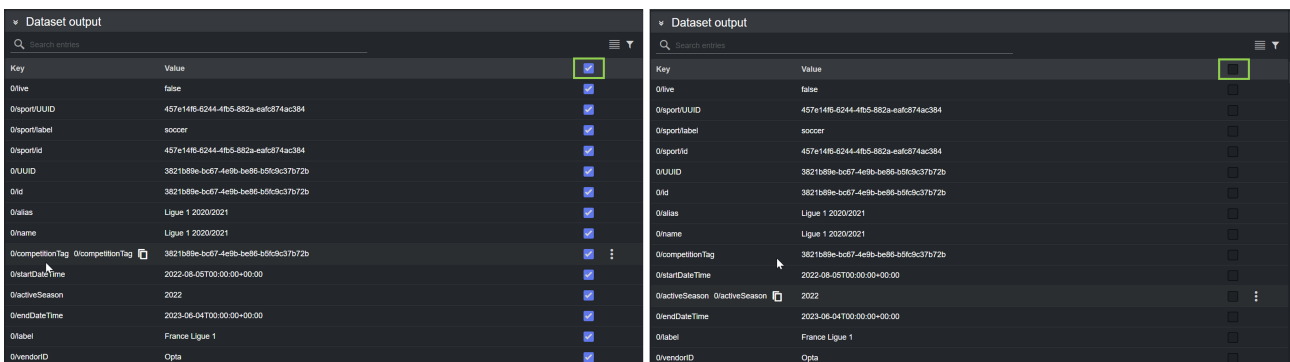
However, individual entries state, can easily be toggled from Datacenter’s UI. To disable a single entry, uncheck the checkbox in the relevant entry row in the **Dataset output** table.

Dataset output

Search entries

Key	Value	
O/live	false	<input type="checkbox"/>
O/sport/UUID	457e14f6-6244-4fb5-882a-eafc874ac384	<input type="checkbox"/>
O/sport/label	soccer	<input checked="" type="checkbox"/>
O/sport/id	457e14f6-6244-4fb5-882a-eafc874ac384	<input checked="" type="checkbox"/>
O/UUID	3821b89e-bc67-4e9b-be86-b5fc9c37b72b	<input checked="" type="checkbox"/>
O/id	3821b89e-bc67-4e9b-be86-b5fc9c37b72b	<input checked="" type="checkbox"/>
O/alias	Ligue 1 2020/2021	<input checked="" type="checkbox"/>
O/name	Ligue 1 2020/2021	<input checked="" type="checkbox"/>
O/competitionTag	3821b89e-bc67-4e9b-be86-b5fc9c37b72b	<input checked="" type="checkbox"/>
O/startDateTime	2022-08-05T00:00:00+00:00	<input checked="" type="checkbox"/>
O/activeSeason	2022	<input checked="" type="checkbox"/>
O/endDateTime	2023-06-04T00:00:00+00:00	<input checked="" type="checkbox"/>
O/label	France Ligue 1	<input checked="" type="checkbox"/>
O/vendorID	Opta	<input checked="" type="checkbox"/>

Likewise, all dataset entries can be disabled at once by clicking the checkbox in the header of the Dataset output table.



5.4.4 Inspecting Dataset Entries

The Dataset Output Panel

The Dataset Output panel shows the received data for the selected dataset.

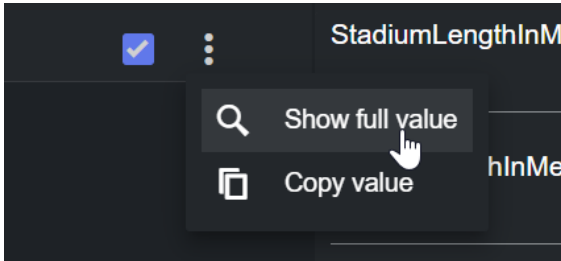
Dataset output

Search entries

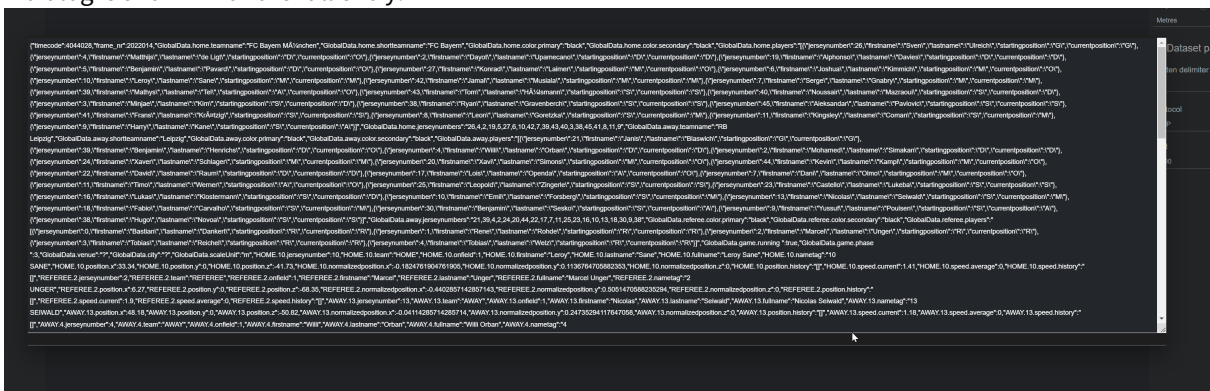
Key	Value	
timecode	4036580	<input checked="" type="checkbox"/>
frame_nr	2018290	<input checked="" type="checkbox"/>
GlobalData.home.teamname	FC Bayern MÃ¼nchen	<input checked="" type="checkbox"/>
GlobalData.home.shortteamname	FC Bayern	<input checked="" type="checkbox"/>
GlobalData.home.color.primary	black	<input checked="" type="checkbox"/>
GlobalData.home.color.secondary	black	<input checked="" type="checkbox"/>
GlobalData.home.players	[{"jerseynumber":26,"firstname":"Sven","lastname":"Ulreich","startinp...	<input checked="" type="checkbox"/>
GlobalData.home.jerseynumbers	26,4,2,19,5,27,6,10,42,7,39,43,40,3,38,45,41,8,11,9	<input checked="" type="checkbox"/>
GlobalData.away.teamname	RB Leipzig	<input checked="" type="checkbox"/>
GlobalData.away.shortteamname	Leipzig	<input checked="" type="checkbox"/>
GlobalData.away.color.primary	black	<input checked="" type="checkbox"/>
GlobalData.away.color.secondary	black	<input checked="" type="checkbox"/>
GlobalData.away.players	[{"jerseynumber":21,"firstname":"Janis","lastname":"Blaswich","startin...	<input checked="" type="checkbox"/>
GlobalData.away.jerseynumbers	21,39,4,2,24,20,44,22,17,7,11,25,23,16,10,13,18,30,9,38	<input checked="" type="checkbox"/>
GlobalData.referee.color.primary	black	<input checked="" type="checkbox"/>
GlobalData.referee.color.secondary	black	<input checked="" type="checkbox"/>
GlobalData.referee.players	[{"jerseynumber":0,"firstname":"Bastian","lastname":"Dankert","startin...	<input checked="" type="checkbox"/>
GlobalData.game.running	true	<input checked="" type="checkbox"/>
GlobalData.game.phase	3	<input checked="" type="checkbox"/>
GlobalData.venue	?	<input checked="" type="checkbox"/>
GlobalData.city	?	<input checked="" type="checkbox"/>
GlobalData.scaleUnit	m	<input checked="" type="checkbox"/>
HOME.10.jerseynumber	10	<input checked="" type="checkbox"/>
HOME.10.team	HOME	<input checked="" type="checkbox"/>
HOME.10.onfield	1	<input checked="" type="checkbox"/>
HOME.10.firstname	Leroy	<input checked="" type="checkbox"/>
HOME.10.lastname	Sane	<input checked="" type="checkbox"/>
HOME.10.fullname	Leroy Sane	<input checked="" type="checkbox"/>
HOME.10.nametag	10 SANE	<input checked="" type="checkbox"/>
HOME.10.position.x	67.05	<input checked="" type="checkbox"/>
HOME.10.position.y	0	<input checked="" type="checkbox"/>
HOME.10.position.z	-23.79	<input checked="" type="checkbox"/>
HOME.10.normalizedposition.x	0.13857142857142857	<input checked="" type="checkbox"/>
HOME.10.normalizedposition.y	0.1501470588235294	<input checked="" type="checkbox"/>

Inspecting Dataset Entries

- To inspect a dataset entry, hover over the entry on the right-most part of the corresponding row. On the menu revealed, press the **Show full value** option:



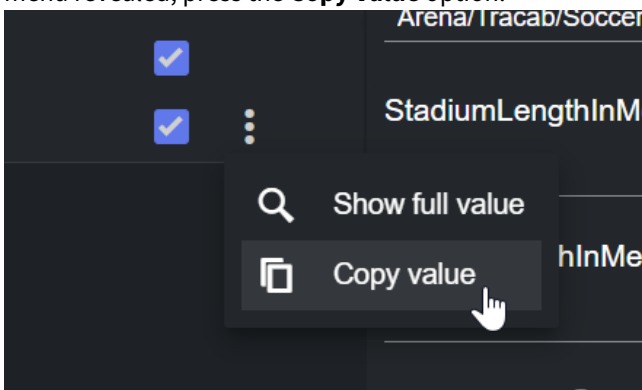
- A dialog is shown with the full entry.



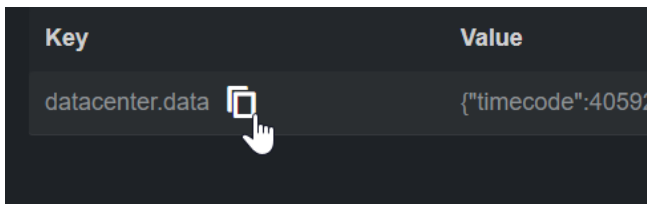
This feature is particularly useful for data entries that have long strings/JSON payloads as value.

Copy Entries Key/Value

- To copy a dataset entry's value, hover over the entry on the right-most part of the corresponding row. On the menu revealed, press the **Copy Value** option:



- To copy a dataset entry's key, hover over the key and click on the copy icon that is revealed:



- After performing one of the copy actions, the copied value is available in the clipboard.

Working with Live Data: Pause a Dataset View or Limit UI Updates



When working with real time data, inspecting or copying the incoming stream may be challenging, as the data at hand may be changing too fast. Therefore, the view of the data can be temporary paused or the entire UI refresh rate limited.

While the earlier affects only the view of a dataset, the latter slows down the view updates for all datasets. It is therefore recommended for cases using multiple datasets, and at least one has real-time data updates.

Note: While in pause mode, the incoming entries **are still forwarded** to all the configured outputs. Any assigned script to the dataset is also applied.

Note: Regardless of the mode selected, pausing a dataset view or limiting the UI updates have no effect on the Datacenter user interaction.

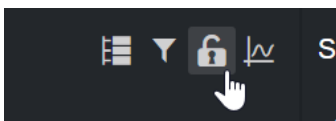
Limit the UI Refresh Rate

To limit the UI refresh rate, click on the speedometer icon on the top right corner of the Application Bar . While running in limited mode, the speedometer icon turns yellow , and to remove the limit, click on the icon again.

The limited refresh rate interval has a default value of 500 milliseconds. This value can be configured in the [General Configuration](#) section of the Admin page.

Pause UI Updates

To pause UI updates, click on the lock icon on the top of the data entries:



A yellow message informs that the data is not being updated for this dataset, while the entries are greyed out.

Dataset output

Search entries

Entries updates paused for this dataset (entries still sent to output)

Key	Value	
timecode	4068628	<input checked="" type="checkbox"/>
frame_nr	2034314	<input checked="" type="checkbox"/>
GlobalData.home.teamname	FC Bayern MÄnchen	<input checked="" type="checkbox"/>
GlobalData.home.shortteamname	FC Bayern	<input checked="" type="checkbox"/>
GlobalData.home.color.primary	black	<input checked="" type="checkbox"/>
GlobalData.home.color.secondary	black	<input checked="" type="checkbox"/>
GlobalData.home.players	[{"jerseynumber":26,"firstname":"Sven","lastname":"Ulreich","startingp...	<input checked="" type="checkbox"/>
GlobalData.home.jerseynumbers	26,4,2,19,5,27,6,10,42,7,39,43,40,3,38,45,41,8,11,9	<input checked="" type="checkbox"/>
GlobalData.away.teamname	RB Leipzig	<input checked="" type="checkbox"/>
GlobalData.away.shortteamname	Leipzig	<input checked="" type="checkbox"/>
GlobalData.away.color.primary	black	<input checked="" type="checkbox"/>
GlobalData.away.color.secondary	black	<input checked="" type="checkbox"/>
GlobalData.away.players	[{"jerseynumber":21,"firstname":"Janis","lastname":"Blaswich","startin...	<input checked="" type="checkbox"/>
GlobalData.away.jerseynumbers	21,39,4,2,24,20,44,22,17,7,11,25,23,16,10,13,18,30,9,38	<input checked="" type="checkbox"/>

All supported interactions with the data (copying or inspecting an entry), are still available while in pause mode.

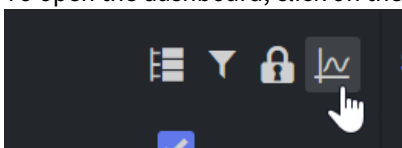
5.4.5 Working with Live Data: the Performance Dashboard

When working with real-time data (data coming from a [Tracab](#) dataset), inspecting the performance of the incoming data streams, as well as applied scripts, can be crucial to spot problems in the pipeline. To help with this, Datcenter offers a **Performance Dashboard**.

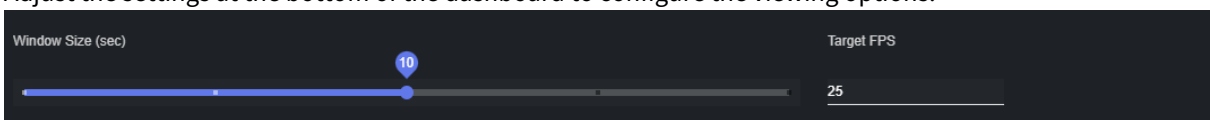


The **Performance Dashboard** helps operators inspect the sanity of the incoming data, and the runtime of any applied script.

- To open the dashboard, click on the graph icon  in the Dataset Entries panel:



- Adjust the settings at the bottom of the dashboard to configure the viewing options.

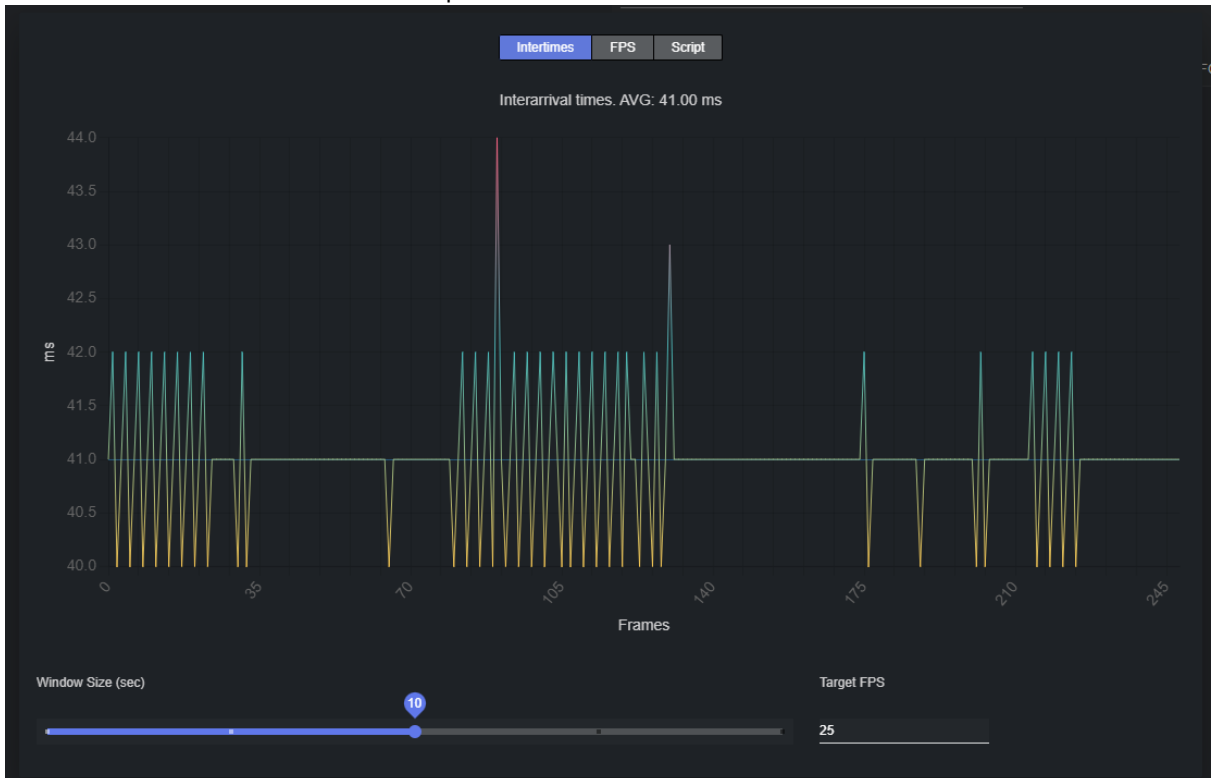


- **Window Size:** Select the time span (in seconds) to inspect.
- **Target FPS:** Configure these parameters to match the incoming stream FPS. This parameter, in combination with the **Window Size**, effectively configures how many frames are shown in the graph.

- To temporarily freeze the dashboard updates, click anywhere on the graph. Clicking again resumes the updates.

Intertimes

- Click on the **Intertimes** button at the top of the dashboard to show Interarrival times statistics.



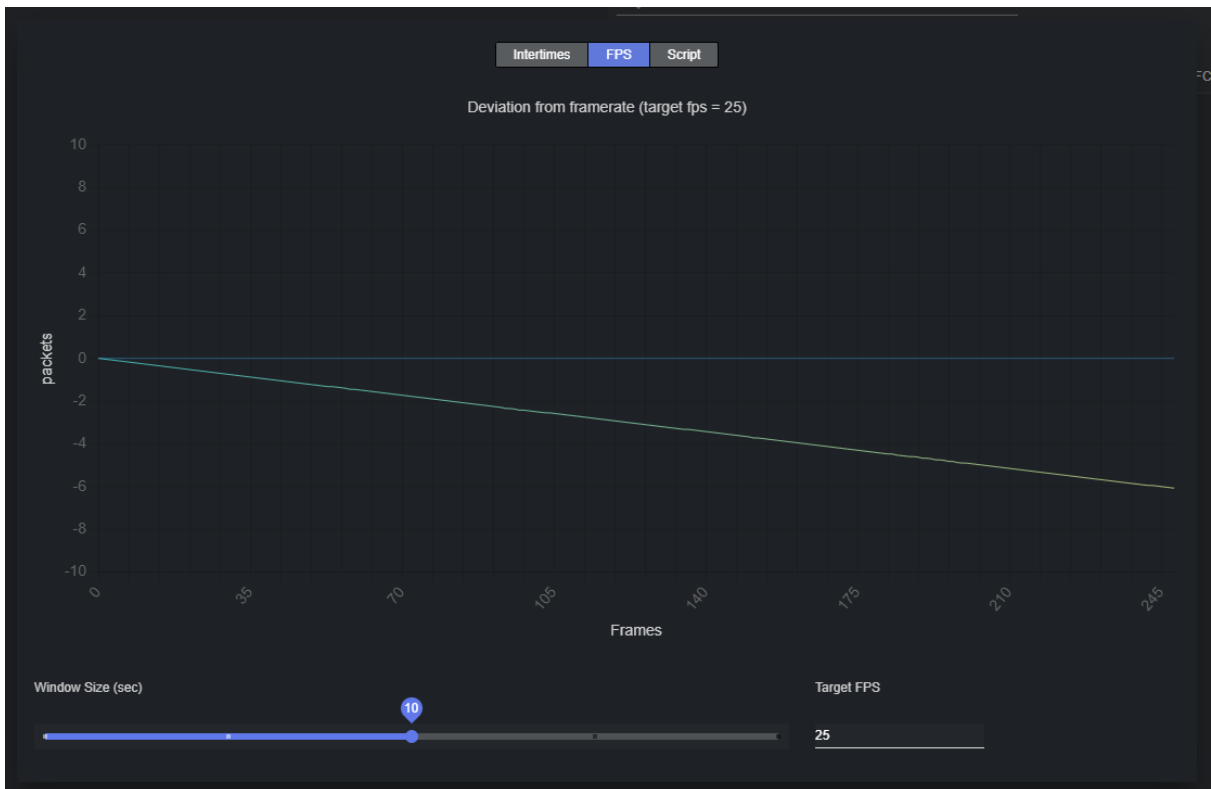
The resulting graph shows the time elapsed, in milliseconds, between the reception of two 'packets' from a data stream. The current average is reported in the title and in light blue in the graph. When hovering on the chart, the intertime for that frame is revealed:



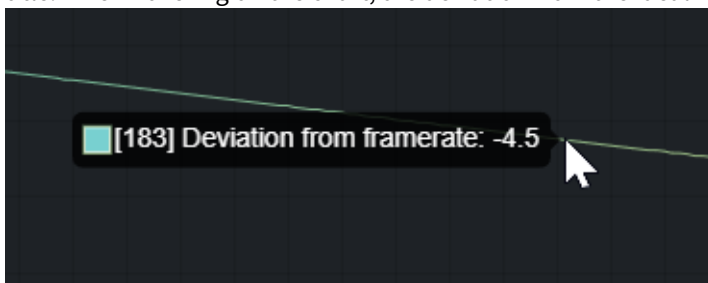
When inspecting intertimes, you can easily figure out if the incoming stream is sending packets slower or faster than the declared FPS. For the earlier, the reported average is larger than the ideal intertime average, while for the latter it is smaller.

FPS

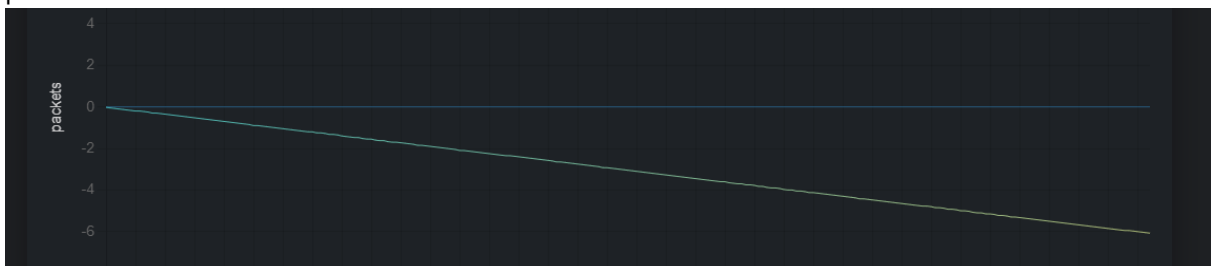
- Click on the **FPS** button at the top of the dashboard to show FPS (frames per second) statistics.



The resulting graph shows the difference between the ideal number of packets that the provider should have sent at a given frame and the actual number of received packets. The current target FPS is reported in the title. When hovering on the chart, the deviation from the ideal framerate for that frame is revealed:



- When inspecting FPS stats, you can easily examine if the incoming stream is sending a different number of packets than the declared FPS. In case of a slower stream, the deviation should move towards the negative part of the Y axis over time.



In the example above, an increasingly smaller number of packets than expected is received as the time advances.

Conversely, in case of faster stream, the deviation should move towards the positive Y axis over time.



In the example above, an increasingly larger number of packets than the expected is received as the time advances.

Script

- Click on the **Script** button at the top of the dashboard to show script execution time (in milliseconds) statistics.

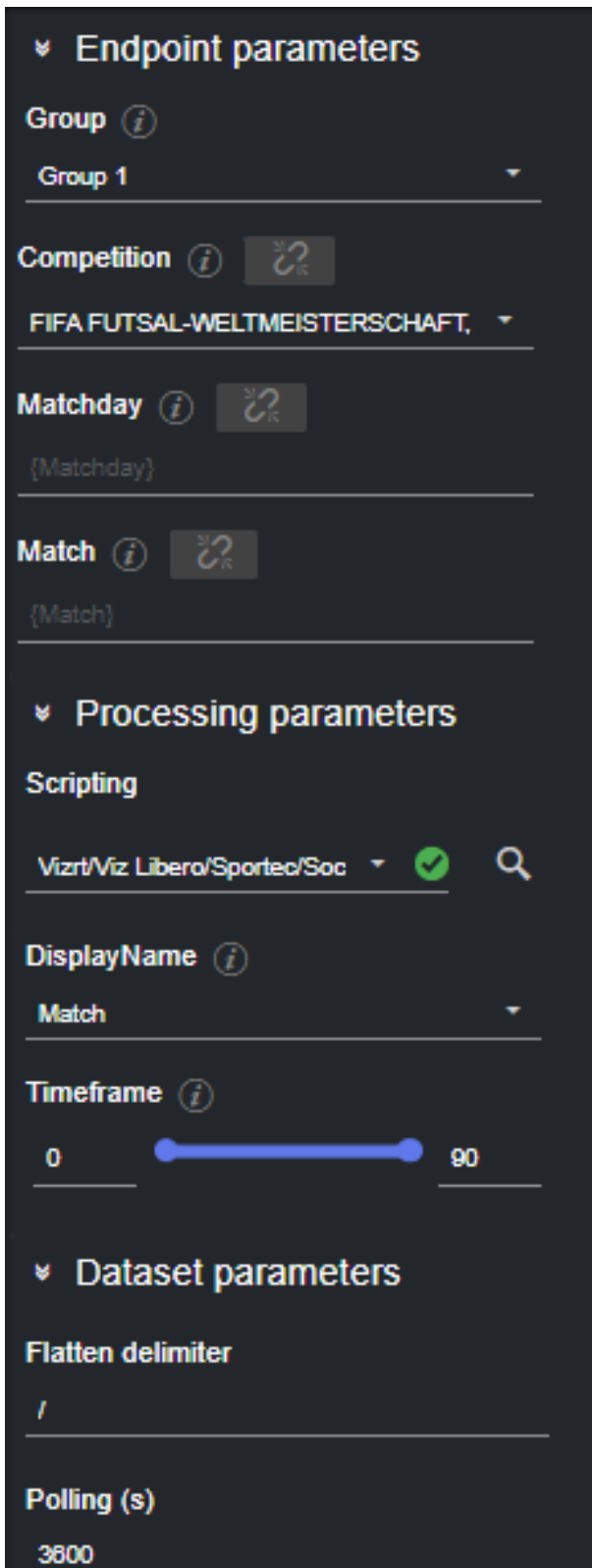


The resulting graph shows the execution time (in milliseconds) of the applied script, if any, over time.

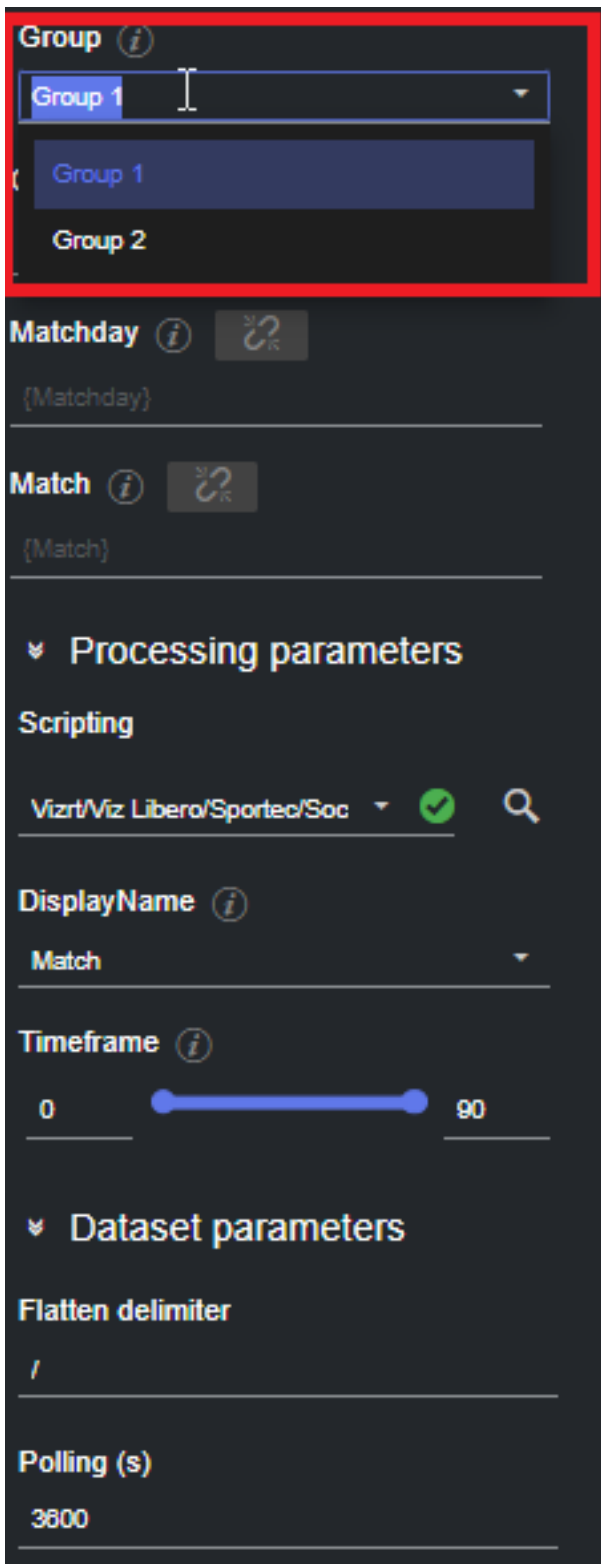
5.4.6 Joining Endpoints Parameters

In Datacenter, it is possible to share parameters of different end points.

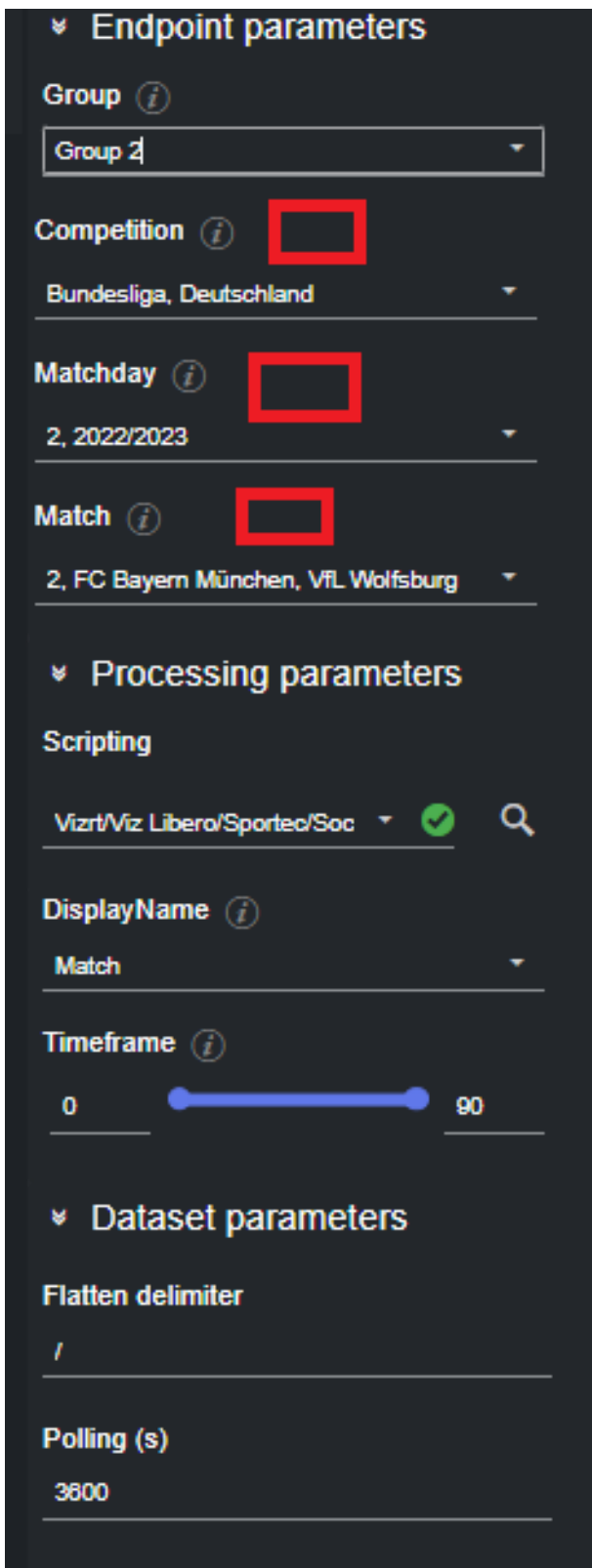
- When creating a dataset like with two end points that share same parameters, it looks as shown below:



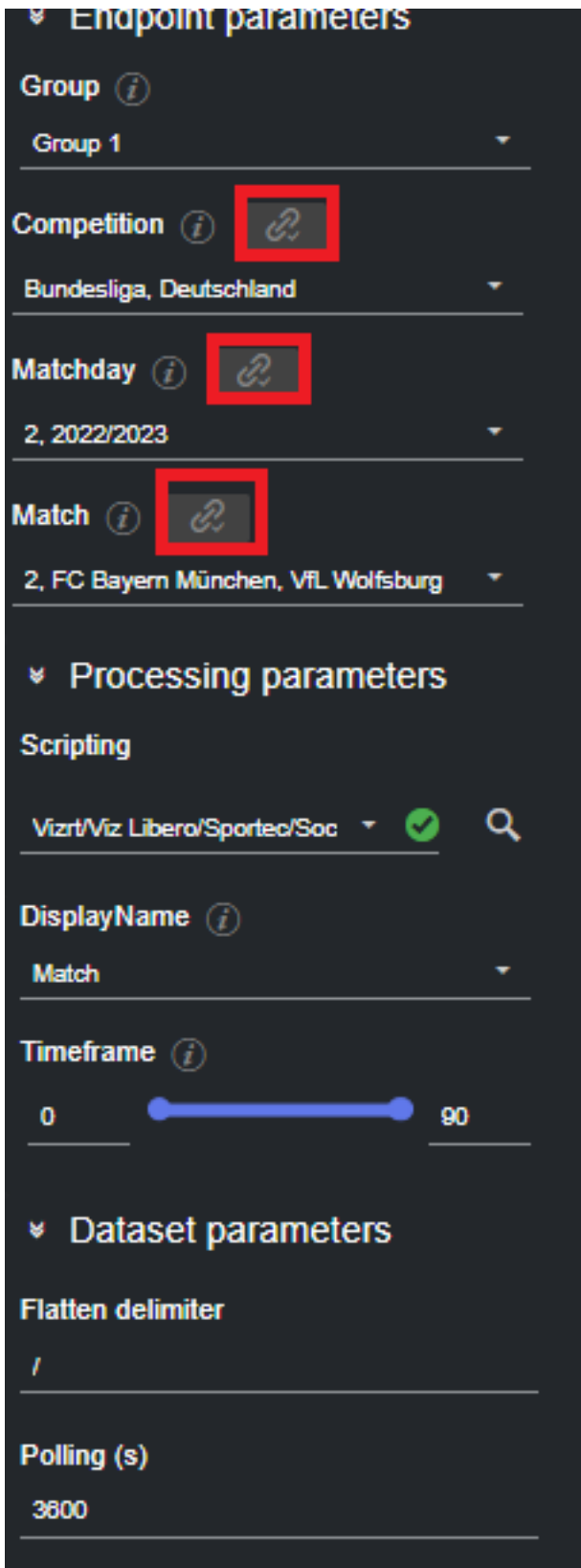
- To deactivate joining any end point parameters, put one end point in a different group:





- This results in the following view, where the broken link icon disappears:



- To join endpoint parameters first make sure that the endpoints are in the same group, then click on the broken link icon:



- If the connected link icon is active, then the endpoint parameters of all endpoints in the group are joint. To break the connection just click on the icon again  → .

5.5 Outputs

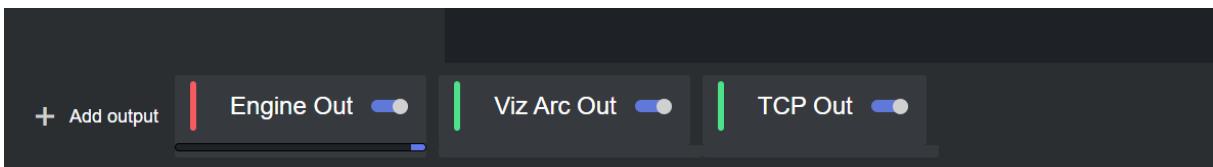
This section describes how to configure the following outputs in Datacenter:

- [Viz Engine Output](#)
- [Viz Arc Output](#)
- [Generic TCP Output](#)

Please refer to the [Configuring Outputs](#) section for steps on how to correctly setup each supported receiving end to accept incoming data from Datacenter.

5.5.1 Overview

Datacenter provides data to one or more outputs, so graphics can be linked to it seamlessly. To do so, first create and configure the desired output(s), which is then listed at the bottom of the main UI, in the **Viz Outputs footer**.

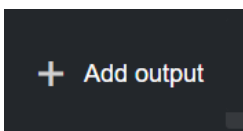


Each output can be either in Connected state (green) or not connected (red):

State	View	Description
Connected		Connected successfully.
Not Connected		When not connected, an output periodically attempts to reconnect. A progress bar appears at the bottom of the connecting output, and the tooltip shown when hovering on the status bar informs the user of any warnings or errors.

5.5.2 Add and Edit an Output

Add an output by clicking on the **Add output** button in the bottom left of the **Viz Outputs footer**.



To configure or edit an output, click on its name in the output list, and edit the fields that are listed in the dialog that appears.

Info: When editing an output, click on **Confirm** to apply changes, or they are lost when closing the dialog.

Connected

Name

Local Preview

Type

Viz Engine ▼

Host

localhost

Port TCP (General communication port)

6100

Check connection every (ms)

10000

Send to

Global SMM Scene Local SMM

Connection mode

Auto ▼

SMM UDP

i 6100

SMM TCP

i 7100

Scene ID

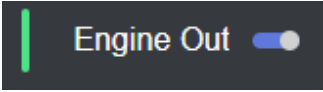
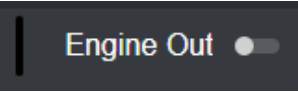
i #3152

Delete Confirm

After adding and configuring an Output, a connection is attempted.

5.5.3 Disable an Output

An output can be temporarily disabled by using the toggle next to its name in the Output list. When disabled, the output does not receive incoming data from Datacenter.

Enabled	Disabled
 The image shows a control panel for 'Engine Out' in an enabled state. On the left, there is a vertical green bar. To its right, the text 'Engine Out' is displayed in white. Further right is a blue toggle switch with a white circle on the right side, indicating it is turned on.	 The image shows a control panel for 'Engine Out' in a disabled state. On the left, there is a vertical black bar. To its right, the text 'Engine Out' is displayed in white. Further right is a grey toggle switch with a white circle on the left side, indicating it is turned off.

5.5.4 Viz Engine Output

To create an output of type Viz Engine, add a new output and click on the new entry.

On the dialog shown, select **Viz Engine** in the **Type** field, and fill all other fields as required:

The screenshot shows a configuration dialog for a 'Connected' output. The fields are as follows:

- Name:** Local Preview
- Type:** Viz Engine
- Host:** localhost
- Port TCP (General communication port):** 6100
- Check connection every (ms):** 10000
- Send to:** Global SMM (selected), Scene Local SMM
- Connection mode:** Auto
- SMM UDP:** 6100
- SMM TCP:** 7100
- Scene ID:** #3152

At the bottom of the dialog are two buttons: 'Delete' (red) and 'Confirm' (blue).

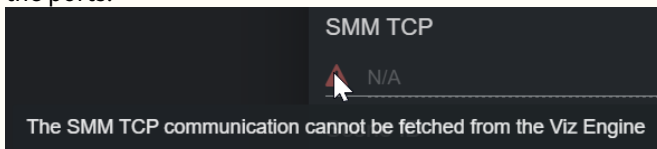
- **Name:** Name of the output that is displayed in the output list.

- **Type:** Output type, set it to Viz Engine.
- **Host:** Host address where the Viz Engine runs.
- **Port TCP (General Communication port):** The port used to communicate with Viz Engine. This must match the port specified in the [Viz Engine Configuration](#) under **Config > Communication > General Communication Port**.
- **Check connection every (ms):** Specifies how often the communication between the Viz Engine and Datacenter is health-checked.

Note: You can temporarily increase the value of the **Check connection every (ms)** field if the messages sent to Viz Engine appear too often in the Viz Engine console while trying to use it. However, leaving this setting to 1000 ms is strongly recommended to be able to timely detect potential connection issues.

- **Send to:** Toggle between communication done via **Global Shared Memory Map** (default, typically used with Control Objects) and **Scene Local Shared Memory Map** (typically used with Control Channels).
- **Connection mode:** Specifies the communication protocol to use when sending data to the Viz Engine:
 - **Auto:** Prefers UDP, but switch to TCP each time the packet size exceeds 1.5kB.
 - **UDP:** Use UDP, regardless of the packet size.
 - **TCP:** Use TCP, regardless of the packet size.
- **SMM UDP:** Read only and auto-populated field, is the port to use for data communication to the Viz Engine. Only available if **Connection mode** is set to **UDP** or **Auto**.
- **SMM TCP:** Read only and auto-populated field, is the port to use for data communication to the Viz Engine. Only available if **Connection mode** is set to **TCP** or **Auto**.
- **Scene ID:** Read only and auto-populated field. Only available if **Send to** is set to **Global SMM**.

Note: If any of the SMM ports are not correctly configured, a warning symbol is displayed next to the **SMM UDP/TCP** fields. If that is the case, please refer to the [Configuring Output](#) section to correctly configured the ports.

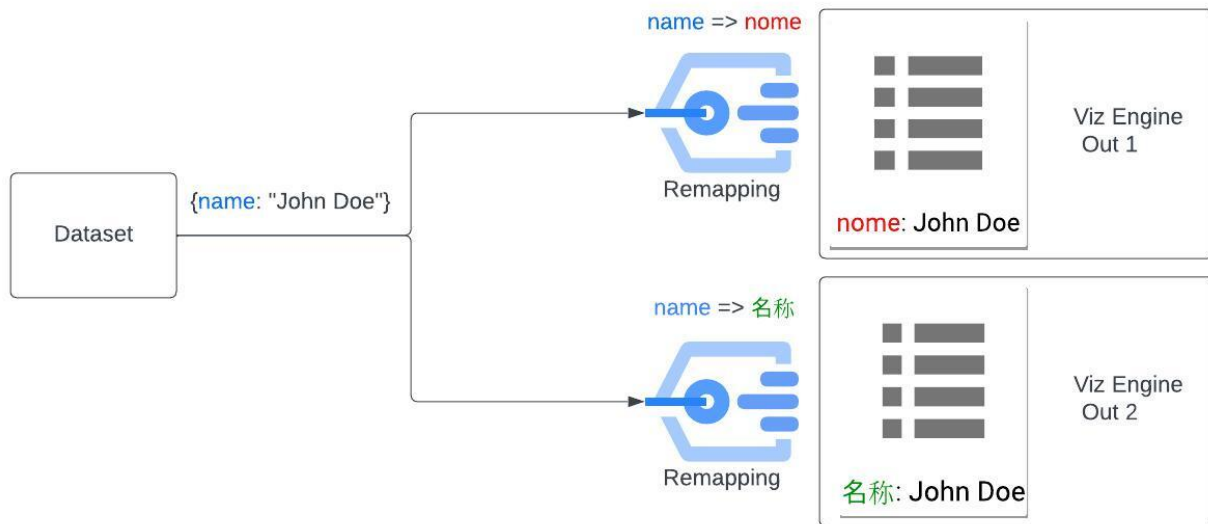


See Also

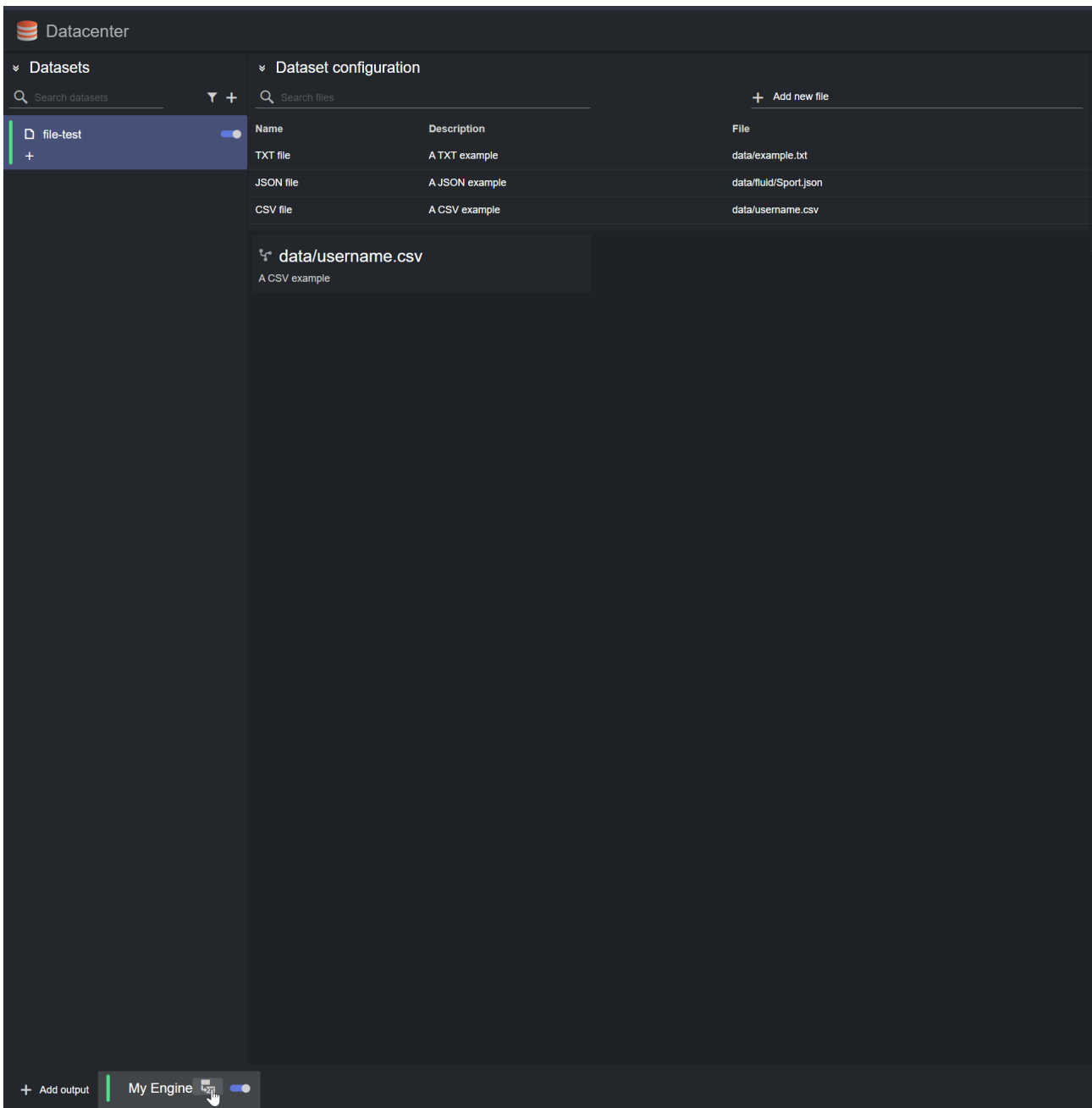
- To configure a Viz Engine to accept incoming data from Datacenter, please refer to the [Configuring Output](#) section.
- To prepare your Viz Engine scene to accept incoming data, please refer to [Prepare Scenes for Data Input in Viz Artist](#).

Custom Mapping of Dataset Keys

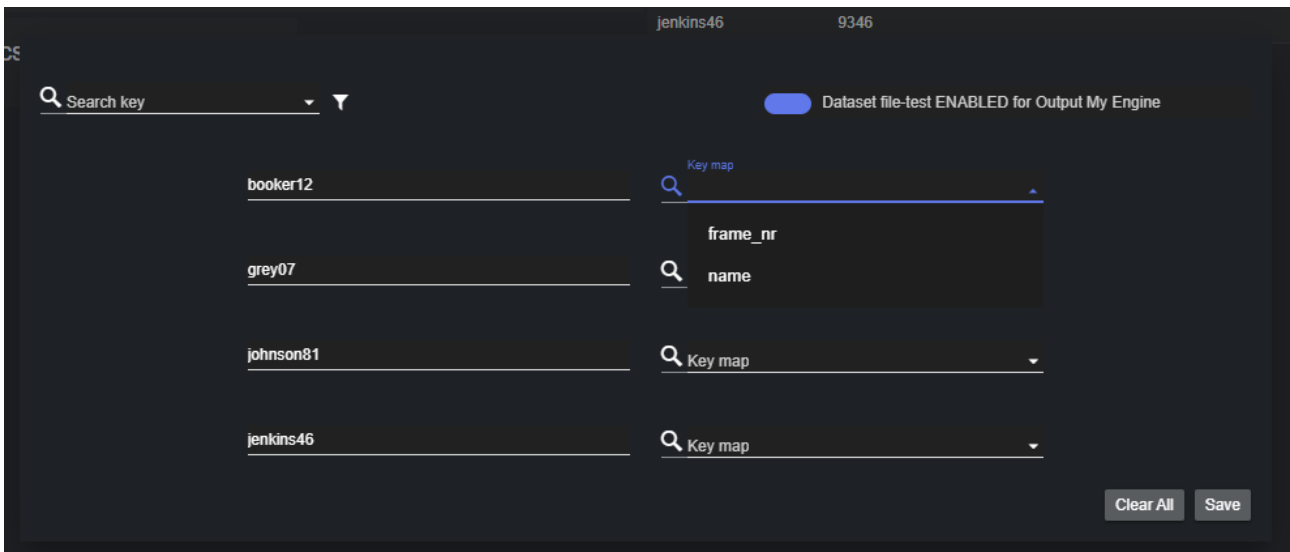
To facilitate matching input data with existing control channels/objects on a configured Viz Engine setup, Datacenter offers a way to intuitively map input entries keys to known Viz Engine channels/objects.



To do so, select a dataset from the **Datasets** panel, and click on the custom mapping icon on the Viz Engine output to edit:

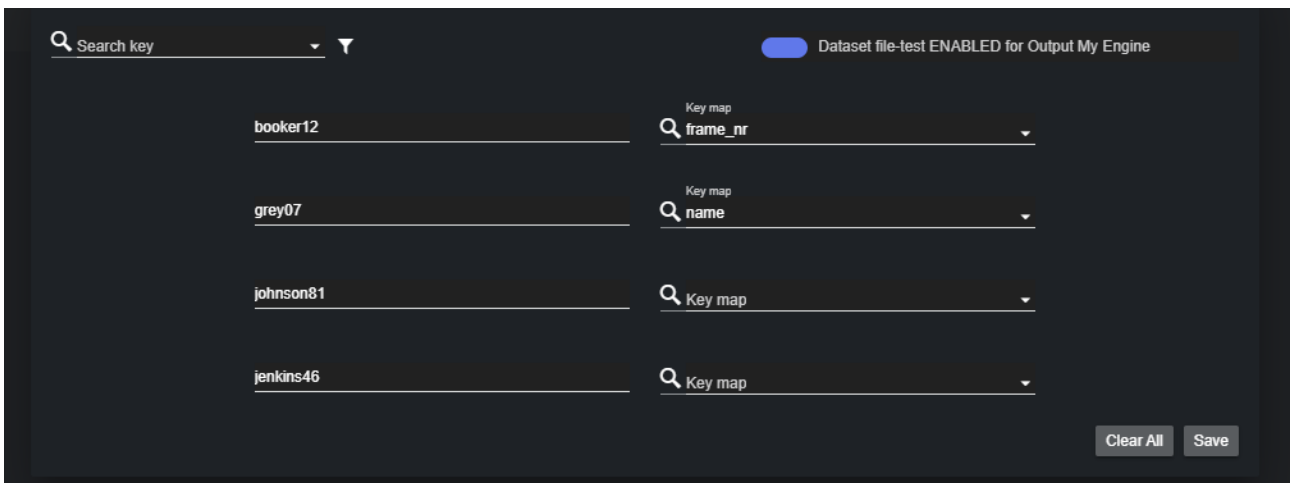


All current keys are listed in the dialog. There is a search box next to each key, to search for all the advertised control channels and control objects on the selected Viz Engine output.



In the example above, the input dataset "file-test" has four keys ("booker12", "grey07", "johnson81" and "jenkins46"), while the selected Viz Engine "My Engine", exposes two control channels/objects ("frame_nr" and "name").

You can now choose a custom mapping for any input key, by simply selecting a value from the right-side search-box:

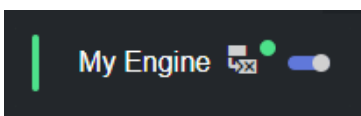


For example, the picture above shows the current custom mapping:

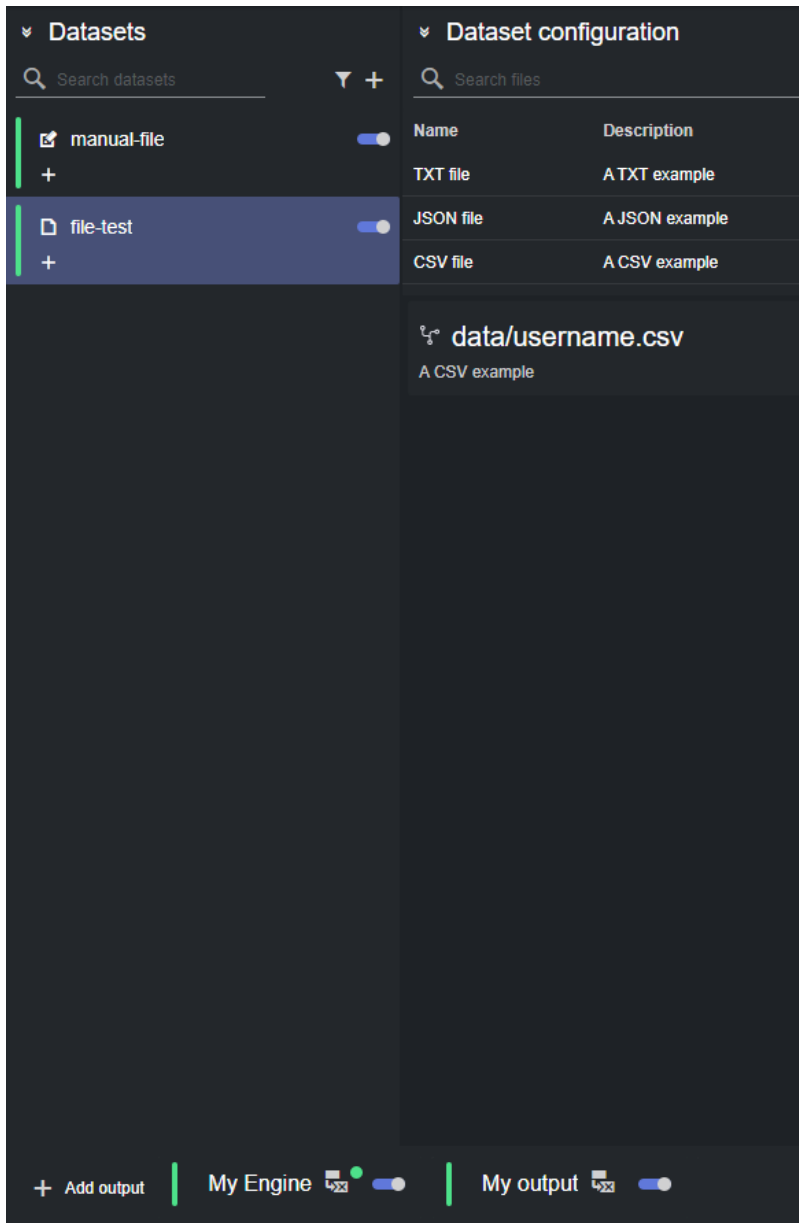
- booker12 → frame_nr
- grey07 → name
- johnson81 → johnson81
- jenkins46 → jenkins46

Click **Save** to apply the current mapping. **Clear All** resets the mapping to its default value (input keys not remapped).

When a custom mapping is applied to a dataset, selecting that dataset reveals a green dot next to the output name:



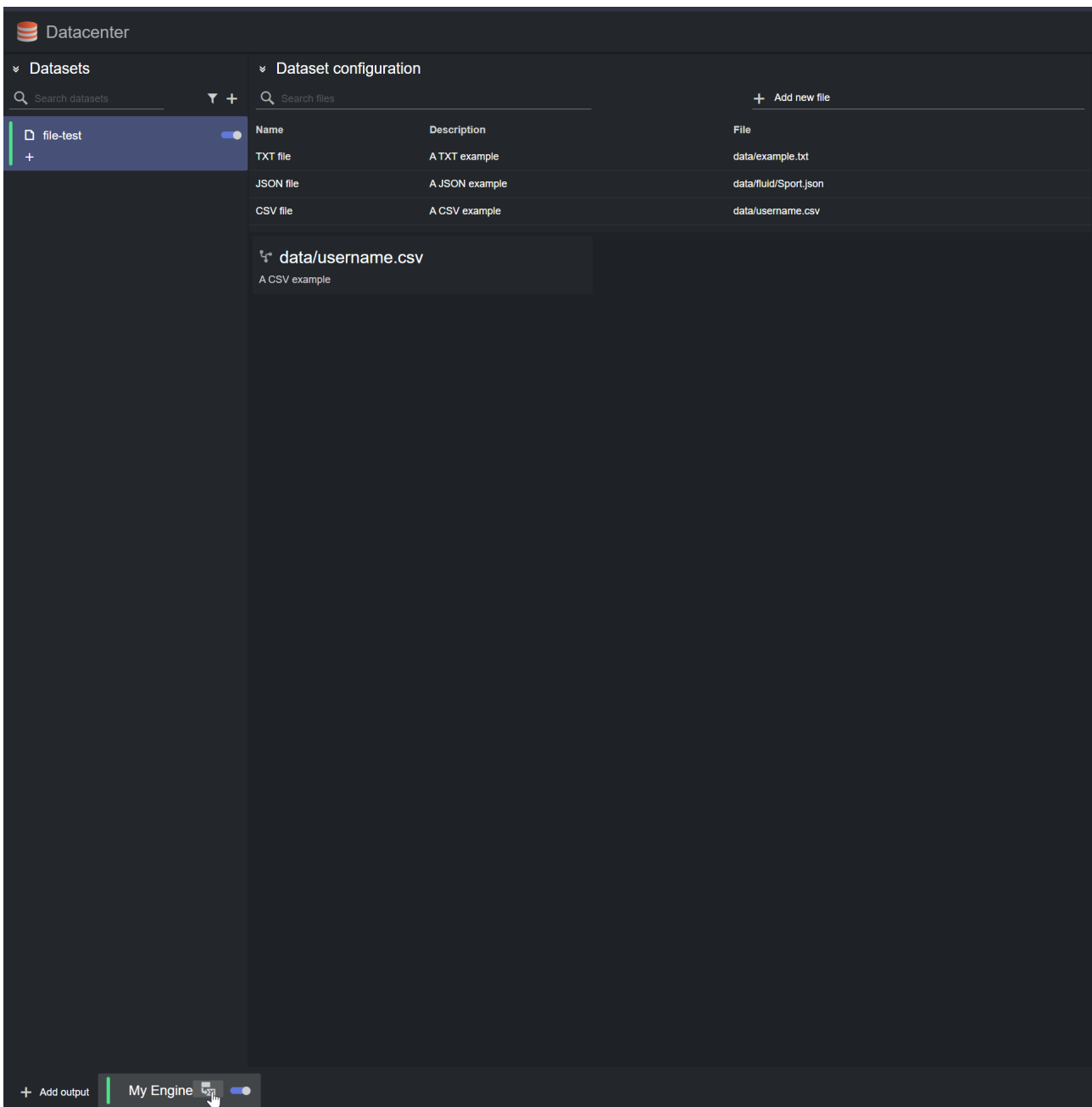
For example, the picture below shows the Dataset *file-test* with a custom mapping specified for the output *My Engine*, but **not** for the output *My output*.



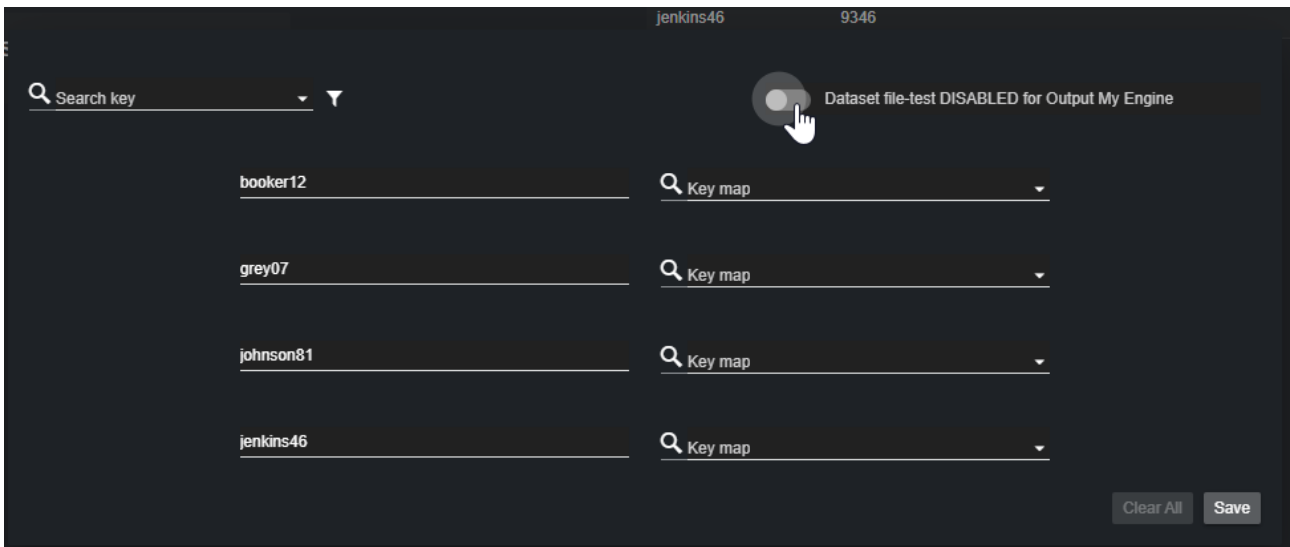
Disable Sending Dataset Entries for a Viz Engine Output

In certain setups, a specific dataset may not be required on a specific Viz Engine output. In these cases, sending all dataset entries can be disabled by using the [custom mapping of dataset keys functionality](#).

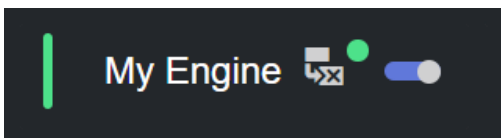
To do so, select a dataset from the **Datasets** panel and click on the custom mapping icon on the Viz Engine output to edit:



In the dialog that appears, switch the toggle in the right corner to **Dataset <dataset name> DISABLED for Output <output name>**, and press the **Save** button.



The output card should show a green dot, to signal that a custom mapping is specified for the selected Dataset:



From now on, updates to the entries of the selected dataset are not sent to the selected output.

Prepare Scenes for Data Input in Viz Artist

When working with a Viz Engine output, the scenes that receive live data from Datacenter, must be correctly prepared, depending on the communication option selected.

Global Shared Memory Map Communication via Control Objects

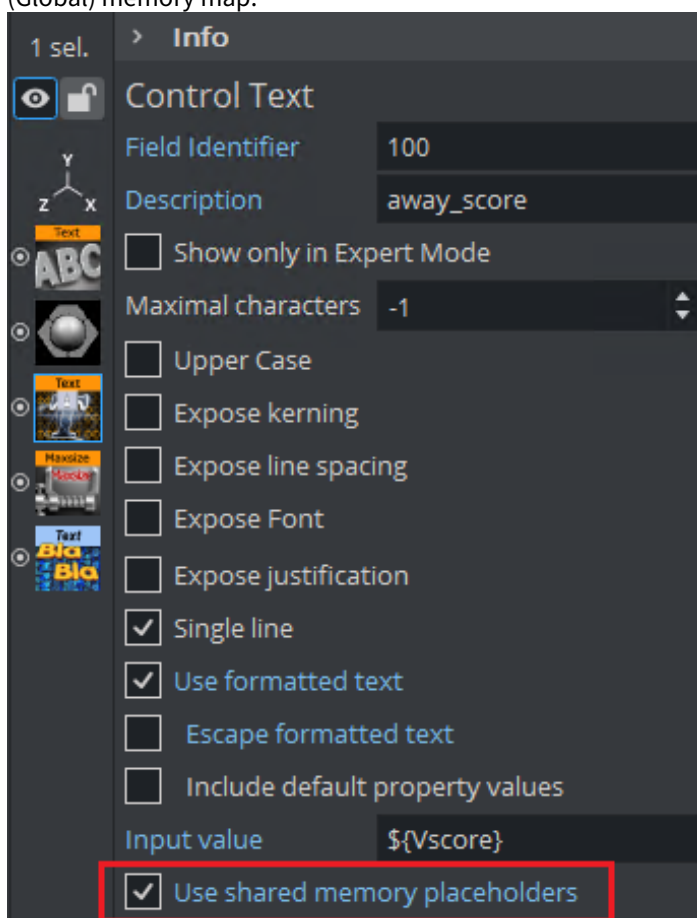
Control objects communication is the default option when creating a new [Viz Engine output](#).

For the communication to work, the Viz Engine scene must enable **Use shared memory placeholders** for the control plug-ins that are updated with data. The following control plugins support Global Shared memory placeholder out of the box:

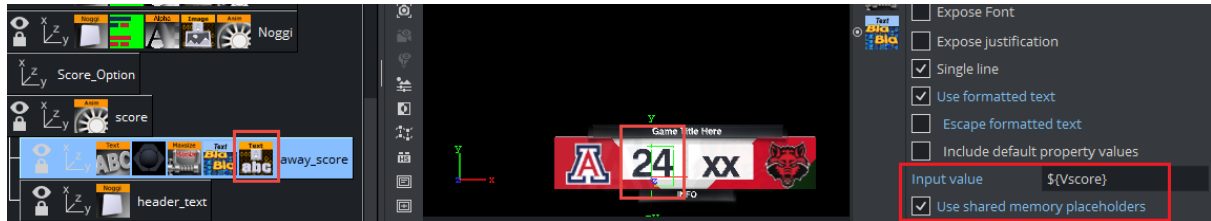
- ControlText
- ControlParameter
- ControllImage

To enable live data input from Datacenter:

1. Open the scene in **Viz Artist**.
2. Locate the control plugin for the field that should receive live input.
3. Check **Use shared memory placeholders**. Note that this enables listening for shared memory in the System (Global) memory map.



4. Set the **Input value** field to the *key* of the Datacenter dataset entry that should update this object, using the `${KEY_NAME}` syntax (in the example above the value would be updated with a dataset entry with key *Vscore*).
5. Save the scene.



Scene-local Shared Memory Map Communication via Control Channels

Control channels communication must be enabled on each Viz Engine output that uses it. To do so, click on the output you want to send data to and enable the **Control channels** toggle.

Connected

Name

Engine Out

Type

Viz Engine ▾

Host

localhost

Port

6100

Control channels

UDP

12000

Scene ID

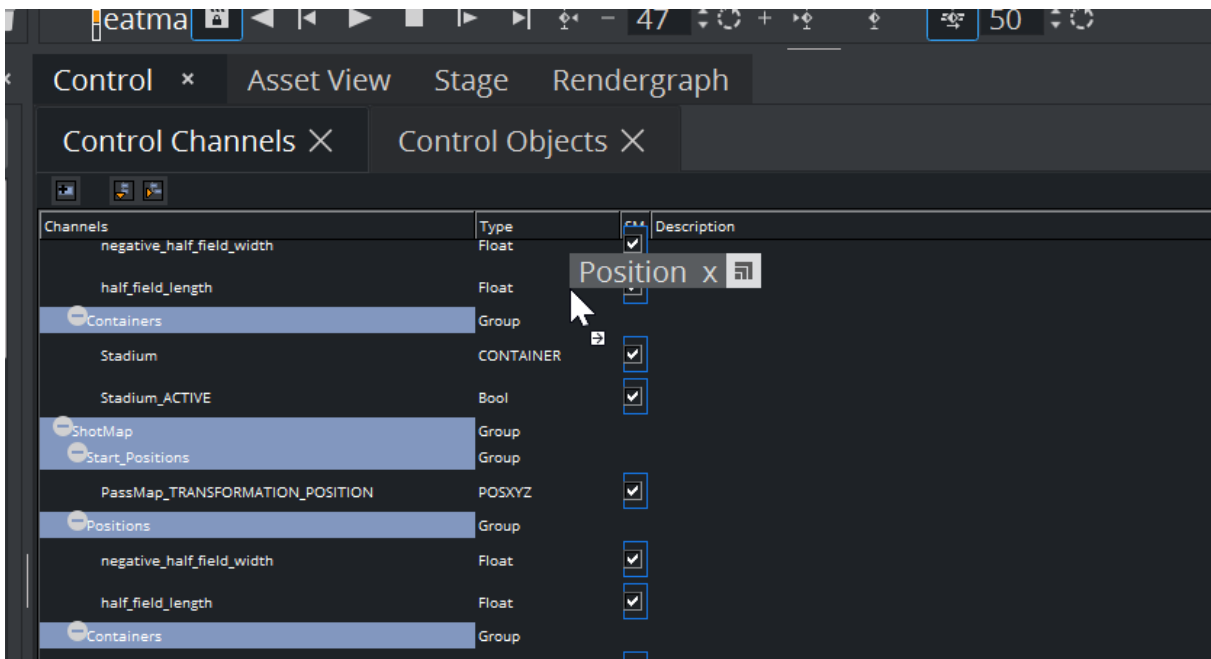
#1289

Delete Confirm

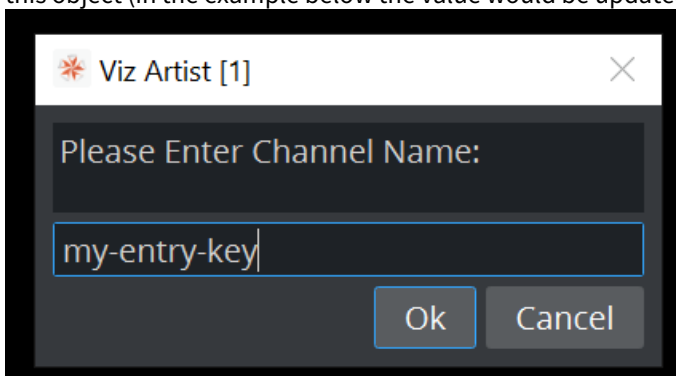
⚠ Scene ID Fetching: Make sure the scene is loaded in Viz Artist before connecting to Viz Engine, as the Output automatically fetches the Scene ID of the main scene. Should there be an error reported in the **Scene ID** field, or should you change the scene in Viz Artist after having connected to it, please temporarily disable and re-enable the output to force a new scene ID fetch.

Then, to enable live data input from Datacenter:

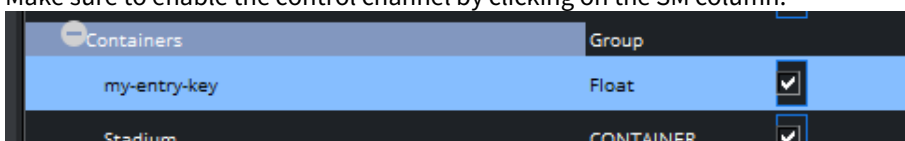
1. Open the scene in **Viz Artist**.
2. Locate the container that should receive live input, and the container field that should be updated with data from the Datacenter.
3. Drag the field in the Control Channels panel of Viz Artist.




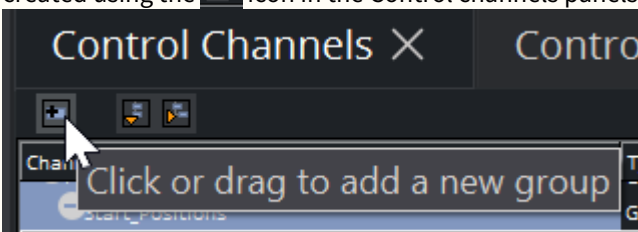
4. In the dialog that appears, set the Control Channel name to the *key* of the dataset entry that should update this object (in the example below the value would be updated with a dataset entry with key *my-entry-key*).



5. Make sure to enable the control channel by clicking on the SM column.



⚠ Control Channel Groups: Control channels in Viz Engine can be organized in Groups. Groups can be created using the  icon in the Control channels panels.



To access a control channel inside a group one must use the '.' delimiter. For example, the *my-entry-key* channel in the example below can be accessed using the following SHM key: *Containers.my-entry-key*.



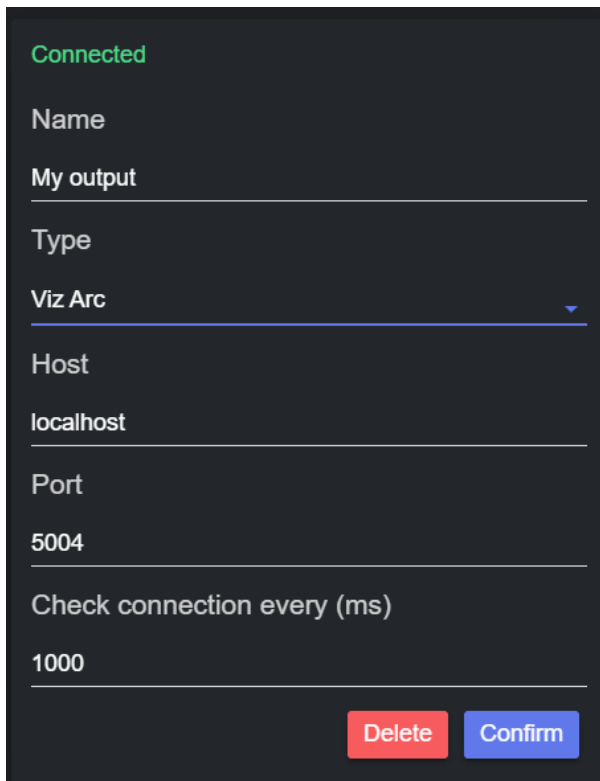
Containers	Group	
my-entry-key	Float	<input checked="" type="checkbox"/>

This property is particularly useful when flattening data in a Datacenter dataset. By setting the flattening delimiter to '.', one can organize the control channels to reflect the flattened data structure.

5.5.5 Viz Arc Output

To create an output of type Viz Arc, add a new output and click on the new entry.

On the dialog shown, select **Viz Arc** in the **Type** field, and fill all other fields as required:



The screenshot shows a dark-themed dialog box titled "Connected" in green text. It contains several input fields and a dropdown menu. The fields are: "Name" with the value "My output"; "Type" with a dropdown menu showing "Viz Arc"; "Host" with the value "localhost"; "Port" with the value "5004"; and "Check connection every (ms)" with the value "1000". At the bottom right, there are two buttons: a red "Delete" button and a blue "Confirm" button.

- **Name:** Name of the output that is displayed in the output list.
- **Host:** Host address where Viz Arc runs.
- **Port:** The port to connect to.
- **Check connection every (ms):** Specifies how often the communication between Viz Arc and Datacenter is health-checked.

To learn more about configuring Viz Arc to accept incoming data from Datacenter, please refer to the [Configuring Output](#) section of this manual.

5.5.6 Generic TCP Output

To create an output of type Generic TCP, add a new output and click on the new entry.

On the dialog that appears, select **Generic TCP** in the **Type** field, and fill all other fields as required:

Waiting to connect

Name
My output

Type
Generic TCP

Host
localhost

Port
6150

Delete Confirm

- **Name:** Name of the output and that is displayed in the output list.
- **Host:** Host address.
- **Port:** The port to connect to.

A generic TCP output sends the data entries with the following format:

```
{
  "type": "data",
  "payload": {
    "key": "entry_key",
    "value": "entry_value"
  }
}
```

A ping packet is also sent regularly to test the connection. This packet can be ignored by the receiver:

```
{
  "type": "ping",
  "payload": null
}
```

A TCP output is used to send data to Viz Libero. To learn more about configuring Viz Libero to accept incoming data from Datacenter, please refer to the [Configuring Output](#) section of this manual.

6 Alternative Views

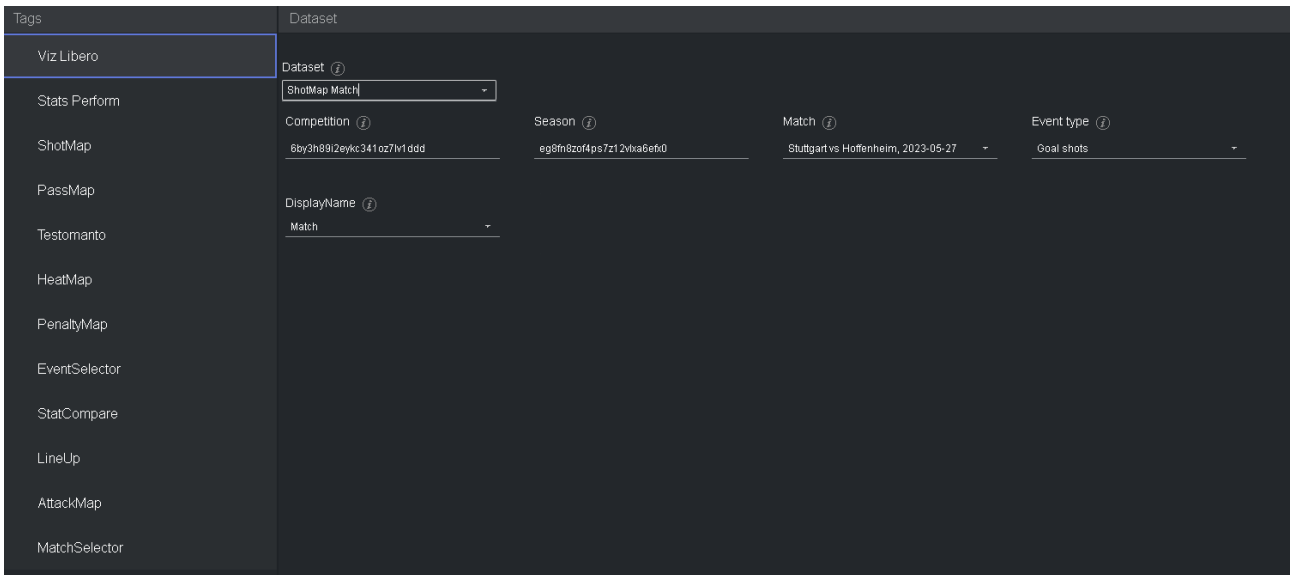
Datacenter can be run in "simplified" mode, where some of its panels are hidden to create a focus view, or information relevant for a certain integration (for example, integration with Viz Libero) is shown.

This section goes through the simplified views supported by Datacenter, each accessible via a unique URL:

- [Simple Page](#)
- [Configurable Page](#)

6.1 Simple Page

The simple page is accessible via `<datacenter_url>/simple` (for example, <http://127.0.0.1:5700/simple>), and provides a minimalistic UI that allows the selection of endpoints through the pre-configured tags (see [Creating Datasets](#)).



Tags can be selected directly through the UI or passed as an argument in the URL (for example, <http://127.0.0.1:5700/simple?tags=Viz%20Libero,ShotMap>).

If the tags are passed in the URL, the **Tags** column is not shown and only datasets relevant for the given tags are available for selection. If, given the tag filtering, only one dataset is available, it is automatically selected.

It is possible to only show licensed datasets in the simple page. This can be done by passing the parameter *licensedonly* in the URL (for example, <http://127.0.0.1:5700/simple?licensedonly> or <http://127.0.0.1:5700/simple?tags=Viz%20Libero,ShotMap&licensedonly>).

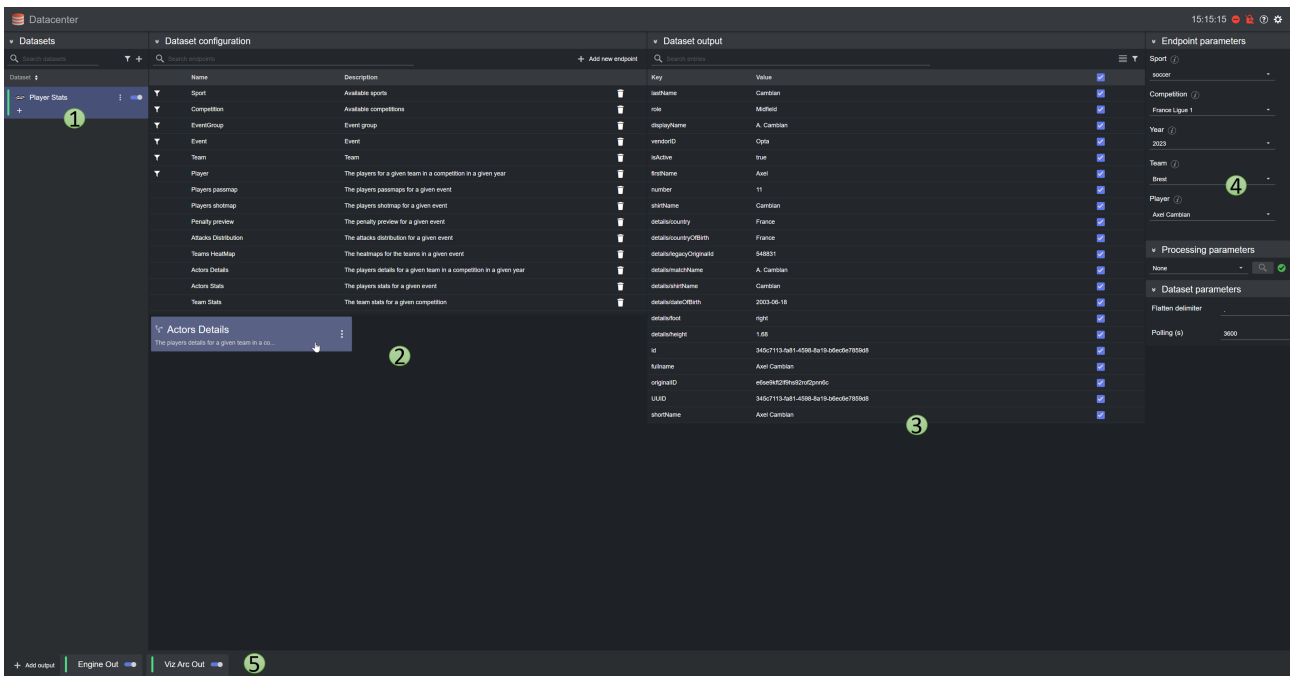
6.2 Configurable Page

The configurable page is accessible via `<datacenter_url>/?components=<ComponentsCommaSeparatedList>` (for example, <http://127.0.0.1:5700/?components=DatasetPanel>), and gives the option to create configurable views that can, for instance, improve focus or remove unnecessary panels from the main UI for a given workflow.

The available configurable components are:

1. Dataset Panel
2. Dataset Edit Panel
3. Dataset Entries Panel
4. Properties Panel
5. Outputs Panel

They must be specified as a comma separated list argument to the `?components` query element, representing respectively:



For example, the <http://127.0.0.1:5700/?components=DatasetPanel,DataEntriesPanel> creates a simplified view where only the configured datasets and their data entries are shown:

The screenshot shows the Datacenter application interface. On the left, there is a sidebar with a 'Player Stats' menu item. The main area is titled 'Dataset output' and contains a table with two columns: 'Key' and 'Value'. Each row in the table has a small blue icon to its right. The table lists various player attributes and their corresponding values.

Key	Value
lastName	Carlsen
no	148166
playerName	A. Carlsen
playerID	1076
isActive	True
firstName	And
number	11
playerName	Carlsen
playerCountry	France
playerCountryID	France
playerCountryOriginal	548331
playerCountryName	A. Carlsen
playerShortName	Carlsen
playerStatusID	2023-06-18
playerShort	1971
playerHeight	1.88
ID	346c7115-5ab1-4588-8a13-066cbe7959d8
fullName	And Carlsen
originalID	4946b202a280c02999d8
UID	346c7115-5ab1-4588-8a13-066cbe7959d8
shortName	And Carlsen

7 Third-Party Licenses

If required by any of these licenses, Vizrt Inc. provides the source code and/or binaries used in the respective product.

If you have any queries regarding third party components, please contact Vizrt at orange@vizrt.com.

This section contains information about the following third party software licenses:

- [ASP.NET Core](#)
- [Confluent Kafka for .NET](#)
- [Coverlet](#)
- [JUnitTestLogger](#)
- [moq4](#)
- [NJsonSchema for .NET](#)
- [Node.js](#)
- [npm](#)
- [Sep](#)
- [Serilog](#)
- [Serilog Graylog Sink](#)
- [SportzCast Library](#)
- [Vite](#)
- [WixSharp](#)
- [xunit](#)

7.1 ASP.NET Core

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7.2 Confluent Kafka for .NET

Version 2.0, January 2004

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=== src/compat.h src/compat-inl.h ===

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7.9 Sep

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