



# TIBCO Flogo® Enterprise

## Release Notes

Version 2.24.0 | March 2024



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# New Features

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This section lists features that have been added since the last major release of TIBCO Flogo® Enterprise.

**!** **Important:** Starting from version 2.17.0, connector information is documented in the *TIBCO® Cloud Integration Release Notes* only. For the latest information on connectors, see [TIBCO® Cloud Integration Release Notes](#).

## Release 2.24.0

### New Flow limit functionality

As a part of the smart engine feature, we have launched Flow limit functionality. This is to better manage the incoming requests on trigger. To enable this feature, you have to set the new environment variable `FLOGO_FLOW_CONTROL_EVENTS` as true.

**i** **Note:** This feature is currently supported by the following connectors:

- Apache Pulsar
- Apache Kafka
- TIBCO Cloud Messaging (eFTL)

For more information, see [Flow Limit](#).

### New environment variables

The following environment variables have been introduced:

- `FLOGO_FLOW_CONTROL_EVENTS`: Used to enable the Flow limit functionality, which improves the process of controlling incoming requests on the trigger.
- `FLOGO_MAX_STEP_COUNT`: Used to limit the number of requests an application might process.
- `FLOGO_EXPOSE_SWAGGER_EP`: If you set this property to True, the swagger endpoint is



exposed.

For more information, see [Environment Variables](#).

### **Detached Invocation toggle for the StartaSubFlow Activity**

If you want to run certain events in the main flow without waiting for the subflow to complete its execution, you can do this using the **Detached Invocation** toggle on the **Settings** tab of the **StartaSubFlow** Activity. When you set this **Detached Invocation** toggle to true, the **Output** option is not available in the **StartaSubFlow** Activity window, and without waiting for the subflow output, the main flow is run.

For more information, see [Creating a subflow](#).

### **New mapper JSON function**

The new function **json.jq** applies a query to the parsed JSON object and returns a filtered array.

For more information, see [JSON.jq function](#).

### **Skip an activity in Unit Testing**

You can skip a particular activity in unit testing if that activity does not have any outputs.

For more information, see [Skipping an activity with no output](#).

## **Release 2.23.0**

### **New environment variables**

The following environment variables have been introduced in this release:

- **FLOGO\_MAPPING\_OMIT\_NULLS**: Used to omit all the keys in the input of an activity which evaluate to null. The default is True.
- **FLOGO\_LOG\_ACTIVITY\_LEVEL**: Used to control the log level of all log activities in a given app. The default is INFO.

For more information, see [Environment Variables](#).

### **Specifying the request schema for the DELETE method**

In the ReceiveHTTPMessage trigger and the InvokeREST Service, the DELETE operation now supports the use of body with app/json as the request type. You can specify the request schema and pass the body to delete the endpoint.

Specifying the request schema for the DELETE method is supported for manual configuration only and not when configured with TIBCO Cloud Mesh and API specification.

For more information, see [InvokeRESTService](#) and [REST Trigger - ReceiveHTTPMessage](#).

### **Response time of InvokeRESTService activity on the activity output**

The time taken by the InvokeRESTService activity to receive the response is displayed in the `responseTimeInMilliSec` parameter of the Output tab.

For more information, see [InvokeRESTService](#).

### **Moving tabs**

You can now move a tab to the left or right of any existing tab. Only opened and appended tabs can be moved to the tabs section. The moving of tabs is applicable for the current instance only.

For more information, see [Switching Between Flows in an App](#).

### **Ability to add a new activity between two activities**

You can now add a new activity between two activities by directly dropping the activity from the panel on the branch label between the two activities. You need not delete the incoming and outgoing connections and reconnect them.

For more information, see [Adding an Activity](#).

## **Release 2.22.0**

### **Ability to add Notes**

Added support for creating Notes for the Flows, Activities, and Triggers. For more information, see [Using Notes](#).

### **Coloured branch lines**

The branch lines are now indicated by different colors depending on the condition applied. For more information, see [Setting Branch Conditions](#).

### **Open Subflow icon**

Added support to open any subflow configured using the Open Subflow icon on the StartaSubflow activity. For more information, see [Creating Subflows](#).

### **Multiple flow tabs**

Added support to open and work with multiple flows in the same Flow designer browser tab. For more information, see [Switching Between Flows](#).

### **'Close connection' field in Invoke Rest Service activity**

In the Settings Configuration window of the InvokeRESTService activity, you can use the newly added Close Connection field to terminate the connection to the server after the response is processed. For more information, see [InvokeRESTService](#).

### **Passing multiPartFormData in the InvokeRESTService activity**

Added support to pass multiPartFormData dynamically in the InvokeRestService activity without defining any data in the multipart Data table. For more information, see [InvokeRESTService](#).

### **Monitoring app metrics using OpenTelemetry**

Added support to monitor the Flogo app metrics using OpenTelemetry. For more information, see [OpenTelemetry Collector](#).

### **Mapping of unmapped arrays**

Added support for the mapping of unmapped arrays. You can now configure the array using the source array, the items or the JSON array using the first class forEach screen. For more information, see [Mapping of unmapped arrays](#).

### **Mapping of Enum values**

Added support to select the Enum values using a dropdown available on the Input tab. For more information, see [Mapping an Enum value](#).

## **Release 2.21.0**

### **Flogo app creation**

Added support for creating TIBCO Flogo apps directly from the TIBCO Cloud Integration - API Modeler user interface. For more information, see [Using an OpenAPI Specification](#).

### **Linking activities**

You can now link activities on the main branch or any other branch from the conditional branch.

### **Flow Revamp**

The flow designer has been revamped to provide enhanced flexibility and new advanced features, such as branch merging. For more information, see [Flows](#).

## Release 2.20.0

### **Enhanced configurations of Opentelemetry for Flogo applications.**

You can now encrypt base64 encoded certificate values by using either the TIBCO Cloud™ Integration platform API or the app executable.

For more information, see [Enabling Tracing for OpenTelemetry Collector](#).

### **Improved AWS connection details.**

The AWS connection now supports the default AWS credentials provider chain with the authentication type as **Default credentials**.

For more information, see [AWS Connection Details](#).

### **Run all unit test cases and suites.**

If the test cases and suites are enabled, you can run the following tests:

- All unit test cases using **Run all Test Cases**. For more information, see [Running a test case](#).
- All unit test suites using **Run all Test Suites**. For more information, see [Running a Test Suite](#).

### **Mock data in unit testing.**

In unit testing, you can mock the data for the unit that is being tested.

For more information, see [Using Mock Data](#).

## Release 2.19.0

### **Unit Testing**

You can now run Unit Testing at any phase of the development cycle to verify whether activities in the flow are working as expected.

For more information, see [Unit Testing](#).

### **Create Array in Mapper**

In the mapper, you can create a new primitive or object array of size N.

For more information, see [Add Items to Array](#).

### **Improved App Properties Creation**

With an enhanced app properties feature, you can now drag the groups from one location to another.

For more information, see [Creating a Group](#).

### **Enhanced AWS AppConfig feature**

If you are using temporary credentials to connect to AWS AppConfig services, then you can even configure a session token.

For more information, see [AppConfig Client Configuration](#).

### **Remote App Management for on-premise Flogo Apps**

With the API, you can export the JSON file for a Flogo app from a running instance. At least one app instance must be running to use this feature. The artifact can be used to create apps in another organization.

For more information, see [Exporting a TIBCO Flogo App with the API](#).

## **Release 2.18.0**

### **Support for AWS AppConfig**

You can now use AWS AppConfig along with a Flogo app. You can use AWS AppConfig to configure, manage, and quickly deploy Flogo app configurations.

For more information, see [AWS AppConfig](#).

### **Support for object type as a query parameter**

The InvokeRESTService Activity now supports the object type as a dynamic query parameter. Only a simple JSON object type is supported.

For more information, see [InvokeRESTService](#).

### **UI revamp of app properties**

The revamped UI of app properties provides an improved user experience while working with app properties.

For more information, see [App Properties](#).

## Enhancements to HTTP Client Authorization Connection

- If you select **OAuth2** as the **Authorization Type**, you can now specify a unique identifier of the audience for an issued token. The audience value is an app client ID for an ID token or the API that is called for an access token. Support for app properties in HTTP Client Authorization Connection
- App property support has been added to the Auth URL and Access Token URL fields of HTTP Client Authorization Connection.

For more information, see [HTTP Client Authorization Configuration](#).

## Integration with TIBCO Cloud™ API Modeler

Flogo can now be used along with TIBCO Cloud™ API Modeler, a new version of the API Modeler. This version is an easy and powerful web-based tool that allows you to graphically create and model APIs.

For more information on TIBCO Cloud™ API Modeler, see [TIBCO Cloud™ API Modeler](#).

# Release 2.17.0

## TIBCO Flogo Enterprise Core

### Support for ECMAScript 6-compatible functions

The Execute JavaScript Activity now supports ECMAScript 6-compatible functions.

For more information, see [Execute JavaScript](#).

### Reading Traceld and SpanId from context

You can now read Traceld and SpanId from the app request context using \$flowctx.

For more information, see [Scopes in Data Mappings](#).

### Improved user experience for creating and importing an app

TIBCO Cloud™ Integration now provides an improved and unified experience for creating and importing an app.

For more information, see [Creating an app](#) or [Importing an app](#).

# Release 2.16.0

## TIBCO Flogo Enterprise Core

### Set-Cookie Header in InvokeRESTService Output

For the InvokeRESTService Activity, the Set-Cookie header is now available in the output headers.

### Improved User Experience While Importing an App

A completely revamped user experience for importing an app has been introduced in this release. You can now use a drop-down list and the **Search** field to narrow down the flows, triggers, and connections displayed.

For more information, see [Importing an App](#).

### Timer Trigger Enhancements

- Use the Timer Trigger to set a cron job that executes a flow at fixed times, dates, or intervals. You can build a cron expression manually or use the Cron Expression Builder provided.
- When running a flow multiple times at a specified interval, you can now delay the first execution of the flow using the **Delayed Start** option. Subsequent runs of the flow are triggered at the scheduled time interval.

For more information, see [Timer Trigger](#).

### Additional Trigger Output Parameters in REST Trigger

For the ReceiveHTTPMessage trigger, on the **Map to Flow Inputs** tab, the requestURI and method trigger output parameters are now available for mapping.

**NOTE:** For existing triggers, you must click **Sync Schema** to make the requestURI and method parameters available to the flow input.

### Support for PATCH Method in REST Trigger

The ReceiveHTTPMessage REST trigger now supports the HTTP PATCH method.

For more information, see [REST Trigger](#).



## Additional Flow Details in Mapper

Flow details such as current flow name, ID, whether the flow is called as a sub flow, parent flow name, and parent flow ID are now available in the mapper. These details can be used for logging as well as Activity mappings.

For more information, see [Scopes in Data Mappings](#).

## New Mapper Functions

The following mapper functions are included under the Data category:

- **GetValue:** Gets the value of the function from the mapper reference. When undefined, the default value is used.
- **isDefined:** Checks whether the mapping reference is available and returns a True or False response.

## Support for Configuring a Server or CA Certificate in SendMail Activity

When a secure connection type is set to SSL, you can now upload a server or CA certificate to be used for the SSL connection.

For more information, see [SendMail Activity](#).

# TIBCO Flogo Connector for PostgreSQL

The connector now supports connectivity to Greenplum and Amazon Redshift.

## Release 2.15.0

# TIBCO Flogo Enterprise Core

## Enhanced Data Mapper

- The Flogo Data Mapper has a redesigned user interface based on a drag-and-drop experience and visual data linking. This new data linking view makes it easier to quickly see what data is mapped and where the data is going in the target datastore.

- You can now do conditional data mapping by using if/else conditions. The if/else statements are used to execute blocks of code based on the specified conditions.

For more information, see [Data Mappings](#).

### **Enhanced Monitoring**

A new component, TIBCO Flogo® Flow State Manager, has been introduced. Use this component along with the TIBCO Flogo® Enterprise Monitoring application to collect information about the state of all executed flows of a Flogo app. The details are displayed on the TIBCO Flogo® Enterprise Monitoring dashboard.

For more information, see [Monitoring](#).

### **Connecting to On-Premises Systems Using Flow Tester**

The Flow Tester now allows you to test apps that connect to on-premises systems by selecting the **Using on-premise services** check box.

For more information, see [Creating and Using a Launch Configuration](#) and [Configuring a Launch Configuration](#).

### **Deploying an App in Knative**

You can now create and deploy a Flogo app as a Knative service.

For more information, see [Deploying a Flogo App in Knative](#).

### **Tracing Apps by Using OpenTelemetry Collector**

You can now capture traces from your Flogo app by using OpenTelemetry Collector and send them to observability vendor tools such as Jaeger, Zipkin, and Datadog.

For more information, see [Tracing Apps by Using OpenTelemetry Collector](#).

### **Changing Log Level of Running App Instance**

You can now change the log level of a running app instance without restarting the app by using the GET and PUT curl commands.

For more information, see [Changing the Log Level of a Running App Instance](#).

### **Automatic migration of contribution models to latest versions**

For existing apps, if a new field is introduced in the latest contribution version, the contribution is now automatically upgraded. In prior releases, you had to export and re-import the app to see the changes in the contribution.

For more information, see [Auto-Upgrade of Activities, Triggers, and Connections](#).

### **New function in JSON category**

In the JSON category, a `json.exists` function has been introduced to the mapping functions. This function checks whether a key exists in a specified JSON object. The key can be a JSONPath expression and the function returns `true` if the expression evaluates to `true`.

### **Automatically updated mappings**

When an upstream Activity or app property is renamed, all the mappings are now automatically updated to use the new name of the Activity or app property.

## **TIBCO Flogo Connector for TIBCO Cloud Messaging**

### **Maximum Unacknowledged Messages**

With the upgraded TIBCO Cloud™ Messaging software development kit (SDK), you can now specify the maximum number of unacknowledged messages allowed for a client by using the **Max Pending Acks** field in the **TIBCO Cloud Messaging eFTL Connection** dialog box.

### **Configuring App Property**

In the eFTL Message Subscriber Trigger, you can now configure an app property for the **Content Matcher** field to filter messages.

## **TIBCO Flogo Connecto For Microsoft SQL Server**

- The **Query Timeout** field has been added in all the activities.
- The connector now certifies **Call Procedure and Call Functions** support with all the activities.

## **TIBCO Flogo Connector for Apache Kafka**

The **Partitioner** field has been added in the Kafka Producer Activity.

## Release 2.14.1

### TIBCO Flogo Enterprise Core

No new features have been introduced in this release of TIBCO Flogo® Enterprise.

## Release 2.14.0

### TIBCO Flogo® Enterprise Core

#### New activities

The following activities are introduced in this release:

- **ReplyToTrigger Activity:** Use this Activity to map output values and send a response back to the trigger without ending the execution of the flow. See [ReplytoTrigger](#).
- **ProtobufToJSON Activity:** Use this Activity to convert protocol buffer messages to JSON format. See [ProtobufToJSON](#).
- **NoOp Activity:** Use this Activity to create branches in a flow without performing any other operation. See [No-Op](#).

#### New triggers

The following triggers are introduced in this release:

- **App Startup trigger:** Use this trigger to execute flows before starting the app engine. See [App Startup Trigger](#).
- **App Shutdown trigger:** Use this trigger to execute flows before the app engine is gracefully shut down. See [App Shutdown Trigger](#).

#### New Functions

The following functions are introduced in this release:

- New category, URL:

- `url.encode`
- `url.escapedPath`
- `url.hostname`
- `url.path`
- `url.pathEscape`
- `url.port`
- `url.query`
- `url.queryEscape`
- `url.scheme`
- **JSON ()**
  - `json.get`
  - `json.length`
  - `json.encodeNumbersToString`
  - `json.objKeys`
  - `json.objValues`
  - `json.set`

### **Support for Mutual TLS**

The `InvokeRESTService` Activity now supports mutual TLS (client certificate and client key). You can either select a certificate or configure an app property for these fields. See [InvokeRESTService](#).

### **Overriding an app property value in the Flow Tester**

You can now override app property values in the launch configuration of the Flow Tester. To override properties defined in the app and those defined in a connection, go to **Mapping settings > properties**. See [Configuring a Launch Configuration](#) and [Overriding an App Property Value While Testing a Flow](#).

### **Mapper Support on the “Retry on Error” tab**

On the **Retry on Error** tab of an Activity, you can now map elements in the schema by using the mapper or enter values for the element in the mapper directly. See [Using the Retry on Error Feature in an Activity](#).

### **Deploying a Flogo App to Microsoft Azure Functions**

After you have designed a Flogo app or imported an existing app, you can now deploy it to Microsoft Azure Functions. See [Deploying a Flogo App to Microsoft Azure Functions](#).

### **Support for \$loop.index in foreach array mapping**

Starting from this release, you can include `$loop.index` in the array mapping of the `foreach()` method to get the current index.

## **TIBCO Flogo Connecto For Microsoft SQL Server**

The following features have been added in this release of TIBCO Flogo® Connector for Microsoft SQL Server.

- TIBCO Flogo® Connector for Microsoft SQL Server now supports Connection TCP Timeout.
- TIBCO Flogo® Connector for Microsoft SQL Server now supports app property override for certificates.

## **TIBCO Flogo Connector for Oracle MySQL**

In this release of TIBCO Flogo® Connector for Oracle MySQL, the support for Connection TCP Timeout has been added.

## **TIBCO Flogo Connector for PostgreSQL**

The following features have been added in this release of TIBCO Flogo® Connector for PostgreSQL.

- TIBCO Flogo® Connector for PostgreSQL now supports Connection TCP Timeout.
- TIBCO Flogo® Connector for PostgreSQL now supports app property override for certificates.

## TIBCO Flogo Connector for WebSockets

### Auto reconnect

The WebSocket Subscriber trigger reconnects automatically to the WebSocket server in an event of a connection failure. You can specify auto reconnect attempts and auto reconnect maximum interval by using the following fields:

- `AutoReconnectAttempts`
- `AutoReconnectMaxDelay`

For more information, see the "WebSocket" section in *TIBCO Flogo® Enterprise Activities, Triggers, and Connections*.

## Release 2.13.0

## TIBCO Flogo Enterprise Core

### File support

ReceiveHTTPMessage REST trigger and InvokeRESTService Activity now support `multipart/form-data` and `form-urlencoded` request types to handle file support.

For more information, see "REST Trigger - ReceiveHTTPMessage" and "InvokeRESTService" in *TIBCO Flogo® Enterprise Activities, Triggers, and Connections*.

### Move branches within a flow

You can now move branches and their respective activities from an Activity to another within a flow by selecting and dragging the branch across the flow designer.

For more information, see "Moving Branches" in *TIBCO Flogo® Enterprise User Guide*.

### **Execute Javascript Activity**

This release introduces a new Activity, Execute JavaScript, to execute Javascript code.

For more information, see "Execute JavaScript" in *TIBCO Flogo® Enterprise Activities, Triggers, and Connections*.

### **Application tags**

You can now define custom tags for your Flogo apps. These tags are preserved even when an app is imported or exported.

For more information, see "Using App Tags" in *TIBCO Flogo® Enterprise User Guide*.

### **Automatic generation of manifest.json file**

When an app is created, the `manifest.json` file is now automatically generated in the `<FLOGO_HOME>/apps/<app>/` directory.

For more information, see "Creating an App" and "Editing an App" in *TIBCO Flogo® Enterprise User Guide*.

## **TIBCO Flogo Connector for WebSockets**

TIBCO Flogo® Connector for WebSockets is added to send and receive messages over a WebSocket connection. This connector provides the following out-of-the-box activities and triggers:

- WebSocket Server trigger
- WebSocket Subscriber trigger
- WebSocket Client Activity
- WebSocket Write Data Activity

For more information, see the "WebSocket" section in *TIBCO Flogo® Enterprise Activities, Triggers, and Connections*.



## TIBCO Flogo® Connector for Oracle MySQL

### Support for Overriding a Certificate Using an Environment Variable

You can override Certificate Authority (CA) Certificate, Client certificate, and Client Key by using an app property. For more information, see 'Overriding a Certificate Using an Environment Variable' section in *TIBCO Flogo Connector for Oracle MySQL User's Guide*.

## TIBCO Flogo Connector for Apache Kafka

### Support for Connectivity to TIBCO Cloud Messaging Service

TIBCO Flogo® Connector for Apache Kafka now supports connectivity to TIBCO Cloud Messaging service. For more information, see 'Connecting to TIBCO Cloud Messaging - Kafka' section in *TIBCO Flogo® Enterprise Activities, Triggers, and Connections* guide.

## TIBCO Flogo® Connector for TIBCO Cloud™ Messaging

### Identifying message redelivery

The MessageSubscriber trigger output provides **messageId** and **deliveryAttempt** to identify message redelivery.

## TIBCO Flogo Connector for Apache Pulsar

### Support for Connectivity to TIBCO Cloud™ Messaging Service

TIBCO Flogo® Connector for Apache Pulsar now supports connectivity to TIBCO Cloud Messaging service. For more information, see the "Connecting to TIBCO Cloud Messaging – Apache Pulsar" section in the *TIBCO Flogo® Enterprise Activities, Triggers, and Connections Guide*.

# Release 2.12.0

## TIBCO Flogo Enterprise

### Distributed tracing by using AWS X-Ray

You can use AWS X-Ray for tracing a Flogo Enterprise app running in the cloud or in your local environment. You can track how the app is performing or troubleshoot performance issues and errors.

For more information, see the "Tracing Apps Using AWS X-Ray" section in the *TIBCO Flogo® Enterprise User's Guide*.

### Share data within a flow or across flows in an app

A new Activity, `SharedData`, is now available under the General category. This Activity enables you to share runtime data within a flow or across flows in an app.

For more information, see the "SharedData" section in *TIBCO Flogo® Enterprise Activities, Triggers, and Connections*.

### Response headers in InvokeRESTService Activity

In the `InvokeRESTService` Activity, if the output has multiple response codes, you can now add response headers corresponding to each response code on the **Output Settings** tab.

For more information, see the "InvokeRestService" section in *TIBCO Flogo® Enterprise Activities, Triggers, and Connections*.

### Basic Auth and OAuth 2.0 support for InvokeRESTService Activity

- The `InvokeRESTService` Activity now supports Basic Auth and OAuth 2.0. The following fields have been added to the `InvokeRESTService` Activity:
  - **Enable Authentication**
  - **Authentication Connection**

For more information, see the "InvokeRESTService" section in *TIBCO Flogo® Enterprise Activities, Triggers, and Connections*.

- A new connection called **HTTP Client Authorization Configuration** has been added to the **General** category, to enable authentication and authorization in InvokeRESTService Activity. For more information about the connection, see the "HTTP Client Authorization Configuration" section in *TIBCO Flogo® Enterprise Activities, Triggers, and Connections*.

### **XML response handling in InvokeRESTService Activity**

The InvokeRESTService Activity now supports `application/xml` as the response type.

For more information, see the "InvokeRESTService" section in *TIBCO Flogo® Enterprise Activities, Triggers, and Connections*.

### **Adding a function in an argument to the `array.forEach()` function**

You can now add a function in the first argument of the `array.forEach()` function. For example:

```
array.forEach(array.slice($Activity[Mapper], 1, 4), "data")
```

For more information, see the "Mapping Complex Arrays - Using the `array.forEach()` Function" in the *TIBCO Flogo® Enterprise User Guide*.

## **TIBCO Flogo Connector for Oracle MySQL, TIBCO Flogo Connector for Microsoft SQL Server and TIBCO Flogo Connector for PostgreSQL**

Added support for Connection Retry mechanism in case of a connection failure (while creating a connection or executing an Activity).

## **TIBCO Flogo Connector for Apache Pulsar**

- The Apache Pulsar Message Ack Activity acknowledges the Pulsar messages received by the Apache Pulsar Consumer trigger.
- The Apache Pulsar Consumer trigger is configured to process messages in a synchronous manner by using the Sync mode and multiple messages concurrently by using the Async mode.

- You can use the Apache Pulsar connection to set the connection and operation timeouts.

For more information, see the *TIBCO Flogo® Connector for Apache Pulsar User Guide*.

## TIBCO Flogo Connector for TIBCO Cloud Messaging

The Message Subscriber trigger is configured to process multiple messages concurrently.

For more information, see the *TIBCO Flogo® Connector for TIBCO Cloud™ Messaging User Guide*

## Release 2.11.0

### TIBCO Flogo Enterprise

#### SendEmail Activity

The SendEmail Activity now supports:

- Sending file attachments
- Setting Reply-To configuration

For more information, see the "SendMail" section in the *TIBCO Flogo® Enterprise Activities, Triggers, and Connections Guide*.

#### Step-back flow testing

Using the enhanced Flow Tester, you can:

- See the flow execution and the progress made in the execution of the flow. In the new Flow Tester interface, when an Activity is run, a blue animation is displayed around it.
- See errors displayed at the Activity-level.
- Select an Activity after its execution to see the inputs and outputs.
- Change the inputs to other valid values and start the execution of the flow from

that point onwards.

For more information, see the "Flow Tester" section in the *TIBCO Flogo® Enterprise User Guide*.

### **Support for OpenAPI Specification**

Support for OpenAPI Specification is added as follows:

- The ReceiveHTTPMessage trigger supports Open API Specification 3.0.
- The InvokeRESTService Activity supports both Open API Specification 3.0 and Swagger 2.0.

For more information, see the "REST Trigger - ReceiveHTTPMessage" and "InvokeRESTService" sections in the *TIBCO Flogo® Enterprise Activities, Triggers, and Connections Guide*.

### **App file persistence**

Flogo app (JSON) files are now persisted to the directory that you specify on your local machine. This allows you to easily use an external source control system such as Git or SVN. This makes it easier for you to set up the version control for Flogo apps for automated delivery using Continuous Integration/Continuous Deployment (CI/CD).

For more information, see the "App File Persistence" section in the *TIBCO Flogo® Enterprise User Guide*.

### **Missing extensions**

When you import an app that contains one or more activities or triggers that are not installed in your environment, a warning is displayed in the Import App dialog but you can still import those activities and triggers. Activities and triggers with a missing extension display an error until you upload the extension.

For more information, see the "Resolving Missing Activities and Triggers" section in the *TIBCO Flogo® Enterprise User Guide*.

### **Apache Pulsar connectivity**

TIBCO Flogo® Connector for Apache Pulsar is added to send and receive messages using publish-subscribe pattern and includes:

- Apache Pulsar Consumer Trigger
- Apache Pulsar Producer Activity

For more information, see the TIBCO Flogo® Connector for Apache Pulsar documentation.

### **Database connectivity**

- For all complex queries which needed manual mode, metadata generation is significantly enhanced to use standard query parsing leading to better user experience.
- Secure connection support for TIBCO Flogo® Connector for Microsoft SQL Server, TIBCO Flogo® Connector for PostgreSQL, and TIBCO Flogo® Connector for Oracle MySQL is now provided.

## **Release 2.10.0**

# **TIBCO Flogo Enterprise**

### **Enhanced monitoring**

- **Hybrid monitoring:** Unified monitoring experience in TIBCO Cloud Integration is now available for monitoring Flogo applications deployed in private cloud environments outside of TIBCO Cloud. You can see and monitor your Flogo apps the same way as apps deployed on TIBCO Cloud using the TIBCO Cloud Integration - Hybrid Agent.
- **Kubernetes native monitoring:** Flogo Enterprise Monitoring can be run as a standalone app or in a container on Kubernetes. Once it starts on Kubernetes, it monitors Flogo apps added to the Kubernetes cluster.

### **App version support**

The UI displays app versions that can be modified anytime. At the creation of a new app, the default version displayed is 1.0.0.

### **Automatically generated HTTP response, Return activities and mapping configuration**

When creating triggers and flows from an API (Swagger) specification, the app's Configure HTTP Response, Return activities, and mappings are now automatically configured.

### **Additional configuration for "Send email" Activity**

Input fields are added to the "Send email" Activity to support HTML body and CC/BCC configuration.

### **Ability to run updated application without binary rebuild**

In the CLI builder, an option is available to exclude the JSON file of the app when building the binary of an updated app to avoid creating a new app binary if you only want to make minor configuration or mapping changes in the app.

### **Improved Prometheus metrics**

New improved Prometheus metrics related to count and execution interval for Activity and flow are now available.

### **Mapping enhancement for loop**

The output of an Activity is accessible for mapping in its input for each iteration while using repeat while true loop.

That is, when using the Mapper you can use the output of an Activity generated by the last iteration as an input for the next iteration. You can see this output as part of "Upstream Output". For example, assume you have a loop with three iterations. In iteration zero, there is no value from that output because the Activity has not run yet, but on the next iteration you can access the output of the Activity from the previous run.

## **TIBCO Flogo Connector for TIBCO Cloud Messaging**

- TCMMMessageAck has been added to the connector with the following modes:
  - **Auto:** messages are auto acknowledged as soon as they are received from the TIBCO Cloud Messaging service.
  - **Explicit:** messages can be acknowledged by using new Activity

TCMMessageAck within the flow.

- The MessageSubscriber trigger now supports standard durables.

## TIBCO Flogo Connector for MQTT

Auto reconnect: The MQTT Publisher Activity and MQTT Subscriber trigger reconnect automatically to the MQTTbroker in the event of a connection failure.

## TIBCO Flogo Connector for Oracle MySQL, TIBCO Flogo Connector for Microsoft SQL Server and TIBCO Flogo Connector for PostgreSQL

There have been significant enhancements to the connection configuration for configuring maximum open connections, maximum idle connections, and maximum connection lifetime. For more details, see *TIBCO Flogo® Enterprise Activities, Triggers, and Connections*.

## Release 2.9.0

### Application monitoring

TIBCO Flogo® Enterprise now provides a component, TIBCO Flogo® Enterprise Monitoring , to monitor running Flogo Enterprise apps. The Flogo® Enterprise Monitoring application collects metrics of flows and triggers from all running apps that are registered with it. In the app's UI, you can visualize the metrics.

For details, see the "TIBCO Flogo® Enterprise Monitoring Application" section in the *TIBCO Flogo® Enterprise User Guide*.

### App-level schemas

In a flow input or output, you can now define a schema and share it across the app. An app-level schema can be used in any flow, Activity, or trigger configuration where a schema editor is provided. Types of schemas supported are JSON and Avro.

For details, see the "Application Schemas" section in the *TIBCO Flogo® Enterprise User Guide*.



## Coercing of fields

In the input, output or trigger reply configuration of an OSS Activity, you can now coerce a parameter to take the value from a schema that you dynamically defined during design time.

Flogo Enterprise supports coercing for parameters of the following data types: array, object, param, and any.

Currently, coercion is supported only for top-level parameters.

## Validation of flows

You can now validate an app before you deploy it. To validate your app, click **Validate** on the App details page. This validates each flow and Activity. If a flow or Activity has an error, it displays an error or warning icon on the flow or Activity.

Validation of flow is done only when you click **Validate**.

## Data mapping functions

This release now includes the `DateTime` and `Array.flatten` Open Source functions.

## Iteration index available for "Repeat While True" loops

If you select **Repeat while true** as the type of a loop in an Activity, iteration index is now available for mapping.

## Support for PATCH method in InvokeRESTService Activity

You can now use the PATCH method in the InvokeRESTService Activity.

## Configure app properties from the Flow View

You can now configure app properties from the Flow View directly, instead of navigating back to the Flow list page to edit the app properties.

## Flexibility to start with a trigger or a flow

With the enhancements in this release, you can create and configure a new trigger without binding it to a flow. This gives you flexibility to start with either a trigger or a flow.

# Release 2.8.1

## Streaming App Metrics to logs

You can now emit flow and Activity metrics of a Flogo Enterprise app to logs by using two new environment variables: `FLOGO_APP_METRICS_LOG_EMITTER_ENABLE` and `FLOGO_APP_METRICS_LOG_EMITTER_CONFIG`.

## Merging changes to an API specification

While creating a REST trigger, you can configure it by uploading the API specification file.

If the API specification is changed after the trigger is created, you can now merge the changes into an existing app by uploading the specification file again.

## Propagating error data from subflow to main flow

You can now propagate error data from a subflow to the main flow using the Throw Error Activity.

## Overriding host and port in the URL for Invoke REST Service Activity

You can now override the host name and port in the URL when calling a REST service using InvokeRESTService Activity.

## Defining common schema for a response code category in REST Invoke Activity

In the InvokeRESTService Activity, you can now define a single schema for a category of response codes. For example, if you are calling a REST service which uses same schema for all response codes in the range 500-599 (such as 501, 502, 503, and so on), you can define a single schema (as 5xx) for them.

## Improved TCM connection management

The TIBCO Cloud Messaging Connector now uses an upgraded client library for improved handling of reconnect and connection timeouts.

Two new fields have been added to TIBCO Cloud Messaging Connector - `AutoReconnectAttempts` and `AutoReconnectMaxDelay` (in seconds). These fields allow the client to re-establish a connection with TIBCO Cloud Messaging Server if the connection is lost.

# Release 2.8.0

## gRPC Support

This release of Flogo Enterprise:

- Includes a gRPC Client Activity for calling gRPC services from the Flogo Enterprise flows
- Simplifies implementing the gRPC services in Flogo Enterprise by adding the ability to import gRPC Protocol Buffers (.proto) file for generating the trigger and flows automatically.
- Supports header input field for GRPCActivity

## Avro Schema Registry for Kafka

Flogo Enterprise now supports built-in connectivity to Avro Schema Registry for Kafka Client Configuration for Serialization and Deserialization of messages published on or subscribed from Kafka topic in Avro format. Basic authentication is used to connect to the registry if the username and password are provided.

## OpenTracing

In the area of Microservices Observability, Flogo Enterprise now adds native support for OpenTracing, a Cloud Native Computing Foundation (CNCF) project, that provides vendor-neutral API specification and instrumentation libraries for distributed tracing. This release also provides built-in integration with the open source Jaeger tracing library for collecting the traces from Flogo Enterprise apps. With this new feature, you can set an environment variable `FLOGO_APP_MONITORING_OT_JAEGER` to `true` for enabling generation of OpenTracing compliant traces and spans and collection of those traces and spans using Jaeger.

## Flow Design

This release of Flogo Enterprise adds the following functionality to improve the Developer Experience (DX) for designing Flogo apps using the UI:

- **Selective Import:** To improve the reusability of Flogo Enterprise apps a new 'Selective Import' feature has been added to the Import functionality of the UI. This allows you to import a Flogo Enterprise app into a new app or an existing app with the flexibility to select specific triggers, flows and connections while importing the app.

- **Loop:** This release of Flogo Enterprise adds significant improvements to the ability to iterate execution of an Activity. A new Loop tab has been added on Activity configuration with support for two types of loops - Iterate and Repeat while true. Iterate type allows you to specify a number of iterations and Repeat while true type allows you to specify condition to repeat the execution of Activity when the condition is true. In addition, this release includes a new Accumulate option for accumulating output of the Activity from each iteration into in array.
- **Retry on Error:** There is a new 'Retry on Error' tab added in the Activity configuration of InvokeRESTService and TCMMMessagePublisher activities to retry the execution of these activities if it encounters a retrieable error. This new tab allows you to specify the retry count and retry interval.
- **Success with no matching condition:** This new type of branch added in this Flogo Enterprise release can be used when you want to execute one or more specific activities when none of the 'Success with condition' branches meet the condition and execute.
- **List view:** A new list view is added for Flow Input & Output parameters in addition to existing JSON schema view. This view allows users to define the Flow parameters and their types in the UI.
- **Copy Activity:** Flogo Enterprise now provides an option to create a copy of an existing Activity within the same flow.
- **Branch Labels:** A label is now added to a branch by default and displayed when hovered on the branch. You can also update the branch labels.

### Support for Red Hat® OpenShift®

This release of Flogo Enterprise adds certification for Red Hat OpenShift Container Platform version 4.x.

### Building a Docker image from CLI

In the area of DevOps Flogo Enterprise CLI now provides an option to build a Flogo application docker image. This is useful for automating the docker image build process.

# Release 2.7.0

## gRPC Support

gRPC is a modern, open source RPC framework commonly used in Microservices architecture. This release adds a new trigger for implementing gRPC services in Flogo applications.

## Certification for Serverless container deployments

This release adds certification for the following managed Cloud services for Serverless container deployments:

- Google Cloud Run
- Azure Container Instances

## TIBCO Cloud Deployment

The UI now provides an option to export Flogo app deployment artifacts for deployment to TIBCO Cloud Integration (TCI).

## REST API Development

This release of Flogo Enterprise adds the following advanced capabilities for simplifying development of REST APIs using Flogo applications:

- A new **Configure Response Codes** option has been added to the ReceiveHTTPMessage trigger and InvokeRESTService Activity that allows you to add multiple HTTP response codes and define response content-type and schema for each code.
- A new ConfigureHTTPResponse Activity has been added in this release of Flogo Enterprise. You can add this Activity before a Return Activity if **Configure Response Codes** option is enabled on the ReceiveHTTPMessage trigger and use the Activity to select a response code and define the response to be returned for that specific code.
- You can also define custom HTTP response header on the ReceiveHTTPMessage trigger.
- InvokeRESTService Activity adds ability to configure a connection timeout and proxy URL while invoking external REST APIs from the Flogo flows.

## Kafka Consumer

KafkaConsumer trigger now supports the Whitelist feature to consume messages from multiple topics. You can whitelist a group of Kafka topics for consuming messages by specifying them as a comma-separated list of topics (**Topic** field) or a regex pattern (**Topic Whitelist** field).

## UI Improvements

- The UI now provides an ability to add multiple handlers for a trigger giving you the ability to bind multiple flows to a single trigger. It also adds a new Trigger View and the ability to switch between the Flow view and the Trigger view so that you can add more than one flow for a single trigger.
- Errors and warnings:
  - The UI now provides a better and consolidated view of validation errors and warnings.
  - For error branches, details of the error (such as Activity and type of error message) are now captured and returned in the \$error variable. These details can be used by subsequent activities and the logic of the flow can be based on the type of error.

## New Activities

This release adds the following two new out-of-the-box activities in Flogo Enterprise:

- Sleep: This Activity is used to pause execution of the Flow for a specified time period.
- ParseJSON: This Activity is used to parse JSON data in String format into a JSON Object.

## Mapper Functions

- This release of Flogo Enterprise adds support for mapper function contributions giving you flexibility to create custom mapper functions, install them as extensions and use within the mapping expressions.
- This release of Flogo Enterprise also includes a set of mapper functions from the open source Project Flogo out-of-the-box.
- The `array.foreach()` function now supports passing of an argument for filtering array elements to return only the matching elements.

## Extensibility

- The UI now allows users to install extensions from GitHub repositories, thus eliminating the need to zip and upload the extension.
- Flogo Enterprise now provides ability to plug-in custom Golang code into the application binary enabling developers to write custom code for integrating with third-party tools like monitoring agents, configuration management.

## Support for AssumeRole

This release of Flogo Enterprise adds support for AssumeRole in AWS Connection configuration.

## Exporting an Application's .json File

You can now export an application's .json file (embedded within the binary file), by using the `./<app-binary-name> --export app` command. The .json is exported as `<app-binary-name>.json`.

# Release 2.6.1

Starting with this release Flogo Enterprise supports Spring Cloud Services. The Spring Cloud Config Server is supported for application configuration management for Flogo apps deployed on Pivotal Application Service (PAS).

This release also adds support for Kubernetes Secrets. Kubernetes Secrets object lets you manage and store sensitive information such as passwords, keys, and so on. This new feature in Flogo Enterprise allows you to resolve the values of application properties in a Flogo application deployed on Kubernetes using Kubernetes Secrets.

# Release 2.6.0

## GraphQL

This release of Flogo Enterprise adds an out-of-the-box trigger for GraphQL that provides an efficient and flexible API design paradigm with a powerful query language allowing frontend clients to query exact data. You can import a GraphQL schema in a Flogo application and choose to auto-generate the GraphQL trigger and flows for

implementing resolver functions or add a GraphQL trigger to existing flows allowing you to rapidly implement GraphQL server for your API.

### **Support for OpenAPI Specification 2.0 (formerly Swagger Specification)**

Using Flogo Enterprise, you can now develop REST APIs from OpenAPI Specification version 2.0 (formerly Swagger Specification). You can import the OpenAPI Specification in a Flogo application and auto-generate the REST trigger and flows for implementing the API, which in turn enables rapid development.

### **Improved error handling capabilities**

The new Error branch type extends the flow execution control and error handling capabilities of Flogo. An Error branch allows you to catch Activity level exceptions and execute a different path in the flow if Activity execution throws an error. Flogo Enterprise now supports three types of branches - Success, Success with Condition, and Error.

### **Mapper Activity**

The new Mapper Activity enables you to define data mappings for any data type and construct data in the required structure for mapping to subsequent activities in the flow.

### **New schema synchronization option**

A new Sync flow input/output configuration option is added on the Trigger configuration tabs. If you make any changes in the trigger input/output schema, this option allows you to propagate the changes to the flow input and output parameters by copying the Trigger Output schema to Flow Inputs and Trigger Reply schema to Flow outputs without having to manually update flow input/output schema.

### **Additional platforms supported for containerized deployment**

The PaaS or containerized deployment options have been extended to support Pivotal Application Service (PAS) of the Pivotal Cloud Foundry (PCF) platform, Amazon ECS, and AWS Fargate.

### **Support for securing APIs using TLS**

Using Flogo Enterprise, you can now secure APIs built using Swagger and GraphQL through X509 certificates.

### **Mapper improvement**

With this release, you can clear child mappings configured for objects and arrays in the mapper using a single click "Clear Mapping" option.



# Release 2.5.0

## AWS Lambda Triggers

This release of Flogo Enterprise takes integration with AWS Lambda to the next level by adding triggers for Amazon API Gateway and Amazon Simple Storage Service (S3). This gives you ability to develop functions in Flogo, deploy them on AWS Lambda, and invoke them from Amazon API Gateway and S3.

## Prometheus Support

In the area of Application Monitoring Flogo Enterprise now provides support for Prometheus, an open source project under Cloud Native Computing Foundation (CNCF). If the environment variable `FLOGO_APP_METRICS_PROMETHEUS` is set to true, Flogo application starts exposing flow and Activity metrics via the HTTP endpoint as Prometheus-compliant time series data. This gives you the ability to configure Prometheus for pulling and storing Flogo application metrics, use features of Prometheus for monitoring as well as alerting, and also use tools like Grafana for visualization.

## Out-of-the-box support for Kafka, MQTT, TCM and Avro connectors

Starting with this release, Flogo Enterprise includes a range of activities and triggers for Apache Kafka, MQTT, Apache Avro, and TIBCO Cloud Messaging out of the box removing the need to install them as separate connectors.

## Duplicating Flows

You can now make a copy of an existing flow within a Flogo app.

## Ability to build engine from CLI

To simplify CI/CD for Flogo applications, this release adds the ability to build a single Flogo runtime engine binary with a set of required connectors. You can execute this binary to run any compatible Flogo application by passing `--app` argument to provide the application's JSON file. This removes the need to install Flogo Enterprise on build machines and build the binary for individual applications. For example, If you develop ten applications that use TIBCO Flogo Connector for Kafka and TIBCO Flogo Connector for Avro connectors, you can build a single Flogo runtime engine binary with TIBCO Flogo Connector for Kafka and TIBCO Flogo Connector for Avro connectors included in it and use the same binary to run all ten applications instead of building ten different binaries.

## Support for Docker Toolbox

For developers who are using Docker Toolbox on Windows, this release allows you to use Docker Toolbox for running the UI.

# Release 2.4.0

## Configuration Management

This release adds a set of new features to help you isolate the configuration from your application and manage it using external stores, so that you can deploy the same application in multiple environments without making any changes to the application. Flogo Enterprise extends the Application Properties feature and allows you to provide the values for application properties at runtime using environment variables or fetching them by connecting to external configuration stores such as Consul. This release certifies use of Consul, AWS Param Store, and Kubernetes ConfigMaps for storing your application configuration. This release also adds the ability to export application properties from the application binary in a JSON file, or as environment variables. If you use application properties for configuring secrets in your application, such as database passwords, you can now generate obfuscated values for the secrets.

## Application Logging

This release adds support for the Zap library for application logging. Zap aims to provide fast, structured, and leveled logging. You can switch to the Zap logger for your application by setting the environment variable, `FLOGO_LOGGER_IMPL`, to `zap`. This release also gives you ability to log in JSON format by setting the environment variable, `FLOGO_LOGGER_FORMAT`, to `JSON`.

## Kubernetes

Flogo Enterprise now certifies deployment and management of apps using Kubernetes. This allows you to run Flogo apps in Docker containers and use Kubernetes to manage the containers leveraging the benefits of Kubernetes including self healing, load balancing, health check, configuration management, rollouts, and rollbacks

## Application Metrics API

This release provides the ability to collect flow and Activity metrics for monitoring your application using a REST API. You can now enable collection of application metrics by setting the environment variable, `FLOGO_APP_METRICS`, to `true` and collecting

instrumentation as well as execution statistics for the flows and activities in your application using the REST API.

### Subflows

This release adds support for creating a subflow and calling the subflow from other flows in your application. This gives you the ability to define the common logic in a subflow and reuse it in multiple flows.

### Mapper Improvements

Flogo Enterprise now adds a set of new array functions to support count, get, delete, and append operations in the mapper. The use of nested ternary operators in the mapper expressions for conditions is now supported. This release also improves validation of mandatory fields and expressions in the mapper.

**i Note:** Application binaries created prior to 2.4 must be recreated to use above features.

## Release 2.3.0

### Application Properties

This release introduces the concept of application properties and the ability to define, configure (inside an application) and manage application properties. Apart from properties provided during application design, developers can also override the value for such properties at the time of deployment.

### Runtime Statistics

In the area of monitoring and tracking your application runtime, new features have been introduced across two areas:

- Memory and CPU profiling data can be collected and reviewed for a given application in a test environment
- TIBCO Flogo® Enterprise includes the ability to gather Go runtime statistics such as memory usage, number of Go routines, logical CPUs used, version and more

### Healthcheck

This release introduces the ability to enable healthcheck for a Flogo application that is running.

## **DB Service**

TIBCO Flogo Enterprise 2.3 supports a common DB Service component that facilitates database operations for database connectors.

# **Release 2.2.0**

## **Flow Testing**

This release introduces the ability for testing the flows created using TIBCO Flogo® Enterprise from the design-time including creating and managing launch configurations for running these tests.

## **Command-Line Interface**

This release provides a command-line utility capable of building a Flogo application binary.

# **Release 2.1.0**

## **Improved support for building and deploying AWS Lambda functions**

This release allows developers to build Flogo flows as functions in AWS Lambda and deploy them directly from the design-time environment in to their AWS accounts.

## **Support for Connectors**

This release introduces an installation manager and the ability to install and manage connectors for Flogo® Enterprise.

# **Release 2.0.0**

## **Improved experience across installation, design, and runtime**

A completely revamped user experience across installation, design-time, and runtime components has been introduced in v2.0.0 of TIBCO Flogo® Enterprise. This makes the experience better aligned for enterprise developers and consistent with the concepts available in TIBCO Flogo® apps.

## **Cross-compatibility for Flogo Applications**

Starting with this release, Flogo apps/flows created in the open-source Project Flogo™ can be imported into TIBCO Flogo® Enterprise (or TIBCO Cloud™ Integration - Flogo®). Starting from this release, Flogo® Enterprise picks the most current stable release of the open-source Project Flogo™ and is compatible with capabilities provided in such a release.

## **Support for AWS Lambda Trigger**

This release introduces the support for triggers for server-less frameworks and environments such as AWS Lambda. Developers can now build Flogo flows that can be run in AWS Lambda as functions.

# Changes in Functionality

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This section lists the features or functionality that have changed in this version of TIBCO Flogo® Enterprise

**!** **Important:** Starting from version 2.17.0, connector information is documented in the *TIBCO® Cloud Integration Release Notes* only. For more information about connectors, see [TIBCO® Cloud Integration Release Notes](#).

## Release 2.24.0

The FLOGO\_RUNNER\_QUEUE engine variable has been renamed to FLOGO\_RUNNER\_QUEUE\_SIZE.

## Release 2.23.0

### Validation of flows

The way in which flows are validated has changed. For more information, see [Validating your App](#).

## Release 2.22.0

### Mapping of unmapped arrays

The 'Array.forEach' functions for mapping of arrays are not available under any array functions. They are now shown in the auto suggestion. We now also have a new first class forEach screen to map arrays.

### Migration of 'ReplyToTrigger' activity

The 'ReplyToTrigger' activity has now been migrated to the 'General' category

## **Moving of references for triggers and activities**

The references for triggers and activities in the 'General' category have been moved from git.tibco.com to github.com.

# **Release 2.21.0**

## **Flogo Log level**

The default TIBCO Flogo log level has been changed from ROOT=WARN to ROOT=ERROR. This results in fewer entries being generated in the engine logs when a Flogo app is started. If you feel you need the additional details, you can update the FLOGO\_LOG\_LEVEL variable value to ROOT=WARN.

## **Validation error count**

The validation error count for 1 non-connected activity has been changed from one to two. Similarly, if there are two non-connected activities, the count is four.

## **Branching order execution**

The branching order of execution has been changed. The new order is:

1. Success with condition/Success with no matching condition/Error(if any)
2. Success

If there are multiple success branches then execution is in the reverse order of addition.

## **Enabling Save option**

The way the app properties are configured has now been changed. The Save option is not enabled until the configuration of all app properties is completed.

## **Start activity**

The Start activity is now present on the canvas after which you can add and connect the other activities.

# **Release 2.20.0**

## **Log responses for REST trigger**

Errors for the ReceiveHTTPMessage trigger are now shown at the info log level.

### **Error for the number or boolean type path parameter in API spec after upgrade**

If the path parameter has a number or boolean data type in the API spec and it is mapped with a string type value, then it shows the design time validation error after upgrade. Update the mappings to match the data type of the path parameter.

### **LogMessage Activity**

The logs from the log Activity are displayed regardless of the log level set in the engine.

## **Release 2.19.0**

### **Create array in Mapper**

On importing an app with in-line array mappings, the array elements are wrapped into the item object.

## **Release 2.18.0**

### **TIBCO Flogo Connectors**

In support of moving to a cloud-first design experience, TIBCO Flogo Enterprise Web UI has been deprecated and more information can be found [here](#). As a result, no new releases are provided for the TIBCO Flogo Connectors compatible with TIBCO Flogo Enterprise Web UI. Entitled customers have access to TIBCO Flogo Enterprise Web UI and compatible connectors for versions prior to TIBCO Flogo® Enterprise 2.14.1 via [edelivery.tibco.com](https://edelivery.tibco.com).

Entitled customers also have the ability to leverage the design-time experience provided with TIBCO Cloud Integration - Develop (Flogo) capability in TIBCO Cloud. Interested customers can request for access (if they do not have these already) using the process described here in the Product Documentation. For the Connectors purchased by the customer for use with TIBCO Flogo Enterprise (on-premise) prior to deprecation, customers shall have access to the same Connectors with TIBCO Cloud Integration - Develop (Flogo).

For any additional questions or queries, reach out to your account manager or TIBCO Support.



## SSL certificates generated using Subject Alternative Names (SAN)

If a client app fails due to a missing SAN field in the certificate, you must configure the certificate with a valid SAN and repush the app.

### Validation rules at design time

Validation rules for a string type and primitive expression at design time have changed. The validation of an expression that expect a string now allows you to return a primitive data type such as boolean and number.

For example, if the following expression is used in an Activity that expects a string message, an error message is not displayed for the returning number types:

```
$flow.body.Customer[1 + 1].ID == 1 ? $flow.body.Customer[1 + 1].ID * 2 :  
$flow.body.Customer[1 + 1].ID + 10
```

# Release 2.17.0

## TIBCO Flogo® Enterprise Core

### Response headers in ReceiveHTTPMessage trigger

When mapped to the Return Activity, response headers are honored by the ReceiveHTTPMessage trigger. You must repush existing apps to pick up the runtime changes.

### Activities listed on Recently Used tab

For quick access, activities used recently for the flow configuration are listed on **Recently Used** tab. Eight of the last-used activities can be accessed from this tab. The activities listed on this tab are specific to the user and browser.

### Prefix for Flogo attributes in OpenTelemetry Collector

Flogo Related Attributes in OpenTelemetry Collector are now prefixed with “flogo”. The prefix is added to tags with product-specific attributes only.

### Configuring a connection app property

You can now configure a connection app property in an Activity and verify the changed value or behavior using the flow tester.

### Change in location of expand or collapse option in mapper

In the mapper, the option to expand or collapse the tree has been moved from the right to the left.

### Handling connections while importing an app

When importing an app, if the connection with a matching name and type existed in the environment, the **Connections in current environment** dropdown is set to the existing connection by default. Prior to this release, the **Connections in current environment** dropdown was set to create a new connection even if the connection used in app existed.

## Release 2.16.0

# TIBCO Flogo® Enterprise Core

### Validations for Fields with Restrictions in JSON Schema

Flogo Enterprise now validates fields that have restrictions defined in the JSON schema. An error message is displayed if invalid values are entered.

### Improved User Experience While Importing an App

A completely revamped user experience for importing an app has been introduced in this release. You can now use a drop-down list and the **Search** field to narrow down the flows, triggers, and connections displayed.

For more information, see [Importing an App](#).

### Change in Format of formatDatetime() Function

The format of the `formatDatetime(<datetime>, <format>)` function has changed to the following:

```
yyyy-MM-ddTHH:mm:ss.SSS+0000
```

**i** **Note:** The format is case-sensitive.

For example, `2022-03-03T17:28:19.190+0000`.

## Release 2.15.0

### TIBCO Flogo® Enterprise Core

#### Ability to specify start time in Timer trigger

In the Timer trigger, you can now specify the time to start the flow execution by using the **Start Time** field. You can select the date and time from the calendar. Alternatively, you can set an app property for the start time. When you configure an app property for the start time, you must use the RFC 3339 date and time format.

#### Ability to migrate contribution models to newer versions

For existing apps, if a new field is introduced in the latest contribution version, the contribution is now automatically upgraded. In prior releases, you had to export and re-import the app to see the changes in the contribution.

### TIBCO Flogo Connector for TIBCO Cloud Messaging

#### Authentication Key Type

The type of the **Authentication Key** field has been changed from plain text to Secret. After the upgrade, if you have a TIBCO Cloud Messaging eFTL connection configured, the masked value for the **Authentication Key** field is displayed.

### TIBCO Flogo® Connector for Apache Pulsar

#### Authentication Key Type

The type of the **JSON Web Token** field has been changed from plain text to Secret. After the upgrade, if you have a pulsar connection configured with the **JSON Web Token** field, the masked value for the **JSON Web Token** field is displayed.

## Release 2.14.1

### TIBCO Flogo® Enterprise Core

There are no changes in functionality in this release.

## Release 2.14.0

### TIBCO Flogo® Enterprise Core

#### NULL Value in Flow Input or Output

When designing a flow, if the flow input or output has a NULL value in the JSON data at the parent level, an error message is now displayed and **Save** is disabled.

#### Mapper Support on the Retry on Error tab

On the **Retry on Error** tab of an Activity, you can now set values using the mapper.

#### Confirmation prompt when deleting an Activity

When you click the **Delete Activity** icon , a confirmation prompt is now displayed.

#### Support for form-url-encoded ReceiveHTTPMessage trigger

With the newly added support for `form-url-encoded` for REST trigger, if the trigger is configured with `application/json` request body type but the client sends `Content-Type` as

application/x-www-form-urlencoded, Flogo Enterprise converts all body to a key-value pair body (with body as key and an empty string as value).

## Change in Log Level

The handler and Activity execution time logs have now been moved from an INFO level to a DEBUG Level.

## Release 2.13.0

### TIBCO Flogo® Enterprise Core

There are no changes in functionality in this release.

## Release 2.12.0

The following functionality-related changes have been made in this release.

### TIBCO Flogo® Enterprise

#### Flow Tester

The Flow Tester engine is now built from scratch every time you start the Flow Tester. As a result, the Flow Tester takes some time to start. The time taken to start the Flow Tester depends upon the number of contributions used in the app and the resources assigned to the Docker daemon.

For more information, see the *Flow Tester* section in the *TIBCO Flogo® Enterprise User's Guide*.

## Order in which branches are executed

When an Activity has multiple branches, the order in which the branches are executed is changed to:

1. Success branch
2. Success with condition branch
3. Success with no matching condition branch
4. The Error branch gets executed as soon as the flow execution encounters an error.
5. The Main flow is run last.

The order is random if there are more than two branches which belong to same type.

For more information, refer to the *Order in which branches are executed* section in the *TIBCO Flogo® Enterprise User's Guide*.

## Docker image generation using the -n flag

The syntax of the `-n` flag of the Builder command to generate a Docker image has changed:

```
-n <name>:<tag>
```

(or)

```
-name <name>:<tag>
```

Where `<name>` is the name of the binary file to be generated and `<tag>` is the tag to be used if a Docker image is to be created.

**i Note:** Standalone use of `-t` or `-tag` is no longer supported.

For more information, refer to the *Builder Command* section in the *TIBCO Flogo® Enterprise User's Guide*.

## Metadata for Oracle MySQL

When Oracle MySQL activities contain SQL statements with prepared parameters, the datatype of the prepared parameter shows up as `varchar` in the fields table. This change

does not have a runtime impact.

## Mapper validation errors

When you click on **Validate**, mapper validation errors are now displayed at the Activity level as well as flow level.

## Release 2.11.0

The following functionality-related changes have been made in this release.

## TIBCO Flogo® Enterprise

### Metadata in database connectors

For database connectors, metadata populated in the table now displays generic datatypes.

### Aggregate function in TIBCO Flogo® Connector for Microsoft SQL Server

When using the Aggregate function (SUM, AVG, COUNT, and so on) in a query, use an alias with the Aggregate function as follows:

- Replace:
  - `SELECT COUNT(*) FROM BookStore;`
  - `SELECT AVG(BookNumber) FROM BookStore;`
- With:
  - `SELECT COUNT(*) AS alias_name <name of alias> FROM BookStore;`
  - `SELECT AVG(BookNumber) AS alias_name <name of alias> FROM BookStore;`

## Table names with spaces

If a table name contains space, change the query as follows:

- From: `select * from "Order Details"`
- To: `select * from [Order Details]`

## Authentication key type in TIBCO Flogo® Connector for TIBCO Cloud™ Messaging

In TIBCO Flogo® Connector for TIBCO Cloud™ Messaging, the type of the Authentication Key field has been changed from PASSWORD to STRING.

## Release 2.10.0

The following functionality-related changes have been made in this release.

### Automatic generation of mappings, Configure HTTP Response, and Return activities

When a Flogo app is created from a Swagger API specification, Flogo REST triggers and flows are now automatically configured with:

- trigger and flow input/output mappings
- Return and Configure HTTP Response activities, wherever applicable

### Flogo Studio now called Flogo Web UI

Flogo Studio is now called Flogo Web UI. For example, this is reflected in the following areas of the product:

- The commands `run-studio.sh` and `run-studio.bat` are renamed to `start-webui.sh` and `start-webui.bat` respectively.
- Console output of the startup scripts



- Docker image is renamed to `flogo-webui`
- Title of the tab in the web browser

## Release 2.9.0

The following functionality-related changes have been made in this release.

### Connector installation

Starting with this release, you need not install the following connectors separately:

- TIBCO Flogo® Connector for PostgreSQL
- TIBCO Flogo® Connector for Oracle MySQL
- TIBCO Flogo® Connector for Microsoft SQL Server

### Database service installation

Starting with this release, the database service is available out-of-the-box and need not be installed separately.

### Revalidating an app after navigating into a flow

After validating an app, if you navigate into a flow, you must validate the app again irrespective of whether you made changes to the flow or not. Flogo Enterprise does not retain the results of any previous validation.

### Validation improvements

- In prior releases, flows on the flow list page were validated automatically. Now, you need to manually validate the flows.
- In prior releases, on editing an Activity, the entire flow was validated automatically. Now, only that particular Activity is validated automatically.

## Timeout field of InvokeRESTService Activity

The unit of measurement for the **Timeout** field in the InvokeRESTService Activity has been changed to milliseconds. You might want to reconfigure this field using milliseconds and deploy the app again.

## Changes in user interface

The following changes have been made to the user interface:

- Flows list page
  - **App Properties** is renamed to **Properties**.
  - The **Revert to last build**, **Import**, and **Export** buttons have been moved into a list menu.
- Flow Canvas/Details page
  - **Start testing** is renamed to **Test**.
  - **Revert to last build** is removed.
  - **Properties** has been added for specifying app properties.
- Buttons have been rearranged to group primary actions together and secondary actions together.

## Release 2.8.1

The following functionality-related changes have been made in this release.

### Explicit save for Activity and trigger configuration

If you make any changes to the schema that you entered when creating a trigger, you must save the changes explicitly by clicking **Save** and then propagate the changes to the flow input and flow output.

If you make changes to the schema but do not save the changes explicitly by clicking **Save**, a warning message is displayed asking you to first save the changes before the schema can be synchronized.

# Release 2.8.0

## Lambda triggers

For apps with Lambda triggers (namely ReceiveLambdaInvocation trigger, S3BucketEventLambda trigger, and AWSAPIGatewayLambda trigger):

- An app can have multiple flows or handlers.
- When a trigger is added to other flows, a validation error indicating that other triggers are not allowed in the app is displayed.

## Resource name for InvokeLambdaFunction

For InvokeLambdaFunction, you can now specify the Amazon Resource Name (ARN) from the Input tab in addition to the Settings tab. This can be used to take the ARN from a previous Activity or trigger.

## Return Activity

A Return Activity is not added by default. Depending on your requirements, you must add the Return Activity manually. The Return Activity is not added by default in the following cases:

- Creating a flow
- Adding a branch
- Creating error handler
- Importing an app

## Mandatory sign

In the input mapper window, for mandatory fields, the mandatory sign (\*) is now displayed before the field name instead of after the field name.

## Updating GraphQL schema

You can now update the GraphQL schema without generating a new Flogo flow.

## Restarting Studio after installing connectors

After installing any connector, Studio must be re-started.

## Release 2.7.0

### JSON string in quotes

If an input string value contains a JSON string and it is not included in quotes, a validation error is returned.

### Response Type in InvokeRestService

In the InvokeRestService Activity, **Response type** has been moved from **Settings** to **Output Settings**. The default value of **Response type** is `application/json`.

**i** **Note:** If you set **Response type** to `plain/text` and export the application from 2.6.1, after upgrading to 2.7.0, you must manually change the **Response type** to `application/json`.

### Consistent structure across functions

The structure of Flogo Enterprise and open source Project Flogo functions is now consistent so that the open source Project Flogo™ functions can be used in Flogo Enterprise and vice versa.

## Redesigned error panels

The error panel is no longer displayed. Errors and warnings are now displayed on the trigger, Activity, and flow UI.

## DEBUG logs

The default log level of the Flogo Tester is now INFO and not DEBUG.

## Release 2.6.0

The following functionality-related changes have been made in this release.

### Iterator Mappings

Apps created in earlier versions of Flogo Enterprise have iterator mappings using the `$current` tag. Such apps return validation errors in version 2.6. You must manually update the iterator mappings for such apps.

Also, the datatype for key attribute under `$current` is changed from number to string. So, any mappings that involve the key attribute must also be manually updated.

### Imported Applications

It is mandatory to provide a condition on branches. If the condition is not provided, the application fails at runtime.

### Application Property

This release of Flogo Enterprise provides additional validations for application properties. If you delete an application property or the property is not configured properly, the application fails to start.

### Application Property Override Using Environment Variables

The environment variable used to enable application property override using environment

variables has changed from `FLOGO_APP_PROPS_RESOLVERS=env` to `FLOGO_APP_PROPS_ENV="{}`".

# Deprecated and Removed Features

This section lists the features that have been deprecated or removed as of this version of TIBCO Flogo® Enterprise

When relevant, useful alternatives to the deprecated features are listed. As a deprecated feature can be removed in a future release, you must plan for discontinuing the use of the feature and avoid creating new dependencies that use the deprecated feature.

**!** **Important:** Starting from version 2.17.0, connector information is documented in the *TIBCO® Cloud Integration Release Notes* only. For more information about connectors, see [TIBCO® Cloud Integration Release Notes](#).

## Deprecated Features

### Deprecated Features

Affected Component	Deprecated Feature	Alternative Feature	Deprecated in Version
Project Flogo contributions	Deprecated contributions: <ul style="list-style-type: none"> <li>Receive HTTP Message</li> <li>REST Invoke</li> <li>Log Activity</li> </ul>	Alternative activities and triggers: <ul style="list-style-type: none"> <li>Receive HTTP Message</li> <li>Invoke REST Service</li> <li>Log Message</li> </ul>	2.11.0
Prometheus Metrics	<ul style="list-style-type: none"> <li>flogo_Activity_metrics</li> <li>flogo_flow_metrics</li> </ul>	<ul style="list-style-type: none"> <li>flogo_Activity_execution_count</li> <li>flogo_Activity_execution_</li> </ul>	2.10.0

Affected Component	Deprecated Feature	Alternative Feature	Deprecated in Version
		duration_msec <ul style="list-style-type: none"><li>• flogo_flow_execution_count</li><li>• flogo_flow_execution_duration_msec</li></ul>	



Affected Component	Deprecated Feature	Alternative Feature	Deprecated in Version
Functions	<code>boolean.true()</code>	<code>true</code>	2.7.0
	<code>boolean.false()</code>	<code>false</code>	
	<code>float.float64()</code>	<code>string.float()</code>	
	<code>number.int64()</code>	<code>coerce.toInt64()</code>	
	<code>number.len()</code>	<code>string.len()</code>	
	<code>string.base64ToString()</code>	<code>utils.decodeBase64()</code>	
	<code>string.stringToBase64()</code>	<code>utils.encodeBase64()</code>	
	<code>string.dateFormat()</code>	<code>YYYY-MM-DD</code>	
	<code>string.datetimeFormat()</code>	<code>YYYY-MM-DDTHH:mm:ss</code>	
	<code>string.timeFormat()</code>	<code>HH-mm-ss</code>	
	<code>string.lowerCase()</code>	<code>string.toLowerCase()</code>	
	<code>string.upperCase()</code>	<code>string.toUpperCase()</code>	
	<code>string.regex()</code>	<code>string.matchRegEx()</code>	
	<code>string.length</code>	<code>string.len()</code>	
	<code>string.toString()</code>	<code>coerce.toString()</code>	
<code>utility.renderJSON</code>	<code>coerce.toString()</code>		
Triggered flows	Use of triggered flows is deprecated.		2.4.0
Flogo OSS		Use the Return Activity	2.2.0

Affected Component	Deprecated Feature	Alternative Feature	Deprecated in Version
Reply (Legacy) Activity		in serverless flows.	

## Removed Features

### Removed Features

Affected Component	Description	Deprecated in Release	Removed in Release
Microsoft Windows	Support for Microsoft Windows (applicable only to 2.14.0 and below) is removed.	-	2.18.0
TIBCO Flogo® Enterprise Web UI	To remove the effort of installing and updating TIBCO Flogo® Enterprise, the functionality of TIBCO Flogo® Enterprise web UI is delivered as a part of the hosted TIBCO Cloud Integration environment. The option to set up TIBCO Flogo® Enterprise web UI locally is removed. This does not affect app deployment options supported with TIBCO Flogo® Enterprise. Also, as the TIBCO Flogo® Enterprise web UI is removed, the latest Flogo features are accessible from TIBCO Cloud™ Integration.	2.14	2.14.1
<b>Start with Trigger</b> option	The <b>Start with Trigger</b> option on the UI (when creating flows), is removed.	-	2.5.0

# Migration and Compatibility

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This section lists migration procedures and compatibility matrix for this version of TIBCO Flogo® Enterprise.

**!** **Important:** Starting from version 2.17.0, connector information is documented in the *TIBCO® Cloud Integration Release Notes* only. For more information on connectors, see [TIBCO® Cloud Integration Release Notes](#).

## Release 2.23.0

There are no migration-related changes in this release.

## Release 2.22.0

### End of Support for Custom Access Key

If you are enabling the DB Service with a custom access key (starting the agent with a custom access key, creating an on-premises database, and testing the app), then as of this release, the existing apps running continue to work, even if they are re-pushed. If you disable the DB Service with a custom access key, it uses the system access key automatically, causing the existing DB Connectors to stop working. To fix this, start another agent with the same specifications, without using an access key. Follow the below steps:

1. `./tibagent configure agent -p <port> <agent_name>`
2. `./tibagent start agent --spec <on-premise port>:<ip/hostname>:<on-premise port>`

## Release 2.21.0

Migration and compatibility are not affected in this release.

## **Release 2.20.0**

Migration and compatibility are not affected in this release.

## **Release 2.19.0**

There are no migration procedures or compatibility issues in this release.

## **Release 2.18.0**

There are no migration procedures or compatibility issues in this release.

## **Release 2.17.0**

Migration and compatibility are not affected in this release.

## **Release 2.16.0**

## **TIBCO Flogo® Enterprise Core**

There are no migration procedures or compatibility issues in this release.

## **Release 2.15.0**

## **TIBCO Flogo® Enterprise Core**

There are no migration procedures or compatibility issues in this release.

## Release 2.14.1

### TIBCO Flogo Enterprise Core

To migrate an existing app (created using release 2.14.0 or a prior release) from Flogo Enterprise to TIBCO Cloud™ Integration, you must:

1. Export your app from Flogo Enterprise (using release 2.14.0 or a prior release)
2. Import the (exported) app in TIBCO Cloud™ Integration

For more information, see *TIBCO Flogo® Enterprise Transition Guide*.

## Release 2.14.0

### TIBCO Flogo® Enterprise Core

There are no migration procedures or compatibility issues in this release.

## Release 2.13.0

### TIBCO Flogo® Enterprise Core

There are no migration procedures or compatibility issues in this release.

## Release 2.12.0

There are no migration procedures or compatibility issues in this release.

## Release 2.11.0

There are no migration procedures or compatibility issues in this release.

## Release 2.10.0

### HTTP Rest Trigger Mappings

Importing an app created in a prior version of Flogo Enterprise that uses a REST Trigger and is configured with an HTTP response code breaks trigger reply mappings. To fix this issue, export the app from the latest version and import it again.

### Mappings after import

For older apps, in some cases, mappings done at parent level are displayed at the element level after import. Note that it does not have any impact at runtime.

## Release 2.9.0

### Zuora App

If a Zuora app is created in a prior version of Flogo Enterprise and is then imported to the current version, mapping issues are observed on the **Input** tab of the Zuora Subscription Activity for the Create Subscription operation.

Export the app without making any changes and then import it again.

## Release 2.8.1

There are no migration or compatibility related changes in this release.

## Release 2.8.0

There are no migration or compatibility related changes in this release.

## Release 2.7.0

### InvokeRESTService Backward Compatibility

After an old application JSON file is imported, if it uses the open source Project Flogo REST Invoke Activity, an error is encountered.

As a workaround, import the application and delete the existing open source Project Flogo REST Invoke Activity. Then, add a new REST Invoke Activity from the Default category.

### Array Mapper Filter

When you upgrade to 2.7.0, if you use an array mapper filter for an application created in a release prior to 2.7.0, an error is displayed during design time. To fix this, delete the old mapping and remap it from the Upstream Output section. A scoping variable is now included in the mapping.

For example, if the old mapping is:

```
array.forEach($flow.body.Book)
```

After the remap, the mapping becomes:

```
array.forEach($flow.body.Book, "Book")
```

## Release 2.6.0

The following migration and compatibility related changes have been made in this release.

### Flogo Enterprise Importing Old Apps Due to a Model Change

In version 2.6, due to an application model change, it is recommended that you import old apps JSON in version 2.6 and export them.

### CLI Tool

When the CLI tool is used to build an application created in an earlier version of Flogo Enterprise, the application binary created might not work properly in version 2.6 due to an application model change.

To avoid errors, import and export old apps in version 2.6 before using the CLI tool.



# Closed Issues

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This section lists the closed issues since the last major release of TIBCO Flogo® Enterprise.

**!** **Important:** Starting from version 2.17.0, connector information is only documented in the *TIBCO® Cloud Integration Release Notes*. For more information about connectors, see [TIBCO® Cloud Integration Release Notes](#).

## Release 2.24.0

The following issues have been fixed in this version of TIBCO Flogo® Enterprise.

Key	Summary
FLOGO-11360	Multipart data table is removed in the <b>InvokeRestService</b> activity when an imported app is exported and imported back.
FLOGO-11274	When you enable DB Service, the following message is displayed: the service is disabled successfully.
FLOGO-11020	The flow note added in the <b>main flow</b> is not there when we switch to the <b>error handler flow</b> .
FLOGO-10961	When a flow is copied, the notes icon is not highlighted on the copied Activities which have notes added in it. If the notes icon is clicked, it opens an additional Notes box.
FLOGO-10761	If there is an activity open in Unit Testing and we switch to another activity, without closing the previous activity, a Validation error is displayed.
FLOGO-10753	Branch error icon is not displayed properly in certain circumstances. For example, it is not shown properly for the upgraded and imported apps

Key	Summary
	having multiple branches, even if one of the branches has any error in the condition. If activities are closer to each other then the branch error icon gets hidden behind the branch label. The branch icon is not aligned in the middle on the connection line.
FLOGO-10652	If the schema is changed to object, the item added in an anonymous array does not get removed.
FLOGO-10631	When we create an app using the API specifications, the entries of the Group name and the Last Modified fields get overlapped, if the Group name entry is long.
FLOGO-10617	After importing old Flogo projects, this message is displayed - "One or more activities are not connected".
FLOGO-10567	Validation error symbol is not observed at the <b>Settings</b> and the <b>Input</b> tab for an activity if you switch without closing the previous activity configuration window.
FLOGO-10470	When we create a flow via the API specification, a loading spinner must be added. Currently it does not give a proper input.
FLOGO-10459	Full name of the activities is not displayed on the canvas.
FLOGO-10019	While running a flow from the flow tester, if we want to run a test on the activity, the activity is not highlighted in any color.
FLOGO-9886	App properties for trigger settings are not attached from the flow list page.
FLOGO-9517	When an API spec file is uploaded in the InvokeRest Activity or the REST trigger, common parameters for all operations at the path level are not displayed in the Input Settings tab.
FLOGO-9041	For a read-only user, the app implementation takes a longer time to load if the app has a large number of flows.

Key	Summary
FLOGO-8107	If you map an array to an array using the <code>array.forEach</code> function and specify a scoping variable in a nested array, [ <code>&lt;&lt;index&gt;&gt;</code> ] is not shown while mapping child elements and generates an error in Activity.
FLOGO-7684	If you drag an array from <b>Available data</b> to the mapper text area that already has an <code>array.forEach</code> function, the array is mapped again as an <code>array.forEach</code> function (instead of being added to the existing <code>array.forEach</code> function).
FLOGO-7464	The <code>Multipart/form-data</code> table does not sync properly when API spec is uploaded in the <code>InvokeRestService</code> Activity.
FLOGO-7405	If you use a function as a source array for <code>array.foreach()</code> , Studio cannot determine the array element schema and throws a design-time validation error.
FLOGO-7031	When building an app binary from builder CLI with Golang version 1.15.x, the <code>gRPC</code> Activity fails to send a request and displays the following error: <div style="background-color: #e6f2ff; padding: 10px; margin-top: 10px;"> <pre>authentication handshake failed: x509: certificate relies on legacy Common Name field, use SANs or temporarily enable Common Name matching</pre> </div>
FLOGO-6458	If you use the Cisco AnyConnect VPN client and then use the <code>InvokeRESTService</code> in the debugger to call a service, it fails.
FLOGO-6383	When the REST trigger ( <code>ReceiveHTTPMessage</code> ) or <code>InvokeRESTService</code> Activity is configured with Swagger/Open API Specification, any manual changes to the configuration are reset when the specifications are uploaded again.
FLOGO-6237	Using literal values in the <code>string.join</code> function in a Flogo app fails both at design and run time.
FLOGO-5133	In the <b>ReceiveHTTPMessage</b> trigger and <code>InvokeRestService</code> service, you cannot select an app-level schema if the trigger or Activity has multiple responses.

Key	Summary
FLOGO-4842	If you upgrade from Flogo Enterprise 2.x.x to 2.8.1, binaries of an app cannot be generated.
FLOGO-4840	If you upgrade from Flogo Enterprise 2.x.x to 2.8.1, the Flow Tester does not work.
FLOGO-4625	If there are changes in an uploaded Swagger file, a warning message is not displayed requesting the user to update the Activity mappings. As a result, you need to navigate to each downstream Activity to check for changes in the schema.
FLOGO-4583	A TIBCO Cloud™ Messaging Subscriber app of type <b>Durable</b> with <b>Content Matcher</b> fails to start, if an app with the same <b>Durable</b> name and <b>Content Matcher</b> was pushed before.
FLOGO-4375	When a Kafka app created in a previous release is imported in the current release, and you click <b>Edit</b> in the <b>Connections</b> tab, the <b>Use Schema Registry</b> option is not available in the <b>Apache Kafka Client Configuration</b> dialog box.
FLOGO-3821	When configuring a response code in a REST trigger, the response body and response header must follow the same input schema type.
FLOGO-3155	If there is no Activity on the UI for some time, the UI is redirected to <code>http://localhost:&lt;port&gt;/undefined/idm/logout-request</code> .
FLOGO-2720	You cannot export app properties from a binary that has an API Gateway or S3 trigger.
FLOGO-2594	Deploying Lambda apps on AWS using the Flogo engine binary is not supported.
FLOGO-1727	When a value which starts with 0 is assigned to a field of integer type, the mapper throws a validation error.
FLOGO-992	If you enter an invalid API Key when creating a Chargify connection, you are prompted to enter username and password for your Chargify account instead of an error being displayed.

## Release 2.23.0

The following issues have been fixed in this version of TIBCO Flogo® Enterprise.

Key	Summary
FLOGO-11099	Formatted Text is not supported in Notes.
FLOGO-9990	Trigger panel inside a flow is not opening when add trigger is clicked from the flow list page.

## Release 2.22.0

The following issues have been fixed in this version of TIBCO Flogo® Enterprise.

Key	Summary
FLOGO-10983	Common parameters for all operations at the path level are not resolved, hence, they do not show in the Input settings.
FLOGO-10350	When we open a flow and click an activity, sometimes it does not open with a single click and a message, saving changes, is displayed.
FLOGO-10803	When you add App Schema and click Rest Trigger, the UI becomes unresponsive. The trigger is removed after you refresh the page.
FLOGO-10821	If any upstream activity is renamed, all the references matching with that activity name are updated.

## Release 2.21.0

The following issues have been fixed in this version of TIBCO Flogo® Enterprise.

Key	Summary
FLOGO-10241	Mapper activity fails at runtime if the schema used has an Anonymous array.
FLOGO-9510	If you rename an activity field, assertion configuration on such activities does not adjust automatically and also does not throw any validation error in the assertion file. When executing a unit test in such cases, the assertion fails.
FLOGO-9369	No validations are displayed if the user enters an invalid assertion expression or performs incorrect mappings in flow inputs.
FGDPBX-28	The dropbox token expires in about 4 hours.

## Release 2.20.0

The following issues have been fixed in this version of TIBCO Flogo® Enterprise.

Key	Summary
FLOGO-9818	After importing an app with a primitive object array, the mapping for the array is lost and is converted into the array.ForEach.
FLOGO-9430	String, number, and boolean types are supported in the ReceiveHTTPMessage trigger when configured with an OpenAPI spec.
FLOGO-8897	Path parameter of type number is converted to type string when the ReceiveHTTPMessage trigger is configured with an OpenAPI spec.
FLOGO-8147	After editing an Activity name, the branching label from source to destination Activity does not show the updated Activity name. It shows the default Activity name instead.

## Release 2.19.0

The following issues have been fixed in this version of TIBCO Flogo® Enterprise.

Key	Summary
FLOGO-9426, FLOGO-9486	When you add a property or group in an app having a large number of flows and nested app properties (for example, 80 flows and more than 100 nested app properties), the API call for <b>Save</b> takes time to add properties and groups.
FLOGO-9444	Search in app property does not return a match if that app property does not have any value.
FLOGO-9434	If you remove a property and add the same property under another group or root level, the mappings are not updated in the input data or mapper text field. The changes are visible at the Activity level but the input data or mapper text field displays the following error: <div data-bbox="428 968 1414 1056" style="background-color: #e6f2ff; padding: 10px; margin: 10px 0;"> <pre>Property 'Property_name' does not exist in '\$Property'</pre> </div>
FLOGO-9427	If you move a property from the root level or from one group to another group in the app properties (using the drag-and-drop feature), at an Activity level existing mappings are not updated in the input data or mapper text field.

## Release 2.18.0

The following issues have been fixed in this version of TIBCO Flogo® Enterprise.

Key	Summary
FLOGO-9251	The documentation of the ConfigureHTTPResponse Activity is updated to include the following considerations: <ul style="list-style-type: none"> <li>The flow in which you want to add the ConfigureHTTPResponse</li> </ul>

Key	Summary
	Activity must have a ReceiveHTTPMessage trigger. <ul style="list-style-type: none"><li>Do not use this Activity with subflows.</li></ul>
FLOGO-9031	OAuth 2.0 client credentials are not working in HTTP Client Authorization connection.

## Release 2.17.0

### TIBCO Flogo® Enterprise Core

The following issues have been fixed in this release of TIBCO Flogo® Enterprise.

Key	Summary
FLOGO-8689	On unbinding an app schema from the request schema, <b>Save</b> is disabled.
FLOGO-2844	If you change the input or output schema in a subflow, an error or warning is not displayed in the mapping of the call flow Activity.

## Release 2.16.0

### TIBCO Flogo® Enterprise Core

The following issues have been fixed in this release of TIBCO Flogo® Enterprise.



Key	Summary
FLOGO-8653	Changes made to a field for adding or removing binding with an app property cannot be saved if the value entered by the user and the default value of the app property are the same.
FLOGO-8519	<p>The documentation of the InvokeRESTService Activity is updated to include the following note:</p> <p>If the content type is other than the types <code>application/json</code>, <code>application/xml</code>, or <code>text/plain</code>, it is converted into Base64-encoded values. You can use the <code>utils.decodeBase64</code> function to get the actual values. This is applicable when <b>Configure Response Codes</b> is set to <b>True</b> or <b>False</b>.</p>
FLOGO-7810	<p>When the ReplyToTrigger Activity is used in a flow, the following warning related to the Return Activity is incorrectly displayed:</p> <div style="background-color: #e6f2ff; padding: 10px; border: 1px solid #d9e1f2;"> <p>Flow output is defined but not configured. To set flow output, add Return Activity from Default category.</p> </div>

## Release 2.15.0

### TIBCO Flogo® Enterprise Core

The following issues have been fixed in this release of TIBCO Flogo® Enterprise.

Key	Summary
FLOGO-8530	Custom errors from the implementation are not returned back to the client from the GraphQL trigger.
FLOGO-8519	<p>The documentation of the InvokeRESTService Activity is updated to include the following note:</p> <p>If the content type is other than the types <code>application/json</code>,</p>

Key	Summary
	<p>application/xml, or text/plain, it is converted into Base64 encoded values. You can use the <code>utils.decodeBase64</code> function to get the actual values. This is applicable when <b>Configure Response Codes</b> is set to <b>True</b> or <b>False</b>.</p>
FLOGO-8448	<p>The eBay OAuth flow does not work with grant type "Authorization Code". To fix this, whenever grant type 'Authorization Code' is used for getting the access token, 'Authorization Header' is now set in the request.</p>
FLOGO-8203	<p>The Client Authentication type 'Header' does not work for the grant type 'Client Credentials'.</p>
FLOGO-8191, FLOGO-8140	<p>For a large response payload, the response time is significantly higher for a REST trigger when configured with STRING datatype.</p>
FLOGO-8189, FLOGO-8190, FLOGO-8123	<p>In the InvokeRestService Activity, if the request type is set to <code>form-urlencoded</code> and the input payload contains spaces, the Activity does not render the output correctly.</p>
FLOGO-8176	<p>The "Using the Loop Feature in an Activity" section of the documentation is updated to include the following note:</p> <p>"Keep in mind that the index for the Repeat while true iteration begins at zero and iterates n+1 times. If you enter 4 as the iterator value, it executes as the following iterations: 0,1,2,3,4."</p>
FLOGO-8133	<p>Login action under HTTP Client Authorization Configuration fails with the following error for 'Client Credentials' grant type and 'Body' as 'Client Authentication':</p> <div data-bbox="427 1409 1414 1497" style="background-color: #e6f2ff; padding: 10px; border: 1px solid #d9e1f2;"> <pre>Invalid credentials</pre> </div>
FLOGO-8125	<p>Images in the "Creating Your First REST API" section of the documentation are updated.</p>
FLOGO-7968	<p>If you have defined the multipart form data field as filecontent but provide string in the input, multipart form data is returned as a string instead of a file.</p>

Key	Summary
FLOGO-7967	If you have defined a filecontent type multipart form data field, you cannot provide a filename as input.
FLOGO-7936	A manually-typed array is not supported in a ternary expression. As a workaround, you can use the new If/Else feature.
FLOGO-7600	For Project Flogo™ extensions, configuration UI is disoriented after clicking on <b>Discard</b> and requires a browser refresh. If you click <b>Discard</b> , the UI for FIELDS is transformed to basic type inputs (input=text).
FLOGO-7572	When you upload a contribution with a Default category (display.category set to Default), an error message is not displayed.
FLOGO-7491	REST trigger settings UI hangs when an app is created from Open API spec 3.0 with Object type in multipart/form-data request.
FLOGO-7411	Overriding app property names with (secs) for the deployed Lambda functions from the command line is not supported.
FLOGO-6950	If an app is created with app property type as password and double quotes are used in the value of the password, the app fails.
FLOGO-6031	In the <b>InvokeRestService</b> Activity, the application level schema toggle is displayed for plain/text and other type request and response.
FLOGO-4324	For a JSON tag that does not have any value, Null is displayed in the output. As a workaround, you can use the new If/Else feature and add the "isdefined(xxxx)" condition.

## TIBCO Flogo® Connector for TIBCO Cloud™ Messaging

Key	Summary
FGTCM-128	You can now push an app with a large TCM JSON web token as a key.

## TIBCO Flogo® Connector for Apache Kafka

Key	Summary
FGKAFKA-50	The Kafka Producer doesn't consider the value of the <b>partition</b> field that is set on the <b>Input</b> tab.

## Release 2.14.1

### TIBCO Flogo® Enterprise Core

No issues have been fixed in this release of TIBCO Flogo® Enterprise.

## Release 2.14.0

### TIBCO Flogo® Enterprise Core

The following issues have been fixed in this release of TIBCO Flogo® Enterprise.

Key	Summary
FLOGO-7666	The value of data type BIGINT is converted to an incorrect value.
FLOGO-7544	<b>Discard</b> is activated in the OSS Invoke REST Service Activity even when no changes are made. The UI is disoriented after clicking on <b>Discard</b> and requires a browser refresh.
FLOGO-7541	If the trigger with coercion has individual mapping for elements, the mapping of the Return Activity changes after export and import.
FLOGO-7531	When you access a property of type array using a square bracket notation, a false mapper validation error is thrown. For example, an error is thrown for the following property: <pre>coerce.toBool((\$flow.body["Customer"] [0+1])</pre>
FLOGO-7528	If you import an app that contains double quotes (""), the value within the double quotes is not preserved in the Activity and the expression becomes empty. A design-time validation error is thrown.
FLOGO-7510	In the Invoke REST Service Activity, when <b>Configure Response Codes</b> is set to <b>True</b> and it is provided in the JSON Schema format, <b>Response Headers</b> are not populated in <b>Output</b> .
FLOGO-7474	The <code>array.foreach()</code> function cannot be used as a function argument or in conditional expressions.
FLOGO-7407	When a dynamic name is used in the property value lookup, the mapper reports validation error. For example, an error is thrown for the following property: <pre>\$property[\$Activity[foo].output.name],</pre>
FLOGO-6936	In the InvokeRESTService Activity, when <b>Configure Response Codes</b> is set to <b>true</b> and <b>Response Body</b> or <b>Response Headers</b> is configured with JSON schema, response headers do not show up correctly in the output.

Key	Summary
FLOGO-6720	If an extension is deleted before an app and uploaded again, the deleted app name or flow name is shown in the extension.
FLOGO-5827	Flow input or output with JSON data of NULL value is not supported.

## TIBCO Flogo® Connector for PostgreSQL

The following issues have been fixed in this release of TIBCO Flogo® Connector for PostgreSQL.

### *Closed Issues*

Key	Summary
WIPGRS-462	When you use ENUM functions on table creates with an enum as datatype for one of its columns, then error "query parsing failed: no prefix parse function found for ILLEGAL" occurs.
WIPGRS-461	Datatype JSON is not supported. At run time output of JSON datatype shows as base64 encoded value.
WIPGRS-428	At runtime output of XML type is showing base64-encoded value.
WIPGRS-257	Postgres values of enum type are base-64 encoded instead of the actual value being displayed.

## TIBCO Flogo® Connector for Oracle MySQL

The following issues have been fixed in this release of TIBCO Flogo® Connector for Oracle MySQL.

Key	Summary
WIMYSQ-546	Inserting a record with null values does not work.

## Release 2.13.0

### TIBCO Flogo® Enterprise Core

The following issues have been fixed in this release of TIBCO Flogo® Enterprise.

Key	Summary
FLOGO-7294	Launch configurations in the Flow tester of the source app are not seen in the target app after the app is replaced from the App Details page.
FLOGO-7060	In the InvokeRESTService Activity, for existing activities, you cannot see the <b>Output Format</b> field if you select <b>Response Type</b> as <b>application/xml</b> in the <b>Output Settings</b> tab. The Activity fails at runtime.
FLOGO-7022	When a new element is added to the JSON (such as a new array element in the existing schema), all mappings are cleared and the mapping must be done again. The old mapping is not retained.
FLOGO-7045	After selecting an app-level schema for an OSS trigger or Activity, the schema does not appear in the dialog box until you click inside the dialog box.
FLOGO-6815	If an arithmetic operator is used inside a function argument, validation errors are returned in the mapper.
FLOGO-5869	App-level schema is not available for the request or response of <code>Plain/text</code> and <code>Other</code> types because they have a non-editable schema by default.
FLOGO-5200	If you add wrong data in the input mapper, an error symbol is not displayed for the Activity. The error symbol is, however, correctly displayed in the input

Key	Summary
	mapper section.
FLOGO-4263	Adding a new element to an existing mapper schema, removes any existing mapped elements.
FLOGO-4104	When Project Flogo apps are imported into Flogo, the Input/Output mappings are lost after the Sync Schema option is used.
FLOGO-3624	If a field in the mapper of an Activity is mandatory and you have not provided a value, an error is not displayed on the Activity or flow canvas.
FLOGO-2536	Importing a Flogo app using Salesforce activities with no connection set in connections page takes longer than expected time to import.
FLOGO-2223	When there is a conflict in the path parameters wildcards, even though you see an error in the logs, the app proceeds to run.

## TIBCO Flogo® Connector for TIBCO Cloud™ Messaging

Key	Summary
FGTCM-88	MessageSubscriber trigger output provides the metadata on the <b>Map to flow Inputs</b> tab. The <b>metadata</b> field includes the <b>messageId</b> and <b>deliveryAttempt</b> properties.



## TIBCO Flogo® Connector for PostgreSQL

### Closed Issues

Key	Summary
WIPGRS-282	Returns {"records":null} at run time for parameter queries where parameter name is same as data in the query.

## TIBCO Flogo® Connector for Microsoft SQL Server

### Closed Issues

Key	Summary
WIMSSS-268	At run time, XML type is not supported.

## TIBCO Flogo® Connector for Oracle MySQL

### Closed Issues

Key	Summary
WIMYSQ-62	Mapper fails to resolve function name on the output for the Activity.

## Release 2.12.0

The following issues have been fixed in this release of Flogo Enterprise.

Key	Description
FLOGO-6661	After installing or uploading a connector or extension with a dependency

Key	Description
	<p>(such as a third-party library), a flow using such a connector or extension cannot be tested in the Flow Tester. The following error is displayed:</p> <pre>Failed to create engine instance</pre>
FLOGO-2224	In a REST trigger, when the endpoints have the same base path but different wildcard in path parameters, the app fails to run and results in a path conflict error.
WIPGRS-285	(TIBCO Flogo® Connector for PostgreSQL) The PostgreSQL Update Activity does not work when the returning clause is used.
WIMSSS-284	(TIBCO Flogo® Connector for Microsoft SQL Server) When creating a connection with incorrect SSL details, a meaningful error message is not displayed.
WIPGRS-166	<p>(TIBCO Flogo® Connector for PostgreSQL) Using multiple user-defined prepared parameters as a sub-string of another does not work. The following query does not work as dep is a substring of dep1:</p> <pre>select name, dept_name from student where student.dept_name=?dep OR student.dept_name=?dep1;</pre>

## Release 2.11.0

The following issues have been fixed in this release of Flogo Enterprise.

Key	Description
FLOGO-6269	After renaming a Flogo app, the app name field was not editable.

Key	Description
FLOGO-6234	(Only for database connectors) In the Manual mode, after you click <b>Clear Table</b> , the subsequent fetch query failed.
FLOGO-6233	(Only for database connectors) In the manual mode, when you entered a query and clicked <b>Fetch</b> , the table was populated with metadata. However, when you clicked <b>Add row</b> , all previous metadata disappeared.
FLOGO-6216	You could not multiply <code>float64</code> with a JSON number. When using the multiply operation in the mapper of a number field, an error occurred at run time.
FLOGO-6175	(Windows OS only) If you clicked <b>Create/Import</b> multiple times, the UI became unresponsive for a certain period. When the UI finally became responsive, multiple unwanted app instances were created. This happened because one new app was created for each click.
FLOGO-5998	The <code>datetime.currentDate()</code> function could not be formatted or parsed by the <code>datetime.parse()</code> or <code>datetime.formatDate()</code> function.
FLOGO-5876	For any old REST triggers where the API Specification upload feature was not enabled, adding a new handler failed.
FLOGO-5867	App level schema was not available for the <code>application/xxx-urlFormEncoded</code> request type and it had a non-editable schema by default.
FLOGO-5647	When creating a new trigger, you could not use <b>Bind an application property</b> to bind a property to the port.
FLOGO-5344	While adding elements in the <code>array.flatten()</code> function, the mapper became slow and the page became unresponsive after some time.
FLOGO-4954	When multiple flows used the same TIBCO Cloud Messaging subscriber trigger, only some of the flows worked as expected.
FLOGO-1488	Mandatory fields in all the AWS Kinesis activities were not displayed as mandatory on the UI.

Key	Description
WIMYSQ-441	The output schema is not generated and the following error is displayed: <pre>evaluation failed: unknown operator: DATETIME_OBJ * INTEGER</pre>

## Release 2.10.0

The following issues have been fixed in this release of Flogo Enterprise.

Key	Description
FLOGO-6255	When an existing Flogo Enterprise setup was upgraded to 2.10, the version of the existing apps was set to 4.0.0 by default.
FLOGO-5895	You could not map empty arrays in Activity mappings.
FLOGO-5893	At runtime, the Flogo engine threw an error when the application property was configured to the <b>Delay</b> field in a <b>Repeat Until True</b> loop.
FLOGO-5846	The <b>Add row</b> option was present for path parameters. It could not be added from <b>Input Settings</b> .
FLOGO-5755	The Send Email Activity did not work with Office365 mail server.
FLOGO-5730	Subflow flow mappings got moved to the top level node after export/import app.
FLOGO-5714	If an existing trigger in a flow was deleted from the flow list page and you added a new trigger from the same page, you could not build the binary app and export the app.  As a workaround, you could duplicate the existing flow and delete the original one. You can perform all actions on the newly created flow.
FLOGO-5655	You could not import tester launch configuration. The following error was displayed:

Key	Description
	Configuration already exists.
FLOGO-5654	For the InvokeRESTService Activity, the Accept request header was set to Response Type when using Configure Response Codes.
FLOGO-5650	<b>Summary:</b> If an app-level schema was attached in the request or response schema of the AWSAPIGatewayLambda trigger, the API gateway was not created.
FLOGO-5634	In the input and output of a flow, if you changed the parameter type and then selected another type as <b>Required</b> , the parameter type changed to the previous type again.
FLOGO-5616	If you did not click <b>Save</b> while configuring an Activity and then moved to the <b>Flow Inputs &amp; Outputs</b> tab, the flow was unavailable and appeared grayed out.
FLOGO-4855	If you upgraded from Flogo Enterprise 2.8.0 to 2.8.1, the following error message was displayed:
	<pre>'o' is not recognized as an internal command or 'things' is not recognized as an internal command"</pre>
	You can ignore the error. The upgrade happens correctly despite the error.
FLOGO-4420	<b>Summary:</b> While mapping arrays, validation errors were displayed on the UI when the source array came from a fixed array child such as: <code>\$flow.input[0].test.arraysource.</code>
WIMSSS-188	The SQLServer output schema was not available immediately for mapping in the downstream activities.
WIMSSS-207 / WIMSSS-215	Input schema was blank and did not populate immediately.

## Release 2.9.0

The following issues have been fixed in this release of Flogo Enterprise.

Key	Description
FLOGO-5570	If an input string contained the equals sign (=) in the app property and the app property was updated at run time, the <code>string.replaceAll</code> function generated an incorrect result.
FLOGO-5267	When the reply settings of a ReceiveHTTPMessage trigger were modified, the corresponding ConfigureHTTPResponse activities within the flow were not modified appropriately.
FLOGO-5068	Loading an app and validating flows took a long time. In addition, if you tried to access mappings in a flow, the mapper UI did not load.
FLOGO-4969	Moving activities around in large flows was slow.
FLOGO-4968	Mapper was slow for large flows.
FLOGO-4953	When the InvokeRestService Activity was used in an app with output settings configured for a String type response code, the output for the response code was generated as type JSON.
FLOGO-4946	If a TIBCO Cloud Messaging trigger had multiple flows, only one flow was triggered and the rest of the flows were not triggered.
FLOGO-4945	For the MongoDBInsertDocument Activity, when an app was imported, input parameters were not displayed on the <b>Input</b> tab.  If the imported flow contained any object or param fields that did not have a fixed schema definition in the <code>Activity.json</code> or <code>trigger.json</code> , it resulted in loss of data and a blank screen was displayed.
FLOGO-4935	After upgrading to the current release, all codes were displayed as 200 in the manifest.
FLOGO-4924	For REST triggers created in prior releases (which did not have the <b>Configure Response Codes</b> field in <b>Reply Settings</b> of the REST trigger),

Key	Description
	the Swagger spec was generated with response code as undefined.
FLOGO-4903	When a Flogo app was scaled down to 0, the app did not shut down gracefully. Thus, in Flogo apps with Salesforce activities, the push topics were not deleted.
FLOGO-4902, FLOGO-4872	The <b>Extensions</b> tab took a long time to load and, in some cases, was unresponsive. If the number of large apps was high, the <b>Extensions</b> tab did not load.
FLOGO-4860	For large apps, there was a lag in design-time performance. For example, tasks such as viewing logs in a browser or downloading a large log file took a long time.
FLOGO-4845	If an app was updated and the app already existed in another environment, when the app was imported into the other environment, changes made to the app did not reflect in the other environment.
FLOGO-4570	If an array name contained a dollar sign (\$) or a dash (-) character and the flow output was mapped to the Return Activity, the character (\$ or -) was removed from the array name in the <b>Input</b> field.
FLOGO-4492	When an app property was bound to a trigger handler configuration and the same trigger was used in another flow, the same app property was used in the new trigger handler. You had to manually unbind the app property in the new trigger handler.

## Release 2.8.1

The following issues have been fixed in this release of Flogo Enterprise.

Key	Description
FLOGO-4582	A TIBCO Cloud Messaging Subscriber Content Matcher was not saved after importing the app.

Key	Description
FLOGO-4573	Flogo Enterprise did not handle special variables containing bracket notation, such as 'address[line1]'.
FLOGO-4489	When an app property was bound to a trigger handler configuration and the app was exported, the name of the property was lost and was not displayed in the design-time model after the app was imported using the UI. The app failed at runtime.
FLOGO-4456	The Flogo AWS Connection failed at runtime if <b>Use Assume Role</b> was set to <b>True</b> .
FLOGO-4448	When the output was configured for a flow, a warning message regarding the Error Handler was reported.
FLOGO-4427	At design time, when a filter expression in a mapper had multiple arguments from \$loop, a wrong validation marker was displayed.
FLOGO-4407	The Flogo AWS Connection failed at runtime if <b>Use Assume Role</b> was set to <b>True</b> and <b>External ID</b> was not configured.
FLOGO-4388	The data set in the Throw Error Activity in a subflow was not accessible to the parent flow.
FLOGO-4315	You could import apps with AWS API Gateway Lambda Trigger, Receive Lambda Invocation Trigger, or S3 Bucket Event Lambda Trigger along with other triggers in the same app. A validation error was not returned at design time and the app failed at runtime.
FLOGO-4250	If you changed or switched a Loop type, the configuration settings of the previous Loop type were not stored or preserved.
FLOGO-3910	For an app, when a child element was added as a filter to the parent array mapping, an index was not added.
FLOGO-3908	While mapping arrays, an extra element was added as a null value for missing elements in the array. For example, if the first element in an array had 3 fields and the second element had only 1 field, 2 fields



Key	Description
	were added as null for the second element.
FLOGO-389	Anonymous arrays are not supported. You can add a root element to the array.
FLOGO-3741	If you upgraded to Flogo Enterprise 2.7.0 and then tried to build a binary for an app with a Lambda trigger, building the binary failed with an error.
FLOGO-3650	Building an app using the builder CLI resulted in an issue for an app exported before 2.6.0. You can import the app into the latest version of Flogo Enterprise and export it again.
FLOGO-3561	Logs were not visible in Flow Tester and the following error was displayed: <pre>Debugger failed to start as the test engine is currently being built. Please try again after sometime. For more information check builder.log.</pre>
FLOGO-3520	For the InvokeRestService Activity, if you selected <b>Response type</b> as text/plain or Other in the <b>Output settings</b> tab, the <b>Response schema</b> was not refreshed.
FLOGO-3375	On re-importing an app, single quotes were replaced by double quotes in a JSON string field.
FLOGO-2676	On Linux platforms, the UI was not launched after connecting to a VPN. You can disconnect the VPN and re-launch or refresh the UI.
FLOGO-2451	After importing a Flogo app, an extra return Activity was added if the flow had no return Activity.

## Release 2.8.0

Key	Description
FLOGO-4322, FLOGO-4298	You could not filter an array based on a condition on the child element of the object in that array.
FLOGO-4262	When ternary operators were used with the <code>array.count()</code> function an error was displayed at design time.
FLOGO-4161	False validation errors were reported in case of nested array fields mapping from different sources.
FLOGO-4129	You could not throw the error caught in a subflow to the main flow and stop the execution of main flow when an error occurs.
FLOGO-4056	When the URL of a big-sized Github repo (which did not have the expected structure of extensions) was provided to extensions downloaded from Github, a new app could not be created.
FLOGO-3912	For a child array filter mapping, when only a parent element was used in the filter expression, activities and flow showed a false validation error. Even if the activities show a red mark on the UI, the required results were shown at runtime. You can ignore the red marks.
FLOGO-3878	If a Flogo app had a RESTInvoke Activity which called a REST service created in Flogo and which used <code>ConfigureHTTPResponse</code> , the RESTInvoke flow failed if it used <code>ConfigureHTTPResponse</code> whose input was mapped from RESTInvoke output.
FLOGO-3858	If an array inside an array was mapped to root, the child elements were not upgraded to <code>\$loop</code> . Instead, they were mapped using <code>\$</code> only for hybrid mappings.
FLOGO-3561	Logs could not be seen in the Flow Tester.
FLOGO-3856	If you mapped an array to an array and its child elements, an error was displayed at the trigger and Activity level even though mappings were correct.

Key	Description
FLOGO-3754	When importing an app, if the app used an extension that was not present in the environment, the import process hanged.
FLOGO-3742	After upgrading to version 2.7.0, if you uninstalled the dbservice and then installed it again, the following error was displayed: <div style="background-color: #e6f2ff; padding: 10px; margin: 10px 0;"> <pre>Failed to install service</pre> </div>
FLOGO-3595	When a Flogo application was created by importing a Swagger specification with multiple response codes, the <b>Message</b> field was displayed in <b>Map from Flow Outputs</b> even after adding a <b>Response body</b> in <b>Reply Settings</b> .

## Release 2.7.0

Key	Description
FLOGO-3304	An application that used an open source Project Flogo REST trigger or REST Invoke Activity did not work in the Flow tester or with the binary.
FLOGO-3235	An error in a condition was not shown anywhere in the flow except on the condition definition page.
FLOGO-3209	When you import an application created in open source Project Flogo into Flogo Enterprise, the data type of the code field in the REST trigger was not displayed.
FLOGO-3162	In Lambda applications, if you used an application property when configuring the <b>Execution Role Name</b> field, you could not push the application. The following error was displayed: <div style="background-color: #e6f2ff; padding: 10px; margin: 10px 0;"> <pre>Execution role name [= \$property ["execRoleName"] ]Execution role name [= \$property ["execRoleName"] ]ValidationError: The specified value for roleName is invalid.</pre> </div>

Key	Description
FLOGO-3136	On importing a Lambda Trigger application, Reply Data schema (in the Reply Settings tab in Receive Lambda Invocation Trigger) was lost.
FLOGO-3131	In a condition, you could not check whether an object was empty or null.
FLOGO-3121	Creating a Flogo application from an API specification resulted in a validation error during application creation.
FLOGO-3117	In branch condition, if you compared a string type variable with a number, a validation error was not displayed at design time and the flow did not get executed at runtime.
FLOGO-3102	An error was not displayed for an empty condition on the UI.
FLOGO-3099	If a string in a mapper started with =, the flow failed at runtime.
FLOGO-2863	You could not create a Flogo application from an API specification that had a 400 response code with a schema response.
FLOGO-2855	A flow was unable to capture the body of the response when Invoke API returned a 400 error.
FLOGO-2466	Use of any "trigger output" was not supported in "trigger output" to "flow input" array mappings. Also, use of "flow output" was not supported in "flow output" to trigger reply array mappings.
FLOGO-2432	After upgrading a connector, if you tried to uninstall the connector, the following error was displayed: <div data-bbox="461 1423 1414 1514" style="background-color: #e6f2ff; padding: 5px; margin-top: 5px;"> <pre>bash: ./installmgr.sh: No such file or directory.</pre> </div>
FLOGO-2187	When the Iterator key was used as an array index, the following error was displayed and the flow execution failed: <div data-bbox="461 1648 1414 1738" style="background-color: #e6f2ff; padding: 5px; margin-top: 5px;"> <pre>index based access expected for an array</pre> </div>

Key	Description
FLOGO-2171	Application properties updated in the AWS Parameter Store were not propagated to Lambda functions when self deploy ( <code>./App --deploy</code> ) mode was used. The flow continued to use the default value for such properties.
FLOGO-646	Formatting and parsing of date and time to a MM-DD-YYYY format was not supported.

## Release 2.6.1

Key	Description
FLOGO-3204	Flogo applications exported from Project Flogo™ version 0.9.0 could not be imported into Flogo® Enterprise 2.6.0.
FLOGO-3186	You were not able to import a Swagger specification that did not have any unsupported methods or paths while creating flows. This has been fixed.
FLOGO-3160	A validation error was not returned for invalid credentials in Connections.
FLOGO-3154	Failed to get data from Marketo Upsert or Delete Activity's output errors field.
FLOGO-3152	On Windows platforms, you could not uninstall Flogo Enterprise using the <code>installmgr</code> script.
FLOGO-3141	When an app was imported, input data (string) in a subflow Activity was lost.
FLOGO-3133	After upgrading Flogo Enterprise from 2.x to 2.6.0, if the application had an OSS Activity, the Flogo tester failed to run and displayed the following error message: <div style="background-color: #e6f2ff; padding: 10px; margin-top: 10px;"> <pre>Failed to create engine: %!s(MISSING) error unmarshalling flow: Activity '#error' not imported.</pre> </div>

## Release 2.6.0

Key	Description
FLOGO-2923	For an empty condition, an error was not returned and the condition was evaluated as true at runtime.
FLOGO-2695	Building a Flogo application binary through UI and testing the Flogo application through Flogo tester did not work.
FLOGO-2512	If you created a Flogo application from an API specification, the flows for the REST methods that had query or path parameters of type integer or long were not created even though the application was created successfully.
FLOGO-2403	To run Flogo Enterprise on the Docker toolbox, you had to do the following: <ul style="list-style-type: none"><li>• provide the virtualbox read/write access if it was installed in any directory other than the home directory hierarchy.</li><li>• make the following changes in the bash script file:<pre>SET DATA_DIR="/c/Users/&lt;username&gt;/customer_docker_18.09.01_toolbox/flogo/data" SET FLOGO_HOME="/c/Users/&lt;username&gt;/customer_docker_18.09.01_toolbox/flogo/2.3" SET TOOLS_DIR="/c/Users/&lt;username&gt;/customer_docker_18.09.01_toolbox/flogo/tools" SET SERVICES_DIR_LOCAL="/c/Users/&lt;username&gt;/customer_docker_18.09.01_toolbox/flogo/services" ECHO %DATA_DIR% ECHO %FLOGO_HOME% ECHO %TOOLS_DIR% ECHO %SERVICES_DIR_LOCAL%</pre></li></ul>

## Release 2.5.0

Key	Description
FLOGO-2404	If you imported an application that contained a connection extension, the application got imported without errors, but you had to recreate the connection after importing the application. The connection detail are now preserved except for the password which must be reset in the imported app.
FLOGO-2396	When invoking a Flogo service from LiveApps, LiveApps did not get a response from the Flogo service.

## Release 2.4.0

Key	Description
FLOGO-2103	If the InvokeRESTAPI Activity URL contained "--", it gave an error at design time for Flogo applications.
FLOGO-2022	Flogo Enterprise now supports nested ternary operators.
FLOGO-2021	If you removed the <code>array.forEach()</code> from the root element, all the mappings underneath would get deleted.
FLOGO-1999	On certain Windows machines, the uninstall service would fail.
FLOGO-1925	When overriding a property from the CLI using the <code>FLOGO_APP_PROPS_OVERRIDE</code> environment variable, if your value was a query that used the comma delimiter, you encountered an error.
FLOGO-1833	The XPATH expression <code>count()</code> which is used to get the number of array items is now available for Flogo apps.
FLOGO-1723	Fixed an issue when running <code>run-studio.sh</code> as a regular user, you received a "permission denied" error.

Key	Description
FLOGO-578	When using branch conditions in Flogo applications, you received error messages when the conditions contained special characters (Expected "(", ",", ".", "/*", "//", ";", "[", comment, end of line, or whitespace but "<" found.) but the condition would work and the flow executed as per the condition provided.
FLOGO-368	If the schema entered in the <b>Input</b> and/or <b>Output</b> tab of a REST Activity or trigger contains reserved names in the schema attributes, after the application is imported into Flogo Enterprise, such attributes get treated as special characters which results in runtime errors. The reserved names to avoid in schemas are now documented in the product documentation under the "Mapper" section.
FLOGO-324	When uploading an application that contained a subflow, the subflow-related configurations did not get imported.

## Release 2.3.0

Key	Description
FLOGO-1443	Fixed an issue where if your Flogo application used any Flogo connector using OAUTH for authentication, the application binary built using the Flogo CLI tool did not work at runtime.
FLOGO-1405	Flogo applications exported from prior versions such as 2.0.0 or 2.1.0 were not compatible with the Flogo CLI tool.
FLOGO-325	When uploading an application that contains an iterator, the iterator-related configurations did not get imported.
FLOGO-313	When uploading an application that contained application properties, the application properties related configurations did not get imported.



# Known Issues

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This section lists the known issues in this version of TIBCO Flogo® Enterprise.

**!** **Important:** Starting from version 2.17.0, connector information is documented in the *TIBCO® Cloud Integration Release Notes* only. For more information on connectors, see [TIBCO® Cloud Integration Release Notes](#).

## TIBCO Flogo Enterprise

The following issues exist in this version of TIBCO Flogo® Enterprise.

Key	Description
FLOGO-12447	<b>Summary:</b> Activities are run but not highlighted in a flow that includes a subflow with detached invocation set to True. <b>Workaround:</b> None.
FLOGO-12567	<b>Summary:</b> When you click an activity with no output in the <b>Unit testing</b> mode's <b>Error handler</b> , instead of the Skip activity pop-up, the following error message is displayed: "Cannot convert undefined or null to object" <b>Workaround:</b> None.
FLOGO-12599	<b>Summary:</b> The first time you attempt to click an activity in the <b>error handler</b> of the <b>unit testing</b> mode, it fails. <b>Workaround:</b> This attempt works the second time.
FLOGO-12620	<b>Summary:</b> When you skip an activity with no output in the <b>unit testing</b> mode's <b>error handler</b> , instead of the Activity Mocked message, the following message is displayed: "Activity with 0 Assertion(s) not executed". <b>Workaround:</b> None.
FLOGO-	<b>Summary:</b> The <b>JSON.SET</b> mapper function generates an error for a null value.

Key	Description
12345	<b>Workaround:</b> None.
FLOGO-11650	<p><b>Summary:</b> When dealing with an OSS activity in your Flogo app, you can update the trigger configurations with the <b>Coerce with Schema</b> option. However, when you pick a configured schema, and discard it to close the triggered configuration screen, the UI gets stuck.</p> <p><b>Workaround:</b> You need to refresh the page or click the apps tab to start again.</p>
FLOGO-10837	<p><b>Summary:</b> Activities are not aligned linearly when the app is pushed from PAPI or tibcli.</p> <p><b>Workaround:</b> None.</p>
FLOGO-10834	<p><b>Summary:</b> References are not auto-updated if a group name is updated in the application properties.</p> <p><b>Workaround:</b> References need to be manually updated after renaming any group of app properties.</p>
FLOGO-10802	<p><b>Summary:</b> The field with space is not working in the filter expression of the for-each function.</p> <p><b>Workaround:</b> You must insert an additional identifier ["&lt;loopName&gt;"] in the \$loop expression. For example, <code>array.forEach(\$activity[Mapper].output.data, "data",\$loop {color:#de350b}["data"]{color}["First Name"]=="Jones")</code></p>
FLOGO-10356	<p><b>Summary:</b> <b>Close</b> disappears when there are many activities open and we expand one of them.</p> <p><b>Workaround:</b> Zoom out the panel to find the close icon.</p>
FLOGO-10958	<p><b>Summary:</b> The enum value dropdown is unavailable for the array child elements.</p> <p><b>Workaround:</b> None.</p>
FLOGO-11199	<p><b>Summary:</b> The test result window is hidden when we open the activity assertion or mock window.</p> <p><b>Workaround:</b> Close the assertion or the mock panel of the activity, if opened.</p>

Key	Description
FLOGO-11239	<p><b>Summary:</b> Let us say there is a Flogo app with a large number of flows and activities. Enable the execution history and then, upon completion of the execution, go back to the Execution History page. After this, open an execution instance and when we click <b>View Details</b>, we do not see the list of activities that have been executed. Instead, we see a message that says that the Execution History is not enabled for the organization.</p> <p><b>Workaround:</b> None.</p>
FLOGO-11122	<p><b>Summary:</b> If you are a Read-Only User, the 'Navigate to subflow' icon is not visible on 'StartaSubflow' Activity tile.</p> <p><b>Workaround:</b> None.</p>
FLOGO-11119	<p><b>Summary:</b> For Read-Only User and User roles, <b>Open Subflow</b> is not present inside the StartaSubflow activity.</p> <p><b>Workaround:</b> Click the Input or Output tab and click the Settings tab. The <b>Navigate to subflow</b> becomes visible.</p>
FLOGO-11100	<p><b>Summary:</b> References are not updated for the General category activities and triggers for the existing apps which are exported after the upgrade from PAPI.</p> <p><b>Workaround:</b> None</p>
FLOGO-11072	<p><b>Summary:</b> When mapping unmapped arrays, the 'Filter by' value gets populated in the 'Configure with Value' input mapper after clearing the source mapping and switching to 'Configure with Value' option. <b>Workaround:</b> Select a different non-array node and select the array node again.</p>
FLOGO-10888	<p><b>Summary:</b> Unpushed apps are not getting copied from tibcli.</p> <p><b>Workaround:</b> None.</p>
FLOGO-10886	<p><b>Summary:</b> During mapping of arrays, on double clicking the source array, the mapping is added in the 'Filter by' field.</p> <p><b>Workaround:</b> Instead of double clicking on source node, drag the source node to update the source.</p>
FLOGO-10839	<p><b>Summary:</b> During mapping of arrays, we are not able to select the 'Configure with source' option after clearing the mappings.</p> <p><b>Workaround:</b> Close the activity panel. Then, open it again and try to map the</p>

Key	Description
	node.
FLOGO-11262	<p><b>Summary:</b> If we try to open the mapper activity which has an array with large records mapped with an array type, then the browser becomes unresponsive and validation goes into an Infinite loop.</p> <p><b>Workaround:</b> Instead of using an array with large records directly into the Mapper activity input, map it with the output of some other activity.</p>
FLOGO-10707	<p><b>Summary:</b> When trying to execute the branch merging process, <b>Run test from this activity</b> in flow tester does not work. The flow gets blocked due to this.</p> <p><b>Workaround:</b> None</p>
FLOGO-10576	<p><b>Summary:</b> The Refresh icon vanishes while performing certain actions. It happens when we discard the changes, close the pop-up on the list flow page and trigger configuration in flow details page.</p> <p><b>Workaround:</b> Refresh the page either by reloading or navigating from flow list to flow details.</p>
FLOGO-10529	<p><b>Summary:</b> When the API specification is renamed, the new name is not reflected when we click the Refresh icon. Instead, it shows the previously used name.</p> <p><b>Workaround:</b> Manually export the API specification from the TIBCO Cloud™ Integration - API Modeler and re-import it in the Trigger Setting.</p>
FLOGO-10499	<p><b>Summary:</b> When we create apps using the TIBCO Cloud™ Integration - API Modeler platform or the API specification, it displays the error - “xml has type or value wrong”.</p> <p><b>Workaround:</b> None.</p>
FLOGO-10565	<p><b>Summary:</b> When we upload an API specification which has constructs that are not supported in Flogo, like Option method and Common Parameters, a warning must be displayed.</p> <p><b>Workaround:</b> None.</p>
FLOGO-10572	<p><b>Summary:</b> If an API specification has some cyclic redundancy, a proper error must be displayed.</p> <p><b>Workaround:</b> None.</p>

Key	Description
FLOGO-10300	<p><b>Summary:</b> When there is a large flow and we want to connect many activities together, then drawing the connection lines must auto scroll the page.</p> <p><b>Workaround:</b> Zoom out the flow canvas by clicking the zoom in and out button and then connect the activities.</p>
FLOGO-9905	<p><b>Summary:</b> When we search for any property, we see the appropriate list of properties as per its name, along with the ones which have no value.</p> <p><b>Workaround:</b> None.</p>
FLOGO-10620	<p><b>Summary:</b> The branching mapping window closes directly after clicking the <b>Save</b>. There is no close option.</p> <p><b>Workaround:</b> None.</p>
FLOGO-10732	<p><b>Summary:</b> In cases where there is only one successful branch or a branch with one true condition in the flow tester, it results in all the branches getting highlighted. This happens irrespective of whether the other branches include false conditions or error.</p> <p><b>Workaround:</b> None.</p>
FLOGO-10456	<p><b>Summary:</b> If an activity is added and not connected to any branch or activity, and later exported and imported back, then this added activity is not seen.</p> <p><b>Workaround:</b> None.</p>
FLOGO-10523	<p><b>Summary:</b> If we make a copy of an app created in TCAM, then we are not able to see its entry in the TIBCO Cloud™ Integration - API Modeler create Flogo app section.</p> <p><b>Workaround:</b> None.</p>
FLOGO-10628	<p><b>Summary:</b> When we modify the API specifications, the Refresh icon must pop-up after opening the Trigger Setting. However, there is some delay for the Refresh icon to be visible.</p> <p><b>Workaround:</b> None.</p>
FLOGO-10582	<p><b>Summary:</b> SF Delete activity with loop does not open upon clicking in the flow tester run.</p> <p><b>Workaround:</b> None.</p>

Key	Description
FLOGO-10047	<p><b>Summary:</b> If the mappings are not correct in the unit testing mock feature for an Activity, the Activity is not mocked, and does not fail at run time.</p> <p><b>Workaround:</b> Correct the mappings in the Mock data.</p>
FLOGO-8988	<p><b>Summary:</b> Error propagated from the trigger does not trigger the error handler flow.</p> <p><b>Workaround:</b> None</p>
FLOGO-9556	<p><b>Summary:</b> When using the <b>Flow Tester</b>, if a null value is passed in the schema at the object level, a validation error is returned and the test does not run.</p> <p><b>Workaround:</b> None</p>
FLOGO-8476	<p><b>Summary:</b> If a mapping variable has a “-” in the name, the flow fails to run at runtime.</p> <p><b>Workaround:</b> None</p>
FLOGO-9394	<p><b>Summary:</b> After clearing a mapping and adding an item, the item is not added the first time.</p> <p><b>Workaround:</b> Click <b>Add item</b> multiple times.</p>
FLOGO-9583	<p><b>Summary:</b> In an Activity configuration, when mappings are cleared in the input mapper using "Clear Mappings", the mappings are cleared but the items are still visible. If you close the Activity configuration and return to the input mapper, the items are no longer visible.</p> <p><b>Workaround:</b> None</p>
FLOGO-9510	<p><b>Summary:</b> If you rename an Activity field, the assertion configuration on such activities does not adjust automatically, and also does not generate any validation error in the assertion file. When running the unit test in such cases, the assertion fails.</p> <p><b>Workaround:</b> Manually update the mappings of assertions with the new name.</p>
FLOGO-9586	<p><b>Summary:</b> On importing a flogotest file with matching unit test data, a copy of</p>

Key	Description
	<p>existing test cases and test suites is created with new names.</p> <p><b>Workaround:</b> Delete the newly added copy of test cases and test suites manually.</p>
FLOGO-9373	<p><b>Summary:</b> Unit test execution fails if a Flogo app is using a user supplement.</p> <p><b>Workaround:</b> None.</p>
FLOGO-9381	<p><b>Summary:</b> Unit test case execution is skipped if an error or exception is reported at runtime.</p> <p><b>Workaround:</b> Handle the error or exception in the error handler flow.</p>
FLOGO-9517	<p><b>Summary:</b> When an API spec file is uploaded in the InvokeRest Activity or the REST trigger, common parameters for all operations at the path level are not displayed in the Input Settings tab.</p> <p><b>Workaround:</b> Define the common parameters separately for each operation. The parameters are displayed in the Input settings tab.</p>
FLOGO-9159	<p><b>Summary:</b> If a REST trigger has app schema and it is attached to the Request or Response schema and later reconfigured using API spec, a “Bad gateway” error is observed.</p> <p><b>Workaround:</b> Detach the app schema from the Request or Response schema before configuring the trigger using API spec.</p>
FLOGO-6933	<p><b>Summary:</b> When the InvokeRestService Activity is configured with Open API spec, the response headers are converted to JSON Data instead of JSON Schema in the InvokeRest Output settings.</p> <p><b>Workaround:</b> None.</p>
FLOGO-6718	<p><b>Summary:</b> The order of elements in an object in a JSON file is not maintained when the file is processed.</p> <p><b>Workaround:</b> None.</p>
FLOGO-9142	<p><b>Summary:</b> If an Activity is executed in a loop, on the Execution History tab, the</p>

Key	Description
	<p><b>Completed</b> count is more than the <b>Started</b> count.</p> <p><b>Workaround:</b> None</p>
FLOGO-9370	<p><b>Summary:</b> A Mapper Activity returns an empty array as output, on mapping multiple items and providing a single array element as input.</p> <p><b>Workaround:</b> None</p>
FLOGO-8896	<p><b>Summary:</b> An API spec with the keyword 'allOf' does not work as expected.</p> <p><b>Workaround:</b> None</p>
FLOGO-9041	<p><b>Summary:</b> For a read-only user, the app implementation takes a longer time to load if the app has a large number of flows.</p> <p><b>Workaround:</b> None</p>
FLOGO-8848	<p><b>Summary:</b> For a Kafka app with AVRO schema, a validation error symbol is displayed in the consumer trigger. <b>Workaround:</b> None</p>
FLOGO-8778	<p><b>Summary:</b> Importing an app in an environment where the Execute JavaScript Activity does not exist, an error indicating that the Activity is missing in the error Handler flow is returned.</p> <p><b>Workaround:</b> None.</p>
FLOGO-8933	<p><b>Summary:</b> If you rename a connection and then select the <b>Create new connection</b> option while importing an app, connection names are not created correctly.</p> <p><b>Workaround:</b> None</p>
FLOG-8740	<p><b>Summary:</b> In the cron expression builder, the <b>Save</b> and <b>Discard</b> buttons are disabled when you try to change an existing cron expression to default by using one of the following methods:</p> <ul style="list-style-type: none"> <li>• Switching to cron builder and accepting the pop-up</li> <li>• Switching from timer to cron</li> </ul>



Key	Description
	<b>Workaround:</b> Click a cron expression field and then click outside the cron expression builder. The <b>Save</b> and <b>Discard</b> buttons are enabled.
FLOGO-8535	<p><b>Summary:</b> When the <b>Coerce with schema</b> option is used, data of type ANY is not converted to OBJECT type upon save or sync.</p> <p><b>Workaround:</b> Switch between tabs, and the data is converted.</p>
FLOGO-8413	<p><b>Summary:</b> After adding multiple If/Else conditions in a mapper, the new conditions are not visible on the UI immediately and there is a minor delay before they are available for viewing.</p> <p><b>Workaround:</b> None</p>
FLOGO-8479	<p><b>Summary:</b> If you rerun an Activity using <b>Rerun flow from this Activity</b> on the <b>Executions</b> page, the <b>Completed count</b> displayed on the <b>Metrics</b> page &gt; <b>Flow</b> tab &gt; <b>Activity Execution (count)</b> does not include the rerun of the Activity from which the rerun is performed.</p> <p><b>Workaround:</b> None</p>
FLOGO-8432	<p><b>Summary:</b> Mapping child elements using <code>\$loop</code> in an array. <code>forEach</code> function results in a mapper validation error. No error is reported during runtime.</p> <p><b>Workaround:</b> None</p>
FLOGO-8350	<p><b>Summary:</b> When a gRPC Activity is used in an app and the app is started, the following warning is displayed:</p> <pre data-bbox="428 1371 1349 1570">WARNING: Package "github.com/golang/protobuf/protoc-gen-go/generator" is deprecated.WARNING: Package "github.com/golang/protobuf/protoc-gen-go/generator" is deprecated. A future release of golang/protobuf deletes this package, which has long been excluded from the compatibility promise.</pre> <p><b>Workaround:</b> Ignore the warning.</p>
FLOGO-8349	<p><b>Summary:</b> If an Activity has an empty or incorrect input, a validation error is</p>

Key	Description
	<p>indicated by a red error icon. Even when the erroneous condition is removed, the error icon continues to be displayed.</p> <p><b>Workaround:</b> Click <b>Validate</b>.</p>
FLOGO-8300	<p><b>Summary:</b> When a condition is added to the data mapper, the mapper does not automatically open the input mapping field.</p> <p><b>Workaround:</b> Scroll down to view the newly added condition and then manually open the input field.</p>
FLOGO-8287	<p><b>Summary:</b> If a root or parent array is not mapped, the <b>Add condition</b> menu is wrongly displayed in the mappings of the array children and the mapper hangs.</p> <p><b>Workaround:</b> Close and reopen the Activity configuration. Map the root or parent array.</p>
FLOGO-8258	<p><b>Summary:</b> The Protobuf2JSON Activity shows a design-time error when you refresh the browser. No error is reported during runtime.</p> <p><b>Workaround:</b> Click <b>Validate</b>.</p>
FLOGO-7927	<p><b>Summary:</b> When you specify a filter as the third argument in the array.forEach() function, \$loop is not evaluated automatically when you drag-and-drop a child element. Instead, the whole path is populated.</p> <p><b>Workaround:</b> Manually edit it and replace the parent path with the \$loop expression.</p>
FLOGO-7868	<p><b>Summary:</b> [Microsoft Azure] When building an app binary, messages of the build process are not shown on the UI immediately. They are shown only after the build process is completed.</p> <p><b>Workaround:</b> None</p>
FLOGO-7665	<p><b>Summary:</b> Instrumentation metrics data is not available for an app and tibagent deployed on AWS Fargate.</p> <p><b>Workaround:</b> None</p>

Key	Description
FLOGO-7657	<p><b>Summary:</b> When adding a description for an app, the "This field is required" message is displayed and the cursor moves in front of the message when you start typing the description. The message does not go away until you go inside the flow. <b>Back</b> is also disabled.</p> <p><b>Workaround:</b> None</p>
FLOGO-7436	<p><b>Summary:</b> Runtime validation is not enabled for <b>Required Form Params</b>.</p> <p><b>Workaround:</b> None</p>
FLOGO-7421	<p><b>Summary:</b> Runtime validation error is observed for filecontent type data when <b>Output Validation</b> is set to true in the REST trigger.</p> <p><b>Workaround:</b> Do not enable <b>Output Validation</b> when the <b>Request type</b> is multipart/form-data in the REST trigger.</p>
FLOGO-7269	<p><b>Summary:</b> On the flow list page, a "missing extension" validation error is shown for each flow even after installing the missing extension.</p> <p><b>Workaround:</b> Validate each flow to remove the validation error for that flow.</p>
FLOGO-6951	<p><b>Summary:</b> Password type app properties do not support encrypted values during design time.</p> <p><b>Workaround:</b> None</p>
FLOGO-6904	<p><b>Summary:</b> When the InvokeRESTService Activity is used with the <b>HTTP Client Authorization Configuration</b> connection and <b>OAuth2 Authorization type</b>, it fails to auto-refresh the token if the expired or invalid token response does not have the status code as 401.</p> <p><b>Workaround:</b> Use another InvokeRESTService Activity to get the new token and use the new token in InvokeRESTService Activity.</p>
FLOGO-6847	<p><b>Summary:</b> If a database connector Activity has a design time error, the message incorrectly disappears after clicking the <b>Clear Table</b> link.</p> <p><b>Workaround:</b> None</p>

Key	Description
FLOGO-6586	<p><b>Summary:</b> The value of BIGINT data type is converted to an incorrect value.</p> <p><b>Workaround:</b> If possible, use a STRING data type instead.</p>
FLOGO-6552	<p><b>Summary:</b> The resource path of a previous specification is shown in the <b>Resource path</b> list even after deleting the specification file and uploading a new specification file.</p> <p><b>Workaround:</b> Select the resource path from the <b>Resource path</b> list even if it shows paths of previous specifications. Even though the specification displayed is incorrect, the new path is loaded.</p>
FLOGO-6542	<p><b>Summary:</b> If you upload an OpenAPI Specification (OAS) file in the InvokeREST Activity and later upload an updated version of the same OAS, the changes to the schema are not reflected in the associated parameters and request/response schemas.</p> <p><b>Workaround:</b> Delete the original specification and upload the new OAS again.</p>
FLOGO-5400	<p><b>Summary:</b> While running an app in flow tester, if you provide a JSON schema with a nested array, it returns an error at design time.</p> <p><b>Workaround:</b> None</p>
FLOGO-5267	<p><b>Summary:</b> The <b>ConfigureHTTPResponse</b> Activity is not updated correctly when reply settings are changed.</p> <p><b>Workaround:</b> Trigger a save operation by re-doing or undoing some of the mapper mappings on the <b>ConfigureHTTPResponse</b> Activity.</p>
FLOGO-4936	<p><b>Summary:</b> Boolean data type and null data type are not supported in TIBCO Cloud Messaging.</p> <p><b>Workaround:</b> None</p>
FLOGO-4717	<p><b>Summary:</b> When a Swagger specification file of size 2.5 MB or more is used for creating an app or uploaded using the REST trigger configuration, the app is not deployed to TIBCO Cloud.</p> <p><b>Workaround:</b> Use a Swagger specification file of a smaller size.</p>

Key	Description
FLOGO-4716	<p><b>Summary:</b> If required elements of a request schema are not provided, the runtime provides a response but the tester returns a validation error.</p> <p><b>Workaround:</b> None</p>
FLOGO-4661	<p><b>Summary:</b> Single quotes are not supported in mapper variables.</p> <p><b>Workaround:</b> None</p>
FLOGO-4659	<p><b>Summary:</b> If you use a field name that contains special characters, the <code>array.foreach</code> mapping fails with the following error:</p>
	<pre>eval expression failed to resolve Loop: 'field name', ensure that Loop is configured in the application</pre>
	<p><b>Workaround:</b> Add a scope name before the field name. For example, manually change <code>\$loop["fieldName"]</code> to <code>\$loop["ScopeName"]["fieldName"]</code>.</p>
FLOGO-4653	<p><b>Summary:</b> An unsupported data type in the request or response schema is not converted to a supported one.</p> <p><b>Workaround:</b> In the API Spec, change the type to the supported data type. For example, change <code>Float</code> and <code>long</code> data type to <code>Integer</code>.</p>
FLOGO-4628	<p><b>Summary:</b> If a Swagger specification file is modified and the file is saved with a different name, the changes are not reflected in the app even if you click <b>Sync Schema</b>.</p> <p><b>Workaround:</b> None</p>
FLOGO-4387	<p><b>Summary:</b> An Activity throws a mapper error if the mapped object does not exist, as the <code>FLOGO_MAPPING_SKIP_MISSING</code> environment variable cannot be set in the flow tester.</p> <p><b>Workaround:</b> None</p>
FLOGO-4363	<p><b>Summary:</b> When an app with different trigger and handler settings is imported, trigger and handler settings are not replaced after selective import.</p> <p><b>Workaround:</b> None</p>

Key	Description
FLOGO-4255	<p><b>Summary:</b> While starting a gRPC app binary which has a ctivity using the same proto file, duplicate proto type registered message was returned.</p> <p><b>Workaround:</b> Change the package name to a different one to make suregRPC activity use the different package name in proto file.</p>
FLOGO-4188	<p><b>Summary:</b> For OpenTracing, even after terminating an app, recurring warnings are displayed in JaegerUI.</p> <p><b>Workaround:</b> None</p>
FLOGO-4164	<p><b>Summary:</b> While starting a gRPC app binary that has a gRPC activity using the same proto file, the following error message is displayed:</p> <pre>Duplicate enum registered</pre> <p><b>Workaround:</b> Change the package name to a different one to make sure gRPC activity use the different package name in proto file.</p>
FLOGO-4127	<p><b>Summary:</b> App properties of type INTEGER are not supported.</p> <p><b>Workaround:</b> None</p>
FLOGO-3906	<p><b>Summary:</b> After mapping array root nodes, when a child node mapping is updated, only a mapped child node is returned at run time.</p> <p><b>Workaround:</b> None</p>
FLOGO-3393	<p><b>Summary:</b> If a Kafka producer produces a JSON string, the Kafka consumer does not receive any data.</p> <p><b>Workaround:</b> None</p>
FLOGO-2888	<p><b>Summary:</b> You cannot upload Swagger specification definitions which have a cyclic dependency.</p> <p><b>Workaround:</b> None</p>
FLOGO-2886	<p><b>Summary:</b> Depending on your machine configuration and browser</p>

Key	Description
	<p>configuration, you might not be able to upload a large Swagger API definition JSON file or the browser might become unresponsive. The following error message is displayed on the <b>Network</b> tab and the file is not uploaded:</p> <pre data-bbox="428 453 797 480">Request entity too large</pre> <p><b>Workaround:</b> None</p>
FLOGO-2861	<p><b>Summary:</b> When uploading custom schema for GraphQL, if the custom schema has a cyclic dependency, the following error is returned and the upload fails:</p> <pre data-bbox="428 747 1268 774">Maximum call stack size exceeded for circular reference</pre> <p><b>Workaround:</b> None</p>
FLOGO-1757	<p><b>Summary:</b> JSON schema with cyclic references is not supported.</p> <p><b>Workaround:</b> Remove the cyclic references from the schema.</p>
FLOGO-1684	<p><b>Summary:</b> When accessing the UI, a "502 Bad Gateway" error is returned if the machine is configured with a static IP address.</p> <p><b>Workaround:</b> Configure the machine IP address as dynamic.</p>
FLOGO-814	<p><b>Summary:</b> In the flow error handler, <code>\$error.data</code> and <code>\$error.code</code> are not supported in the mapper.</p> <p><b>Workaround:</b> If you import an open source Project Flogo™ app, manually delete <code>\$error.data</code> and <code>\$error.code</code> from the mappings.</p>
FLOGO-358	<p><b>Summary:</b> On macOS, if you run the <code>run-studio.sh</code> installer from a directory that is not shared with the Docker container, the installation fails and the following error is displayed:</p> <pre data-bbox="428 1623 630 1650">Mounts denied</pre> <p><b>Workaround:</b> Configure the path to the <code>run-studio.sh</code> file in <b>Docker &gt; Preferences &gt; File Sharing</b> before running the <code>run-studio.sh</code> command.</p>

## Database Services

Key	Description
WIDBSV-451	<p><b>Summary:</b> In a select query with a where clause, if the parameter name is the same as the column name, the return type is incorrect.</p> <p><b>Workaround:</b> None</p>

## TIBCO Flogo® Connector for Oracle Database

Key	Description
WIORA-153	<p><b>Summary:</b> If the password contains a colon (:), an error occurs while connecting to the database.</p> <p><b>Workaround:</b> None</p>

## TIBCO Flogo® Connector for Salesforce.com Einstein Analytics

Key	Description
WISFEI-62	<p><b>Summary:</b> If Flogo apps using Salesforce Wave activities are run for longer durations, a token refresh error is displayed.</p> <p><b>Workaround:</b> Reconfigure the Salesforce connection used in the activities and build the app again.</p>



# TIBCO Flogo® Connector for TIBCO Cloud™ Messaging

Key	Description
FGTCM-53	<p><b>Summary:</b> The subscriber stops receiving the message from the server after the reconnect attempts are exceeded.</p> <p><b>Workaround:</b> Make sure that the TIBCO Cloud™ Messaging server is running normally and try the following:</p> <ul style="list-style-type: none"> <li>• Restart the app.</li> <li>• Configure a larger number of <code>AutoReconnectAttempts</code> under the connection to make sure it can try to reconnect more times until the server is up.</li> </ul>
FGTCM-18	<p><b>Summary:</b> Content matcher does not work with INTEGER type for TIBCO Cloud™ Messaging Subscriber.</p> <p><b>Workaround:</b> None</p>

# TIBCO Flogo® Connector for PostgreSQL

Key	Description
WIPGRS-538	<p><b>Summary:</b> When Nullable fields are left empty, an error is generated.</p> <p><b>Workaround:</b> Remove any fields that are not required from the query to automatically treat those fields as NULL.</p>
WIPGRS-460	<p><b>Summary:</b> In case of queries combining results from multiple tables, if the tables have identical column names, then the repeated column names are renamed as <code>columnName_&lt;number&gt;</code>.</p> <p><b>Workaround:</b> For duplicate column name use alias.</p>

Key	Description
WIPGRS-429	<p><b>Summary:</b> In PostgreSQL "rowsAffected" is not showing in the output schema of the INSERT and UPDATE Activity.</p> <p><b>Workaround:</b> None</p>
WIPGRS-387	<p><b>Summary:</b> When running the connector with an SSL configuration with incorrect client key and client certificate issues, it results in errors at run time. These issues are not validated at design time.</p> <p><b>Workaround:</b> None</p>
WIPGRS-327	<p><b>Summary:</b> If you export or import from 2.8.1 to the current version, an error is shown on the activities even after establishing a connection.</p> <p><b>Workaround:</b> Refresh the page or click on the respective Activity again.</p>
WIPGRS-88	<p><b>Summary:</b> When using time datatype, "time without timezone" is not supported.</p> <p><b>Workaround:</b> None</p>

## TIBCO Flogo® Connector for Oracle MySQL

Key	Description
WIMYSQ-524	<p><b>Summary:</b> In case of queries combining results from multiple tables, if the tables have identical column names, then the repeated column names are renamed as <code>columnName_&lt;number&gt;</code>.</p> <p><b>Workaround:</b> For Duplicate column name use alias.</p>
WIMYSQ-488	<p><b>Summary:</b> When importing an app's JSON with a MySQL, SQL Server, or Postgres Activity, an error marker is shown on the Activity even after updating the credentials.</p> <p><b>Workaround:</b> Refresh the page.</p>

Key	Description
WIMYSQ-464	<p><b>Summary:</b> For incorrect query, an error message is not showing up in the Insert, Delete, and Update activities.</p> <p><b>Workaround:</b> None.</p>
WIMYSQ-440	<p><b>Summary:</b> If there is no SSL server and you configure the connection as an SSL Connection with the <b>TLS Required</b> option selected, no error is generated at design time. An error is generated only at run time.</p> <p><b>Workaround:</b> None</p>

## TIBCO Flogo® Connector for Microsoft SQL Server

Key	Description
WIMSSS-355	<p><b>Summary:</b> In case of queries combining results from multiple tables, if the tables have identical column names, then the repeated column names are renamed as columnName_&lt;number&gt;.</p> <p><b>Workaround:</b> For duplicate column names use alias.</p>
WIMSSS-327	<p><b>Summary:</b> When passing a list of values in the prepared parameter, the query does not return any values.</p> <p><b>Workaround:</b> Pass multiple prepared parameters like ?a1,?a2</p>
WIMSSS-213	<p><b>Summary:</b> If you export or import from 2.8.1 to the current version, an error is shown on the activities even after establishing a connection.</p> <p><b>Workaround:</b> Refresh the page or click on the respective Activity again.</p>
WIMSSS-310	<p><b>Summary:</b> For incorrect query, an error message is not showing up in the Insert, Delete, and Update activities at design time.</p> <p><b>Workaround:</b> None</p>

Key	Description
WIMSSS-92	<p><b>Summary:</b> OUTPUT clause in INSERT INTO is not supported. For example, the following INSERT INTO statement does not return the expected value for promotion id:</p> <pre data-bbox="418 457 878 890"> INSERT INTO promotions (   promotion_name,   discount,   start_date,   expired_date ) OUTPUT inserted.promotion_id VALUES (   '2018 Fall Promotion',   0.15,   '20181001',   '20181101' ); </pre> <p><b>Workaround:</b> None</p>

## TIBCO Flogo® Connector for Apache Avro

Key	Summary
WIAVRO-65	<p><b>Summary:</b> For Avro activities, when app-level schemas are used, Avro schemas are not displayed in the list for selecting the schema. Instead, JSON schemas are displayed.</p> <p><b>Workaround:</b> None</p>

# TIBCO Documentation and Support Services

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For information about this product, you can read the documentation, contact TIBCO Support, and join TIBCO Community.

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Documentation for TIBCO products is available on the [Product Documentation website](#), mainly in HTML and PDF formats.

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