SALESFORCE REAL-TIME EVENT PROCESSING

SALESFORCE EVENTS

Streaming product on Salesforce's Lightning Platform that enables you to efficiently integrate your Salesforce data with external systems.

TALEND CLOUD API

Used to simply connect to Salesforce Streaming API using a pre-build connector. Transforms the events into data the subsystems can work with while delivering them to the right place at the right time creating a reliable middleware platform.

How Salesforce Streaming API and Talend Cloud connects all your Enterprise Apps in Real-Time

Todays growing application landscape utilizing SaaS and cloud applications makes it crucial to have data available in real-time whenever and wherever needed. When a user creates a new account in your CRM application you might not want to wait for a nightly batch process to distribute this information to other applications. Unfortunately, the majority of applications do not provide features for outbound notifications and require custom coding to grab changes, implement error handling and achieve solid replay capabilities in case of system outages.

Streaming API as Solution

Salesforce's Streaming APIs solves any real-time integration challenge by automatically notifying subsystems about changes and events in Salesforce. The technical approach goes much further than any traditional ETL or outbound notifications. Your application will subscribe to events of interest for your business use-case and catch the notification at that moment it occured. Salesforce will persist and store messages and even let's you replay lost messages. You will receive a full set of meta-data; who made the change, which change has been made and much more.


Talend Subscribes → Talend Cloud API (Talend Processes) → Talend Delivers → ERP, Cloud App, DWH

Understanding Salesforce Streaming API

The idea behind the Salesforce's Streaming API is the same as for Outbound Workflows: Automatically notify subsystems in real-time about changes or events in Salesforce. The technical approach Salesforce takes goes one step further and has much more possibilities than an outbound workflow has to offer. The technical difference is that the client opens a connection to Salesforce and subscribes to different kinds of events.

There are three different event categories:

- Change Data Capture Events
- Platform Events
- Push Topics
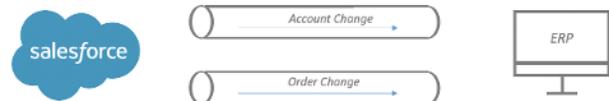
! *All three event types can be combined, there is no reason to stick to one or another. It basically depends on the type of integration or business use-case you are implementing!*

Change Data Capture

CDC is a well know term in the world of databases. Whenever there is a change in a table – either an insert, update or delete – this change will be logged either into a specific log or simply in another table. Any 3rd party application can then leverage this information to replicate the changes to its own storage. Salesforce's strategy is exactly the same. Whenever there is a change on a certain entity (e.g. Account) it pushes out a new notification about that change onto a channel. Any subscribed application to that channel can consume this change notification and process it. The notification will have all information such as id, updates, and "updated by" included.

CDC can be activated on entity level and comes with almost no configuration effort.

Platform Events

Platform Events are the most flexible but also most complex event category to implement. A platform event has always to be triggered manually. This can be accomplished within a workflow, an APEX function and even with Salesforce's REST API. It needs to be created as a custom entity first and can have its own custom attributes. Any client can subscribe to a specific platform event and will be notified immediately once the event has been created. It will have all custom attributes which have been previously set included.

This is a highly customizable way of notifying other applications in real-time, the custom workflow exactly dictates when this event will be produced and what information it includes.

Push Topics

This event category comes close to Change Data Capture. Instead of getting all changes for a selected entity the user can create a SOQL query (Salesforce Object Query Language) to define the desired events. The topic could limit the event production to Accounts in a specific status as an example. Whenever the SOQL matches, an event will be created.

How does this technically work?

Salesforce uses CometD as the technical foundation for all streaming events. CometD utilizes the regular HTTP protocol as a transport layer. The client opens an HTTP connection which will be kept open by the server to receive new data in chunks without closing the connection in between. Instead of polling the server asking for new events the connection will be held open continuously. This concept is also called long-polling. The technology became popular in web applications, like instant messaging, where a user needed to get a notification when receiving a new message. This was used as javascript library in browsers.

Benefits of using Streaming API

- **Message Reliability:** Salesforce keeps messages when the consuming endpoint is unavailable
- **Replay Capability:** 72 hours of messages can be re-played
- **Security:** No firewall port has to be opened, traffic is only outbound towards Salesforce
- **Real-Time:** Almost instant delivery of notifications
- **Flexible:** Exactly define when which event will be triggered
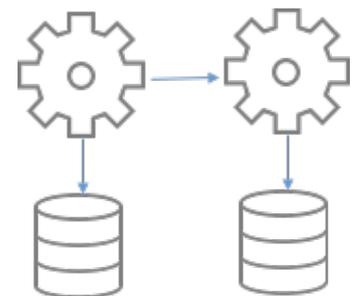
Salesforce Subscription

Performance, Unlimited, Enterprise, and Developer Editions

Talend Subscriptions

Talend Cloud API, Big Data Platform or Talend Data Service ESB

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Connecting to Streaming API using Talend Routes in Two Steps

Using Talend to connect to Salesforce Streaming is easy by utilizing Talend Routes, which are based on Apache Camel integration framework.
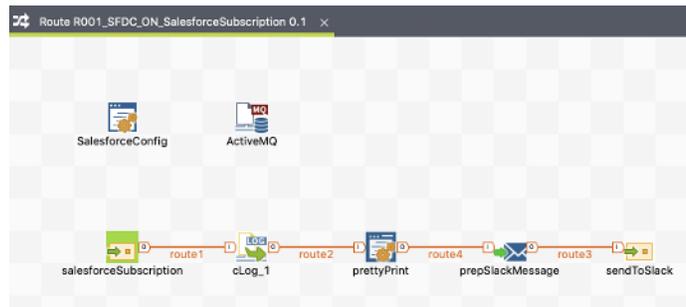
1 Prepare Salesforce

- Enable Change Data Capture in Salesforce Setup
- Select the Entity to be captured
- For Platform Events a new entity needs to be created
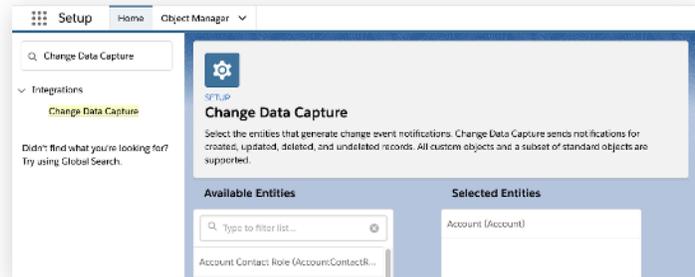
2 Create the Talend Route

- Open Talend Cloud Studio and create a new Route
- Select one cConfig and one cMessageRoute from the Palette
- Add a cLog or a Camel Json Mapper to pretty print the message

cConfig
```
SalesforceLoginConfig loginConfig = new SalesforceLoginConfig();
loginConfig.setLoginUrl("https://login.salesforce.com");
loginConfig.setClientId("YourClientId");
loginConfig.setClientSecret("YourClientSecret");
loginConfig.setUserName("YourUsername");
loginConfig.setPassword("YourPassword");
SalesforceComponent salesforce =
        (SalesforceComponent)camelContext.getComponent("salesforce");
salesforce.setLoginConfig(loginConfig);
```

cMessageEndpoint
```
salesforce:/data/AccountChangeEvent?rawPayload=true&replayId=-1
```

cJavaDslProcessor (prettyPrint)
```
.marshal().json(org.apache.camel.model.dataformat.JsonLibrary.Jackson, true)
```

Talend Camel Salesforce Component Overview

This code snippet gives you an overview how to use Change Events, Platform Events and Push Topics:

```
Talend Salesforce Streaming API                          Talend Salesforce Streaming API — ~/Desktop
1    Platform Event
2    --------------
3    from("salesforce:event/Custom_Integration__e?replayId=-1")   .log("new platform event")
4
5    Change Data Capture
6    -------------------
7    from("salesforce:data/ChangeEvents?replayId=-1")             .log("all change events")
8    from("salesforce:data/AccountChangeEvent?replayId=-1")       .log("change events for Account records")
9    from("salesforce:data/Employee__ChangeEvent?replayId=-1")    .log("change events for custom object")
10
11   Push Topic
12   ----------
13   from("salesforce:TestTopic&sObjectName=Merchandise__c")      .log("push topic change events")
14
Talend Salesforce Streaming API    ⓘ 0 ⚠ 0 ⓘ 0    13:94                              ● LF   UTF-8   Plain Text   ◯ GitHub   ◆ Git (0)
```

Salesforce Streaming API Comparison Chart

	Platform Events	Change Data Capture	Push Topic
General			
	Highly customizable Salesforce Event	Event based on the change of an entity	Event based on specific entity changes based on SOQL
	Event types can be combined and used simultaneously		
Data			
	Event is a custom sObject entity itself, needs to be created first	Data and format cannot be changed	Data and format cannot be changed
	Holds custom data attributes like texts, integers or dates which need to be filled	Automatically holds specific entity change information: recordIDs, change type, user origin	Automatically holds specific entity change information: recordIDs, change type, user origin
Trigger			
	No automatic trigger	Event will be automatically created and triggered by a change of an entity	Event will be automatically triggered when SOQL resultset changes (e.g. where order.amount > 1000)
	Flexible triggering inside process designer, APEX function or outside Salesforce using REST API	No custom triggering possible	Customization through SOQL, no triggering through process designer or APEX
License			
	Performance, Unlimited, Enterprise, and Developer Editions	**Performance, Unlimited, Enterprise, and Developer** Editions	**Performance, Unlimited, Enterprise, and Developer** Editions
	50,000 events daily	50,000 events daily, **max 5 entities**	
	Event Streaming Addon: 150,000 events daily, unlimited entities		

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