FABRIC V6.4 RELEASE NOTES

These Release Notes describe the new features in Fabric version 6.4 and also lists bugs that have been fixed since version 6.3

Certification of this Fabric release is based on:

- Cassandra version 3.11.6 (updated package for Cassandra as a service).
- SQLite version 3.27.2.
- Open JDK version jdk-8u252.
- Confluent Kafka version 5.5.1.
- OrientDB tp3-3.1.2.
- Elastic oss-7.6.0.

MAIN FEATURES AND IMPROVEMENTS

1. Data Catalog

Data Catalog is a new web-based graphical application in the web framework that displays a project's metadata structure and the relationships between its entities. Providing comprehensive information about organizational data, Data Catalog shows how data is collected, transformed and stored in the data inventory and how it flows from its sources to its targets.

The Fabric Studio supports the Data Catalog by enabling Build and Write Data Catalog actions as well as having a new interface type. New fabric commands were added too, enable building or dropping the catalog deployed to the server.

2. Broadway

Broadway Recovery

The new Broadway Recovery capability enables adding recovery points to a flow, whereby after a crash the flow restarts from the nearest saved recovery point and not from the beginning of the sequence. Recovery points are marked in the flow's stages and data is serialized and saved in a Cassandra table.

Actors Parallel Execution

Fabric now supports parallel execution of Actors in the same stage whereby shortening the execution time of a Flow. This option can be enabled using the new Parallel Stage property by defining the number of actors running simultaneously.

New Actors

ErrorHandler Actor

The ErrorHandler Actor is an advanced error handler that enables different types of behavior based on the exception type. The Actor can be configured to suppress one type of exception and not to suppress others, or to invoke an inner flow when an exception is thrown. Note that other Actors can continue to be used as error handlers.

ErrorFields Actor

The ErrorFields Actor enables easy access to fields in a Broadway error object and can also be used by an inner flow to access erroneous information.

Statistics Actors

The following new Actors have been added to the Stats category:

- StatsWriter, used to set statistics that can then be read by the StatsReader.
- StatsReader, used to read statistics written by other actors like the StatsWriter, DbCommand or ErrorHandler.

LuKeyspace Actor

The LuKeyspace Actor provides the Cassandra keyspace of a given LUT which can be selected from a list in the Actor's properties.

BatchWait Actor

The BatchWait Actor enables waiting for a batch to be completed or throws an error if it is not completed successfully or is not completed within the predefined time period defined at the Wait For Seconds property. This field can be set to a zero or negative value whereby the Actor will wait indefinitely. When the batch is completed successfully, the Actor's output includes information about the batch duration and about the executed batch's tasks.

Array Handling Actors

The following Actors have been added to the Array Handling Actors:

- ArrayBuilder and ArrayConcat Actors, that join a number of arrays into one array.
- ArrayToMap Actor, that transforms a key-value input array into a map.

NotNull Actor

The NotNull Actor, a companion of the isNull Actor, indicates whether the input value is not null.

SeqMappingStore Actor

The SeqMappingStore Actor has been added to the Sequence Actors category and stores relationships between original and masked values.

Improved Actors

FabricGet Actor

The Sync Mode setting is now available, and users can select between ON, OFF, FORCE or to leave it empty, whereby the sync mode in the current Fabric project is used.

DateAdd Actor

To extend the available time period settings, the Months and Years properties have been added.

MaskingSequence Actor

As part of the improvements made for Sequence Actors, the following changes have been introduced for the MaskingSequence Actor:

- The SequenceInterface property has been added, replacing the in RedisInterface property, and which enables to use DB for sequences handling. (Note that in case this Actor is already used in a project it shall be edited, otherwise it will fail).
- The InitialValue property can now be an inner flow and not a constant number.

Actor Editor

Offering enhanced management and increased flexibility, the Actor Editor enables creating new or editing existing Actors based on the concept of actor inheritance.

Previously created using the Export action or edited as JSON files, Actors can now also be created directly from the Fabric Studio project tree and be edited using the Actors UI. The Actor Editor also offers additional options for settings input and output parameters.

Sequences Enhancements

- Sequences can now be managed at a DB level as well as in Fabric.
- Environment sequences support has been added to enable execution of parallel environments, whereby each environment has its own sequences that are applied to its populations.
- Lazy sequence support for setting initial values has been added, whereby initial settings are implemented only when a flow runs and only after it verifies that the initial value of the setting's process has not yet been activated.
- Sequence masking for cloning is now supported, whereby the clone-id is added to the masking map key.

Actors Behavior Changes

Publish Actor

The Publish Actor has been changed and now subscribes to all partitions when the Partition property value is set to -1.

Transactions

The management of commit-per-iteration transactions has been changed whereby non-transactional stage must be added at the end of a loop to generate a commit on each iteration.

Flow Validation

The new Flow Validation capability displays errors and warnings in a flow for example to indicate that an inner flow has been deleted. The Validation screen is accessed by clicking the new Validation button in the flow's top action bar.

Live Debug

The Live Debug option now runs automatically when Actors and Flows definitions are updated.

Favorites List

Users can now add or remove Actors to or from the Favorites list. This option is available in the new Actor screen when choosing an Actor.

Run Result Window

The new Run Results window now enables users to examine the errors in a flow.

Usability Improvements

- When hovering over the Data Inspector fields their full name is displayed.

3. HTTP Interface Authentication

The HTTP Interface now supports various standard authentication and authorization types and protocols when accessing external protected resources.

Fabric implements all required authentication interactions with remote vendor servers based on the selected type and security credential properties. The following authentication types are supported:

- Basic HTTP authentication.
- Bearer authentication.
- OAuth 2.0 password credentials.
- OAuth 2.0 client credentials.

4. Environmental-level Globals Overrides

Globals can now also be overridden per environment as well as in interfaces. This option is defined in the Fabric Studio in the Globals tab and displayed in the Environment table grid.

Globals can also be overridden per environment by applying the set_global command in the active environment.

5. Data Editor

Data Editor, a new graphical web-based application in the web framework, displays the data structure and relationships between the tables in an LU Schema in a top-down nested tree.

Showing the tables' hierarchy, linkage fields and population functions, the Data Editor enables:

- Viewing LUI and reference table data with filtering and navigation capabilities within and across the tree hierarchy.

- Editing LUI and reference table data including Add, Update and Delete actions aligned with the users assigned roles and privileges.

6. Event Functions

An Event function is a new function type that is enabled in the Events LU Schema properties and enables running user code upon the completion of a Sync or Delete instance.

The function is triggered for one of the following events:

- Post Sync Success.

- Post Sync Failure

- Post Delete Instance Success.

This granularity enables comprehensive assignment of the correct function to the specific result. Event functions can be defined on a shared or LU level and the same Event function can be attached to several events. That is, the same event can be used for both a success or a failure.

7. iidFinder

Delta Mechanism Improvements

To expedite the Delta mechanism, the delta can now be written into in-memory JSON files and not into Cassandra. The data processing is now partitioned and handled by several jobs, each responsible for activating sync worker threads.

This new mechanism is optional and must be explicitly configured. The current mechanism using Cassandra remains the default.

Globals as a Source Schema

Fabric now supports Globals as a source schema's value in an LU population property under the iidFinder section. The Globals name must be written between @ characters. For example: @BILLING_SCHEMA@.

8. Fabric Studio

The following enhancements have been added to the Fabric Studio:

Deployment Improvements

- Exploded / Fast Local Deploy mechanism was added, expediating deployment to the local debug sever by omitting the packaging process whereby the server uses Fabric Studio files.
- A new mechanism was added for expediating deployment time to the server by not recompiling Java code and preparing the deployed JAR file when not needed.

Smoother Debug Capabilities / Auto Deploy

To enhance user experience when running a debug, Fabric Studio first activates an auto deployment process on the relevant components in the background before performing the debug execution.

Templates

- The new Templates tool enables defining templates for Fabric objects that can be used throughout a project. This new feature saves time and offers increased efficiency when creating objects. Templates can be used for various purposes in Broadway flows and Actors, Java files, Graphit and the Data Catalog.
- Fabric Templates support using placeholders for smoother and smarter reuse. When selecting a template, the user populates the template's placeholder so that the new object is auto-generated based on the template.
- The integrated Templates engine has powerful capabilities such as iteration over lists, conditions and lookup expressions.

Jobs in References

A Jobs section has been added to References in the Fabric Studio project tree whereby it can be deployed regardless of the specific LU.

Broadway in Web Services

A Broadway section has been added to Web Services in the Fabric Studio project tree. Broadway Flows can now be used in Web Services and not only under a specific LU.

Generic Interfaces Auto Discovery

Auto discovery supports now more interfaces: DB2, SqlServer, Salesforce and Teradata. The required queries for discovering meta data like FK and PK for these interfaces are now coming out of the box.

Usability Improvements

The following improvements have been added to increase usability:

- Navigation pane, users can now hide/show the Navigation pane in the LU Schema view.

- Data Viewer, when attempting to retrieve data without entering an instance id, a pop-up is displayed to inform the user that an instance should be entered.

- Interface, a success message is displayed for a successful post-connection command.

- Enrichment, when adding or removing an enrichment to an LU table, there is no need to open and save the LU Schema in order the change will take effect.

Removed Settings

The following settings have been removed:

- Regular/Computed-Field column type in the LU table schema.

- Deploy to debug of a specific web service.

9. Fabric Commands

- Enhancements to SET and SET_GLOBAL GLOBAL commands have been added on both cluster and session levels:

  o A specific LUT Global parameter can be overridden on cluster or session levels by specifying its name as a prefix in the SET command.

  o SET compound command, enables aggregating several SET commands into a single command and providing parameters in JSON format. This can be useful, for example when reusing a bunch of commands or sending them to others to avoid mistakes.

- Batch command enhancements support double quotes when using an SQL statement.

- ps (thread=<id>) command enhancements show the task's Java thread stack trace.

- batchSummary command usability have been improved and shows now an empty table in case job did not actually started instead of presenting it as an error.

- batch and migrate commands support now prepared statement usage among more fabric_command such as for catalog. .

10.   Graphit

The following improvements and changes have been made in the Graphit tool:

- A new capability has been added to enable copying and pasting elements also between Graphit files.

- The Graphit web-based UI in the standalone Graphit tool is now embedded into the Fabric Studio.

- The Debug Graphit Server settings are now based on Fabric Studio > User Preferences > Server Configuration.

11. Web Admin

- A deployed LU zip file holding an entire LU implementation can now be downloaded and shared in the Admin > Objects > Implementation screen.

- The list of environments is now available in the Web Admin which also enables changing the active environment.

- Java thread stack trace is now available in the Web Admin in the Admin > Processes > Tasks > Task Details screen.

12. Miscellaneous

Cache Location Per LU

This new capability enables defining the cache location of an LU schema while overriding the default in the config.ini file. This is implemented using the new Cache Location property per LU which enables either using the default location or specifying an alternative one.

JMX Metrics

- Statistics shows all JMX metrics including for flows that have not yet run to provide users with a full understanding of the metrics supported by the current deployment.

- The New cdcOpenTransactions and cdcClosedTransactions JMX metrics for CDC have been added.

Web Services

The new manually acquire and handle the request body in Web Services option enables getting request input parameters as input stream instead of the default option where Fabric parses the request and serves the input parameters to the function. This can be useful when a request contains a special request body.

To use this option, in the Fabric Studio > Web Service properties, set the new Custom Payload property to True. The default value is False which means using the original option. When set to True, users can acquire the request input-stream using the request.getInputStream() method.

Cassandra as a Service

A daemon process has been added to the Cassandra setup package to enable installing Cassandra as a service.

Activating Cassandra as a service enables users without Admin permissions to run Fabric without running Cassandra manually. In these cases, Cassandra is loaded as a service for all users.

Cassandra Loader

When a field is defined as short-int in Cassandra, an int value is implicitly converted into short-int for the Cassandra Loader. If the value exceeds the short-int range, a warning is written in the log.

Implementation Usage Changes

- ludbFunctions has been replaced with invokeFunction().
- The new getDeltasStream() exists now in user-code replaces the getDeltas() exist in IidFinderApi.

RESOLVED ISSUES

- Hadoop Hive Stream now supports writing when executed in a Query Builder.
- Common table replications now stop when a k2_ref is dropped.
- A clear error message is now displayed when switching the Fabric Studio > Server configuration for users with READ permissions.
- Renaming a project in the Fabric Studio is now reflected in the cluster_id in Cassandra.
- Graphit input parameters defined to float for an instance ID are now aligned and can be retrieved as a valid iid.
- The following issues have been resolved in Broadway:
  - The Subscribe Actor's timeout setting have been corrected.
  - Broadway now iterates over the correct logic in multiple arrays.
  - Support for the Cassandra Loader interface is now available in the DbLoad Actor and displays the DB connection list when setting a table property.
- The Fabric Console can now be opened also when the Fabric Studio is installed on a drive other than C.
- When saving an environment's data In the Fabric Studio the deployed green LU icon remains unchanged and no longer becomes grey to indicate that it is not deployed.
- The DBCommand now works also when the selected data has an Oracle CLOB field.
- The correct error message is displayed when executing an UPDATEJOB command without providing its mandatory arguments.
- When a sync process is killed the GET command for its associated instance is now also terminated.
- iidFinder, iid.getTableName works well now also for SOR DELTA.
- When closing a Broadway Flow window at Fabric Studio, while flow it is running, the flow execution is aborted.

- CDC, Kafka's is increased also when ElasticSearch – the Kafka's consumer - is down. By this, updates are consumed later successfully by ES.
- CDC, when CDC_PUBLISH_MODE is configured to "IF_SETUP":
  - Performance is aligned now with other modes and not slowing down.
  - Studio is no longer print out non-stop warnings when deploying an LU with CDC or opening a project that contain an LU with CDC, while Kafka is down.
- Charset can now be sent as part of the header to the web services, yet its value is ignored.