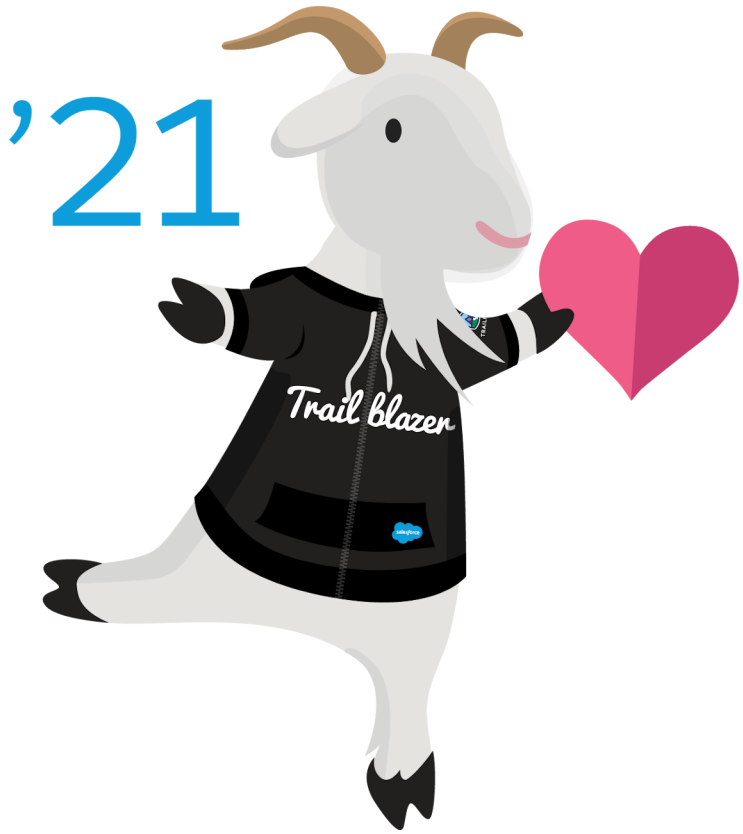
Platform Events Developer Guide

Version 52.0, Summer '21



@salesforcedocs

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PLATFORM EVENTS DEVELOPER GUIDE

Use platform events to connect business processes in Salesforce and external apps through the exchange of real-time event data. Platform events are secure and scalable messages that contain data. Publishers publish event messages that subscribers receive in real time. To customize the data published, define platform event fields.

EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: **Performance**, **Unlimited**, **Enterprise**, and **Developer** Editions

IN THIS SECTION:

Delivering Custom Notifications with Platform Events

Platform events are part of Salesforce's enterprise messaging platform. The platform provides an event-driven messaging architecture to enable apps to communicate inside and outside of Salesforce. Before diving into platform events, take a look at what an event-based software system is.

IN THIS SECTION:

Event-Driven Software Architecture

An event-driven (or message-driven) software architecture consists of event producers, event consumers, and channels. The architecture is suitable for large distributed systems because it decouples event producers from event consumers, thereby simplifying the communication model in connected systems.

Event
A change in state that is meaningful in a business process. For example, placement of a purchase order is a meaningful event because the order fulfillment center expects to receive a notification before processing an order.

Event message
A message that contains data about the event. Also known as an event notification. For example, an event message can be a notification about an order placement containing information about the order.

Event producer
The publisher of an event message.

Event channel
A stream of events on which an event producer sends event messages and event consumers read those messages. For platform events, the channel is for a single platform event and groups all event messages for that platform event.

Event consumer
A subscriber to a channel that receives messages from the channel. For example, an order fulfillment app that is notified of new orders.

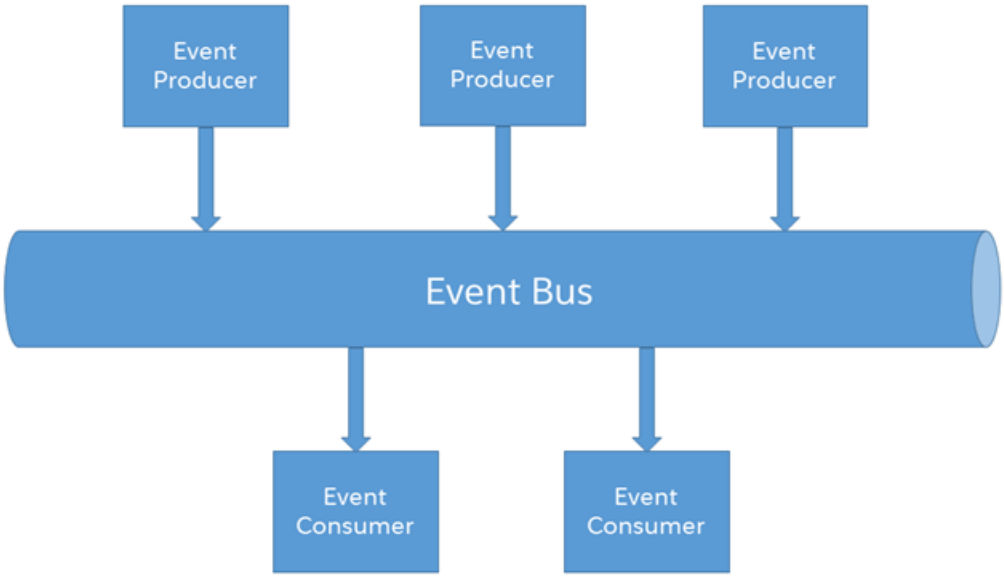
Event bus
A communication and storage service that enables event streaming using the publish-subscribe model. The event bus enables the retrieval of stored event messages at any time during the retention window.

Systems in request-response communication models make a request to a web service or database to obtain information about a certain state. The sender of the request establishes a connection to the service and depends on the availability of the service.

In comparison, systems in an event-based model obtain information and can react to it in near real time when the event occurs. Event producers don't know the consumers that receive the events. Any number of consumers can receive and react to the same events. The only dependency between producers and consumers is the semantic of the message content.

The Event Bus

Platform event messages are published to the event bus, where they are stored temporarily. You can retrieve stored event messages from the event bus using a CometD (Streaming API) client. Each event message contains the `ReplayId` field, which identifies the event in the stream and enables replaying the stream after a specific event. For more information, see Message Durability in the Streaming API Developer Guide.



Enterprise Messaging Platform Events

The Salesforce enterprise messaging platform offers the benefits of event-driven software architectures. Platform events are the event messages (or notifications) that your apps send and receive to take further action. Platform events simplify the process of communicating changes and responding to them without writing complex logic. Publishers and subscribers communicate with each other through events. One or more subscribers can listen to the same event and carry out actions.

For example, a software system can send events containing information about printer ink cartridges. Subscribers can subscribe to the events to monitor printer ink levels and place orders to replace cartridges with low ink levels.

Custom Platform Events

Use custom platform events to publish and process custom notifications. For example, publish custom platform events to send order information to an order fulfillment service. Or publish custom platform events to send printer ink information that is processed by a service app.

You define a custom platform event in Salesforce in the same way that you define a custom object. Create a platform event definition by giving it a name and adding custom fields. Platform events support a subset of field types in Salesforce. See Platform Event Fields. This table lists a sample definition of custom fields for a printer ink event.

Field Name	Field API Name	Field Type
Printer Model	Printer_Model__c	Text
Serial Number	Serial_Number__c	Text
Ink Percentage	Ink_Percentage__c	Number

You can publish custom platform events on the Lightning Platform by using Apex or point-and-click tools, such as Process Builder and Flow Builder, or an API in external apps. Similarly, you can subscribe to an event channel either on the platform through an Apex trigger or point-and-click tools, or in external apps using the CometD-based Streaming API. When an app publishes an event message, event subscribers receive the event message and execute business logic. Using the printer ink example, a software system monitoring a printer makes an API call to publish an event when the ink is low. The printer event message contains the printer model, serial number, and ink level. After the printer sends the event message, an Apex trigger is fired in Salesforce. The trigger creates a case record to place an order for a new cartridge.

Standard Platform Events

Salesforce provides events with predefined fields, called standard platform events. An example of a standard platform event is AssetTokenEvent, which monitors OAuth 2.0 authentication activity. Another example is BatchApexErrorEvent, which reports errors encountered in batch Apex jobs.

Salesforce publishes standard platform events in response to an action that occurred in the app or errors in batch Apex jobs. You can subscribe to a standard platform event stream using the subscription mechanism that the event supports.

High-Volume Platform Events

Use high-volume platform events to publish and process millions of events efficiently and to scale your event-based apps. Previously, standard-volume events were available. In API version 45.0 and later, your new custom event definitions are high volume by default. Standard-volume events are still supported but not available for new event definitions. High-volume platform events offer better scalability than standard-volume platform events.

Note the following characteristics of high-volume platform events.

Asynchronous Publishing
: For efficient processing of high loads of incoming event messages, high-volume platform events are published asynchronously. After the publishing call returns with a successful result, the publish request is queued in Salesforce. The event message isn't always published immediately. For more information, see High-Volume Platform Event Persistence.

Separate Event Allocations
: Each Salesforce edition provides default allocations and usage-based entitlements for the number of high-volume events delivered monthly to CometD clients. See Platform Event Allocations.

Starting in Spring '21, standard-volume platform events are also published asynchronously.

Platform Events and sObjects

A platform event is a special kind of Salesforce entity, similar in many ways to an sObject. An event message is an instance of a platform event, similar to how a record is an instance of a custom or standard object. Unlike custom or standard objects, you can't update or delete event records. You also can't view event records in the Salesforce user interface, and platform events don't have page layouts. When you delete a platform event definition, it's permanently deleted.

You can set read and create permissions for platform events. Grant permissions to users in profiles or in permission sets.

Platform Events and Transactions

Platform event messages are published either immediately or after a transaction is committed, depending on the publish behavior you set in the platform event definition. Platform events defined to be published immediately don't respect transaction boundaries, but those defined to be published after a transaction is committed do. For more information, see Platform Event Fields. Note the following:

- If the platform event publish behavior is set to **Publish Immediately**:
  - The `allOrNone` header is ignored when publishing through the APIs. Some events can be published even when others fail in the same call.
  - You can't roll back published event messages, and the Apex `setSavepoint()` and `rollback()` `Database` class methods aren't supported.
- If the publish behavior is set to **Publish After Commit**:
  - The `allOrNone` header value takes effect. If `allOrNone` is set to `true`, no events are published if at least one event fails in the same call.
  - You can roll back published event messages with the Apex `setSavepoint()` and `rollback()` `Database` class methods.
- The publishing of high-volume platform events is asynchronous. For more information, see Asynchronous Publishing.

When publishing platform events, DML limits and other Apex governor limits apply.

Event Retention in the Event Bus

High-volume platform event messages are stored for 72 hours (3 days). Standard-volume platform event messages are stored for 24 hours (1 day). You can retrieve past event messages when using CometD clients to subscribe to a channel.

Order of Events

If you publish multiple events in one publish call, the order of events in a batch is guaranteed for that publish request. So the order of event messages that are stored in the event bus and delivered to subscribers matches the order of events that are passed in the call. You can publish multiple events in several ways, including the Apex `EventBus.publish` method or the REST API composite resource. For events published across different requests, the order of events is not guaranteed because publish requests can be processed by different Salesforce application servers. As a result, a later request could be processed faster than an earlier request.

Salesforce assigns a replay ID value to a received platform event message and persists it in the event bus. Subscribers receive platform event messages from the event bus in the order of the replay ID.

SEE ALSO:

Publishing Platform Events

Subscribing to Platform Events

Standard Platform Event Objects

Defining Your Custom Platform Event

Custom platform events are sObjects, similar to custom objects. Define a platform event in the same way you define a custom object.

IN THIS SECTION:

EDITIONS

Available in: both Salesforce Classic and Lightning Experience

Available in: **Performance**, **Unlimited**, **Enterprise**, and **Developer** Editions

USER PERMISSIONS

To create and edit platform event definitions:
- Customize Application

Platform Event Fields

Platform events contain standard fields. Add custom fields for your custom data.

To define a platform event in Salesforce Classic or Lightning Experience:

1. From Setup, enter `Platform Events` in the Quick Find box, then select **Platform Events**.
2. On the Platform Events page, click **New Platform Event**.
3. Complete the standard fields, and optionally add a description.
4. For Publish Behavior, choose when the event message is published in a transaction.
   - **Publish After Commit** to have the event message published only after a transaction commits successfully. Select this option if subscribers rely on data that the publishing transaction commits. For example, a process publishes an event message and creates a task record. A second process that is subscribed to the event is fired and expects to find the task record. Another reason for choosing this behavior is when you don't want the event message to be published if the transaction fails.
   - **Publish Immediately** to have the event message published when the publish call executes. Select this option if you want the event message to be published regardless of whether the transaction succeeds. Also choose this option if the publisher and subscribers are independent, and subscribers don't rely on data committed by the publisher. For example, the immediate publishing behavior is suitable for an event used for logging purposes. With this option, a subscriber might receive the event message before data is committed by the publisher transaction.
5. Click **Save**.
6. To add a field, in the Custom Fields & Relationships related list, click **New**.
7. Follow the custom field wizard to set up the field properties.

Note:
- If you change the publish behavior, expect up to a 5-minute delay for the change to take effect.
- In Lightning Experience, platform events aren't shown in the Object Manager's list of standard and custom objects and aren't available in Schema Builder.

Standard Fields

Platform events include standard fields. These fields appear on the New Platform Event page.

Field	Description
`Label`	Name used to refer to your platform event in a user interface page.
`Plural Label`	Plural name of the platform event.
`Starts with a vowel sound`	If it's appropriate for your org's default language, indicate whether the label is preceded by "an" instead of "a."
`Object Name`	Unique name used to refer to the platform event when using the API. In managed packages, this name prevents naming conflicts with package installations. Use only alphanumeric characters and underscores. The name must begin with a letter and have no spaces. It cannot end with an underscore or have two consecutive underscores.
`Description`	Optional description of the object. A meaningful description helps you remember the differences between your events when you view them in a list.
`Deployment Status`	Indicates whether the platform event is visible to other users.

Custom Fields

In addition to the standard fields, you can add custom fields to your custom event. Platform event custom fields support only these field types.

- Checkbox
- Date
- Date/Time
- Number
- Text
- Text Area (Long)

The maximum number of fields that you can add to a platform event is the same as for a custom object. See Salesforce Features and Edition Allocations.

`ReplayId` System Field

Each event message is assigned an opaque ID contained in the `ReplayId` field. The `ReplayId` field value, which is populated by the system when the event is delivered to subscribers, refers to the position of the event in the event stream. Replay ID values are not guaranteed to be contiguous for consecutive events. For example, the event following the event with ID 999 can have an ID of 1,025. A subscriber can store a replay ID value and use it on resubscription to retrieve events that are within the retention window. For example, a subscriber can retrieve missed events after a connection failure. Subscribers must not compute new replay IDs based on a stored replay ID to refer to other events in the stream.

`EventUuid` System Field

A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later. The API version corresponds to the version that an Apex trigger is saved with, or the version specified in a CometD subscriber endpoint.

API Name Suffix for Custom Platform Events

When you create a platform event, the system appends the `__e` suffix to create the API name of the event. For example, if you create an event with the object name `Low Ink`, the API name is `Low_Ink__e`. The API name is used whenever you refer to the event programmatically, for example, in Apex. API names of standard platform events, such as AssetTokenEvent, don't include a suffix.

SEE ALSO:

Considerations for Defining and Publishing Platform Events

Considerations for Publishing and Subscribing to Platform Events with Apex and APIs

Migrate Platform Event Definitions with Metadata API

Deploy and retrieve platform event definitions from your sandbox and production org as part of your app's development life cycle.

The CustomObject metadata type represents a platform event.

Platform event names are appended with `__e`. The file that contains the platform event definition has the suffix `.object`. Platform events are stored in the `objects` folder.

Example: Here is a definition of a platform event with a number field and two text fields.

```
<?xml version="1.0" encoding="UTF-8"?>
<CustomObject xmlns="http://soap.sforce.com/2006/04/metadata">
    <deploymentStatus>Deployed</deploymentStatus>
    <eventType>HighVolume</eventType>
    <publishBehavior>PublishAfterCommit</publishBehavior>
    <fields>
        <fullName>Ink_Percentage__c</fullName>
        <externalId>false</externalId>
        <isFilteringDisabled>false</isFilteringDisabled>
        <isNameField>false</isNameField>
        <isSortingDisabled>false</isSortingDisabled>
        <label>Ink Percentage</label>
        <precision>18</precision>
        <required>false</required>
        <scale>2</scale>
        <type>Number</type>
        <unique>false</unique>
    </fields>
    <fields>
        <fullName>Printer_Model__c</fullName>
        <externalId>false</externalId>
        <isFilteringDisabled>false</isFilteringDisabled>
        <isNameField>false</isNameField>
        <isSortingDisabled>false</isSortingDisabled>
        <label>Printer Model</label>
        <length>20</length>
        <required>false</required>
        <type>Text</type>
        <unique>false</unique>
    </fields>
    <fields>
        <fullName>Serial_Number__c</fullName>
        <externalId>false</externalId>
```

```
        <isFilteringDisabled>false</isFilteringDisabled>
        <isNameField>false</isNameField>
        <isSortingDisabled>false</isSortingDisabled>
        <label>Serial Number</label>
        <length>20</length>
        <required>false</required>
        <type>Text</type>
        <unique>false</unique>
    </fields>
    <label>Low Ink</label>
    <pluralLabel>Low Ink</pluralLabel>
</CustomObject>
```

The `eventType` field specifies the platform event volume. Only the `HighVolume` value is supported. The `StandardVolume` value is deprecated. If you create a platform event with the `StandardVolume` event type, you get an error.

This package.xml manifest file references the previous event definition. The name of the referenced event is `Low_Ink__e`.

```
<?xml version="1.0" encoding="UTF-8"?>
<Package xmlns="http://soap.sforce.com/2006/04/metadata">
    <types>
        <members>Low_Ink__e</members>
        <name>CustomObject</name>
    </types>
    <version>52.0</version>
</Package>
```

Retrieve Platform Events

To retrieve all platform events, in addition to custom objects defined in your org, use the wildcard character (`*`) for the `<members>` element, as follows.

```
<?xml version="1.0" encoding="UTF-8"?>
<Package xmlns="http://soap.sforce.com/2006/04/metadata">
    <types>
        <members>*</members>
        <name>CustomObject</name>
    </types>
    <version>52.0</version>
</Package>
```

To retrieve or deploy triggers associated to a platform event, use the ApexTrigger metadata type. For more information about how to use Metadata API and its types, see the *Metadata API Developer Guide*.

Publishing Platform Events

After a platform event has been defined in your Salesforce org, publish event messages from a Salesforce app using processes, flows, or Apex or an external app using Salesforce APIs.

IN THIS SECTION:

SEE ALSO:

Decoupled Publishing and Subscription

Publish Event Messages with Flows

Use flows to publish event messages from a Salesforce app as part of some user interaction, an automated process, Apex, or workflow action.

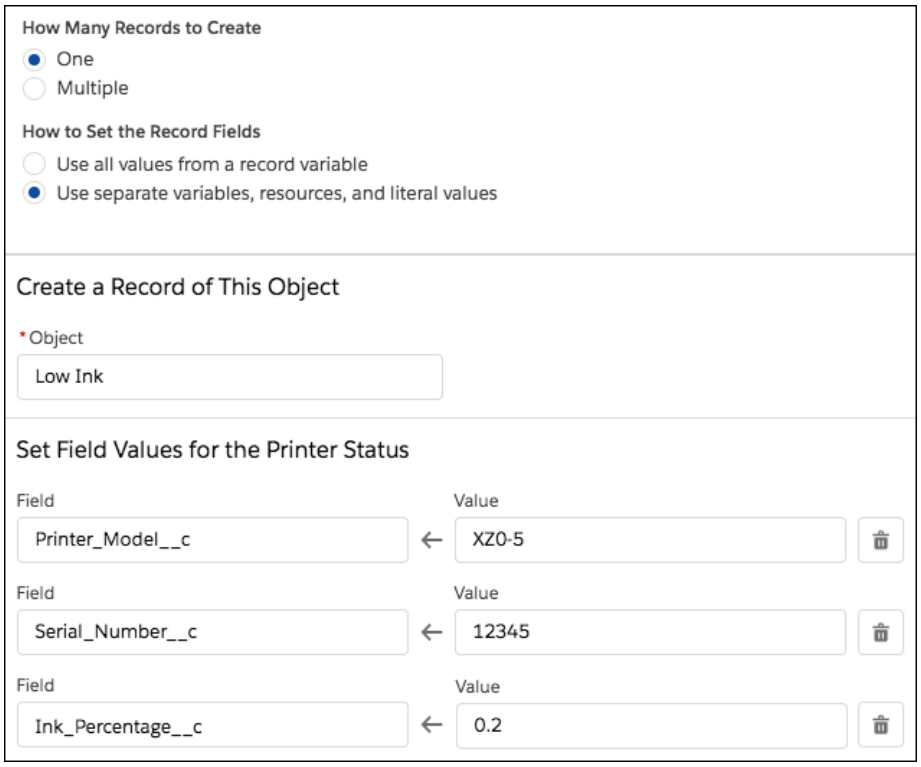
To publish event messages, add a Create Records element to the appropriate flow. Where you'd usually pick an object to create, select the custom platform event.

For example, here's how to configure a Create Records element that publishes a Printer Status platform event message. This example assumes that the Printer Status platform event is defined in your org and that the event has these custom fields.

- Printer Model (Text)
- Serial Number (Text)
- Ink Status (Text)

1. For How Many Records to Create, choose **One**.
2. For How to Set the Record Fields, choose **Use separate variables, resources, and literal values**.
3. For Object, enter `Printer` and select **Printer Status**.
4. Set these field values.

Field	Value
Printer Model	XZO-5
Serial Number	12345
Ink Status	Low



5. Save and activate the flow.

SEE ALSO:

Salesforce Help: Flows

Publish Event Messages with Processes

Use Process Builder to publish event messages from a Salesforce app as part of an automated process.

To publish event messages, add a Create a Record action to the appropriate process. Where you'd usually pick an object to create, select the custom platform event.

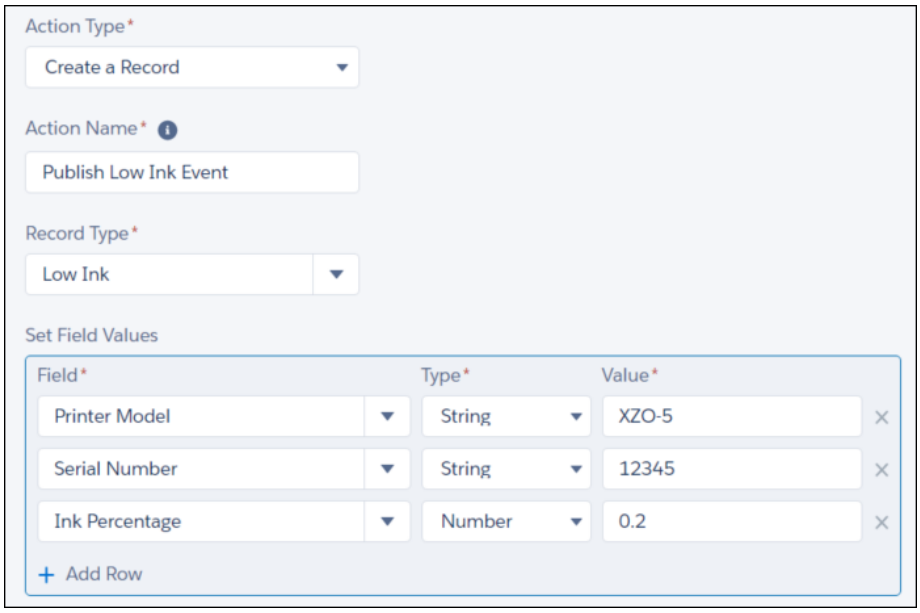
Tip: If a platform event is configured to publish immediately, the process publishes each event message outside of the database transaction. If the transaction fails and is rolled back, the event message is still published and can't be rolled back. So if you see an informational message under the selected platform event, consider whether you want the process to publish an event message only after the transaction commits successfully.

For example, here's how to configure a Create a Record action that publishes a Low Ink event message. This example assumes that the Low Ink platform event is defined in your org and that the event has these custom fields.

- Printer Model (Text)
- Serial Number (Text)
- Ink Percentage (Number)

1. For Record Type, enter `low` and select **Low Ink**.
2. Set the field values.

Field	Type	Value
Printer Model	String	XZO-5
Serial Number	String	12345
Ink Percentage	Number	0.2



3. Save the action and activate the process.

SEE ALSO:

Salesforce Help: Process Builder

Decoupled Publishing and Subscription

Platform Event Fields

Publish Event Messages with Apex

Use Apex to publish event messages from a Salesforce app.

To publish event messages, call the `EventBus.publish` method. For example, if you defined a custom platform event called `Low Ink`, reference this event type as `Low_Ink__e`. Next, create instances of this event, and then pass them to the Apex method.

Example: This example creates two events of type `Low_Ink__e`, publishes them, and then checks whether the publishing was successful or errors were encountered.

Before you can run this snippet, define a platform event with the name of `Low_Ink__e` and the following fields: `Printer_Model__c` of type Text, `Serial_Number__c` of type Text (marked as required), `Ink_Percentage__c` of type Number(16, 2).

```
List<Low_Ink__e> inkEvents = new List<Low_Ink__e>();
inkEvents.add(new Low_Ink__e(Printer_Model__c='XZO-5', Serial_Number__c='12345',
              Ink_Percentage__c=0.2));
inkEvents.add(new Low_Ink__e(Printer_Model__c='MN-123', Serial_Number__c='10013',
```

```
            Ink_Percentage__c=0.15));


// Call method to publish events
List<Database.SaveResult> results = EventBus.publish(inkEvents);

// Inspect publishing result for each event
for (Database.SaveResult sr : results) {
    if (sr.isSuccess()) {
        System.debug('Successfully published event.');
    } else {
        for(Database.Error err : sr.getErrors()) {
            System.debug('Error returned: ' +
                        err.getStatusCode() +
                        ' - ' +
                        err.getMessage());
        }
    }
}
```

For each event, `Database.SaveResult` contains information about whether the operation was successful and the errors encountered. If the `isSuccess()` method returns `true`, the publish request is queued in Salesforce and the event message is published asynchronously. For more information, see High-Volume Platform Event Persistence. If `isSuccess()` returns `false`, the event publish operation resulted in errors which are returned in the `Database.Error` object. `EventBus.publish()` can publish some passed-in events, even when other events can't be published due to errors. The `EventBus.publish()` method doesn't throw exceptions caused by an unsuccessful publish operation. It is similar in behavior to the Apex `Database.insert` method when called with the partial success option.

`Database.SaveResult` also contains the `Id` system field. The `Id` field value isn't included in the event message delivered to subscribers. It isn't used to identify an event message, and isn't always unique.

The platform event message is published either immediately or after a transaction is committed, depending on the publish behavior you set in the platform event definition. For more information, see Platform Event Fields. Apex governor limits apply. For events configured with the **Publish After Commit** behavior, each method execution is counted as one DML statement against the Apex DML statement limit. You can check limit usage using the Apex `Limits.getDMLStatements()` method. For events configured with the **Publish Immediately** behavior, each method execution is counted against a separate event publishing limit of 150 `EventBus.publish()` calls. You can check limit usage using the Apex `Limits.getPublishImmediateDML()` method.

SEE ALSO:

- EventBus Class
- Platform Event Error Status Codes
- *Apex Developer Guide*: Execution Governors and Limits
- *Apex Developer Guide*: Limits Class

Publish Event Messages with Salesforce APIs

External apps use an API to publish platform event messages.

Publish events by inserting events in the same way that you insert sObjects. You can use any Salesforce API to create platform events, such as SOAP API, REST API, or Bulk API.

When publishing an event message, the result that the API returns contains information about whether the operation was successful and the errors encountered. If the `success` field is `true`, the publish request is queued in Salesforce and the event message is published asynchronously. For more details, see High-Volume Platform Event Persistence. If the `success` field is `false`, the event publish operation resulted in errors, which are returned in the `errors` field.

The returned result also contains the `Id` system field. The `Id` field value is not included in the event message delivered to subscribers. It is not used to identify an event message, and is not always unique. Subscribers can use the `ReplayId` system field, which is included in the delivered message, to identify the position of the event in the stream.

The examples in the following sections are based on a high-volume platform event.

REST API

To publish a platform event message using REST API, send a POST request to the following endpoint.

```
/services/data/v52.0/sobjects/Event_Name__e/
```

Example: If you've defined a platform event named `Low Ink`, publish event notifications by inserting `Low_Ink__e` data. This example creates one event of type `Low_Ink__e` in REST API.

REST endpoint:

```
/services/data/v52.0/sobjects/Low_Ink__e/
```

Request body:

```
{
   "Printer_Model__c" : "XZO-5"
}
```

After the platform event message is published, the REST response looks like this output. Headers are deleted for brevity.

```
HTTP/1.1 201 Created

{
  "id" : "e01xx0000000001AAA",
  "success" : true,
  "errors" : [ {
    "statusCode" : "OPERATION_ENQUEUED",
    "message" : "232fd30e-0a71-42bd-a97b-be0e329b2ded",
    "fields" : [ ]
  } ]
}
```

REST API Composite Resource

To publish multiple platform event messages in one REST API request, use the `composite` resource. Send a POST request to the following endpoint.

```
/services/data/v52.0/composite/
```

Add each platform event as a subrequest in the composite request body.

Example: This composite request contains two platform events in the request body.

```
{
  "allOrNone": true,
  "compositeRequest": [
    {
      "method": "POST",
      "url": "/services/data/v52.0/sobjects/Low_Ink__e",
      "referenceId": "event1",
      "body": {
        "Serial_Number__c" : "1000",
        "Printer_Model__c" : "XZO-5"
      }
    },
    {
      "method": "POST",
      "url": "/services/data/v52.0/sobjects/Low_Ink__e",
      "referenceId": "event2",
      "body": {
        "Serial_Number__c" : "1001",
        "Printer_Model__c" : "XY-10"
      }
    }
  ]
}
```

After the platform event messages are published, the REST response looks like this output. Headers are deleted from this sample response.

```
{
  "compositeResponse" : [ {
    "body" : {
      "id" : "e01xx0000000001AAA",
      "success" : true,
      "errors" : [ {
        "statusCode" : "OPERATION_ENQUEUED",
        "message" : "436ccd6f-cc43-4861-a260-a3ffbc1bc27c",
        "fields" : [ ]
      } ]
    },
    "httpStatusCode" : 201,
    "referenceId" : "event1"
  }, {
    "body" : {
      "id" : "e01xx0000000001AAA",
      "success" : true,
      "errors" : [ {
        "statusCode" : "OPERATION_ENQUEUED",
        "message" : "85d962fb-f05c-4ccf-9ee1-ac751d0fc07f",
        "fields" : [ ]
      } ]
    },
    "httpStatusCode" : 201,
    "referenceId" : "event2"
```

```
  } ]
}
```

Note: The `allOrNone` header in the composite REST request and in SOAP API applies only to platform events defined with the Publish After Commit option. For more information, see Platform Events and Transactions.

SOAP API

To publish a platform event message using SOAP API, use the `create()` call.

Example: This example shows the SOAP message (using Partner API) of a request to create three platform event messages in one call. Each event has one custom field named `Printer_Model__c`.

```
<?xml version="1.0" encoding="UTF-8"?>
<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:ns1="urn:sobject.partner.soap.sforce.com"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:ns2="urn:partner.soap.sforce.com">
<SOAP-ENV:Header>
    <ns2:SessionHeader>
       <ns2:sessionId>00DR00000001fWV!AQMAQOshATCQ4fBaYFOTrHVixfEO6l...</ns2:sessionId>

    </ns2:SessionHeader>
    <ns2:CallOptions>
        <ns2:client>Workbench/34.0.12i</ns2:client>
        <ns2:defaultNamespace xsi:nil="true"/>
        <ns2:returnFieldDataTypes xsi:nil="true"/>
    </ns2:CallOptions>
</SOAP-ENV:Header>
<SOAP-ENV:Body>
    <ns2:create>
        <ns2:sObjects>
            <ns1:type>Low_Ink__e</ns1:type>
            <ns1:fieldsToNull xsi:nil="true"/>
            <ns1:Id xsi:nil="true"/>
            <Printer_Model__c>XZO-600</Printer_Model__c>
        </ns2:sObjects>
        <ns2:sObjects>
            <ns1:type>Low_Ink__e</ns1:type>
            <ns1:fieldsToNull xsi:nil="true"/>
            <ns1:Id xsi:nil="true"/>
            <Printer_Model__c>XYZ-100</Printer_Model__c>
        </ns2:sObjects>
        <ns2:sObjects>
            <ns1:type>Low_Ink__e</ns1:type>
            <ns1:fieldsToNull xsi:nil="true"/>
            <ns1:Id xsi:nil="true"/>
            <Printer_Model__c>XYZ-9000</Printer_Model__c>
        </ns2:sObjects>
    </ns2:create>
</SOAP-ENV:Body>
</SOAP-ENV:Envelope>
```

The response of the Partner SOAP API request looks something like the following. Headers are deleted for brevity.

```
<?xml version="1.0" encoding="UTF-8"?>
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
xmlns="urn:partner.soap.sforce.com">
<soapenv:Header>
 ...
</soapenv:Header>
<soapenv:Body>
    <createResponse>
        <result>
            <id>e00xx000000000F</id>
            <success>true</success>
            <errors>
               <message>04b8724e-e7e7-4caf-9bcd-0d14c9f97e31</message>
               <statusCode>OPERATION_ENQUEUED</statusCode>
            </errors>
        </result>
        <result>
            <id>e00xx000000000G</id>
            <success>true</success>
            <errors>
               <message>7378b9cc-d381-4150-b093-336e3a0e4018</message>
               <statusCode>OPERATION_ENQUEUED</statusCode>
            </errors>
        </result>
        <result>
            <id>e00xx000000000H</id>
            <success>true</success>
            <errors>
               <message>32da1ef3-6877-485a-8dde-1174f589e31a</message>
               <statusCode>OPERATION_ENQUEUED</statusCode>
            </errors>
        </result>
    </createResponse>
</soapenv:Body>
</soapenv:Envelope>
```

SEE ALSO:

- REST API Developer Guide
- REST API Developer Guide : Using Composite Resources
- SOAP API Developer Guide: `create()` call
- Bulk API 2.0 Bulk API Developer Guide
- Platform Event Error Status Codes

Get the Status of Asynchronous Platform Event Publish Operations (Beta)

High-volume platform events are published asynchronously. With publish status events, you can track the status of publishing operations and take the necessary actions. Enable status events on the high-volume platform event you're interested in tracking. Then subscribe to the PublishStatusEvent standard platform event.

Note: As a beta feature, Publish Status Events is a preview and isn't part of the "Services" under your master subscription agreement with Salesforce. Use this feature at your sole discretion, and make your purchase decisions only on the basis of generally available products and features. Salesforce doesn't guarantee general availability of this feature within any particular time frame or at all, and we can discontinue it at any time. This feature is for evaluation purposes only, not for production use. It's offered as is and isn't supported, and Salesforce has no liability for any harm or damage arising out of or in connection with it. All restrictions, Salesforce reservation of rights, obligations concerning the Services, and terms for related Non-Salesforce Applications and Content apply equally to your use of this feature. You can provide feedback and suggestions for Publish Status Events in the Trailblazer Community. **For information on enabling this feature in your org, contact Salesforce.**

You can get a confirmation of the enqueued publish operation without this feature, but you don't know whether the operation eventually succeeds. A status of success in the immediately returned SaveResult means that the publish operation is queued in Salesforce. The operation is carried out later when system resources are available. Some failures are returned in the SaveResult, such as validation or limit errors, but not the asynchronous errors. In rare cases, enqueued publish operations can fail due to a system error. The benefit of status events is that you can find out about the eventual status of enqueued publish operations and perform appropriate actions.

Note: The Publish Status Events feature isn't available for standard-volume platform events.

Enable Publish Status Events

To enable receiving publish status events for your high-volume platform event, in Setup, click **Track publish status** on the event's definition page. Or in Metadata API, set the `enablePublishStatusTracking` field on CustomObject to `true`.

Event publish results are batched in a PublishStatusEvent and grouped by the status and topic, which is the event API name. A PublishStatusEvent doesn't necessarily correspond to one publish request. It contains results of one or more requests that are for the same platform event and have the same publish status. PublishStatusEvent can hold up to 100 publish results. Each PublishStatusEvent includes an array of PublishStatusDetail child objects containing information about each event publish operation.

IN THIS SECTION:

Subscribe to Publish Status Events with a CometD Client—EMP Connector (Beta)

To subscribe to publish status events with EMP Connector or another CometD client, supply this channel: `/event/PublishStatusEvent`.

Subscribe to Publish Status Events with an Apex Trigger (Beta)

Alternatively, you can subscribe to publish status events with an Apex trigger. Create an `after insert` trigger on PublishStatusEvent.

Match a Publish Result with the Event Published (Beta)

Use the `EventUuid` field value to match the event status with the event published. The `EventUuid` field is a universally unique identifier (UUID) that identifies the event message and correlates the publish result of each event with the original publish call.

SEE ALSO:

PublishStatusEvent (Beta)

Platform Event Error Status Codes

Subscribe to Publish Status Events with a CometD Client—EMP Connector (Beta)

To subscribe to publish status events with EMP Connector or another CometD client, supply this channel: `/event/PublishStatusEvent`.

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This example shows the payload received for a publish status of success and contains information for two events. Because the publish operations were successful, the replay ID for each event is available in the `Replay` field and the `FailureReason` and `StatusCode` fields are empty. The `EventUuid` field correlates the publish result of each event with the original publish call.

```
{
  "schema": "tklL37cct1eXnqi_yPIS7w",
  "payload": {
    "Status": "SUCCESS",
    "AdditionalInfo": null,
    "CreatedById": "005xx000001X83aAAC",
    "CreatedDate": "2020-08-06T20:16:44.400Z",
    "PublishStatusDetails": [
      {
        "Replay": 7,
        "EventUuid": "6ba5db7e-c27b-4a67-a3c5-cf425ffcaf53",
        "FailureReason": null,
        "StatusCode": null
      },
      {
        "Replay": 10,
        "EventUuid": "5a520ebe-6ac5-49b3-a3e0-6f9f81361c79",
        "FailureReason": null,
        "StatusCode": null
      }
    ],
    "Topic": "Order_Event__e"
  }
}
```

This example shows the payload for a publish status of failure and contains information for two events. Because the publish operations failed, the replay IDs are not available in the `Replay` fields. The `FailureReason` and `StatusCode` fields contain information about the error. The `EventUuid` field correlates the publish result of each event with the original publish call.

```
{
  "schema": "tklL37cct1eXnqi_yPIS7w",
  "payload": {
    "Status": "FAILURE",
    "AdditionalInfo": null,
    "CreatedById": "005xx000001X83aAAC",
    "CreatedDate": "2020-08-06T20:20:23.573Z",
    "PublishStatusDetails": [
      {
        "Replay": null,
        "EventUuid": "e981b488-81f3-4fcc-bd6f-f7033c9d7ac3",
        "FailureReason":
```

```
          "The platform event message could not be published. Try again later.",
        "StatusCode": "PLATFORM_EVENT_PUBLISH_FAILED"
      },
      {
        "Replay": null,
        "EventUuid": "ed5773c8-6848-4eee-99cf-2d3703cc0da3",
        "FailureReason":
          "The platform event message could not be published. Try again later.",
        "StatusCode": "PLATFORM_EVENT_PUBLISH_FAILED"
      }
    ],
    "Topic": "Order_Event__e"
  }
}
```

SEE ALSO:

GitHub: EMP Connector

Example: Subscribe to and Replay Events Using a Java Client (EMP Connector)

Subscribe to Publish Status Events with an Apex Trigger (Beta)

Alternatively, you can subscribe to publish status events with an Apex trigger. Create an `after insert` trigger on PublishStatusEvent.

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`Trigger.New` contains the received PublishStatusEvent messages. For each status event, you can obtain the event fields, such as the status and topic. Then you can get information about each event, including the `EventUuid`, in the `PublishStatusDetails` field.

This Apex trigger example iterates over every PublishStatusEvent and logs information about the failed event publishes in PublishResult__c custom object records.

Prerequisites: Before you can save this example, create a custom object with the label PublishResult and with these fields:

- Type: Text(36), Label: `EventUuid`
- Type: Number(18,0), Label: `ReplayId`
- Type: Text(50), Label: `StatusCode`
- Type: Text(255), Label: `FailureReason`
- Type: Text(255), Label: `Topic`
- Type: Text(25), Label: `Status`

```
trigger StatusEventTrigger on PublishStatusEvent (after insert) {
    for (PublishStatusEvent event : Trigger.New) {
        System.debug('Event Name:' + event.Topic);
```

```
        System.debug('Event status:' + event.Status);

        // Get the publish details for all events included
        List<PublishStatusDetail> details = event.PublishStatusDetails;
        // List of custom object records to insert later
        List<PublishResult__c> resultsToInsert = new List<PublishResult__c>();

        // Log failed publishes in custom object records
        if (event.Status == 'FAILURE') {
            for(PublishStatusDetail detail : details) {
                // Populate custom object record
                PublishResult__c result = new PublishResult__c();
                result.EventUuid__c = detail.EventUuid;
                result.ReplayId__c = detail.Replay;
                result.StatusCode__c = detail.StatusCode;
                result.FailureReason__c = detail.FailureReason;
                // Get fields from parent event object
                result.Topic__c = event.Topic;
                result.Status__c = event.Status;
                // Add to list of records to insert
                resultsToInsert.add(result);
            }
            // Insert custom object records in bulk
            Database.insert(resultsToInsert);
        }
    }
}
```

SEE ALSO:

- Set Up Debug Logs for Event Subscriptions
- Subscribe to Platform Event Notifications with Apex Triggers

Match a Publish Result with the Event Published (Beta)

Use the `EventUuid` field value to match the event status with the event published. The `EventUuid` field is a universally unique identifier (UUID) that identifies the event message and correlates the publish result of each event with the original publish call.

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After getting the `EventUuid` field value, save the UUID along with event field values. If you save event field values, you can republish the same events if the publishing fails.

If you published the event using Salesforce APIs, the SaveResult returned contains the UUID in the Error `message` field. This example contains the save result of an event inserted using a REST API POST request.

```
{
  "id" : "e01xx0000000001AAA",
  "success" : true,
  "errors" : [ {
    "statusCode" : "OPERATION_ENQUEUED",
    "message" : "e981b488-81f3-4fcc-bd6f-f7033c9d7ac3",
    "fields" : [ ]
  } ]
}
```

If you published the event in Apex, you can obtain the UUID by calling `EventBus.getOperationId(`***`saveResult`***`)`.

This example gets the UUID from the event publish call using Apex.

Prerequisites: Before you can run this example, define a platform event with the label of `Order Event` and the following fields: `Order Number` of type Text(10) and `Has Shipped` of type Checkbox.

```
// Publish a high-volume event message
Order_Event__e evt = new Order_Event__e(
    Order_Number__c='17',
    Has_Shipped__c = false);
Database.SaveResult sr = EventBus.publish(evt);
// Inspect immediate result
if (sr.isSuccess() == true) {
    System.debug('Successfully enqueued event for publishing.');
    // Get the UUID that uniquely identifies this event publish
    System.debug('UUID=' + EventBus.getOperationId(sr));
} else {
   for(Database.Error err : sr.getErrors()) {
       System.debug('Error returned: ' +
                    err.getStatusCode() +
                    ' - ' +
                    err.getMessage());
   }
}

// Debug message output:
//|DEBUG|Successfully enqueued event for publishing.
//|DEBUG|UUID=6ba5db7e-c27b-4a67-a3c5-cf425ffcaf53
```

Subscribing to Platform Events

Receive platform events in processes, flows, Apex triggers, or CometD clients.

IN THIS SECTION:

Subscribe to Platform Event Messages with Flows

Launch flows or resume running instances of flows, called interviews, when platform event messages are received. Subscribed flows and interviews can receive event messages published through Apex, APIs, flows, and other processes. Flows and interviews provide an autosubscription mechanism.

Subscribe to Platform Event Messages with Processes

Processes built in Process Builder can subscribe to platform events and receive event messages published through Apex, APIs, flows, and other processes. Processes provide an autosubscription mechanism.

Subscribe to Platform Event Notifications with Apex Triggers

Use Apex triggers to subscribe to events. You can receive event notifications in triggers regardless of how they were published—through Apex or APIs. Triggers provide an autosubscription mechanism. No need to explicitly create and listen to a channel in Apex.

Subscribe to Platform Event Notifications in a Lightning Component

Subscribe to platform events with the `empApi` component in your Lightning web component or Aura component. The `empApi` component provides access to methods for subscribing to a streaming channel and listening to event messages.

Subscribe to Platform Event Notifications with CometD

Use CometD to subscribe to platform events in an external client. Implement your own CometD client or use EMP Connector, an open-source, community-supported tool that implements all the details of connecting to CometD and listening on a channel.

Obtain a Platform Event's Subscribers

View a list of all triggers or processes that are subscribed to a platform event by using the Salesforce user interface or the API.

Identify and Match Event Messages with the EventUuid Field

Platform event messages include the `EventUuid` field, which identifies an event message. Use this field to match published and received event messages by comparing the UUIDs of the received events with those returned in the SaveResult of publish calls. This way, you can find any event messages that aren't delivered and republish them.

SEE ALSO:

Decoupled Publishing and Subscription

Set Up Debug Logs for Event Subscriptions

Debug logs for platform event triggers, event processes, and resumed flow interviews are created by Automated Process and are separate from their corresponding Apex code logs. For a platform event trigger with an overridden running user, debug logs are created by the specified user. The debug logs aren't available in the Developer Console's Log tab.

IN THIS SECTION:

Add a Trace Flag Entry for the Default Automated Process User

To collect logs for an event subscription, add a trace flag entry for the Automated Process entity in Setup.

Add a Trace Flag Entry for the Overridden User

To collect logs for an Apex trigger whose default running user is overridden, add a trace flag entry for the user in Setup.

SEE ALSO:

Salesforce Help: Set Up Debug Logging

Add a Trace Flag Entry for the Default Automated Process User

To collect logs for an event subscription, add a trace flag entry for the Automated Process entity in Setup.

1. From Setup, in the Quick Find box, enter `Debug Logs`, then click **Debug Logs**.
2. Click **New**.
3. For Traced Entity Type, select **Automated Process**.
4. Select the time period to collect logs. The start and expiration dates default to the current date and time. To extend the expiration date, click the end date input box, and select the next day from the calendar.
5. For Debug Level, click **New Debug Level**. Enter a name, such as `CustomDebugLevel`, and accept the defaults.
6. Click **Save**.

To collect logs for the user who publishes the events, add another trace flag entry for that user.

Add a Trace Flag Entry for the Overridden User

To collect logs for an Apex trigger whose default running user is overridden, add a trace flag entry for the user in Setup.

1. From Setup, in the Quick Find box, enter `Debug Logs`, then click **Debug Logs**.
2. Click **New**.
3. Keep the Traced Entity Type value of `User`.
4. For Traced Entity Name, click the Lookup button, search for the user in the Lookup window, and select it.
5. Select the time period to collect logs. The start and expiration dates default to the current date and time. To extend the expiration date, click the end date input box, and select the next day from the calendar.
6. For Debug Level, click **New Debug Level**. Enter a name, such as `CustomDebugLevel`, and accept the defaults.
7. Click **Save**.

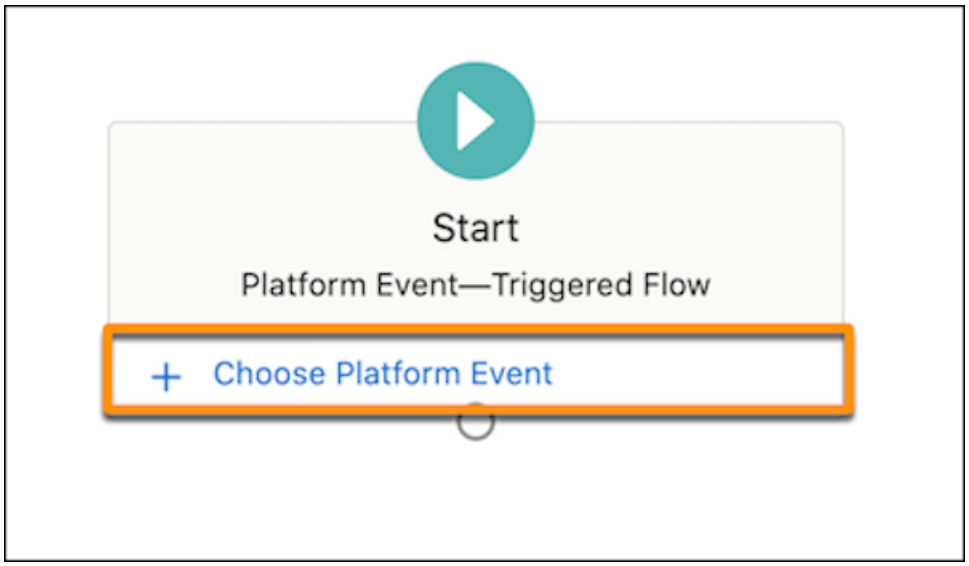
To collect logs for the user who publishes the events, add another trace flag entry for that user.

Subscribe to Platform Event Messages with Flows

Launch flows or resume running instances of flows, called interviews, when platform event messages are received. Subscribed flows and interviews can receive event messages published through Apex, APIs, flows, and other processes. Flows and interviews provide an autosubscription mechanism.

Launch a Flow When a Platform Event Message Is Received

Create a platform event–triggered flow. From the Start element, choose a platform event whose event messages trigger the flow to run.



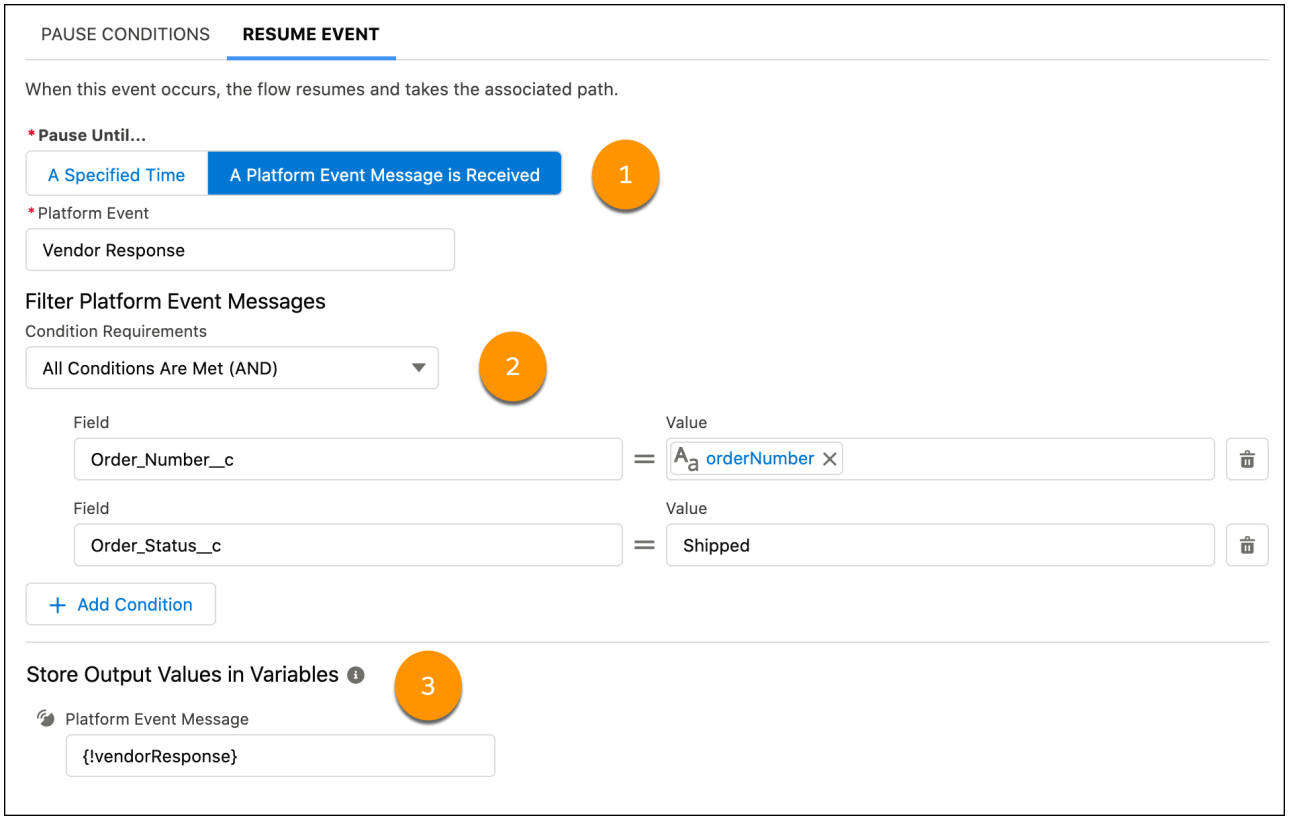
As you build the flow, you can use the field values from the platform event message by referencing the `$Record` global variable.

Resume a Flow When a Platform Event Message Is Received

To configure an autolaunched flow to subscribe to a platform event at run time, add a Pause element and set it up as follows.

- (Optional) Specify conditions that determine whether to pause a flow interview.
- Select the platform event that the flow interview subscribes to.
- Identify the values that a received event message must have to resume the flow interview.
- (Optional) Create a record variable in the flow to store the data from the event message that resumes the flow interview.

Example: This Pause element is set up to resume a flow interview when a vendor response event message is received (1). The order number in the event message must match the flow's `orderNumber` variable value, and the order status must be *`Shipped`* (2). When the flow interview resumes, the `vendorResponse` record variable is populated with the data from the event message (3).



Flow and Platform Event Considerations

If platform event–triggered flows, paused flow interviews, and processes are subscribed to the same platform event, we can't guarantee which one processes each event message first.

Platform event–triggered flows and flow interviews evaluate platform event messages in the order they're received. The order of event messages is based on the event replay ID. A flow can receive a batch of event messages at once, up to a maximum of 2,000 event messages. The order of event messages is preserved within each batch. The event messages in a batch can originate from multiple publishers.

Each platform event–triggered flow or resumed flow interview runs asynchronously in a separate transaction from the transaction that published the event message. As a result, there can be a delay between when an event message is published and when the subscribed flow or interview evaluates the event message.

Debug logs for platform event–triggered flows and resumed flow interviews appear under the Automated Process user. But each flow interview runs in the context of the user who published the event message. So, for example, if a flow interview creates or updates records, system fields like `CreatedById` and `LastModifiedById` reference the user who published the event message.

SEE ALSO:

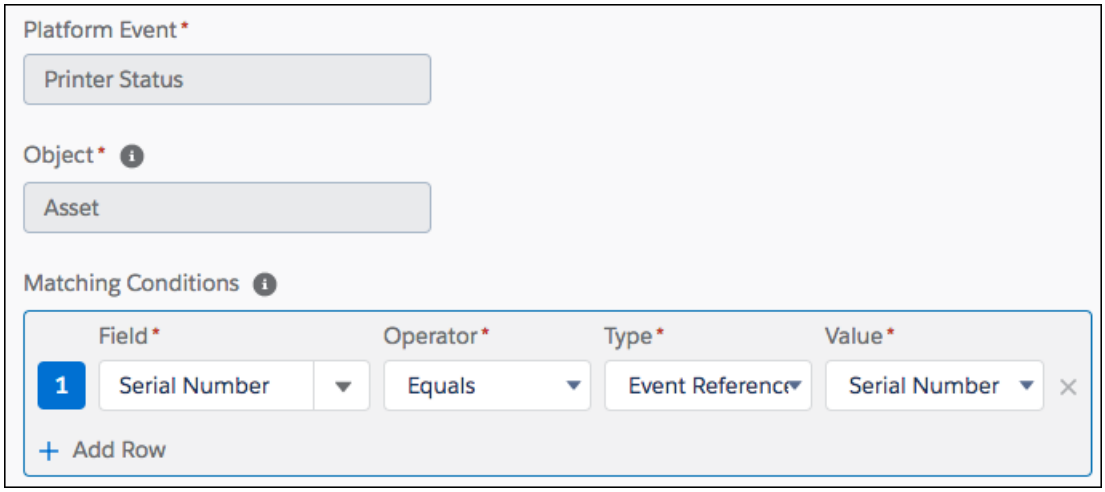
- Considerations for Subscribing to Platform Events with Processes and Flows
- *Salesforce Help*: Flow Limits and Considerations
- *Salesforce Help*: Paused Flow Interview Considerations
- End-to-End Example: Printer Supply Automation

Subscribe to Platform Event Messages with Processes

Processes built in Process Builder can subscribe to platform events and receive event messages published through Apex, APIs, flows, and other processes. Processes provide an autosubscription mechanism.

To subscribe a process to a platform event, build the process to start when it receives a platform event message. In the process's trigger, associate the process with a platform event and an object.

Example: This process starts when it receives a Printer Status event message. When it starts, the process looks for an Asset record whose serial number matches the serial number in the event message.



Process and Platform Event Considerations

If platform event–triggered flows, paused flow interviews, and processes are subscribed to the same platform event, we can't guarantee which one processes each event message first.

A process evaluates platform event messages in the order they're received. The order of event messages is based on the event replay ID. A process can receive a batch of event messages at once, up to a maximum of 2,000 event messages. The order of event messages is preserved within each batch. The event messages in a batch can originate from multiple publishers.

Each event process runs asynchronously in a separate transaction from the transaction that published the event message. As a result, there can be a delay between when an event message is published and when the subscribed flow or interview evaluates the event message.

Debug logs corresponding to the process execution appear under the Automated Process user. But the process actions run in the context of the user who published the event message. So, for example, if a process creates or updates records, system fields like `CreatedById` and `LastModifiedById` reference the user who published the event message.

All processes are subject to entitlements, limits, and other considerations, including Apex governor limits.

SEE ALSO:

- *Salesforce Help*: Process Limits and Considerations
- Considerations for Subscribing to Platform Events with Processes and Flows
- Set Up Debug Logs for Event Subscriptions
- Obtain Processes That Subscribe to a Platform Event in Metadata API

Subscribe to Platform Event Notifications with Apex Triggers

Use Apex triggers to subscribe to events. You can receive event notifications in triggers regardless of how they were published—through Apex or APIs. Triggers provide an autosubscription mechanism. No need to explicitly create and listen to a channel in Apex.

To subscribe to event notifications, write an `after insert` trigger on the event object type. The `after insert` trigger event corresponds to the time after a platform event is published. After an event message is published, the `after insert` trigger is fired.

Example: This example shows a trigger for the `Low Ink` event. It iterates through each event and checks the `Printer_Model__c` field value. The trigger inspects each received notification and gets the printer model from the notification. If the printer model matches a certain value, other business logic is executed. For example, the trigger creates a case to order a new cartridge for this printer model.

```
// Trigger for catching Low_Ink events.
trigger LowInkTrigger on Low_Ink__e (after insert) {
    // List to hold all cases to be created.
    List<Case> cases = new List<Case>();

    // Get user Id for case owner. Replace username value with a valid value.
    User adminUser = [SELECT Id FROM User WHERE Username='admin@acme.org'];

    // Iterate through each notification.
    for (Low_Ink__e event : Trigger.New) {
        System.debug('Printer model: ' + event.Printer_Model__c);
        if (event.Printer_Model__c == 'MN-123') {
            // Create Case to order new printer cartridge.
            Case cs = new Case();
            cs.Priority = 'Medium';
            cs.Subject = 'Order new ink cartridge for SN ' + event.Serial_Number__c;
            // Optional: Set case owner ID so it is not Automated Process.
            // This step is not needed if the running user is overridden
            // or if using assignment rules.
            cs.OwnerId = adminUser.Id;
            cases.add(cs);
        }
    }

    // Insert all cases in the list.
    if (cases.size() > 0) {
        insert cases;
    }
}
```

An Apex trigger processes platform event notifications sequentially in the order they're received. The order of events is based on the event replay ID. An Apex trigger can receive a batch of events at once. The maximum batch size in a platform event trigger is 2,000 event messages. The order of events is preserved within each batch. The events in a batch can originate from one or more publishers.

Unlike triggers on standard or custom objects, triggers on platform events don't execute in the same Apex transaction as the one that published the event. The trigger runs asynchronously in its own process. As a result, there can be a delay between when an event is published and when the trigger processes the event.

The trigger runs under the Automated Process entity or the user you select in the trigger configuration. If no user is configured, debug logs corresponding to the trigger execution are created by Automated Process. System fields, such as `CreatedById` and `LastModifiedById`, reference the Automated Process entity. You can override the trigger's default running user so that the user

for debug logs and records is set to the selected user. For more information, see Configure the User and Batch Size for Your Platform Event Trigger.

Note: The `OwnerId` field of records saved in the trigger is set to the trigger's running user. By default, it's Automated Process. For more information on how to change the OwnerId, see Considerations for Publishing and Subscribing to Platform Events with Apex and APIs.

Event triggers have many of the same limitations of custom and standard object triggers. For example, with some exceptions, you generally can't make Apex callouts from triggers. For more information, see Implementation Considerations for triggers in the *Apex Developer Guide*.

Platform Event Triggers and Uncaught Exceptions

If an uncaught exception occurs during trigger execution, the trigger stops executing and doesn't process the remaining event messages in the current batch. Uncaught exceptions are exceptions that the trigger doesn't handle in a catch block or limit exceptions. As long as the trigger hasn't exceeded the Apex execution time limit, the DML operations that were carried out before the uncaught exception are committed and aren't rolled back. Committing the DML transactions enables you to use the `setResumeCheckpoint()` method to continue trigger execution from where it left off. With this method, the trigger resumes and picks up the unprocessed event messages from the previous batch. For more information, see Resume a Platform Event Trigger After an Uncaught Exception.

DML transactions are rolled back only when:

- The trigger throws the `EventBus.RetryableException`.
- The trigger exceeds the Apex execution time limit of 10 minutes. See Maximum execution time for each Apex transaction in Execution Governors and Limits in the *Apex Developer Guide*.

Platform Event Triggers and Apex Governor Limits

Platform event triggers are subject to Apex governor limits.

Synchronous Governor Limits

When governor limits are different for synchronous and asynchronous Apex, the synchronous limits apply to platform event triggers. Asynchronous limits are for long-lived processes, such as Batch Apex and future methods. Synchronous limits are for short-lived processes that execute quickly. Although platform event triggers run asynchronously, they're short-lived processes that execute in batches rather quickly.

Reset Limits

Because a platform event trigger runs in a separate transaction from the one that fired it, governor limits are reset, and the trigger gets its own set of limits.

IN THIS SECTION:

Configure the User and Batch Size for Your Platform Event Trigger

You can override the default running user and batch size of a platform event Apex trigger. By default, the trigger runs as the Automated Process system user with a batch size of 2,000 event messages. Configuring the user and batch size enables you to bypass some limitations that sometimes arise from using the defaults. Use PlatformEventSubscriberConfig in Tooling API or Metadata API to configure the trigger.

Resume a Platform Event Trigger After an Uncaught Exception

Set a checkpoint in the event stream for where the platform event trigger resumes execution in a new invocation. If an Apex governor limit is hit or another uncaught exception is thrown, the checkpoint is used during the next execution of the trigger. Trigger processing resumes after the last successfully checkpointed event message. You can also set a checkpoint to explicitly control the number of events processed in one trigger execution. However, you can configure the trigger batch size more easily using Metadata API or Tooling API. For more information, see Configure the User and Batch Size for Your Platform Event Trigger.

Retry Event Triggers with EventBus.RetryableException

Get another chance to process event notifications. Retrying a trigger is helpful when a transient error occurs or when waiting for a condition to change. Retry a trigger if the error or condition is external to the event records and is likely to go away later.

Email Notifications for Triggers in Error State

When an Apex platform event trigger exceeds the maximum number of retries and is in the error state, you're notified by email. When the trigger subscriber reaches the error state, it disconnects and stops receiving published events.

Comparing setResumeCheckpoint() and EventBus.RetryableException

Determine which method is most suitable for resuming a platform event trigger. Use `setResumeCheckpoint()` when the trigger has processed event messages successfully before an unhandled exception occurs, such as a limit exception. After the exception, the trigger resumes after the last checkpointed event message. Throw the `EventBus.RetryableException` to reprocess events when you expect an external condition to change or a transient error to go away.

SEE ALSO:

Apex Developer Guide: Execution Governors and Limits

Set Up Debug Logs for Event Subscriptions

View and Manage an Event's Subscribers on the Platform Event's Detail Page

Considerations for Publishing and Subscribing to Platform Events with Apex and APIs

Configure the User and Batch Size for Your Platform Event Trigger

You can override the default running user and batch size of a platform event Apex trigger. By default, the trigger runs as the Automated Process system user with a batch size of 2,000 event messages. Configuring the user and batch size enables you to bypass some limitations that sometimes arise from using the defaults. Use PlatformEventSubscriberConfig in Tooling API or Metadata API to configure the trigger.

Running the trigger as a specific user instead of the default Automated Process entity has these benefits:

- Records are created, modified, and deleted as this user.
- `OwnerId` fields of created records are populated to this user.
- Records are shared with the user when sharing is enabled. For example, when the trigger calls into an Apex class declared with the `with sharing` keywords.
- Debug logs for the trigger execution are created by this user.
- You can send email messages from the trigger, which isn't supported with the default Automated Process user.

You can specify any active user in the Salesforce org. The trigger runs in system context with privileges to access all records regardless of the user's object and field-level permissions. Record sharing is enforced for the running user when the trigger calls into an Apex class declared with the `with sharing` keywords.

In addition to setting a user, you can specify a custom batch size from 1 through 2,000. The batch size is the maximum number of event messages that can be sent to a trigger in one execution. For platform event triggers, the default batch size is 2,000. Setting a smaller batch size can help avoid hitting Apex governor limits.

Note: We don't recommend setting the batch size to 1 to process one event at a time. Small batch sizes can slow down the processing of event messages.

If a trigger is running and subscribed to a platform event, new configuration settings take effect after you suspend and resume the trigger. You can suspend and resume a trigger from the platform event detail page by clicking **Manage** next to the Apex trigger in the Subscriptions related list. For more information, see View and Manage an Event's Subscribers on the Platform Event's Detail Page.

To configure a platform event trigger with Tooling API, see PlatformEventSubscriberConfig in the *Tooling API Developer Guide*. To add a configuration, perform a POST with the PlatformEventSubscriberConfig REST resource, and perform a GET call to retrieve a configuration by ID. Also, you can query the configurations using Tooling API.

To configure a platform event trigger with Metadata API, see PlatformEventSubscriberConfig in the *Metadata API Developer Guide*. You can use Visual Studio Code with the Salesforce Extension pack to deploy and retrieve Metadata API. For more information about installing Visual Studio Code and the extension pack, see Salesforce Extensions for Visual Studio Code. For more information about deploying and retrieving metadata using the CLI, see source Commands and mdapi Commands in the *Salesforce CLI Command Reference*.

SEE ALSO:

Apex Developer Guide: Apex Security and Sharing

Apex Developer Guide: Execution Governors and Limits

Resume a Platform Event Trigger After an Uncaught Exception

Set a checkpoint in the event stream for where the platform event trigger resumes execution in a new invocation. If an Apex governor limit is hit or another uncaught exception is thrown, the checkpoint is used during the next execution of the trigger. Trigger processing resumes after the last successfully checkpointed event message. You can also set a checkpoint to explicitly control the number of events processed in one trigger execution. However, you can configure the trigger batch size more easily using Metadata API or Tooling API. For more information, see Configure the User and Batch Size for Your Platform Event Trigger.

By processing fewer event messages, your trigger is less likely to hit Apex governor limits. The maximum batch size of a platform event trigger is 2,000, while the maximum of an Apex object trigger is 200. Therefore, platform event triggers are more likely to reach limits and can benefit from this feature.

To set a checkpoint for trigger resumption, set the replay ID of the last successfully processed event message using this method call.

```
EventBus.TriggerContext.currentContext().setResumeCheckpoint(replayId);
```

When the trigger stops its flow of execution, either intentionally or because of an unhandled exception, such as a limit exception, it fires again with a new batch (the sObject list in `Trigger.New`). The new batch starts with the event message after the one with the replay ID that you set. The `setResumeCheckpoint(replayId)` method doesn't cause the trigger execution to stop, but you can end the execution explicitly. For example, to control the batch size, end the execution flow after some event messages are processed.

If the supplied Replay ID isn't valid, the method throws an `EventBus.InvalidReplayIdException`. An invalid Replay ID is a replay ID that isn't in the current trigger batch of events in the `Trigger.new` list.

Note: Resuming a batch in one trigger doesn't affect another trigger on the same event object. However, having multiple triggers on the same object isn't a best practice because we can't guarantee the order of execution, so we recommend that you add only one trigger per object.

Example: This example trigger sets the replay ID of the last processed event message in each iteration. If a limit exception occurs, the trigger is fired again and resumes processing starting with the event message after the one with the set replay ID.

```
trigger ResumeEventProcessingTrigger on Low_Ink__e (after insert) {
    for (Low_Ink__e event : Trigger.New) {
        // Process the event message.
```

```
        // ...

        // Set the Replay ID of the last successfully processed event message.
        // If a limit is hit, the trigger refires and processing starts with the
        // event after the last one processed (the set Replay ID).
        EventBus.TriggerContext.currentContext().setResumeCheckpoint(event.replayId);

    }
}
```

Example: This example controls the platform event trigger batch size and matches it with the 200 batch size of Apex object triggers. The trigger counts the number of event messages processed. The `setResumeCheckpoint(replayId)` is called in each iteration of the loop after each event message that is successfully processed. The loop is exited if you exceed the count of 200 events, and the trigger stops execution. If you have unprocessed event messages, the trigger fires again. The list of event messages sent to the new trigger invocation starts with the event message after the one with the set replay ID.

Note: Starting in API version 51.0, you can configure the trigger batch size by using PlatformEventSubscriberConfig in Metadata API or Tooling API. For more information, see Configure the User and Batch Size for Your Platform Event Trigger.

```
trigger ControlBatchSizeTrigger on Low_Ink__e (after insert) {
    Integer counter = 0;
    for (Low_Ink__e event : Trigger.New) {
      // Increase batch counter.
      counter++;
      // Only process the first 200 event messages
      if (counter > 200) {
        // Resume after the last successfully processed event message
        // after the trigger stops running.
        // Exit for loop.
        break;
      }

      // Process event message.
      // ....

      // Set Replay ID after which to resume event processing
      // in new trigger execution.
      EventBus.TriggerContext.currentContext().setResumeCheckpoint(
          event.ReplayId);
    }
}
```

The `TestBatchSizeTriggerResumption` test class contains a test for the `ControlBatchSizeTrigger`. The test method in the class publishes 201 event messages. Next, it calls the `deliver()` method twice to fire the trigger twice. The first invocation processes 200 event messages. The second invocation processes the last event message. The test verifies that the trigger was invoked by inspecting the `EventBusSubscriber.Position` property, which holds the replay ID of the last processed event message.

```
@isTest
public class TestBatchSizeTriggerResumption {

    @isTest static void testResumingBatchSizeTrigger() {

        Test.startTest();
```

```
        // Publish 201 test events
        List<Low_Ink__e> eventList = new List<Low_Ink__e>();
        for(Integer i=0;i<201;i++) {
            Low_Ink__e oneEvent = new Low_Ink__e(Serial_Number__c='X-' + i);
            eventList.add(oneEvent);
        }
        Database.SaveResult[] srs = EventBus.publish(eventList);
        for(Database.SaveResult sr : srs) {
            System.assertEquals(true, sr.isSuccess());
        }


        // Deliver the first 200 test event messages.
        // This will fire the associated event trigger.
        Test.getEventBus().deliver();

        // Get old position of this subscriber
        EventBusSubscriber subOld =
            [SELECT Name, Position, Topic
             FROM EventBusSubscriber
             WHERE Topic='Low_Ink__e' AND Name='ControlBatchSizeTrigger'];
        System.debug(subOld);

        // Refire the trigger for the last event (201st).
        Test.getEventBus().deliver();

        // VERIFICATION
        // Get new position of this subscriber
        EventBusSubscriber subNew =
            [SELECT Name, Position, Topic
             FROM EventBusSubscriber
             WHERE Topic='Low_Ink__e' AND Name='ControlBatchSizeTrigger'];
        System.debug(subNew);

        System.assertEquals(subOld.Position + 1, subNew.Position);

        Test.stopTest();

    }
}
```

Retry Event Triggers with `EventBus.RetryableException`

Get another chance to process event notifications. Retrying a trigger is helpful when a transient error occurs or when waiting for a condition to change. Retry a trigger if the error or condition is external to the event records and is likely to go away later.

An example of a transient condition: A trigger adds a related record to a master record if a field on the master record equals a certain value. It is possible that in a subsequent try, the field value changes and the trigger can perform the operation.

To retry the event trigger, throw `EventBus.RetryableException`. Events are resent after a small delay. The delay increases in subsequent retries. If the trigger receives a batch of events, retrying the trigger causes all events in the batch to be resent. Resent events have the same field values as the original events, but the batch sizes of the events can differ. For example, the initial trigger can receive

events with replay ID 10 to 20. The resent batch can be larger, containing events with replay ID 10 to 40. When the trigger is retried, the DML operations performed in the trigger before the retry are rolled back and no changes are saved.

Limit the Number of Retry Attempts

You can run a trigger up to 10 times when it is retried (the initial run plus nine retries). After the trigger is retried nine times, it moves to the error state and stops processing new events. Events sent after the trigger moves to the error state and before it returns to the running state are not resent to the trigger. To resume event processing, fix the trigger and save it.

We recommend limiting the retries to less than nine times. Use the `EventBus.TriggerContext.currentContext().retries` property to check how many times the trigger has been retried. Alternatively, you can query the `EventBusSubscriber.retries` field in API version 43.0 and later.

Example: This example is a skeletal trigger that gives you an idea of how to throw `EventBus.RetryableException` and limit the number of retries. The trigger uses an `if` statement to check whether a certain condition is true. Alternatively, you can use a try-catch block and throw `EventBus.RetryableException` in the catch block.

```
trigger ResendEventsTrigger on Low_Ink__e (after insert) {
    if (condition == true) {
        // Process platform events.
    } else {
        // Ensure we don't retry the trigger more than 4 times
        if (EventBus.TriggerContext.currentContext().retries < 4) {
            // Condition isn't met, so try again later.
            throw new EventBus.RetryableException(
                    'Condition is not met, so retrying the trigger again.');
        } else {
            // Trigger was retried enough times so give up and
            // resort to alternative action.
            // For example, send email to user.
        }
    }
}
```

Email Notifications for Triggers in Error State

When an Apex platform event trigger exceeds the maximum number of retries and is in the error state, you're notified by email. When the trigger subscriber reaches the error state, it disconnects and stops receiving published events.

For more information about the error state and how to resume the trigger, see the Subscription Statessection in View and Manage an Event's Subscribers on the Platform Event's Detail Page on page 37. We recommend limiting the retries to fewer than nine times to avoid reaching this state. See Retry Event Triggers with EventBus.RetryableException on page 33.

The email notification is not sent for general unhandled exceptions, such as uncatchable limit exceptions. Unlike Apex object triggers, platform event triggers don't generate exception emails for unhandled exceptions.

For a platform event trigger in the error state, the notification is sent to the developer specified in the trigger's Last Modified By field. To also send the email to other users, add them on the Apex Exception Email page in Setup. The recipients specified on the Apex Exception Email page also apply to emails sent for Apex object triggers and classes.

To set up more recipients, from Setup, in the Quick Find box, enter *Apex Exception Email*, and then select **Apex Exception Email**.

The users and email addresses entered apply to all managed packages in the customer's org. You can also configure Apex exception emails using the Tooling API object ApexEmailNotification.

Comparing `setResumeCheckpoint()` and `EventBus.RetryableException`

Determine which method is most suitable for resuming a platform event trigger. Use `setResumeCheckpoint()` when the trigger has processed event messages successfully before an unhandled exception occurs, such as a limit exception. After the exception, the trigger resumes after the last checkpointed event message. Throw the `EventBus.RetryableException` to reprocess events when you expect an external condition to change or a transient error to go away.

`setResumeCheckpoint()` **Method**	`EventBus.RetryableException`
Trigger execution continues after `setResumeCheckpoint()`.	Trigger execution halts after the `EventBus.RetryableException` is thrown.
DML operations performed are committed.	DML operations performed before the exception is thrown are rolled back and not committed.
When the trigger fires again, only the event messages after the one with the specified replay ID are resent, in addition to any new event messages.	When the trigger fires again, all event messages from the previous batch are resent in the new batch, in addition to any new event messages.
These `TriggerContext` properties don't apply and aren't populated: `retries` and `lastError`.	These `TriggerContext` properties are populated: `retries` and `lastError`.

Subscribe to Platform Event Notifications in a Lightning Component

Subscribe to platform events with the `empApi` component in your Lightning web component or Aura component. The `empApi` component provides access to methods for subscribing to a streaming channel and listening to event messages.

The `empApi` component uses a shared CometD-based Streaming API connection, enabling you to run multiple streaming apps in the browser for one user. The connection is not shared across user sessions.

Note: As of Spring '19 (API version 45.0), you can build Lightning components using two programming models: the Lightning Web Components model, and the original Aura Components model. Lightning web components are custom HTML elements built using HTML and modern JavaScript. Lightning web components and Aura components can coexist and interoperate on a page.

Subscribe in a Lightning Web Component

To use the `empApi` methods in your Lightning web component, import the methods from the `lightning/empApi` module as follows.

```
import { subscribe, unsubscribe, onError, setDebugFlag, isEmpEnabled }
    from 'lightning/empApi';
```

Then call the imported methods in your JavaScript code.

For an example of how to use the `lightning/empApi` module and a complete reference, see the lightning-emp-api documentation in the *Lightning Component Library*.

Subscribe in an Aura Component

To use the `empApi` methods in your Aura component, add the `lightning:empApi` component inside your custom component and assign an `aura:id` attribute to it.

```
<lightning:empApi aura:id="empApi"/>
```

Then in the client-side controller, add functions to call the component methods.

For an example of how to use the `lightning:empApi` component and a complete reference, see the lightning:empApi documentation in the *Lightning Component Library*.

Subscribe to Platform Event Notifications with CometD

Use CometD to subscribe to platform events in an external client. Implement your own CometD client or use EMP Connector, an open-source, community-supported tool that implements all the details of connecting to CometD and listening on a channel.

Salesforce sends platform events to CometD clients sequentially in the order they're received. The order of event notifications is based on the replay ID of events. A CometD client can receive a batch of events at once. The number of event messages in a batch can vary. If the client uses a buffer for the received events, ensure that the buffer size is large enough to hold all event messages in the batch. The buffer size needed depends on the publishing rate and the event message size. At a minimum, set the buffer size to 10 MB, and adjust it higher if needed.

The process of subscribing to platform event notifications through CometD is similar to subscribing to PushTopics or generic events. The only difference is the channel name. The platform event channel name is case-sensitive and is in the following format.

```
/event/Event_Name__e
```

Use this CometD endpoint with the API version appended to it.

```
/cometd/52.0
```

Example: If you have a platform event named `Low Ink`, provide this channel name when subscribing.

```
/event/Low_Ink__e
```

The message of a delivered platform event looks similar to the following example for `Low Ink` events.

```
{
  "data": {
    "schema": "dffQ2QLzDNHqwB8_sHMxdA",
    "payload": {
      "CreatedDate": "2017-04-09T18:31:40.517Z",
      "CreatedById": "005D0000001cSZs",
      "Printer_Model__c": "XZO-5",
      "Serial_Number__c": "12345",
      "Ink_Percentage__c": 0.2
    },
    "event": {
      "EventUuid": "2ec0e371-1395-457f-9275-be1b527a72f7",
      "replayId": 2
    }
  },
  "channel": "/event/Low_Ink__e"
}
```

The `schema` field in the event message contains the ID of the platform event schema. The schema is versioned—when the schema changes, the schema ID changes as well.

To determine if the schema of an event has changed, retrieve the schema through REST API. Use the schema ID by performing a GET request to this REST API resource: `/services/data/v`***XX.X***`/event/eventSchema/`***schemaId***. Alternatively, you can retrieve the event schema by supplying the event name to this endpoint: `/services/data/v`***XX.X***`/sobjects/`***eventName***`/eventSchema`. For more information, see:

- Platform Event Schema by Schema ID in the *REST API Developer Guide*
- Platform Event Schema by Event Name in the *REST API Developer Guide*

You can use EMP Connector to receive delivered events. The connector subscribes to any type of streaming event and accepts the event channel name as an argument. See Example: Subscribe to and Replay Events Using a Java Client (EMP Connector).

Add custom logic to your client to perform some operations after a platform event notification is received. For example, the client can create a request to order a new cartridge for this printer model.

SEE ALSO:

Streaming API Developer Guide: Message Durability

CometD

Considerations for Publishing and Subscribing to Platform Events with Apex and APIs

Obtain a Platform Event's Subscribers

View a list of all triggers or processes that are subscribed to a platform event by using the Salesforce user interface or the API.

Note: CometD subscribers to a platform event channel aren't exposed in the user interface or the API. Flow Pause element subscribers to a platform event aren't returned in Metadata API.

IN THIS SECTION:

View and Manage an Event's Subscribers on the Platform Event's Detail Page
View the triggers, flows, and processes that are subscribed to a platform event in the Subscriptions related list. Manage subscriptions for Apex triggers.

Obtain Processes That Subscribe to a Platform Event in Metadata API
Use Metadata API to retrieve all processes subscribed to a platform event.

Obtain an Event's Subscribers by Querying EventBusSubscriber
The EventBusSubscriber standard object contains information about the trigger and process subscribers of all platform events. You can query this object using SOQL.

View and Manage an Event's Subscribers on the Platform Event's Detail Page

View the triggers, flows, and processes that are subscribed to a platform event in the Subscriptions related list. Manage subscriptions for Apex triggers.

View Event Subscribers

View a list of all triggers, processes, and platform event–triggered flows that are subscribed to a platform event in the Subscriptions related list. CometD subscribers, such as your own CometD client or the `empApi` Lightning component, aren't listed in this page.

1. From Setup, enter *`Platform Events`* in the Quick Find box, then select **Platform Events**.
2. Click your event's name.

   On the event's definition page, the Subscriptions related list shows all the active triggers, processes, and platform event–triggered flows that are subscribed to the platform event.

   Note: Only one "Process" subscriber appears in the Subscriptions related list for all paused flow interviews that are subscribed to the platform event. Processes and platform event–triggered flows are listed individually.

3. To access a subscriber's definition, click the subscriber name in the Subscriptions related list. For a trigger, details include its implementation and API version. For a process, details include its version number and API name.

   Note: Why are you seeing flow version details when you click a process? Similar to a flow, a running instance of a process is a flow interview. The information that you see on the Flow Version page is about the process. You can click the flow API name of the process to view the list of processes for your org.

Subscriptions

Action	Subscriber	Last Processed Id	Last Published Id	State
Edit	myTestEventTrigger	318179	Not Available	Suspended
Edit	Process	318179	Not Available	Running
Edit	Flow launched by PE	318179	Not Available	Running
Edit	Process Builder Process	318179	Not Available	Running

The list shows the replay ID of the event that the system last processed (Last Processed Id field) and the event last published (Last Published Id field). Knowing which replay ID was last processed is useful when there's a gap in the events published and processed. For example, if a trigger contains complex logic that causes a delay in processing large batches of incoming events.

Note: For high-volume platform events, the Last Published Id value is not available and is always shown as Not Available.

Subscription States

Also, the Subscriptions list shows the state of each subscriber, which can be one of the following.

- `Running`—The subscriber is actively listening to events. If you modify the subscriber, the subscription continues to process events.
- `Error`— The subscriber was disconnected and stopped receiving published events. A trigger reaches this state when it exceeds the number of maximum retries with the `EventBus.RetryableException`. Trigger assertion failures and unhandled exceptions don't cause the error state. We recommend limiting the retries to fewer than nine times to avoid reaching this state. When you fix and save the trigger, or for a managed package trigger, if you redeploy the package, the trigger resumes automatically from the tip, starting from new events. Also, you can resume a trigger subscription in the subscription detail page that you access from the platform event page.
- `Suspended`—The subscriber is disconnected and can't receive events because a Salesforce admin suspended it or due to an internal error. You can resume a trigger subscription in the subscription detail page that you access from the platform event page. To resume a process, deactivate it and then reactivate it. If you modify the subscriber, the subscription resumes automatically from the tip, starting from new events.

Suspend or Resume an Apex Trigger Subscription

Resume a suspended trigger subscription where it left off, starting from the earliest event message that is available in the event bus. If you want to bypass event messages that are causing errors or are no longer needed, you can resume the subscription from the tip, starting from new event messages.

To manage a trigger subscription:

1. In the Subscriptions related list, click **Manage** next to the Apex trigger.
2. In the subscription detail page, choose the appropriate action.
   - To suspend a running subscription, click **Suspend**.
   - To resume a suspended subscription, starting from the earliest event message that is available in the event bus, click **Resume**.
   - To resume a suspended subscription, starting from new event messages, click **Resume from Tip**.

You can't manage subscriptions for flows and processes through the Subscriptions related list.

Note:

- After you click **Resume** or **Resume from Tip**, there can be a delay of a few minutes before the subscription resumes.
- After you modify a subscriber, the subscription resumes automatically. For more information, see the Subscription States section.
- If you click **Resume** for a trigger that's in the error state, the trigger skips the events that were retried with `EventBus.RetryableException`. The subscription starts with the unprocessed events sent after the error state was reached and that are within the retention window.

Obtain Processes That Subscribe to a Platform Event in Metadata API

Use Metadata API to retrieve all processes subscribed to a platform event.

1. Retrieve all event subscriptions in your org with this sample package manifest.

```
<?xml version="1.0" encoding="UTF-8"?>
<Package xmlns="http://soap.sforce.com/2006/04/metadata">
   <types>
      <members>*</members>
      <name>EventSubscription</name>
   </types>
   <version>52.0</version>
</Package>
```

2. In each .subscription file, look at the `referenceData` parameter. The value is the API name of a process.

Example: In this .subscription file, referenceData points to version 4 of the Printer_Management process.

```
<?xml version="1.0" encoding="UTF-8"?>
<EventSubscription xmlns="http://soap.sforce.com/2006/04/metadata">
    <active>true</active>
    <eventType>Printer_Status__e</eventType>
    <referenceData>Printer_Management_4</referenceData>
</EventSubscription>
```

Obtain an Event's Subscribers by Querying EventBusSubscriber

The EventBusSubscriber standard object contains information about the trigger and process subscribers of all platform events. You can query this object using SOQL.

For more information, see EventBusSubscriber.

Identify and Match Event Messages with the `EventUuid` Field

Platform event messages include the `EventUuid` field, which identifies an event message. Use this field to match published and received event messages by comparing the UUIDs of the received events with those returned in the SaveResult of publish calls. This way, you can find any event messages that aren't delivered and republish them.

The `EventUuid` field is a universally unique identifier (UUID) and is available in API version 52.0 and later. The API version corresponds to the version that an Apex trigger is saved with, or the version specified in a CometD subscriber endpoint. The `EventUuid` field isn't

part of the event schema, which is returned by the REST `eventSchema` resource or the describe call result. The `EventUuid` field is available for high-volume and standard-volume platform events.

Event publishing is asynchronous. A success status in an immediately returned SaveResult means that the publish operation is queued in Salesforce. The operation is carried out later when system resources are available. Some failures such as validation or limit errors are returned in the SaveResult, but not asynchronous errors. In rare cases, enqueued publish operations can fail due to a system error, and the event message isn't delivered. You can use the `EventUuid` field to determine which enqueued event messages failed to publish and then republish them.

Get the Event UUID of Published Event Messages

Before you can compare the UUIDs of published and received event messages, first save the UUID of published event messages. Also, save the corresponding event field values so you can republish the events if needed.

If you publish the event using Salesforce APIs, the SaveResult returned contains the UUID in the Error `message` field. This example contains the save result of an event inserted using a REST API POST request.

```
{
  "id" : "e01xx0000000001AAA",
  "success" : true,
  "errors" : [ {
    "statusCode" : "OPERATION_ENQUEUED",
    "message" : "e981b488-81f3-4fcc-bd6f-f7033c9d7ac3",
    "fields" : [ ]
  } ]
}
```

If you publish the event in Apex, you can obtain the UUID by calling this method: `EventBus.getOperationId(saveResult)`.

This example gets the UUID from the event publish call using Apex.

Prerequisites: Before you can run this example, define a platform event with the label of Order Event and the following fields: Order Number of type Text(10) and Has Shipped of type Checkbox.

```
// Publish a high-volume event message
Order_Event__e evt = new Order_Event__e(
    Order_Number__c='17',
    Has_Shipped__c = false);
Database.SaveResult sr = EventBus.publish(evt);
// Inspect immediate result
if (sr.isSuccess() == true) {
    System.debug('Successfully enqueued event for publishing.');
    // Get the UUID that uniquely identifies this event publish
    System.debug('UUID=' + EventBus.getOperationId(sr));
} else {
   for(Database.Error err : sr.getErrors()) {
       System.debug('Error returned: ' +
                    err.getStatusCode() +
                    ' - ' +
                    err.getMessage());
   }
}

// Debug message output:
//|DEBUG|Successfully enqueued event for publishing.
//|DEBUG|UUID=6ba5db7e-c27b-4a67-a3c5-cf425ffcaf53
```

Get the Event UUID from Received Event Messages in a CometD Client

In a CometD client, the received event message contains the event UUID in the `EventUuid` field in the event object, as shown in this JSON event example.

```
{
  "schema": "UIovjRagY-xEDIJ1Ehzafg",
  "payload": {
    "CreatedDate": "2021-03-04T18:31:40.517Z",
    "CreatedById": "005RM00000231cZYAQ",
    "Order_Number__c": "17",
    "Has_Shipped__c": false
  },
  "event": {
     "EventUuid": "e981b488-81f3-4fcc-bd6f-f7033c9d7ac3",
     "replayId": 617
  }
}
```

Get the Event UUID from Received Event Messages in an Apex Trigger

In an Apex trigger, extract the event UUID by accessing the `EventUuid` field on the event object.

```
trigger OrderEventTrigger on Order_Event__e (after insert) {
    for(Order_Event__e evt: Trigger.New) {
        // Get the event UUID
        String EventUuid = evt.EventUuid;
        System.debug('Received event UUID=' + EventUuid);

        // Store the event UUID for matching with published event UUID
        // . . .
    }
}

// Debug message output:
//|DEBUG|Received event UUID=6ba5db7e-c27b-4a67-a3c5-cf425ffcaf53
```

Match UUIDs of Published and Received Event Messages

Once you obtain the event UUIDs for both published and received event messages, match the UUIDs. Any UUIDs that don't match can indicate that the event hasn't been delivered. You can attempt to republish the unmatched event messages.

Testing Your Platform Event in Apex

Add Apex tests to test platform event subscribers. Before you can package or deploy Apex code, including triggers, to production, it must have tests and sufficient code coverage. Add Apex tests to provide code coverage for your triggers.

IN THIS SECTION:

SEE ALSO:

Apex Developer Guide : Testing and Code Coverage

Event and Event Bus Properties in Test Context

In test context, event messages and the event bus have different properties. State information of events and subscribers is reset and isn't persisted.

Test Events and the Test Event Bus

When an Apex test publishes an event message, it's published to a test event bus that is separate from the Salesforce event bus. In an Apex test, state information of events and subscribers is reset, as follows.

- The event replay ID value is reset to 0 and starts from 1 for the first test event message.
- Event state information in EventBusSubscriber is reset. The last processed replay ID (`EventBusSubscriber.Position`) and the last published replay ID (`EventBusSubscriber.Tip`) are reset to 0.
- When test events are published and processed in subscribers, event state information is updated.
- Subscriber status is reset to `Running` (`EventBusSubscriber.Status`).
- You can query EventBusSubscriber to get event state. For example, the following SOQL query gets some information about all trigger subscribers to the Order_Event__e event.

```
SELECT Name, Position, Retries, LastError
FROM EventBusSubscriber
WHERE Topic='Order_Event__e' AND Type='ApexTrigger'
```

After an Apex test finishes executing, state information of events and subscribers reverts to the non-test values.

Test Events and Limits

Event allocations don't apply to test events, which have their own publishing limit of 500 event messages in a test method. If the number of event messages published from an Apex test context exceeds the limit, an error is returned with the `LIMIT_EXCEEDED` status code. The error is in the `SaveResult` that the `EventBus.publish` Apex method returns.

Testing Event Subscribers

Use an Apex test to test publishing and subscribing to a platform event. When you publish an event message in an Apex test, event subscribers are notified and start execution, including:

- Apex triggers
- Processes (when using an Apex test class saved with API version 43.0 or later)
- Flows (when using in an Apex test class saved with API version 43.0 or later)

Apex tests don't start CometD-based subscribers.

SEE ALSO:

Event-Driven Software Architecture

EventBusSubscriber

Deliver Test Event Messages

Deliver test event messages after the `Test.stopTest()` statement. Alternatively, deliver test event messages at any time with the `Test.getEventBus().deliver()` method.

Deliver Test Event Messages After `Test.stopTest()`

To publish platform event messages in an Apex test, enclose the publish statements within `Test.startTest()` and `Test.stopTest()` statements. Call the `EventBus.publish()` method within the `Test.startTest()` and `Test.stopTest()` statements. In test context, the `EventBus.publish()` method enqueues the publish operation. The `Test.stopTest()` statement causes the event publishing to be carried out and event messages to be delivered to the test event bus. Include your validations after the `Test.stopTest()` statement. For example, you can validate that a subscribed Apex trigger or a subscribed flow Pause element has performed the expected actions, like creating a Salesforce record.

```
// Create test events
Test.startTest();
// Publish test events with EventBus.publish()
Test.stopTest();
// Perform validations
```

Example: This sample test class contains two test methods. The `testValidEvent()` method checks that the event was successfully published and fires the associated trigger. The `testInvalidEvent()` method verifies that publishing an event with a missing required field fails, and no trigger is fired. The `testValidEvent()` method creates one Low_Ink__e event. After `Test.stopTest()`, it executes a SOQL query to verify that a case record is created, which means that the trigger was fired. The second test method follows a similar process but for an invalid test.

This example requires that the Low_Ink__e event and the associated trigger are defined in the org.

```
@isTest
public class EventTest {
    @isTest static void testValidEvent() {

        // Create a test event instance
        Low_Ink__e inkEvent = new Low_Ink__e(Printer_Model__c='MN-123',
                                             Serial_Number__c='10013',
                                             Ink_Percentage__c=0.15);
```

```
        Test.startTest();

        // Publish test event
        Database.SaveResult sr = EventBus.publish(inkEvent);

        Test.stopTest();

        // Perform validations here

        // Verify SaveResult value
        System.assertEquals(true, sr.isSuccess());

        // Verify that a case was created by a trigger.
        List<Case> cases = [SELECT Id FROM Case];
        // Validate that this case was found
        System.assertEquals(1, cases.size());
    }

    @isTest static void testInvalidEvent() {

        // Create a test event instance with invalid data.
        // We assume for this test that the Serial_Number__c field is required.
        // Publishing with a missing required field should fail.
        Low_Ink__e inkEvent = new Low_Ink__e(Printer_Model__c='MN-123',
                                             Ink_Percentage__c=0.15);

        Test.startTest();

        // Publish test event
        Database.SaveResult sr = EventBus.publish(inkEvent);

        Test.stopTest();

        // Perform validations here

        // Verify SaveResult value - isSuccess should be false
        System.assertEquals(false, sr.isSuccess());

        // Log the error message
        for(Database.Error err : sr.getErrors()) {
            System.debug('Error returned: ' +
                        err.getStatusCode() +
                        ' - ' +
                        err.getMessage()+' - '+err.getFields());
        }

        // Verify that a case was NOT created by a trigger.
        List<Case> cases = [SELECT Id FROM Case];
        // Validate that this case was found
        System.assertEquals(0, cases.size());
    }
}
```

Deliver Test Event Messages on Demand with `Test.getEventBus().deliver()`

You can control when test event messages are delivered to subscribers by calling `Test.getEventBus().deliver()`. Use `Test.getEventBus().deliver()` to deliver test event messages multiple times and verify that subscribers have processed the test events each step of the way. Delivering event messages multiple times is useful for testing sequential processing of events. For example, you can verify sequential actions of a subscriber in a loop within the same test.

Enclose `Test.getEventBus().deliver()` within the `Test.startTest()` and `Test.stopTest()` statement block.

```
Test.startTest();
// Create test events
// ...
// Publish test events with EventBus.publish()
// ...
// Deliver test events
Test.getEventBus().deliver();
// Perform validations
// ...
Test.stopTest();
```

Also, you can call `Test.getEventBus().deliver()` in an Apex test method outside the `Test.startTest()` and `Test.stopTest()` statement block. Doing so enables you to test event messages with asynchronous Apex.

```
Test.startTest();
// Do some tests
Test.stopTest();

// Deliver test events
Test.getEventBus().deliver();
```

Deliver Test Event Messages Published from Asynchronous Apex

When testing a batch Apex job that publishes BatchApexErrorEvent on failure, use the `Test.startTest()` and `Test.stopTest()` statement block with `Test.getEventBus().deliver()`. The `Test.stopTest()` call ensures that the asynchronous Apex job executes after this statement. Next, `Test.getEventBus().deliver()` delivers the event message that the failed batch job published.

This snippet shows how to execute a batch Apex job and deliver event messages. It executes the batch job after `Test.stopTest()`. This batch job publishes a BatchApexErrorEvent message when a failure occurs through the implementation of `Database.RaisesPlatformEvents`. After `Test.stopTest()` runs, a separate `Test.getEventBus().deliver()` statement is added so that it can deliver the BatchApexErrorEvent.

```
try {
    Test.startTest();
    Database.executeBatch(new SampleBatchApex());
    Test.stopTest();
    // Batch Apex job executes here
} catch(Exception e) {
    // Catch any exceptions thrown in the batch job
}

// The batch job fires BatchApexErrorEvent if it fails, so deliver the event.
Test.getEventBus().deliver();
```

Asynchronous Apex also includes queueable Apex and future methods. If a platform event message is published from within those async Apex jobs, they're delivered after `Test.stopTest()`. It's not necessary to add `Test.getEventBus().deliver();`. The next example shows how to deliver a platform event message that a queueable Apex job publishes. After `Test.stopTest()`, the queueable job is executed and the event message is delivered.

```
Test.startTest();
System.enqueueJob(new SampleQueueableApex());
Test.stopTest();
// Queueable Apex job executes here.
// The platform event message published by the job is delivered too.
```

Note: If further platform events are published by downstream processes, add `Test.getEventBus().deliver();` to deliver the event messages for each process. For example, if a platform event trigger, which processes the event from the Apex job, publishes another platform event, add a `Test.getEventBus().deliver();` statement to deliver the event message.

Example: Deliver Event Messages Individually

This test class publishes an `Order_Event__e` event message and delivers it using `Test.getEventBus().deliver()`. It verifies that the trigger processed the event message and created a task. A duplicate event message (an event with the same `Event_ID__c` custom field value) is published and delivered. The test verifies that the trigger didn't create a task for the duplicate event.

Before you can run this test class, define a platform event with the name of `Order_Event__e` and these fields: `Event_ID__c` of type Text, `Order_Number__c` of type Text, `Has_Shipped__c` of type Checkbox.

```
@isTest
public class MyTestClassDeliver {

    @isTest static void doSomeTesting() {

        Test.startTest();

        // Publish a test event
        Order_Event__e event = new Order_Event__e(
              Event_ID__c='123AB', Order_Number__c='12346', Has_Shipped__c=true);
        Database.SaveResult sr = EventBus.publish(event);

        // Verify that the publish was successful
        System.assertEquals(true, sr.isSuccess());

        // Deliver the test event before Test.stopTest()
        Test.getEventBus().deliver();

        // Check that the case that the trigger created is present.
        List<Task> tasks = [SELECT Id FROM Task];
        // Validate that this task was found.
        // There is only one test task in test context.
        Integer taskCount = tasks.size();
        System.assertEquals(1, taskCount);

        // Publish a duplicate event
        Order_Event__e dupEvent = new Order_Event__e(
              Event_ID__c='123AB', Order_Number__c='12346', Has_Shipped__c=true);
        Database.SaveResult sr2 = EventBus.publish(dupEvent);
```

```
        // Verify that the publish was successful.
        System.assertEquals(true, sr2.isSuccess());

        Test.getEventBus().deliver();

        // Get all tasks in test context
        List<Task> tasksNew = [SELECT Id FROM Task];
        // Validate that no task was created and
        // the number of tasks should not have changed.
        System.assertEquals(taskCount, tasksNew.size());

        Test.stopTest();

    }
}
```

This example trigger processes `Order_Event__e` event messages that the test class publishes.

Note: Because this trigger performs a SOQL query for each event notification received, the Apex governor limit for SOQL queries can be hit.

```
trigger OrderTrigger on Order_Event__e (after insert) {
    // List to hold all cases to be created.
    List<Task> tasks = new List<Task>();

    // Get user Id for case owner
    User usr = [SELECT Id FROM User WHERE Name='Admin User' LIMIT 1];

    // Iterate through each notification.
    for (Order_Event__e event : Trigger.New) {
        if (event.Has_Shipped__c == true) {
            // Create task only if it doesn't exist yet for the same order
            String eventID = '%' + event.Event_ID__c;
            List<Task> tasksFromQuery =
                [SELECT Id FROM Task WHERE Subject LIKE :eventID];
            if (tasksFromQuery.size() == 0) {
                Task t = new Task();
                t.Priority = 'Medium';
                t.Subject = 'Follow up on shipped order ' + event.Order_Number__c +
                    ' for event ID ' + event.Event_ID__c;
                t.OwnerId = usr.Id;
                tasks.add(t);
            }
        }
    }
    // Insert all tasks in the list.
    if (tasks.size() > 0) {
        insert tasks;
    }
```

```
}
```

SEE ALSO:

Apex Developer Guide : Using Limits, `startTest`, and `stopTest`

Test Retried Event Messages

An Apex trigger can retry processing of an event message by throwing `EventBus.RetryableException`. In API version 43.0 and later, you can test retried event messages by calling `Test.EventBus.deliver()` and inspecting `EventBusSubscriber` fields.

To force redelivery of a retried event message in an Apex test, call `Test.EventBus.deliver()`. This method also delivers other event messages that have been published after the last `deliver()` call.

In API version 43.0 or later, you can check these new EventBusSubscriber fields to test retried triggers.

- `Retries`
- `LastError`

The `EventBusSubscriber.Retries` field indicates how many times a trigger was retried.

`EventBusSubscriber.LastError` indicates the error message that was passed to the `throw` statement that executed last (`throw new EventBus.RetryableException('Error Message')`).

Note: When `EventBus.RetryableException` is thrown, `EventBusSubscriber.Position` isn't incremented because the trigger didn't successfully process the event message.

Example: This test method delivers a test event message that fires a trigger. The associated event trigger throws `EventBus.RetryableException` twice. The test verifies that the trigger was retried twice by querying `EventBusSubscriber` and checking the `Retries` field value.

Before you can run this test class, define a platform event with the name of `Order_Event__e` and the following fields: `Order_Number__c` of type Text and `Has_Shipped__c` of type Checkbox. This test class assumes there is an associated trigger called `OrderTriggerRetry` that retries the event. The trigger is not provided in this example.

```
@isTest
public class MyTestClassRetryDoc {

    @isTest static void doSomeTesting() {

        Test.startTest();

        // Publish a test event
        Order_Event__e event = new Order_Event__e(
              Order_Number__c='12345', Has_Shipped__c=true);
        Database.SaveResult sr = EventBus.publish(event);
        // Deliver the initial event message.
        // This will fire the associated event trigger.
        Test.getEventBus().deliver();

        // Trigger retries event twice, so loop twice
        for(Integer i=0;i<2;i++) {
            // Get info about all subscribers to the event
```

```
            EventBusSubscriber[] subscribers =
                [SELECT Name, Type, Position, Retries, LastError
                 FROM EventBusSubscriber WHERE Topic='Order_Event__e'];

            for (EventBusSubscriber sub : subscribers) {
                System.debug('sub.Retries=' + sub.Retries);
                System.debug('sub.lastError=' + sub.lastError);
                if (sub.Name == 'OrderTriggerRetry') {
                    System.assertEquals(i+1, sub.Retries);
                }
            }

            // Deliver the retried event
            Test.getEventBus().deliver();
        }

        Test.stopTest();

    }
}
```

SEE ALSO:

Retry Event Triggers with EventBus.RetryableException

Encrypting Platform Event Messages at Rest in the Event Bus

For increased security, you can enable encryption of platform event messages while they're stored in the event bus in a Shield Encryption org.

When you enable encryption of platform events in a Shield Encryption org, event messages are encrypted using the key that is based on the event bus tenant secret type. The encrypted event messages are stored in the event bus for up to 3 days (or 1 day for standard-volume events). The encryption applies to all custom and standard platform events, including Salesforce Event Monitoring streamed events.

To enable encryption and delivery of platform events, first create an event bus tenant secret on the Key Management page in Setup. Then enable encryption of platform events on the Encryption Policy page.

If you don't enable encryption of platform events in a Shield Encryption org, event messages are stored in clear text in the event bus.

Decrypting Platform Event Messages Before Delivery

Before delivering a platform event message to a subscribed client, the event payload is decrypted using the encryption key. The platform event message is sent over a secure channel using HTTPS and TLS, which ensures that the data is protected and encrypted while in transit. If the encryption key was rotated and a new key is issued, stored event messages are not re-encrypted, but they are decrypted before delivery using the archived key. If a key is destroyed, stored event messages can't be decrypted and aren't delivered.

Note: Classic Encryption is not supported.

Error Status Code

If you enable encryption and an event message could not be published due to an encryption failure, the publish operation returns the `PLATFORM_EVENT_ENCRYPTION_ERROR` status code. For more information, see Platform Event Error Status Codes.

Enable Encryption of Platform Events

To enable encryption of platform event messages at rest, generate an event bus tenant secret and then enable encryption.

USER PERMISSIONS

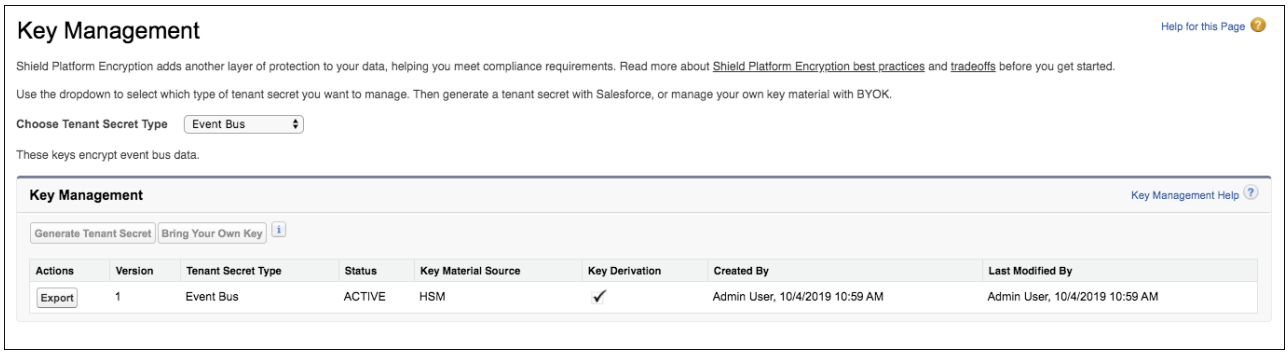
To manage tenant secrets:
- Manage Encryption Keys

Prerequisites:

- A Shield Platform Encryption org.
- Only authorized users can generate tenant secrets from the Platform Encryption page. Ask your Salesforce admin to assign the Manage Encryption Keys permission to you.

Steps:

1. To generate an event bus tenant secret, from Setup, in the Quick Find box, enter *`Platform Encryption`*, and then select **Key Management**.
2. In the Choose Tenant Secret Type dropdown list, choose **Event Bus**.
3. Click **Generate Tenant Secret** or, to upload a customer-supplied tenant secret, click **Bring Your Own Key**.



Note:

- If your org has no tenant secrets, perform Step 3 before Step 2.
- You can generate or rotate an event bus tenant secret once every 7 days.
- You can also generate a tenant secret through SOAP API or REST API using the TenantSecret object and the Type field value of EventBus. For more information, see TenantSecret in the *Object Reference for Salesforce and Lightning Platform*.

4. To enable encryption, from Setup, in the Quick Find box, enter *`Platform Encryption`*, and then select **Encryption Policy**.
5. Select **Encrypt and deliver change data capture events and platform events**.

   Note: You can access and control this setting in Metadata API, in PlatformEncryptionSettings. Ensure that the event bus tenant secret is created before setting `enableEventBusEncryption` to true.

6. Click **Save**.

When you enable encryption for platform events, you also enable it for change data capture events. For more information, see Change Events for Encrypted Salesforce Data in the *Change Data Capture Developer Guide*.

Monitor Platform Event Publishing and Delivery Usage

To get usage data for event publishing and CometD-client delivery, query the PlatformEventUsageMetric object. Usage data is available for the last 24 hours, ending at the last hour, and for historical daily usage. PlatformEventUsageMetric is available in API version 50.0 and later.

Use PlatformEventUsageMetric to get visibility into your event usage and usage trends. The usage data gives you an idea of how close you are to your allocations and when you need more allocations. The usage metrics stored in PlatformEventUsageMetric are separate from the REST API limits values. Use the REST API limits to track your monthly delivery and publishing usage against your allocations. The monthly CometD-client delivery usage that the limits API returns is common for platform events and change data capture events. PlatformEventUsageMetric breaks down usage of platform events and change data capture events so you can track their usage separately.

Because dates are stored in Coordinated Universal Time (UTC), convert your local dates and times to UTC for the query. For the date format to use, see Date Formats and Date Literals in the *SOQL and SOSL Reference*.

Note:

- Usage data is stored for at least 45 days. Usage data is updated hourly and is available only when usage is nonzero for a 24-hour period. Usage data isn't available for 1-hour intervals or any other arbitrary interval. The only supported intervals are the last 24 hours and daily data. Also, usage data isn't available for standard-volume platform events.
- After a Salesforce major upgrade, usage data can be inaccurate for the day and the last 24 hours within the upgrade window. New usage data overwrites the data for the hour that the 5-minute upgrade occurs in. The new usage data includes metrics that start after the upgrade for that hour. For more information about Salesforce upgrades, see Salesforce Upgrades and Maintenance in *Help* and Salesforce Status.

For platform events, you can query usage data for these metrics. The first value is the metric name value that you supply in the query.

- `PLATFORM_EVENTS_PUBLISHED`—Number of platform events published
- `PLATFORM_EVENTS_DELIVERED`—Number of platform events delivered to CometD clients

For change data capture events, you can query usage data for these metrics. The first value is the metric name value that you supply in the query.

- `CHANGE_EVENTS_PUBLISHED`—Number of change data capture events published
- `CHANGE_EVENTS_DELIVERED`—Number of change data capture events delivered to CometD clients

Obtain Usage Metrics for the Last 24 Hours

To get usage metrics for the last 24 hours, ending at the last hour, perform a query by specifying the start and end date and time in UTC, and the metric name.

For the last 24-hour period, the end date is the current date in UTC, with the time rounded down to the previous hour. The start date is 24 hours before the end date. Dates have hourly granularity.

Example: Based on the current date and time of August 4, 2020 11:23 in UTC, the last hour is 11:00. The query includes these dates.

- Start date in UTC format: 2020-08-03T11:00:00.000Z
- End date in UTC format: 2020-08-04T11:00:00.000Z

This query returns the usage for the number of platform events delivered to CometD clients for August 3, 2020 at 11:00 to August 4, 2020 at 11:00.

```
SELECT Name, StartDate, EndDate, Value FROM PlatformEventUsageMetric
WHERE Name='PLATFORM_EVENTS_DELIVERED'
AND StartDate=2020-08-03T11:00:00.000Z AND EndDate=2020-08-04T11:00:00.000Z
```

The query returns this result for the last 24-hour usage.

Name	StartDate	EndDate	Value
PLATFORM_EVENTS_DELIVERED	2020-08-03T11:00:00.000+0000	2020-08-04T11:00:00.000+0000	575

The time span between StartDate and EndDate is 24 hours for the stored 24-hour usage. Therefore, you can specify either StartDate or EndDate in the query and you get the same result.

Obtain Historical Daily Usage Metrics

To get daily usage metrics for one or more days, perform a query by specifying the start date and end date in UTC, and metric name.

Example: To get usage metrics for a period of 3 days, from July 19 to July 22, 2020, use these start and end dates. Time values are 0.

- Start date for the query: 2020-07-19T00:00:00.000Z
- End date for the query: 2020-07-22T00:00:00.000Z

This query selects usage metrics for the number of platform events delivered to CometD clients for a 3-day period.

```
SELECT Name, StartDate, EndDate, Value FROM PlatformEventUsageMetric
WHERE Name='PLATFORM_EVENTS_DELIVERED'
AND StartDate>=2020-07-19T00:00:00.000Z and EndDate<=2020-07-22T00:00:00.000Z
```

The query returns these results for the specified date range.

Name	StartDate	EndDate	Value
PLATFORM_EVENTS_DELIVERED	2020-07-19T00:00:00.000+0000	2020-07-20T00:00:00.000+0000	575
PLATFORM_EVENTS_DELIVERED	2020-07-20T00:00:00.000+0000	2020-07-21T00:00:00.000+0000	899
PLATFORM_EVENTS_DELIVERED	2020-07-21T00:00:00.000+0000	2020-07-22T00:00:00.000+0000	1,035

SEE ALSO:

Object Reference for Salesforce and Lightning Platform: PlatformEventUsageMetric

Platform Event Considerations

Learn about special behaviors related to defining, publishing, and subscribing to platform events. Learn how to test platform events. And get an overview of the various events that Salesforce offers.

IN THIS SECTION:

Considerations for Defining and Publishing Platform Events

Take note of the considerations when defining and publishing platform events.

Considerations for Defining Platform Events

Field-Level Security
All platform event fields are read only by default, and you can't restrict access to a particular field. Field-level security permissions don't apply and the event message contains all fields.

Enforcement of Field Attributes
Platform event records are validated to ensure that the attributes of their custom fields are enforced. Field attributes include the Required and Default attributes, the precision of number fields, and the maximum length of text fields.

Permanent Deletion of Event Definitions
When you delete an event definition, it's permanently removed and can't be restored. Before you delete the event definition, delete the associated triggers. Published events that use the definition are also deleted.

Renaming Event Objects
Before you rename an event, delete the associated triggers. If the event name is modified after clients have subscribed to this event, the subscribed clients must resubscribe to the updated topic. To resubscribe to the new event, add your trigger for the renamed event object.

No Associated Tab
Platform events don't have an associated tab because you can't view event records in the Salesforce user interface.

No SOQL Support
You can't query event messages using SOQL.

No Record Page Support in Lightning App Builder
When creating a record page in Lightning App Builder, platform events that you defined show up in the list of objects for the page. However, you can't create a Lightning record page for platform events because event records aren't available in the user interface.

Platform Events in Package Uninstall

When uninstalling a package with the option **Save a copy of this package's data for 48 hours after uninstall** enabled, platform events aren't exported.

Event Volume in Package Installations and Upgrades

Installing a managed or unmanaged package that contains a standard-volume platform event causes the event type to be saved as high volume in the subscriber org. Upgrading a managed package doesn't change the event volume in the subscriber org.

No Support in Professional and Group Editions

Platform events aren't supported in Professional and Group Edition orgs. Installation of a package that contains platform event objects fails in those orgs.

Considerations for Publishing Platform Events

Publishing Events in Read-Only Mode

During read-only mode, publishing standard-volume platform events results in an exception, and the events aren't published. Publishing high-volume platform events in read-only mode sometimes fails when the event schema is not up to date in Salesforce. Your org is in read-only mode during Salesforce maintenance activities.

High-Volume Platform Event Persistence

Platform events are temporarily persisted to and served from an industry-standard distributed system during the retention period. A distributed system doesn't have the same semantics or guarantees as a transactional database. As a result, we can't provide a synchronous response for an event publish request. Events are queued and buffered, and Salesforce attempts to publish the events asynchronously. In rare cases, the event message might not be persisted in the distributed system during the initial or subsequent attempts. This means that the events aren't delivered to subscribers, and they aren't recoverable.

Considerations for Subscribing to Platform Events with Processes and Flows

Before you use processes or flows to subscribe to platform events, familiarize yourself with these considerations.

Supported Platform Events

Processes and flows can subscribe to custom platform events and these standard platform events.

- AIPredictionEvent
- BatchApexErrorEvent
- FlowExecutionErrorEvent
- FOStatusChangedEvent
- OrderSummaryCreatedEvent
- OrderSumStatusChangedEvent
- PlatformStatusAlertEvent

Infinite Loops and Limits

Be careful when publishing events from processes or flows because you can get into an infinite loop and exceed limits. For example, a process is associated with the Printer Status platform event. The same process includes an action that creates a Printer Status event message. The process would trigger itself.

To avoid creating an endless loop in an event process, make sure that the new event message's field values don't meet the filter criteria for the associated criteria node.

Subscriptions Related List

On the platform event's detail page, the Subscriptions related list shows which entities are waiting to receive that platform event's messages. The related list includes a link to each subscribed process. If flow interviews are waiting for that platform event's messages, one "Process" subscriber appears in the Subscriptions related list.

Uninstalling Events

Before you uninstall a package that includes a platform event:

- Delete interviews that are waiting for that platform event's messages
- Deactivate processes that reference the event

Einstein Predictions

AIPredictionEvents are sent for every Einstein prediction result. To trigger your process or flow only by predictions on a specific object, use event condition filters. For example, if your process acts only on predictions written to Lead records, add a matching condition to check that the Lead ID field equals the AI Predicted Object ID event reference.

If your process or flow updates a field that is used by an Einstein prediction, Einstein will run the prediction again and write back new results. The new results generate a new AIPredictionEvent that could trigger your process or flow again, resulting in a loop. Avoid creating potential loops by only updating fields that aren't used in Einstein predictions.

Event Processes

These considerations apply only to event processes.

Apex Actions

You can't use an event reference to set an sObject variable in the Apex class.

Email Alerts Actions

Email alerts can't use values from platform event messages. For the process to send an email that contains values from the platform event message that starts the process, use this workaround.

1. Create an autolaunched flow.
2. In the flow, create a variable for each field in the platform event. Be sure to use compatible data types and make the variables available for input.
3. In the flow, add a Send Email action, and set the action's input variables with the flow variables.
4. In the process, add a Flows action and specify the autolaunched flow. Use event references to assign each platform event field to its corresponding flow variable.

Flows Actions

You can't use an event reference to set a record variable in the flow, even when the platform event is specified as the record variable's object. To pass values into the flow from the platform event message that starts the process, use this workaround.

1. In the flow, create a variable for each field in the platform event. Be sure to use compatible data types and make the variables available for input.
2. In the process, when you add the Flows action, use event references to assign each platform event field to its corresponding flow variable.

Packaging Event Processes

When you package an event process, the associated object isn't included automatically. Advise your subscribers to create the object, or manually add the object to your package.

Resumed Flow Interviews

These considerations apply only to flow interviews that resume when a platform event message is received.

Formulas
To reference a platform event in a flow formula, pass the event data into a record variable in the Pause element. Then reference the appropriate field in that record variable.

Event Condition Values
When you filter platform event messages, only the first 765 bytes of the condition value are used for filtering. Note that the number of characters will be smaller if you use multi-byte characters.

SEE ALSO:

Decoupled Publishing and Subscription

Considerations for Publishing and Subscribing to Platform Events with Apex and APIs

Before you use Apex or Salesforce APIs to publish and subscribe to platform events, familiarize yourself with these considerations.

Support Only for `after insert` Triggers
Only `after insert` triggers are supported for platform events because event notifications can't be updated. They're only inserted (published).

Infinite Trigger Loop and Limits
Be careful when publishing events from triggers because you could get into an infinite trigger loop and exceed limits. For example, if you publish an event from a trigger that's associated with the same event object, the trigger is fired in an infinite loop.

Publishing Events in Apex with Text Fields Set to Empty Strings
If you publish an event in Apex with a Text field set to an empty string, the field value in the delivered event message is null instead of empty string. The Text field value of empty string is preserved when publishing through other methods, including APIs, flows, and processes.

Platform Event Triggers: `OwnerId` Fields of New Records
In platform event triggers, if you create a Salesforce record that contains an `ownerId` field, the system populates the field with `Automated Process` by default. To set this field to another value, you can configure the trigger to run as another user. That way, the `OwnerId` field references the selected user. For more information, see Configure the User and Batch Size for Your Platform Event Trigger. Alternatively, if you don't change the running user, you can set the `ownerId` field explicitly to the appropriate user when you create the record. This example explicitly populates the `ownerId` field for an opportunity with an ID obtained from another record.

```
Opportunity newOpp = new Opportunity(
    OwnerId = customerOrder.createdById,
    AccountId = acc.Id,
    StageName = 'Qualification',
    Name = 'A ' + customerOrder.Product_Name__c + ' opportunity for ' + acc.name,
    CloseDate = Date.today().addDays(7));
```

For cases and leads, you can alternatively use assignment rules for setting the owner. For more information, see AssignmentRuleHeader for SOAP API or Setting DML Options for Apex.

No Email Support from a Platform Event Trigger
With the default Automated Process running user, sending an email message from a platform event trigger using the `Messaging.SingleEmailMessage` class isn't supported. The email can't be sent because the sender is the Automated

Process entity, which has no email address. To send an email, change the running user of the trigger. For more information, see Configure the User and Batch Size for Your Platform Event Trigger.

Replaying Past Events

You can replay platform events that were sent in the past. You can replay platform events through the API (CometD) but not Apex. The process of replaying platform events is the same as for other Streaming API events. For more information, see the following resources.

- *Streaming API Developer Guide*: Message Durability
- Example: Subscribe to and Replay Events Using a Java Client (EMP Connector)
- Example: Subscribe to and Replay Events Using a Visualforce Page
- Streaming Replay Client Extensions for Java and JavaScript on GitHub

Note: In rare occasions, some Salesforce maintenance activities, such an org migration to a new data center or instance refresh, reset the stream of retained high-volume platform events. The stream reset results in the events no longer being available for replay. For more information, see Instance Refresh Maintenance.

Filtered Subscriptions

Filtered subscriptions in Streaming API aren't supported for platform events.

Millisecond Time Precision in DateTime Fields

For event messages delivered to CometD clients in JSON format, the DateTime fields include the number of milliseconds. The date format, which is in the ISO 8601 standard, is `YYYY-MM-DDTHH:mm:ss.sssZ`. In API version 42.0 and earlier, DateTime fields don't include the millisecond part of the time, and the DateTime format is `YYYY-MM-DDTHH:mm:ssZ`.

For event messages delivered to Apex triggers, DateTime fields don't include millisecond precision, like DateTime fields of Salesforce objects.

Apex Trigger Subscriptions Disabled in Inactive Salesforce Orgs

If an org becomes inactive, all Apex trigger subscriptions are stopped and disabled. Triggers no longer process incoming event messages and can't process missed event messages. After the org is reactivated, new Apex trigger subscriptions are started when a platform event message is published.

SEE ALSO:

Platform Event Allocations

Decoupled Publishing and Subscription

When the publish behavior of a platform event is set to **Publish Immediately**, it's published outside of a Lightning Platform database transaction. As a result, the publishing and subscription processes are decoupled—the subscription process can't assume that an action made by the publishing transaction is committed before an event message is received. Familiarize yourself with some scenarios that can occur from the decoupled behavior.

Note: This decoupled behavior doesn't apply to platform events whose publish behavior is set to **Publish After Commit**.

Publisher Does Not Respect Transaction Boundaries

If an event is defined with a publish behavior of **Publish Immediately**, the publishing of the platform event message isn't transactional. As a result, a Salesforce record that an event publisher creates after publishing might not be committed to the database before the subscriber receives the event message. If the subscriber looks up the record, it might not be found because it hasn't been committed yet. For example, consider this scenario.

1. A Process Builder process publishes an event and creates a task record.

2. A trigger on the Task object runs some logic, which delays the commit of the task record.
3. A second Process Builder process, which is subscribed to the event, receives the event and looks up the newly created task. The process returns the following error because the trigger hasn't finished executing, and the record is not yet committed.

   ```
   "MyProcess process is configured to start when a MyEvent platform event message
   occurs. A MyEvent message occurred, but the process didn't start because no records
   in your org match the values specified in the process's Object node."
   ```

The example uses Process Builder, but the scenario applies to other methods of publishing and subscribing, such as the API and triggers.

Conversely, if a subscriber creates a Salesforce record after receiving an event message, the new record might not be found immediately after publishing. The reason is that the event is not processed synchronously after publishing, or the event processing might take a long time if the logic is complex.

Solution

The solution is to change the publishing behavior of the event to **Publish After Commit**. With this behavior, the event message is published after the first process creates the task record and the transaction finishes. The second process is able to find the task record.

Event Published from a Trigger

Consider an `after insert` trigger on a Salesforce object that publishes an event defined with a publish behavior of **Publish Immediately**. The event can be processed before the Salesforce record in the trigger is committed to the database. For example, consider this scenario.

1. An `after insert` trigger on a custom object publishes an event message.
2. A Process Builder process is subscribed to the event. The process is fired before the trigger finishes execution and before it commits the new custom object record.
3. The process tries to look up the record to match the event and fails because the record is not found.

Solution

The solution is to change the publishing behavior of the event to **Publish After Commit**. With this behavior, the event message is published after the trigger creates the custom object record and the transaction commits. The second process that receives the published event message is able to find the new record that the first process created.

What's the Difference Between the Salesforce Events?

Salesforce offers various features that use events, some of which are based on standard platform events. Other features are event-like but aren't event notifications.

Custom Events

You can use the following types of events to generate and deliver custom messages.

Custom Platform Events
: Use custom platform events to deliver secure, scalable, and customizable event notifications within Salesforce or from external sources. Custom platform event fields are defined in Salesforce and determine the data that you send and receive. Apps can publish and subscribe to platform events on the Lightning Platform or in external systems.

Generic Events
: Generic events are custom events that contain arbitrary payloads. With a generic event, you can't define the schema of the event.

Data Events

The following types of events are tied to Salesforce records.

Change Data Capture Events
Salesforce publishes Change Data Capture events for record and field changes.

PushTopic Events
PushTopic events track field changes in Salesforce records and are tied to Salesforce records.

Custom and Data Event Comparison

For a comparison of custom and data events, see Streaming Event Features in the Streaming API Developer Guide.

Standard Events: Security, Apex, and Monitoring

Salesforce publishes the following examples of standard platform events. These predefined events enable monitoring of security-related actions and user actions in Salesforce.

Asset Token Events
Subscribe to an AssetTokenEvent stream to monitor OAuth 2.0 authentication activity. Salesforce publishes an asset token event upon successful completion of an OAuth 2.0 asset token flow for a connected device.

Batch Apex Error Events
Subscribe to an BatchApexErrorEvent stream to catch errors that occur during batch Apex job execution. You can receive all types of errors and exceptions, including uncatchable exceptions, such as Apex limit exceptions.

Real-Time Event Monitoring
Real-Time Event Monitoring provides standard platform events that you can subscribe to for monitoring user activity in real time, such as logins and running reports. For example, you can subscribe to the event channel for LoginEventStream to receive notifications when users log in.

Event-Like Features

The following features can trick you into being streaming events, but they're not.

Event Monitoring Log
Like Real-Time Event Monitoring, you can use Event Monitoring to track user activity, such as logins and running reports. Unlike Real-Time Events, Event Monitoring doesn't send real-time notifications. Instead, it stores user activity in a log that you can query.

Transaction Security Policies
A transaction security policy evaluates user activity, such as logins and data exports, and trigger actions in real time. When a policy is triggered, notifications are sent through email or in-app notifications. You can use standard actions, such as blocking an operation, or custom actions defined in Apex.

Calendar Events
A calendar event is an appointment or meeting that you create and view in the user interface. In SOAP API, the Event object represents a calendar event. These events are calendar items and not notifications that software systems send.

SEE ALSO:

Standard Platform Event Objects

Examples

Check out platform event apps—an end-to-end example using flows, a Java client, and sample apps that cover business scenarios.

IN THIS SECTION:

End-to-End Example: Printer Supply Automation

This example demonstrates how to make sure that your office printers always have enough paper and ink by using two platform events and two flows.

Your company just received a shipment of "smart" printers. You configure the printers to send information to Salesforce. You build a flow that uses the received information to decide whether to order more ink or paper from the vendor. Also, you build another flow to schedule installation of the new supplies the day after they're delivered.

IN THIS SECTION:

Platform Events: Printer Status and Vendor Response

This example uses two platform events: one to hold the information coming from the printer (Printer Status) and one to hold the information coming from the vendor (Vendor Response).

The Printer Status platform event includes these custom fields.

API Name	Field Label	Data Type	Description
Serial_Number	Serial Number	Text	The printer's unique identifier. This value is used to locate the corresponding asset record.
Ink_Status	Ink Status	Text	Values: Full, Medium, Low, or Empty.
Paper_Level	Paper Level	Number	Paper level in percentage.
Total_Print_Count	Total Print Count	Number	Aggregate number of pages printed.

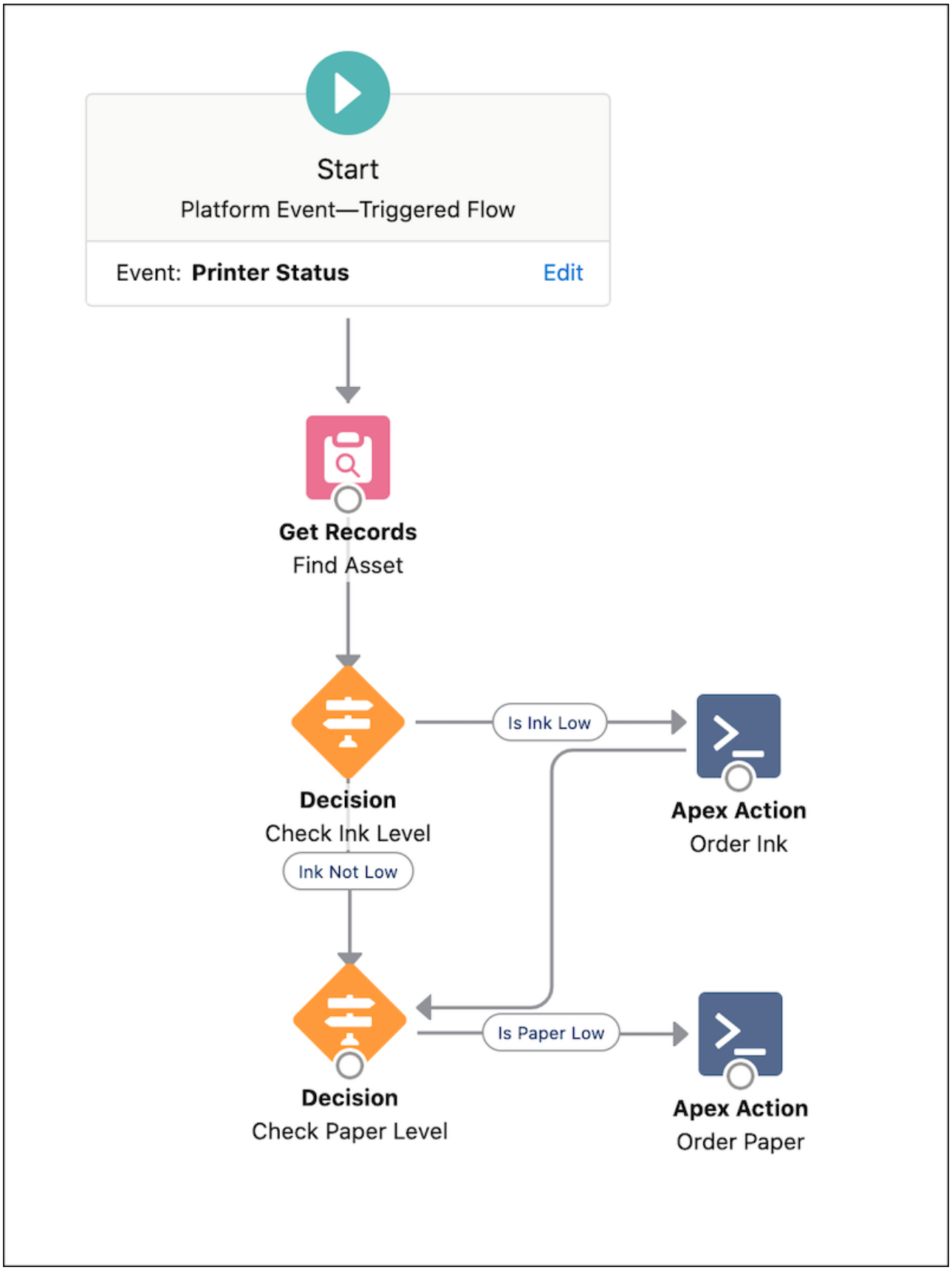
The Vendor Response platform event includes these custom fields.

API Name	Field Label	Data Type	Description
Order_Number	Order Number	Text	The order's unique identifier.
Expected_Delivery_Date	Expected Delivery Date	Date	The date when the vendor expects the order to be delivered
Order_Status	Order Status	Text	Values: Ordered, Confirmed, Shipped, Delivered, Delayed, Canceled.
Part_Label	Part Label	Text	The label of the part to order.
Part_Number	Part Number	Text	The part number of the part to order.
Serial_Number	Serial Number	Text	The printer's unique identifier. This value is sent in the order request and returned in the vendor response. It's used to locate the corresponding asset record.

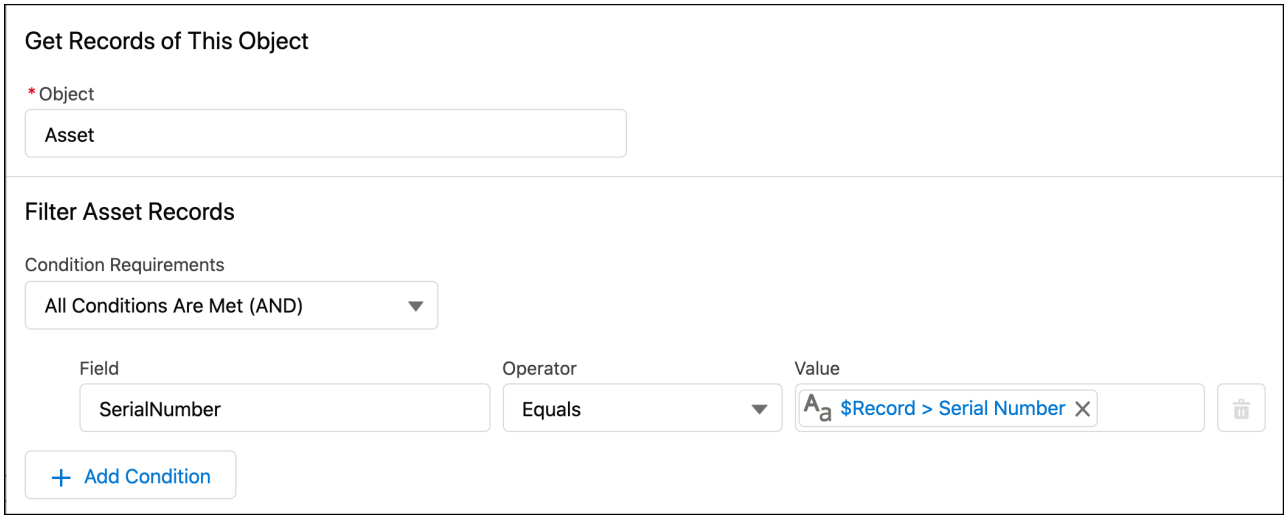
Flow: Automation for Printer Status Events

When the platform event–triggered flow receives a Printer Status event, the flow finds the asset record that's associated with the printer. The flow evaluates whether the printer has low ink or paper, and if so, calls an Apex action to order ink or another action to order paper.

The flow starts when it receives a Printer Status platform event message.

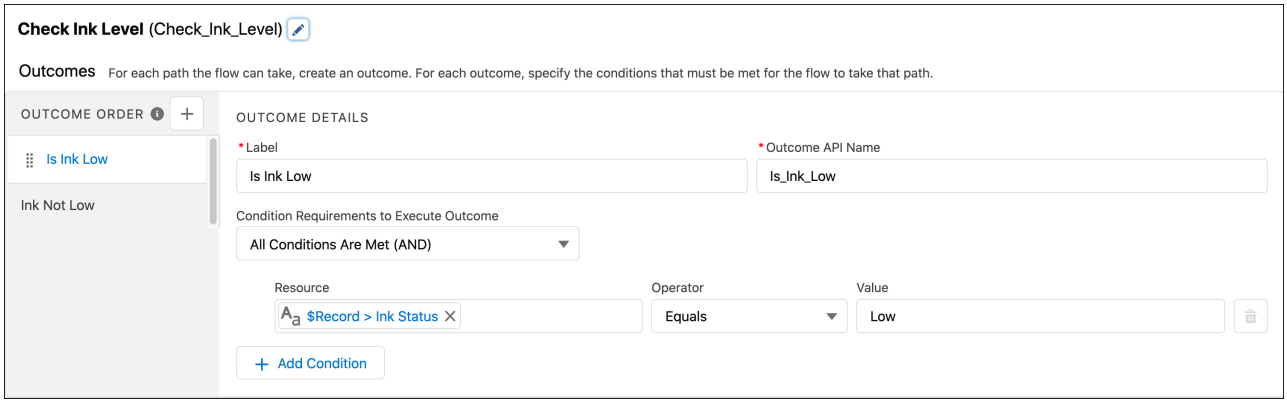

Start
Platform Event—Triggered Flow
Event: Printer Status
Edit
Get Records
Find Asset
Decision
Check Ink Level
Is Ink Low
Apex Action
Order Ink
Ink Not Low
Decision
Check Paper Level
Is Paper Low
Apex Action
Order Paper

The Get Records element finds the related asset record by matching the asset's serial number with that of the incoming event message. The Get Records element provides us with the asset record fields that we use later in the flow.

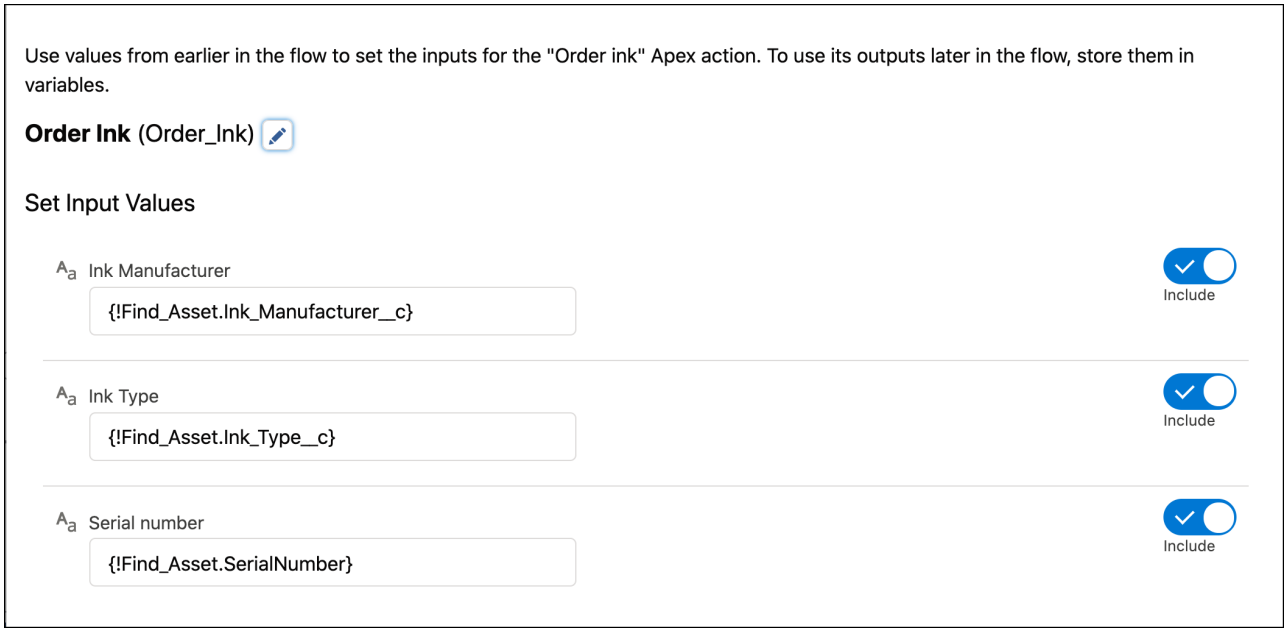


Order Ink or Paper

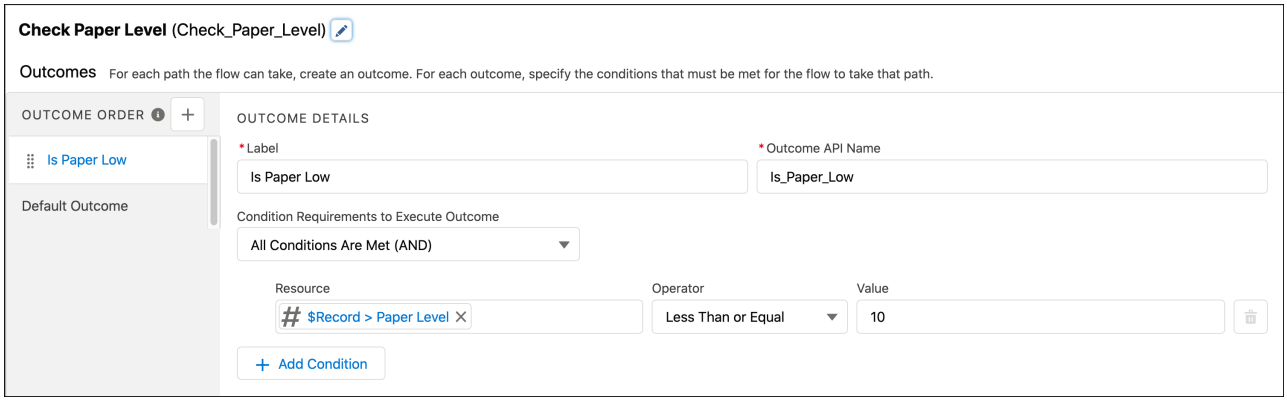
A Decision element evaluates whether the ink level is low. It checks whether the Ink_Level__c field value in the event message is equal to 'Low'.



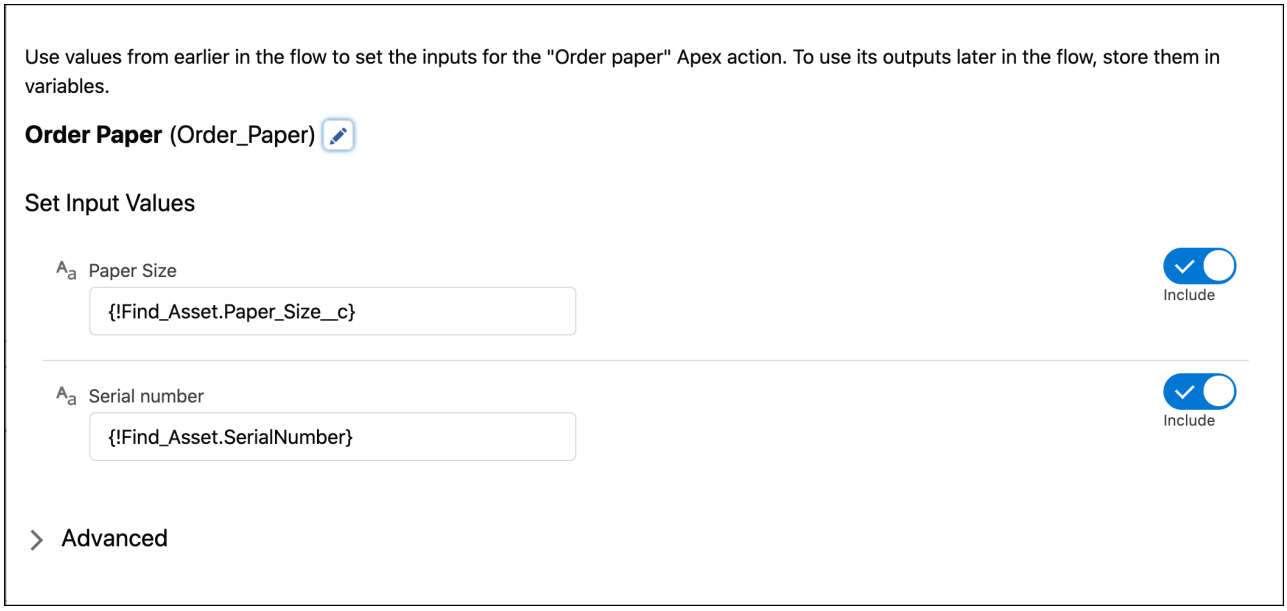
If the ink level is low, the flow calls an Apex action that orders ink. The Apex action calls an invocable method and passes information about the ink type and the printer serial number as invocable variables.



After the ink level is evaluated, another Decision element evaluates the paper level.



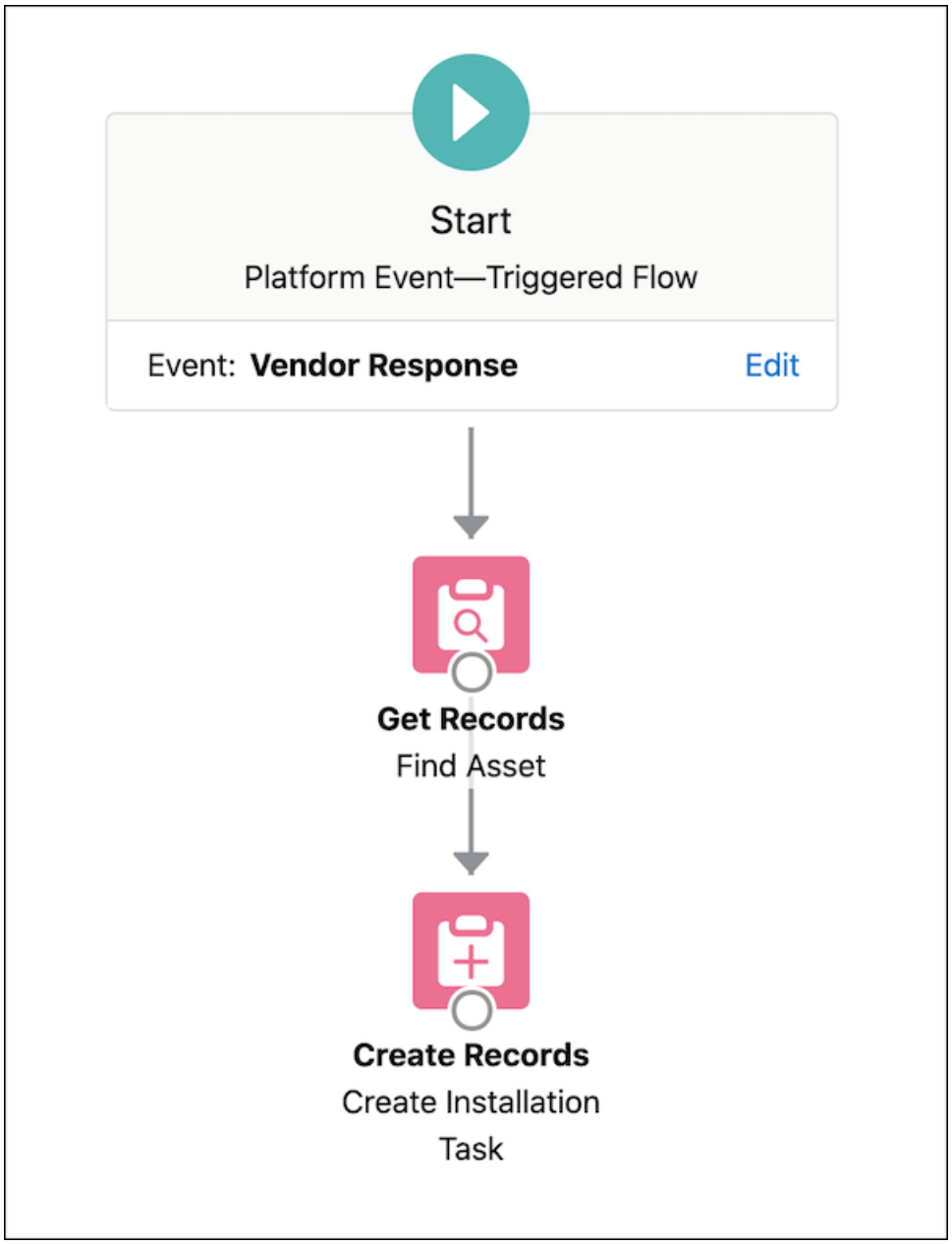
If the paper level is lower than 10%, the flow calls an Apex action to order paper. The Apex action calls an invocable method and passes the paper size and serial number as invocable variables.



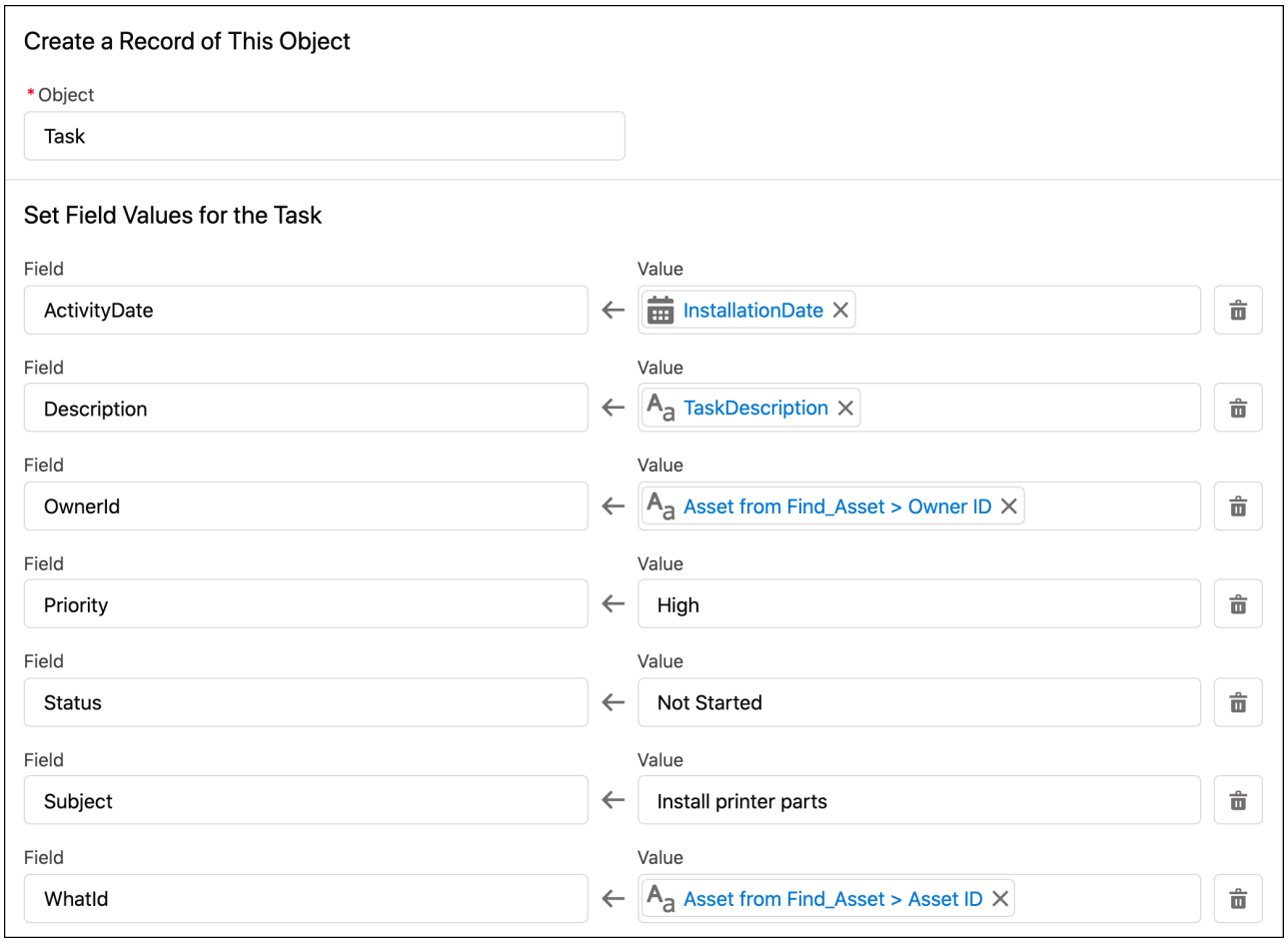
The implementation of Apex actions isn't covered in this example. For more information about invocable Apex actions, see InvocableMethod Annotation and InvocableVariable Annotation in the *Apex Developer Guide*. Typically, you call an external service to place an order. To do so from an Apex action, you use Apex callouts. For more information, see Invoking Callouts Using Apex in the *Apex Developer Guide*.

Flow: Automation for Vendor Response Events

The Install Printer Supplies flow is a platform event–triggered flow that subscribes to the Vendor Response platform event. When the vendor ships the printer part, they publish the Vendor Response platform event to notify their customer. This flow starts when it receives the Vendor Response event message. It creates a task for the asset owner to install the new printer part.

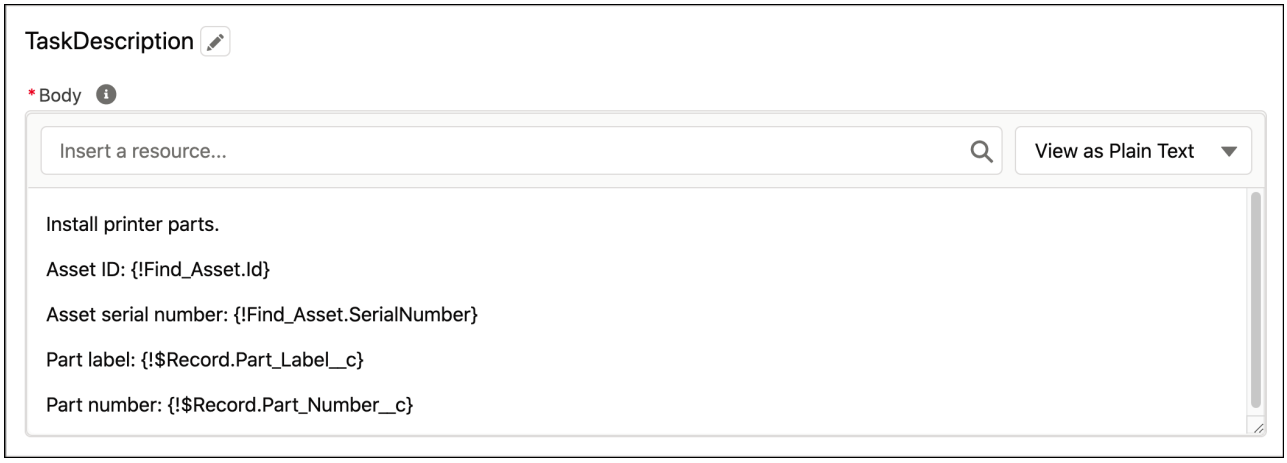


The Get Records element finds the related asset by matching the asset's serial number with that of the received event message. Next, the Create Records element creates the installation task for the part.



In this example, some task fields reference flow resources that are created separately. The InstallationDate is a formula resource and is defined as follows.

TaskDescription is a text template resource with the following body.



Example: Subscribe to and Replay Events Using a Java Client (EMP Connector)

The Java sample uses a library called Enterprise Messaging Platform (EMP) Connector. EMP Connector is a thin wrapper around the CometD library. It hides the complexity of creating a CometD client and subscribing to Streaming API in Java. The example subscribes to a channel, receives notifications, and supports replaying events with durable streaming.

Important: EMP Connector is a free, open-source, community-supported tool. Salesforce provides this tool as an example of how to subscribe to events using CometD. To contribute to the EMP Connector project with your own enhancements, submit pull requests to the repository at https://github.com/forcedotcom/EMP-Connector.

EMP Connector is based on Java and uses CometD version 3.1.0. It supports username and password authentication and OAuth bearer token authentication. This walkthrough shows steps only for username and password authentication.

IN THIS SECTION:

Prerequisites

Some tools and a Developer Edition org are required to run the sample.

- Java Development Kit 8 or later (see Java Downloads)
- Eclipse IDE for Java Developers (get a recent version from http://www.eclipse.org/downloads/eclipse-packages/). This example walks you through the steps of building the project with the Eclipse IDE but you can you use your preferred IDE to build the Java client.

- To run the tool from the command line: Apache Maven (see https://maven.apache.org/index.html)
- Access to a Developer Edition org

  If you are not already a member of the Lightning Platform developer community, go to `developer.salesforce.com/signup` and follow the instructions for signing up for a Developer Edition organization. Even if you already have Enterprise Edition, Unlimited Edition, or Performance Edition, use Developer Edition for developing, staging, and testing your solutions against sample data to protect your organization's live data. This is especially true for applications that insert, update, or delete data (as opposed to simply reading data).
- API Enabled user permission. This permission is enabled by default in a Developer Edition org.
- Streaming API enabled in Setup, in the User Interface page. This permission is enabled by default in a Developer Edition org.

Define a Custom Platform Event

Before you subscribe to a custom platform event, define the Low Ink platform event and its fields.

USER PERMISSIONS

To create and edit platform event definitions:
- Customize Application

1. From Setup, enter *Platform Events* in the Quick Find box, then select **Platform Events**.
2. On the Platform Events page, click **New Platform Event**.
3. Complete the standard fields, and optionally add a description.
4. For Event Type, select **High Volume**.
5. Click **Save**.
6. To add a field, in the Custom Fields & Relationships related list, click **New**.
7. Create these fields by using the custom field wizard for each field.

Field Type	Field Label
Text	Printer Model
Text	Serial Number
Number (length: 16; decimal places: 2)	Ink Percentage

Download and Build the Project

Before you can run the connector examples, download the Java source files and build the Java project.

The EMP Connector project includes examples in the GitHub repository's example folder that use the connector to log in and subscribe to events.

1. To download the project files, do one of the following.
   - Clone the EMP Connector project using git.

     ```
     git clone https://github.com/forcedotcom/EMP-Connector
     ```
   - Download the project zip file from GitHub, and then extract the zip to a local folder.
2. In Eclipse, import the Maven project from the folder where you cloned or extracted the project.

   The dependencies that are specified in the Maven's `pom.xml` file, such as CometD, are added in the Java project in Eclipse.
3. If the Java project wasn't automatically built, build it.

If you prefer to run the tool from the command line, generate the JAR file using the Maven command `mvn clean package`. The generated JAR file includes the connector and the example class functionality. The JAR file is a shaded JAR—it contains all dependencies for the connector, so you don't have to download them separately. The JAR file has a `-phat` Maven classifier. You can run the login example from the command line. To run the tool against a production instance without specifying a login URL, use this command, which uses the `LoginExample.java` class by default.

```
$ java -jar target/emp-connector-0.0.1-SNAPSHOT-phat.jar <username> <password> <channel>
 [optional_replay_id]
```

To specify a login URL for sandbox or My Domain, use this command, which references the `DevLoginExample.java` class.

```
$ java -classpath target/emp-connector-0.0.1-SNAPSHOT-phat.jar
com.salesforce.emp.connector.example.DevLoginExample <login_URL> <username> <password>
<channel> [optional_replayId]
```

For *<login_URL>*, use your org's My Domain login URL, including the https:// prefix. For example, `https://`***MyDomainName***`.my.salesforce.com`.

If you don't have a deployed My Domain, use `https://login.salesforce.com` for a production org and `https://test.salesforce.com` for a sandbox or developer environment.

Open Source Project

EMP Connector is an open-source project, so you can contribute to it with your own enhancements by submitting pull requests to the repository.

Subscribe to a Channel and Receive Event Notifications

Use EMP Connector to subscribe to a platform event channel.

1. In the `/src/main/java/com/salesforce/emp/connector/example` folder, open the `LoginExample.java` source file.
2. Subscribe to an event channel by running the `LoginExample` class.
   a. To subscribe to a custom event channel, see Subscribe to a Custom Platform Event Channel.
   b. To subscribe to a standard event channel, see Subscribe to a Standard Platform Event Channel.

Subscribe to a Custom Platform Event Channel

Use EMP Connector to subscribe to the channel of the Low_Ink__e custom platform event that you defined earlier.

1. Run the `LoginExample` class and provide arguments.
   a. In Package Explorer, navigate to the `LoginExample.java` file. Right-click the file, and select **Run As** > **Run Configurations**.
   b. On the Arguments tab, add values for the following arguments, separated by a space.

Argument	Value
username	Your Salesforce username
password	Your Salesforce password
channel	The channel name for the event: `/event/Low_Ink__e`.

c. Click **Run**.

The sample is now subscribed to the event channel and is listening to event notifications. As soon as an event notification is generated and received, the tool prints it to the console.

Optionally, to receive different events, you can include a replay ID as the last argument. Valid values are:

- –1 — Get all new events sent after subscription. This option is the default.
- –2 — Get all new events sent after subscription and all past events within the retention window. Use -2 sparingly. If a large volume of event messages is stored, retrieving all event messages can slow performance.
- Specific number — Get all events that occurred after the event with the specified replay ID.

2. To generate an event message for the custom platform event, publish an event message by running Apex in the Developer Console.

a. In Salesforce Classic, select *your name* > **Developer Console**.

b. In Lightning Experience, click the quick access menu ( ), and select **Developer Console**.

c. In the Developer Console, select **Debug** > **Open Execute Anonymous Window**.

d. In the new window, replace any code with this Apex snippet, which publishes the platform event.

```
// Create event instance.
Low_Ink__e event = new Low_Ink__e(Printer_Model__c='XZO-5', Serial_Number__c='12345',

              Ink_Percentage__c=0.2);

// Publish event.
Database.SaveResult sr = EventBus.publish(event);

// Inspect publishing result for each event
if (sr.isSuccess()) {
    System.debug('Successfully published event.');
} else {
    for(Database.Error err : sr.getErrors()) {
        System.debug('Error returned: ' +
                    err.getStatusCode() +
                    ' - ' +
                    err.getMessage());
    }
}
```

e. Click **Execute**. After the platform event is published, EMP Connector receives an event notification, which is printed in the console. The output looks similar to the following.

```
Subscribed: Subscription [/event/Low_Ink__e:-1]
Received:
{
   "schema":"3l1laWb62nM8omMU0waLdg",
   "payload":{
      "Serial_Number__c":"12345",
      "CreatedById":"00550000001N45jAAC",
      "CreatedDate":"2018-08-15T21:49:44Z",
      "Ink_Percentage__c":0.2,
      "Printer_Model__c":"XZO-5"
   },
   "event":{
```

```
        "replayId":1
    }
}
```

Note: Generally, don't handle usernames and passwords of others when running code in production. In a production environment, delegate the login to OAuth. The `BearerTokenExample.java` class uses OAuth authentication.

Subscribe to a Standard Platform Event Channel

Use EMP Connector to subscribe to the channel of the LoginEventStream standard platform event. This channel tracks user logins in real time and is part of Real-time Event Monitoring.

1. In Setup, enable streaming for the LoginEventStream event on the Event Manager page.

   Note: LoginEventStream is part of Real-Time Event Monitoring. To enable streaming for this event in Event Manager and subscribe to the channel, you must have the Shield Event Monitoring add-on and the View Real-Time Event Monitoring Data permission enabled. For more information, see Real-Time Event Monitoring in Salesforce Help.

2. In Eclipse, run the `LoginExample` class and provide arguments.

   a. In Package Explorer, navigate to the `LoginExample.java` file. Right-click the file, and select **Run As** > **Run Configurations**.

   b. On the Arguments tab, add values for the following arguments, separated by a space.

Argument	Value
`username`	Your Salesforce username
`password`	Your Salesforce password
`channel`	The channel name for the event. For the LoginEventStream standard event, provide `/event/LoginEventStream`. To perform this quick start with another standard event, pass in a channel name in the following format: `/event/`***`Event_Name`***

   c. Click **Run**.

   The sample is now subscribed to the event channel and is listening to event notifications. As soon as an event notification is generated and received, the tool prints it to the console.

   Optionally, to receive different events, you can include a replay ID as the last argument. Valid values are:

   - –1 — Get all new events sent after subscription. This option is the default.
   - –2 — Get all new events sent after subscription and all past events within the retention window. Use -2 sparingly. If a large volume of event messages is stored, retrieving all event messages can slow performance.
   - Specific number — Get all events that occurred after the event with the specified replay ID.

3. To generate an event message for a standard platform event, perform the action that fires the event. For LoginEventStream, log in to Salesforce.

   a. In a browser window, navigate to `https://login.salesforce.com`.

   b. Enter your Salesforce username and password (or the credentials of another user in your org), and click **Log In**.

c. After you log in, EMP Connector receives an event notification for the login action. The event message is printed in the console. The output looks similar to the following.

```
Subscribed: Subscription [/event/LoginEventStream:-1]
Received:
{
   "schema":"3J6UjLfL6cDEeBI84DSyTA",
   "payload":{
      "EventDate":"2019-01-04T21:32:15.000Z",
      "AuthServiceId":null,
      "Platform":"Mac OSX",
      "EvaluationTime":0.0,
      "CipherSuite":"ECDHE-RSA-AES256-GCM-SHA384",
      "ClientVersion":"N/A",
      "LoginGeoId":"04F2J00006PqzoY",
      "LoginUrl":"login.salesforce.com",
      "LoginHistoryId":"0Ya2J0000Dt8t5aSQA",
      "CreatedById":"00550000001ZtKcAAK",
      "SessionKey":null,
      "ApiType":"N/A",
      "LoginType":"Application",
      "PolicyOutcome":null,
      "Status":"Success",
      "AdditionalInfo":"{}",
      "ApiVersion":"N/A",
      "EventIdentifier":"eeccf731-2585-4a40-bfa5-770e31d6c2ab",
      "RelatedEventIdentifier":null,
      "SourceIp":"Salesforce.com IP",
      "Username":"joe.smith@acme.com",
      "UserId":"00550000001N45jAAC",
      "CreatedDate":"2019-01-04T21:32:19.188Z",
      "TlsProtocol":"TLS 1.2",
      "LoginKey":"QuEoTPHKy22V68XV",
      "Application":"Browser",
      "UserType":"Standard",
      "PolicyId":null,
      "SessionLevel":"STANDARD",
      "Browser":"Chrome 71"
   },
   "event":{
      "replayId":2540
   }
}
```

Note: Generally, don't handle usernames and passwords of others when running code in production. In a production environment, delegate the login to OAuth. The `BearerTokenExample.java` class uses OAuth authentication.

Platform Event Samples

Check out a sample that covers common business scenarios and uses platform events along with other Lightning Platform features.

Sample Gallery: Pure Aloe App

The Pure Aloe sample app uses platform events to integrate with external systems. This sample app for a fictional agricultural, manufacturing, and retail company demonstrates how to simplify complex processes and integrate external systems with Lightning components, Salesforce Flow, and platform events. The app helps the Pure Aloe company manage the aloe harvest and sell derived aloe products through a distributor channel.

To access the sample code on GitHub, check out https://github.com/trailheadapps/purealoe-lwc.

Reference

The reference documentation for platform events covers limits, an API object, and Apex methods.

IN THIS SECTION:

Platform Event Allocations
Learn about the allocations available for platform event definitions, publishing and subscribing to platform events, and event delivery in CometD clients.

EventBusSubscriber
Represents a trigger, process, or flow that's subscribed to a platform event or a change data capture event. Doesn't include CometD subscribers.

EventBus Class
Contains methods for publishing platform events.

Platform Event Error Status Codes
When publishing an event message results in an error, a status code is returned in the SaveResult or in an event notification.

TriggerContext Class
Provides information about the platform event or change event trigger that's currently executing, such as how many times the trigger was retried due to the `EventBus.RetryableException`. Also, provides a method to resume trigger executions.

Standard Platform Event Objects
Check out the standard platform events that Salesforce publishes.

SEE ALSO:

Salesforce Help: Configure the Process Trigger

Salesforce Help: Flow element: Pause

Platform Event Allocations

Learn about the allocations available for platform event definitions, publishing and subscribing to platform events, and event delivery in CometD clients.

Common Platform Event Allocations

The following allocations apply to standard-volume and high-volume platform events.

Description	Performance and Unlimited Editions	Enterprise Edition	Developer Edition	Professional Edition (with API Add-On)
Maximum number of platform event definitions that can be created in an org	100	50	5	5
Maximum number of concurrent CometD clients (subscribers) across all channels and for all event types	2,000	1,000	20	20
Maximum number of processes that can subscribe to a platform event	4,000	4,000	4,000	5
Maximum number of active processes that can subscribe to a platform event	2,000	2,000	2,000	5

Note:

- The concurrent client allocation is shared with all types of events that you can subscribe to through Streaming API (CometD), including PushTopic, generic, platform events, and change events. The `empApi` Lightning component uses CometD and consumes the concurrent client allocation like any other CometD client. Each logged-in user using `empApi` counts as one concurrent client. If the user has multiple browser tabs using `empApi`, the streaming connection is shared and is counted as one client for that user. A client that exceeds the concurrent client allocation receives an error and can't subscribe. When one of the clients disconnects and a connection is available, the new client can subscribe. For more information, see Streaming API Error Codes in the Streaming API Developer Guide.
- Platform events that originate from an installed managed package share the org's allocation for the maximum number of platform event definitions.

High-Volume Platform Event Default Allocations

If your org has no add-on licenses, default allocations apply for event publishing and delivery that can't be exceeded. The default allocation is enforced daily to ensure fair sharing of resources in the multitenant environment and to protect the service. The publishing allocation is how many events you can publish using any method, including Apex, APIs, flows, and processes. The delivery allocation is how many event notifications can be delivered to CometD subscribers, including the `empApi` Lightning component. It excludes non-CometD subscribers, such as Apex triggers, flows, and processes. The publishing allocation is higher than the delivery allocation because there can be various types of subscribers. Published event messages that are delivered to non-CometD subscribers, such as Apex triggers, flows, and processes, don't count against the delivery allocation.

The number of delivered events to CometD clients is counted per subscribed client. If you have multiple client subscribers, your usage is added across all subscribers. For example, you have an Unlimited Edition org with a default allocation of 50,000 events in a 24-hour period. Within a few hours, 20,000 event messages are delivered to two subscribed clients. So you consumed 40,000 events and are still entitled to 10,000 events within the 24-hour period.

If you exceed the default event delivery allocation, you receive an error. For more information, see Streaming API Error Codes in the Streaming API Developer Guide. Event messages that are generated after exceeding the allocation are stored in the event bus. You can retrieve stored event messages as long as they are within the retention window of 72 hours.

Table 1: Default Allocations

Description	Performance and Unlimited Editions	Enterprise Edition and Professional Edition (with API Add-On)	Developer Edition
Event Delivery: maximum number of delivered event notifications in the last 24 hours, shared by all CometD clients. (Applies to CometD clients and the `empApi` Lightning component only.)	50,000	25,000	10,000
Event Publishing: maximum number of event notifications published per hour. (Applies to all publishing methods, including Apex, APIs, flows, and processes.)	250,000	250,000	50,000

High-Volume Platform Event Add-On License and Usage-Based Entitlement

If your org has the add-on license, your allocation for delivered events to CometD clients moves to a monthly entitlement model. The add-on increases the 24-hour allocation of delivered event notifications by 100,000 per day (3 million a month) as a usage-based entitlement. The entitlement gives you flexibility in how you use your allocations. The entitlement isn't as strictly enforced as the default allocation. With the entitlement, you can exceed your 24-hour event delivery allocation by a certain amount. The entitlement is reset every month after your contract start date. Entitlement usage is computed only for production orgs. It isn't available in sandbox or trial orgs. For more information, see Usage-based Entitlement Fields.

Salesforce monitors event overages based on a calendar month, starting with your contract start date. If you exceed the monthly entitlement, Salesforce contacts you to discuss your event usage needs. The entitlement used for monitoring monthly event overages is the daily allocation multiplied by 30.

When you purchase an add-on license, the hourly event publishing allocation increases by 25,000 events per hour.

Table 2: Example: Entitlement with One High-Volume Platform Event Add-On License

Description	Performance and Unlimited Editions	Enterprise Edition and Professional Edition (with API Add-On)
Event Delivery: entitlement for delivered event notifications, shared by all CometD clients. (Applies to CometD clients and the `empApi` Lightning component only.) You can exceed this entitlement by a certain amount before receiving an error. Salesforce uses the monthly entitlement for event overage monitoring. The monthly entitlement is returned in the `limits` REST API resource.	Last 24 hours: 150,000 (50 K included with org license + 100 K from add-on license) Monthly entitlement: 4.5 million (1.5 million included with org license + 3 million from add-on license)	Last 24 hours: 125,000 (25 K included with org license + 100 K from add-on license) Monthly entitlement: 3.75 million (0.75 million included with org license + 3 million from add-on license)
Event Publishing: maximum number of event notifications published per hour. (Applies to all publishing methods, including Apex, APIs, flows, and processes.)	275,000 (250 K included with org license + 25 K from add-on license)	275,000 (250 K included with org license + 25 K from add-on license)

The maximum event message size that you can publish is 1 MB. If your event object has hundreds of custom fields or many long text area fields, you could hit this limit. In this case, the publishing call gets an error.

Note:

- The default allocations and usage-based entitlement of delivered events are shared between high-volume platform events and Change Data Capture events.
- Non-CometD clients, including Apex triggers, processes, and flows, don't count against the event delivery limit. The number of event messages that an Apex trigger, process, or flow can process depends on how long the processing takes for each subscriber. The longer the processing time, the longer it takes for the subscriber to reach the tip of the event stream.
- The `empApi` Lightning component is a CometD client. As a result, the event delivery allocation applies to the component and it is per channel per unique browser session.

Monitor Your High-Volume Event Usage Against Your Allocations

Determine how to check event usage for your org.

Allocation	Org With Add-On License	Org Without Add-On License
Event Delivery: number of delivered event notifications to CometD clients	Check your usage in one of these ways: • With the REST API `limits` resource: usage information is returned in `MonthlyPlatformEventsUsageEntitlement` in API version 48.0 and later. This value is updated once a day. • In the user interface: From Setup, in the Quick Find box, enter *`Company Information`*, and then select **Company Information**. The usage is shown under the Usage-based Entitlements related list.	With the REST API `limits` resource: usage information is returned in `MonthlyPlatformEvents` in API version 47.0 and earlier. This value is updated within a few minutes after event delivery.
Event Publishing: number of event notifications published per hour	With the REST API `limits` resource: usage information is returned in `HourlyPublishedPlatformEvents`	With the REST API `limits` resource: usage information is returned in `HourlyPublishedPlatformEvents`

For more information about the limit usage values that the limits REST resource returns, see Limits and List Organization Limits in the *REST API Developer Guide*.

Monitor 24-Hour and Daily Event Usage with PlatformEventUsageMetric

To get usage data for event publishing and CometD-client delivery, query the PlatformEventUsageMetric object. The usage metrics stored in PlatformEventUsageMetric are separate from the REST API limits values. The REST API limits resource returns the maximum and remaining allocations for platform events and change data capture events. PlatformEventUsageMetric contains actual event usage data broken down by type of event for platform events and change data capture events.

PlatformEventUsageMetric usage data is available for the last 24 hours, ending at the last hour, and for historical daily usage for the last 45 days. Use PlatformEventUsageMetric to get visibility into your usage trends.

For more information, see Monitor Platform Event Publishing and Delivery Usage on page 51.

Monitor Hourly Event Delivery Usage with REST API

To monitor your org's event delivery hourly usage, make a REST API call to the limits resource every hour. The difference between the results obtained in the last 2 hours shows how many events were delivered in the last hour.

For example, you make a call at 12:00 PM and see that you have 40,000 events remaining. Then you run the same call at 1:00 PM and see that you have 38,500 events remaining. The returned responses indicate that 1,500 events were delivered to your CometD subscribers between 12:00 PM and 1:00 PM.

These results are examples of the responses that a GET request to the `/services/data/v47.0/limits` URI returns.

```
First call result:
{
...
"MonthlyPlatformEvents" : {
    "Max" : 50000,
    "Remaining" : 40000
  },

...
}

Second call result:
{
...
"MonthlyPlatformEvents" : {
    "Max" : 50000,
    "Remaining" : 38500
  },

...
}
```

Standard-Volume Platform Event Allocations

The following allocations are for standard-volume events defined in API version 44.0 and earlier.

Note: You can no longer define new standard-volume platform events. New platform events are high volume by default.

Description	Performance and Unlimited Editions	Enterprise Edition	Developer Edition and Professional Edition (with API Add-On)
Event Delivery: maximum number of delivered event notifications in the last 24 hours, shared by all CometD clients[1]	50,000	25,000	10,000
Event Publishing: maximum number of event notifications published per hour	100,000	100,000	1,000

If you exceed the event delivery allocation, you receive an error. For more information, see Streaming API Error Codes in the Streaming API Developer Guide. Standard-volume event messages that are generated after exceeding the allocation are stored in the event bus. You can retrieve stored standard-volume event messages as long as they are within the retention window of 24 hours.

To monitor your standard-volume event delivery usage, use the `limits` REST API resource, and inspect the `DailyStandardVolumePlatformEvents` value. And to monitor the publishing usage, inspect the `HourlyPublishedStandardVolumePlatformEvents` value. For more information, see List Organization Limits in the *REST API Developer Guide*.

[1]To request a higher number of standard-volume events delivered to CometD clients, contact Salesforce to purchase an add-on license. The add-on license increases your daily limit of delivered events by 100,000 more events. For example, for Unlimited Edition, the add-on license increases the daily limit of delivered events from 50,000 to 150,000 events. You can purchase multiple add-ons to meet your event requirements for CometD clients. To avoid deployment problems and degradation in service, we recommend that the number of events delivered to CometD clients not exceed 5 million per day. If you require more external events, contact your Salesforce representative to understand how the product can scale to meet your needs.

SEE ALSO:

Considerations for Publishing and Subscribing to Platform Events with Apex and APIs

Change Data Capture Developer Guide: Change Data Capture Allocations

EventBusSubscriber

Represents a trigger, process, or flow that's subscribed to a platform event or a change data capture event. Doesn't include CometD subscribers.

Supported Calls

`describeSObjects()`, `query()`

Special Access Rules

EventBusSubscriber is read only and can only be queried. As of Summer '20 and later, only your Salesforce org's internal users can access this object.

Fields

Field	Details
`ExternalId`	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** The ID of the subscriber. For example, the trigger ID.
`LastError`	**Type** string

Field	Details
	Properties Filter, Group, Nillable, Sort **Description** The error message that the last thrown `EventBus.RetryableException` contains. This field applies to Apex triggers only. Available in API version 43.0 and later.
`Name`	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** The name of the subscribed item, such as the trigger or process name. If the subscribed item's name is "Process", at least one flow Pause element is subscribed to the event.
`Position`	**Type** int **Properties** Filter, Group, Nillable, Sort **Description** The replay ID of the last event that the subscriber processed.
`Retries`	**Type** int **Properties** Filter, Group, Nillable, Sort **Description** The number of times the trigger was retried due to throwing the `EventBus.RetryableException`. This field applies to Apex triggers only. Available in API version 43.0 and later.
`Status`	**Type** picklist **Properties** Filter, Group, Nillable, Restricted picklist, Sort **Description** Indicates the status of the subscriber. Can be one of the following values: • `Running`—The subscriber is actively listening to events. If you modify the subscriber, the subscription continues to process events. • `Error`— The subscriber was disconnected and stopped receiving published events. A trigger reaches this state when it exceeds the number of maximum retries with the `EventBus.RetryableException`. Trigger assertion failures and unhandled exceptions don't cause the error state. We recommend limiting the retries to fewer than

Field	Details
	nine times to avoid reaching this state. When you fix and save the trigger, or for a managed package trigger, if you redeploy the package, the trigger resumes automatically from the tip, starting from new events. Also, you can resume a trigger subscription in the subscription detail page that you access from the platform event page. • `Suspended`—The subscriber is disconnected and can't receive events because a Salesforce admin suspended it or due to an internal error. You can resume a trigger subscription in the subscription detail page that you access from the platform event page. To resume a process, deactivate it and then reactivate it. If you modify the subscriber, the subscription resumes automatically from the tip, starting from new events. For more information, see View and Manage an Event's Subscribers on the Platform Event's Detail Page in the *Platform Events Developer Guide*.
`Tip`	**Type** int **Properties** Filter, Group, Nillable, Sort **Description** The replay ID of the last published event. Note: For high-volume platform events and change events, the value for Tip isn't available and is always -1.
`Topic`	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** The name of the subscription channel that corresponds to a platform event or change event. For a platform event, the topic name is the event name appended with `__e`, such as `MyEvent__e`. For a change event, the topic is the name of the change event, such as `AccountChangeEvent`.
`Type`	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** The subscriber type (`ApexTrigger`). If the subscriber is a process or flow Pause element, the type is blank.

Usage

Use EventBusSubscriber to query details about subscribers to a platform event. You can get all subscribers for a particular event by filtering on the `Topic` field, as follows.

```
SELECT ExternalId, Name, Position, Status, Tip, Type
FROM EventBusSubscriber
WHERE Topic='Low_Ink__e'
```

EventBus Class

Contains methods for publishing platform events.

Namespace

System

IN THIS SECTION:

EventBus Methods

SEE ALSO:

Platform Events Developer Guide: Publishing Platform Events

EventBus Methods

The following are methods for `EventBus`. All methods are static.

IN THIS SECTION:

getOperationId(result)
Returns the UUID of the asynchronous event publishing operation based on the passed-in SaveResult. Use this UUID to correlate the asynchronous publishing result sent on the `/event/PublishStatusEvent` channel.

publish(event)
Publishes the given platform event.

publish(events)
Publishes the given list of platform events.

`getOperationId(result)`

Returns the UUID of the asynchronous event publishing operation based on the passed-in SaveResult. Use this UUID to correlate the asynchronous publishing result sent on the `/event/PublishStatusEvent` channel.

Signature

```
public static String getOperationId(Object result)
```

Parameters

result
Type: Object

The SaveResult that is returned by the `EventBus.publish` call.

Return Value

Type: String

publish(event)

Publishes the given platform event.

Signature

```
public static Database.SaveResult publish(SObject event)
```

Parameters

event
Type: SObject

An instance of a platform event. For example, an instance of *MyEvent__e*. You must first define your platform event object in your org.

Return Value

Type: Database.SaveResult

The result of publishing the given event. `Database.SaveResult` contains information about whether the operation was successful and the errors encountered. If the `isSuccess()` method returns `true`, the publish request is queued in Salesforce and the event message is published asynchronously. For more information, see High-Volume Platform Event Persistence. If `isSuccess()` returns `false`, the event publish operation resulted in errors, which are returned in the `Database.Error` object. This method doesn't throw an exception due to an unsuccessful publish operation.

`Database.SaveResult` also contains the `Id` system field. The `Id` field value isn't included in the event message delivered to subscribers. It isn't used to identify an event message, and isn't always unique.

Usage

- The platform event message is published either immediately or after a transaction is committed, depending on the publish behavior you set in the platform event definition. For more information, see Platform Event Fields in the *Platform Events Developer Guide*.
- Apex governor limits apply. For events configured with the **Publish After Commit** behavior, each method execution is counted as one DML statement against the Apex DML statement limit. You can check limit usage using the Apex `Limits.getDMLStatements()` method. For events configured with the **Publish Immediately** behavior, each method execution is counted against a separate event publishing limit of 150 `EventBus.publish()` calls. You can check limit usage using the Apex `Limits.getPublishImmediateDML()` method.

publish(events)

Publishes the given list of platform events.

Signature

```
public static List<Database.SaveResult> publish(List<SObject> events)
```

Parameters

events
Type: List<sObject>

A list of platform event instances. For example, a list of *MyEvent__e* objects. You must first define your platform event object in your Salesforce org.

Return Value

Type: List<Database.SaveResult>

A list of results, each corresponding to the result of publishing one event. For each event, `Database.SaveResult` contains information about whether the operation was successful and the errors encountered. If the `isSuccess()` method returns `true`, the publish request is queued in Salesforce and the event message is published asynchronously. For more information, see High-Volume Platform Event Persistence. If `isSuccess()` returns `false`, the event publish operation resulted in errors, which are returned in the `Database.Error` object. `EventBus.publish()` can publish some passed-in events, even when other events can't be published due to errors. The `EventBus.publish()` method doesn't throw exceptions caused by an unsuccessful publish operation. It's similar in behavior to the Apex `Database.insert` method when called with the partial success option.

`Database.SaveResult` also contains the `Id` system field. The `Id` field value isn't included in the event message delivered to subscribers. It isn't used to identify an event message, and isn't always unique.

Usage

- The platform event message is published either immediately or after a transaction is committed, depending on the publish behavior you set in the platform event definition. For more information, see Platform Event Fields in the *Platform Events Developer Guide*.
- Apex governor limits apply. For events configured with the **Publish After Commit** behavior, each method execution is counted as one DML statement against the Apex DML statement limit. You can check limit usage using the Apex `Limits.getDMLStatements()` method. For events configured with the **Publish Immediately** behavior, each method execution is counted against a separate event publishing limit of 150 `EventBus.publish()` calls. You can check limit usage using the Apex `Limits.getPublishImmediateDML()` method.

Platform Event Error Status Codes

When publishing an event message results in an error, a status code is returned in the SaveResult or in an event notification.

Synchronous Errors

The following error status codes are returned immediately in the publish call result.

`LIMIT_EXCEEDED`
The number of published platform event messages exceeded the hourly publishing limit or the test limit for event messages published from an Apex test context.

`PLATFORM_EVENT_PUBLISHING_UNAVAILABLE`
Publishing platform event messages failed because a service was temporarily unavailable. Try again later.

PLATFORM_EVENT_ENCRYPTION_ERROR

The platform event messages could not be published due to a problem with encryption. A misconfiguration in your Salesforce org or a general encryption service error can cause this problem.

In Apex, the status code is returned in the `Database.SaveResult` in the `Database.Error` object. In SOAP API, the status code is returned in the `SaveResult` object. In REST API, the status code is returned in the `errors` field in the JSON message.

Asynchronous Errors

To receive asynchronous errors, subscribe to PublishStatusEvent. For more information, see Get the Status of Asynchronous Platform Event Publish Operations (Beta).

The following status code is returned when the asynchronous publish operation of a high-volume platform event fails.

PLATFORM_EVENT_PUBLISH_FAILED

The platform event message could not be published after one or more attempts because of a system error. Try again later.

TriggerContext Class

Provides information about the platform event or change event trigger that's currently executing, such as how many times the trigger was retried due to the `EventBus.RetryableException`. Also, provides a method to resume trigger executions.

Namespace

EventBus

IN THIS SECTION:

TriggerContext Properties

The following are properties for `TriggerContext`.

IN THIS SECTION:

lastError

Read-only. The error message that the last thrown `EventBus.RetryableException` contains.

Signature

```
public String lastError {get;}
```

Property Value

Type: String

Usage

The error message that this property returns is the message that was passed in when creating the `EventBus.RetryableException` exception, as follows.

```
throw new EventBus.RetryableException(
             'Condition is not met, so retrying the trigger again.');
```

`retries`

Read-only. The number of times the trigger was retried due to throwing the `EventBus.RetryableException`.

Signature

```
public Integer retries {get;}
```

Property Value

Type: Integer

TriggerContext Methods

The following are methods for `TriggerContext`.

IN THIS SECTION:

`currentContext()`

Returns an instance of the `EventBus.TriggerContext` class containing information about the currently executing trigger.

Signature

```
public static eventbus.TriggerContext currentContext()
```

Return Value

Type: EventBus.TriggerContext

Information about the currently executing trigger.

`getResumeCheckpoint()`

Returns the replay ID that was set by `setResumeCheckpoint()`. The returned value is the replay ID of the event message after which trigger processing resumes in a new trigger invocation.

Signature

```
public String getResumeCheckpoint()
```

Return Value

Type: String

`setResumeCheckpoint(resumeReplayId)`

Sets a checkpoint in the event stream where the platform event trigger resumes execution in a new invocation. Use this method to recover from limit and uncaught exceptions, or to control the number of events processed in one trigger execution. When calling this method, pass in the replay ID of the last successfully processed event message. When the trigger stops execution before all events in `Trigger.New` are processed, either because of an uncaught exception or intentionally, the trigger is invoked again. The new execution starts with the event message in the stream after the one with the checkpointed Replay ID.

Signature

```
public void setResumeCheckpoint(String resumeReplayId)
```

Parameters

`resumeReplayId`
Type: String

The replay ID of the last successfully processed platform event message, after which to resume processing in a new trigger execution context.

Return Value

Type: void

Usage

The method throws an `EventBus.InvalidReplayIdException` if the supplied Replay ID is not valid—the replay ID is not in the current trigger batch of events, in the `Trigger.new` list.

Example

This snippet shows how to call the method and pass in the replayId property of an event instance.

```
EventBus.TriggerContext.currentContext().setResumeCheckpoint(event.replayId);
```

Standard Platform Event Objects

Check out the standard platform events that Salesforce publishes.

IN THIS SECTION:

Change Data Capture Events

Salesforce Change Data Capture publishes change events, which represent changes to Salesforce records. Changes include record creation, updates to an existing record, deletion of a record, and undeletion of a record. Change Data Capture events are available since API version 44.0.

Change Event Name

Change events are available for all custom objects and a subset of standard objects. The name of a change event is based on the name of the corresponding object for which it captures the changes.

Standard Object Change Event Name

```
<Standard_Object_Name>ChangeEvent
```

Example: `AccountChangeEvent`

Custom Object Change Event Name

```
<Custom_Object_Name>__ChangeEvent
```

Example: `Employee__ChangeEvent`

Subscription Channels

Subscription channels for change events depend on the name of the change event you want to receive notifications for. Also, a generic channel is provided to receive all notifications.

Channel for All Change Events

To receive event messages for all objects selected for Change Data Capture, use this channel:

```
/data/ChangeEvents
```

Standard Object Channel

To receive event messages for changes in a standard object, use this channel:

```
/data/<Standard_Object_Name>ChangeEvent
```

Example: AccountChangeEvent

Custom Object Channel

To receive event messages for changes in a custom object, use this channel:

```
/data/<Custom_Object_Name>__ChangeEvent
```

Example: Employee__ChangeEvent

Change Event Fields

The record fields in the change event correspond to the fields on the associated Salesforce object or entity that triggered the change. Only new or updated fields are included in the event message.

For example, the fields that can be sent in a change event for the Account object are the Account fields. To look up the fields of a standard object, see Object Reference for Salesforce and Lightning Platform.

Each change event also contains header fields. The header fields are included inside the `ChangeEventHeader` field. They contain information about the event, such as whether the change was an update or delete and the name of the entity, like Account, among other things.

The following example shows the structure of a change event message.

```
{
  "data": {
    "schema": "<schema_ID>",
    "payload": {
      "ChangeEventHeader": {
         "entityName" : "...",
         "recordIds" : ["..."],
         "changeType" : "...",
         "changeOrigin" : "...",
         "transactionKey" : "...",
         "sequenceNumber" : "...",
         "commitTimestamp" : "...",
         "commitUser" : "...",
         "commitNumber" : "..."
      },
     "field1":"...",
     "field2":"...",
     . . .
    },
    "event": {
      "replayId": <replayID>
    }
  },
  "channel": "/data/<channel>"
}
```

Event Message Example

The following event is sent for a new account.

```
{
  "data": {
    "schema": "IeRuaY6cbI_HsV8Rv1Mc5g",
    "payload": {
```

```
      "ChangeEventHeader": {
        "entityName": "Account",
        "recordIds": [
          "<record_ID>"
        ],
        "changeType": "CREATE",
        "changeOrigin": "com/salesforce/api/soap/46.0;client=Astro",
        "transactionKey": "001b7375-0086-250e-e6ca-b99bc3a8b69f",
        "sequenceNumber": 1,
        "commitTimestamp": 1556737866,
        "commitNumber": 92847272780,
        "commitUser": "<User_ID>"
      },
      "Name": "Acme",
      "Description": "Everyone is talking about the cloud. But what does it mean?",
      "OwnerId": "<Owner_ID>",
      "CreatedDate": "2019-05-01T12:11:44Z",
      "CreatedById": "<User_ID>",
      "LastModifiedDate": "2019-05-01T12:11:44Z",
      "LastModifiedById": "<User_ID>"
    },
    "event": {
      "replayId": 6
    }
  },
  "channel": "/data/ChangeEvents"
}
```

Resources

For more information about Change Data Capture, see Change Data Capture Developer Guide.

Standard Platform Event Object List

Salesforce publishes standard platform events in response to an action that occurred in the org or to report errors. For example, LoginEventStream monitors user login activity and BatchApexErrorEvent reports errors encountered in batch Apex jobs. You can subscribe to a standard platform event channel using the subscription mechanism that the event supports.

IN THIS SECTION:

AIPredictionEvent

Notifies subscribers when an Einstein feature, such as Prediction Builder or Case Classification, has written prediction results back to a target object and AI prediction field. This object is available in API version 46.0 and later.

AIUpdateRecordEvent

Notifies subscribers when Einstein Case Classification has generated a case field value prediction and potentially updated a case record. This object is available in API version 47.0 and later.

AppointmentSchedulingEvent

Notifies subscribers when an appointment schedule is added, updated, or deleted. This object is available in API version 50.0 and later.

AssetTokenEvent

Notifies subscribers of asset token issuance and registration of a connected device as an Asset. This object is available in API version 39.0 and later.

BatchApexErrorEvent

Notifies subscribers of errors and exceptions that occur during the execution of a batch Apex class. This object is available in API version 44.0 and later.

CommerceDiagnosticEvent

Tracks checkout, pricing, search, and other activity within your Commerce implementation to monitor events and diagnose issues. This object is available in API version 49.0 and later.

ConsentEvent

Notifies subscribers of changes to consent fields or contact information on all core objects. This object is available in API version 50.0 and later.

DatasetExportEvent

Notifies subscribers on the export of a Tableau CRM dataset. This object is available in API version 41.0 and later.

FlowExecutionErrorEvent

Notifies subscribers of errors related to screen flow executions. Messages for this platform event aren't published for autolaunched flows or processes. This object is available in API version 47.0 and later.

FOStatusChangedEvent

Notifies subscribers of changes to the status of a fulfillment order record. Use this event to trigger flows and processes in your order workflow. This object is available in API version 48.0 and later.

OrderStatusChangedEvent

Notifies subscribers of changes to the status of an order record. Use this event to trigger flows and processes in your order workflow. This object is available in API version 51.0 and later.

OrderSummaryCreatedEvent

Notifies subscribers of the creation of an order summary record. Use this event to trigger flows and processes in your order workflow. This object is available in API version 48.0 and later.

OrderSumStatusChangedEvent

Notifies subscribers of changes to the status of an order summary record. Use this event to trigger flows and processes in your order workflow. This object is available in API version 48.0 and later.

PlatformStatusAlertEvent

Notifies subscribers of alerts that occur during the processing of a user request or service job execution. This object is available in API version 45.0 and later.

ProcessExceptionEvent

Notifies subscribers of errors that occur during payment processing (capture, apply, and refund) on an order summary. Use this event to trigger flows and processes in your order workflow. This object is available in API version 50.0 and later.

PublishStatusEvent (Beta)

Tracks the results of one or more asynchronous publish operations of high-volume platform events. The results are grouped by status and event API name. This object is available in API version 49.0 and later.

RemoteKeyCalloutEvent

Notifies subscribers of callouts that fetch encrypted key material from a customer endpoint. This object is available in API versions 45.0 and later.

Real-Time Event Monitoring Objects

Check out the standard platform event and object pairs for Real-Time Event Monitoring. For most platform events used in Real-Time Event Monitoring, corresponding objects store the event data. For more information, see Real-Time Event Monitoring in Salesforce Help.

AIPredictionEvent

Notifies subscribers when an Einstein feature, such as Prediction Builder or Case Classification, has written prediction results back to a target object and AI prediction field. This object is available in API version 46.0 and later.

Supported Calls

`describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	✓
Flows	✓
Processes	✓
Streaming API (CometD)	✓

Streaming API Subscription Channel

`/event/AIPredictionEvent`

Special Access Rules

Users with Customize Application permission have read access.

Fields

Field	Details
`Confidence`	**Type** double **Properties** Nillable **Description** Relative confidence strength of the generated prediction result. Higher values (near 1.0) indicate stronger confidence.
`EventUuid`	**Type** string

Field	Details
	Properties Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`FieldName`	**Type** string **Properties** Nillable **Description** API name of the AI prediction field that prediction results were written back to. An AI prediction field is a custom field created for storing and displaying the prediction scores on records. The name is specified in `ObjectName.FieldName` format, for example, `Lead.predicted_score__c`. For Case Classification prediction results, this field can be null.
`HasError`	**Type** boolean **Properties** Defaulted on create **Description** `true` if there was an error while gathering information to create an event message, `false` otherwise.
`InsightId`	**Type** string **Properties** Nillable **Description** The unique ID of the created AIRecordInsight record that generated the event message.
`PredictionEntityId`	**Type** string **Properties** Nillable **Description** The unique ID of the created AIInsightValue record associated with the AIRecordInsight that generated the event message.
`ReplayId`	**Type** string

Field	Details
	Properties Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`TargetId`	**Type** string **Properties** Nillable **Description** The unique ID of the record Einstein is writing prediction results to.

Usage

When Einstein writes prediction results back to AI prediction fields, record save custom logic, such as Apex triggers, workflow rules, and assignment rules, aren't run for efficiency reasons. To add custom logic based on Einstein prediction results, subscribe to AIPredictionEvent for notifications of prediction result updates. Every time prediction results are written back to a Salesforce record, an AIPredictionEvent event is created and AIPredictionEvent subscribers are notified.

SEE ALSO:

Object Reference for Salesforce and Lightning Platform : AIRecordInsight

AIUpdateRecordEvent

Notifies subscribers when Einstein Case Classification has generated a case field value prediction and potentially updated a case record. This object is available in API version 47.0 and later.

Supported Calls

`describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	✓
Flows	✓
Processes	✓
Streaming API (CometD)	✓

Streaming API Subscription Channel

`/event/AIUpdateRecordEvent`

Fields

Field	Details
`ErrorCode`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** Indicates whether an error occurred in the automatic case update, and describes the nature of the error. Values are: • `none`—No error occurred. • `entity_locked`—The case is locked for editing by an approval process. • `no_access`—The selected Einstein user or automatic process user doesn't have permission to make the update. For example, the user needs permission to update cases or the case field in question, or needs sharing-based access to the case. • `validation_rule`—The update violates a case validation rule. • `other`—A different error occurred. Available in API version 50.0 and later.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`IsUpdated`	**Type** boolean **Properties** Defaulted on create **Description** Indicates whether the related case (`RecordId`) was updated by Einstein Case Classification. If a case value prediction falls below the required confidence level selected in the predictive model, the case is not updated (`false`). If the case value prediction meets the confidence level requirement, the case field is updated and the case is saved (`true`). Available in API version 49.0 and later.

Field	Details
`RecordId`	**Type** string **Properties** None **Description** The record in which the prediction results are written.
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`UpdatedFields`	**Type** complexvalue **Properties** Nillable **Description** Indicates which record fields, if any, were updated in the event. Available in API version 49.0 and later.

Usage

When Einstein Case Classification generates a case field value prediction, an AIUpdateRecordEvent event message is generated whether or not Einstein updates the case. A prediction will not result in a case update if its confidence level falls below the confidence threshold defined for the field's Automate Value setting. Subscribe to AIUpdateRecordEvent to be notified of such changes and to rerun case routing logic.

In API versions 48.0 and earlier, AIUpdateRecordEvent event messages are generated only if a case is updated.

AppointmentSchedulingEvent

Notifies subscribers when an appointment schedule is added, updated, or deleted. This object is available in API version 50.0 and later.

Supported Calls

`describeSObjects()`

Special Access Rules

AppointmentSchedulingEvent is available as part of Salesforce Scheduler.

Supported Subscribers

Subscriber	Supported?
Apex Triggers	✔
Flows	
Processes	
Streaming API (CometD)	✔

Streaming API Subscription Channel

`/event/AppointmentSchedulingEvent`

Fields

Field	Details
`AssignedResourceFields`	**Type** AsgnRsrcApptSchdEvent[] **Properties** Nillable **Description** The assigned resources associated with the appointment.
`ChangeType`	**Type** string **Properties** Nillable **Description** The operation that caused the change. For example: CREATE, UPDATE, DELETE.
`CorrelationId`	**Type** string **Properties** Nillable **Description** The universally unique identifier (UUID) that correlates the appointment with the platform event.

Field	Details
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`ServiceAppointmentFields`	**Type** SvcApptSchdEvent[] **Properties** Nillable **Description** The service appointments associated with the appointment.

Example

This example event message is for a new appointment with two assigned resources.

```
{
  "schema": "Zog7FKcPWV9DeEIEVHsoug",
  "payload": {
    "CreatedById": "005xx000001X7dlAAC",
    "ChangeType": "CREATE",
    "ServiceAppointmentFields": {
      "ParentRecordId": "001RM000003rwkfYAA",
      "ContactId": "003RM000006EpajYAC",
      "Status": "None",
      "AdditionalInformation": "Sample additional information",
      "ServiceTerritoryId": "0Hhxx0000004mu4",
      "Comments": "Sample comment",
      "Email": "abc@example.com",
      "Address": "1 Market Street San Francisco CA 94105 United States",
      "WorkTypeId": "08qxx0000004C92",
      "WorkTypeBlockTimeBeforeAppointment": 30,
      "WorkTypeBlockTimeAfterAppointment": 1,
```

```
      "WorkTypeBlockTimeBeforeUnit": "minutes",
      "WorkTypeBlockTimeAfterUnit": "hours",
      "ServiceAppointmentId": "08pxx0000005Ip6",
      "ScheduledEndTime": "2020-02-28T00:45:00.000Z",
      "Subject": "Apply for Privileged Customer Card",
      "AppointmentType": "null",
      "StatusCategory": "None",
      "DurationInMinutes": 60,
      "Phone": "4155551212",
      "ScheduledStartTime": "2020-02-27T23:45:00.000Z"
    },
    "AssignedResourceFields": [
      {
        "IsPrimaryResource": true,
        "ServiceResourceUserName": "Rachel Adams",
        "ServiceResourceUserId": "005xx000001X7dl",
        "AssignedResourceId": "03rxx0000004gLc",
        "ServiceResourceId": "0Hnxx0000004C92",
        "ServiceResourceUserEmail": "ra@example.com",
        "IsRequiredResource": true
      },
      {
        "IsPrimaryResource": false,
        "ServiceResourceUserName": "Andrew Collins",
        "ServiceResourceUserId": "005xx000001XPNl",
        "AssignedResourceId": "03rxx0000004gNE",
        "ServiceResourceId": "0Hnxx0000006z8q",
        "ServiceResourceUserEmail": "ac@example.com",
        "IsRequiredResource": false
      }
    ],
    "CreatedDate": "2020-02-25T01:57:39.936Z",
    "CorrelationId": "d7c0bbGiUObLF6BD3NaG"
  },
  "event": {
    "replayId": 3
  }
}
```


IN THIS SECTION:

AsgnRsrcApptSchdEvent

Represents the assigned resources that are part of the AppointmentSchedulingEvent. This object is included in a streamed notification received on the /event/AppointmentSchedulingEvent channel. You can't subscribe to the AsgnRsrcApptSchdEvent channel directly. This object is available in API version 50.0 and later.

SvcApptSchdEvent

Represents the service appointment event. This object is included in a streamed notification received on the /event/AppointmentSchedulingEvent channel. You can't subscribe to the SvcApptSchdEvent channel directly. This object is available in API version 50.0 and later.

AsgnRsrcApptSchdEvent

Represents the assigned resources that are part of the AppointmentSchedulingEvent. This object is included in a streamed notification received on the /event/AppointmentSchedulingEvent channel. You can't subscribe to the AsgnRsrcApptSchdEvent channel directly. This object is available in API version 50.0 and later.

Supported Calls

`describeSObjects()`

Fields

Field	Details
`AssignedResourceId`	**Type** string **Properties** Nillable **Description** ID of the assigned resource.
`ChangedFields`	**Type** complexvalue **Properties** Nillable **Description** A list of fields that changed.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`IsPrimaryResource`	**Type** boolean **Properties** Defaulted on create **Description** Indicates whether the resource is primary.
`IsRequiredResource`	**Type** boolean

Field	Details
	Properties Defaulted on create **Description** Indicates whether the resource is required.
`ServiceResourceId`	**Type** string **Properties** Nillable **Description** ID of the service resource assigned to the event.
`ServiceResourceUserEmail`	**Type** string **Properties** Nillable **Description** Email of the service resource user assigned to the event.
`ServiceResourceUserId`	**Type** string **Properties** Nillable **Description** ID of the user record associated with the service resource assigned to the event.
`ServiceResourceUserName`	**Type** string **Properties** Nillable **Description** Username as per the user record associated with the service resource assigned to the event.

Example

This example shows the assigned resources associated with the event.

```
{
  "IsPrimaryResource": true,
  "ServiceResourceUserName": "Rachel Adams",
  "ServiceResourceUserId": "005xx000001X7dl",
  "AssignedResourceId": "03rxx0000004gLc",
  "ServiceResourceId": "0Hnxx0000004C92",
```

```
  "ServiceResourceUserEmail": "ra@example.com",
  "IsRequiredResource": true
}
```

SvcApptSchdEvent

Represents the service appointment event. This object is included in a streamed notification received on the /event/AppointmentSchedulingEvent channel. You can't subscribe to the SvcApptSchdEvent channel directly. This object is available in API version 50.0 and later.

Supported Calls

`describeSObjects()`

Fields

Field	Details
`AdditionalInformation`	**Type** string **Properties** Nillable **Description** Additional information about the service appointment.
`Address`	**Type** string **Properties** Nillable **Description** The address of the service appointment.
`AppointmentType`	**Type** string **Properties** Nillable **Description** The service appointment type.
`ChangedFields`	**Type** complexvalue **Properties** Nillable **Description** List of fields that changed.

Field	Details
`Comments`	**Type** string **Properties** Nillable **Description** Comments about the service appointment.
`ContactId`	**Type** string **Properties** Nillable **Description** ID of the contact associated with the service appointment.
`DurationInMinutes`	**Type** double **Properties** Nillable **Description** The duration of the service appointment in minutes.
`Email`	**Type** string **Properties** Nillable **Description** The email associated with the service appointment.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`ParentRecordId`	**Type** string **Properties** Nillable

Field	Details
	Description ID of the parent record associated with the service appointment.
`Phone`	**Type** string **Properties** Nillable **Description** The phone number associated with the service appointment.
`ScheduledEndTime`	**Type** dateTime **Properties** Nillable **Description** The scheduled end time of the service appointment.
`ScheduledStartTime`	**Type** dateTime **Properties** Nillable **Description** The scheduled start time of the service appointment.
`ServiceAppointmentId`	**Type** string **Properties** Nillable **Description** ID of the service appointment.
`ServiceTerritoryId`	**Type** string **Properties** Nillable **Description** ID of the service territories associated with the service appointment.
`Status`	**Type** string **Properties** Nillable

Field	Details
	Description The status of the service appointment.
`StatusCategory`	**Type** string **Properties** Nillable **Description** The status category of the service appointment.
`Subject`	**Type** string **Properties** Nillable **Description** The subject of the service appointment.
`WorkTypeBlockTimeAfterAppointment`	**Type** int **Properties** Nillable **Description** The period of time occurring after the appointment that is typically blocked for this work type.
`WorkTypeBlockTimeAfterUnit`	**Type** string **Properties** Nillable **Description** The unit of the period specified for WorkTypeBlockTimeAfterAppointment. Values include `hour` and `minute`.
`WorkTypeBlockTimeBeforeAppointment`	**Type** int **Properties** Nillable **Description** The period of time occurring before the appointment that is typically blocked for this work type.

Field	Details
`WorkTypeBlockTimeBeforeUnit`	**Type** string **Properties** Nillable **Description** The unit of the period specified for WorkTypeBlockTimeBeforeAppointment. Values include `hour` and `minute`.
`WorkTypeId`	**Type** string **Properties** Nillable **Description** ID of the work type associated with the service appointment.

Example

This example shows the service appointment fields associated with the event.

```
{
  "ParentRecordId": "001RM000003rwkfYAA",
  "ContactId": "003RM000006EpajYAC",
  "Status": "None",
  "AdditionalInformation": "Sample additional information",
  "ServiceTerritoryId": "0Hhxx0000004mu4",
  "Comments": "Sample comment",
  "Email": "abc@example.com",
  "Address": "1 Market Street San Francisco CA 94105 United States",
  "WorkTypeId": "08qxx0000004C92",
  "WorkTypeBlockTimeBeforeAppointment": 30,
  "WorkTypeBlockTimeAfterAppointment": 1,
  "WorkTypeBlockTimeBeforeUnit": "minutes",
  "WorkTypeBlockTimeAfterUnit": "hours",
  "ServiceAppointmentId": "08pxx0000005Ip6",
  "ScheduledEndTime": "2020-02-28T00:45:00.000Z",
  "Subject": "Apply for Chase Sapphire Preferred Card",
  "AppointmentType": "null",
  "StatusCategory": "None",
  "DurationInMinutes": 60,
  "Phone": "4157286216",
  "ScheduledStartTime": "2020-02-27T23:45:00.000Z"
}
```

AssetTokenEvent

Notifies subscribers of asset token issuance and registration of a connected device as an Asset. This object is available in API version 39.0 and later.

An asset token event records successful completion of an OAuth 2.0 asset token flow for a connected device. An event is published whenever an access token and actor token (optional) are successfully exchanged for an asset token. This object is designed to support custom business processes, such as automatic logging of a case when an event occurs. Create Apex triggers that subscribe to an event and execute after asset token issuance. This object is read only and can't be retrieved using a SOQL query. Asset token events are not displayed in the Setup user interface for Platform Events.

Supported Calls

`describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	✔
Flows	
Processes	
Streaming API (CometD)	✔

Streaming API Subscription Channel

`/event/AssetTokenEvent`

Fields

Field Name	Details
`ActorTokenPayload`	**Type** textarea **Properties** Nillable **Description** If the asset token request included an actor token, the payload portion containing claims about the connected device, asset token, and if applicable, the registered Asset.
`AssetId`	**Type** reference **Properties** Nillable **Description** ID of the Asset record if the Asset was newly created or an existing Asset was linked to in the asset token request.

Field Name	Details
`AssetName`	**Type** string **Properties** Nillable **Description** If specified in the actor token, the display name of the existing Asset. This value is otherwise `null`.
`AssetSerialNumber`	**Type** string **Properties** Nillable **Description** If specified in the actor token, the serial number of the existing Asset. This value is otherwise `null`.
`ConnectedAppId`	**Type** reference **Properties** Nillable **Description** ID of the connected app associated with the access token for the device.
`DeviceId`	**Type** string **Properties** Nillable **Description** ID of the connected device. Value is the `did` (device ID) claim specified in the actor token.
`DeviceKey`	**Type** textarea **Properties** Nillable **Description** If specified in the actor token, the device-specific RSA public key as a JSON Web Key (JWK). Value is the `jwk` claim within the confirmation claim from the actor token.
`EventUuid`	**Type** string

Field Name	Details
	Properties Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`Expiration`	**Type** dateTime **Properties** Nillable **Description** The expiration time on or after which the asset token JWT must not be accepted for processing. A numeric value representing the number of seconds from 1970-01-01T00:00:00Z UTC until the specified UTC date/time, ignoring leap seconds.
`Name`	**Type** string **Properties** Nillable **Description** Display name of the asset token.
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`UserId`	**Type** reference **Properties** Nillable **Description** ID of the user associated with the access token.

Usage

The following example shows how to trigger an action after an asset token event.

```
trigger AssetTokenEventTrigger on AssetTokenEvent (after insert) {
      System.assertEquals(1,Trigger.new.size(),'One record expected');
      AssetTokenEvent event = Trigger.new[0];
      AssetTokenRecord__c record = new AssetTokenRecord__c();
      record.ConnectedAppId__c = event.ConnectedAppId;
      record.UserId__c = event.UserId;
      record.AssetId__c = event.AssetId;
      record.AssetTokenName__c = event.AssetTokenName;
      record.DeviceId__c = event.DeviceId;
      record.DeviceKey__c = event.DeviceKey;
      record.Expiration__c = event.Expiration;
      record.AssetSerialNumber__c = event.AssetSerialNumber;
      record.AssetName__c = event.AssetName;
      record.ActorTokenPayload__c = event.ActorTokenPayload;
      insert(record);
}
```

BatchApexErrorEvent

Notifies subscribers of errors and exceptions that occur during the execution of a batch Apex class. This object is available in API version 44.0 and later.

Batch Apex classes can fire platform events when encountering an error or exception. Clients listening to the event channel can tell how often it failed, which records were in scope at the time of failure, and other exception details.

Supported Calls

`describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	✓
Flows	✓
Processes	✓
Streaming API (CometD)	✓

Streaming API Subscription Channel

`/event/BatchApexErrorEvent`

Special Access Rules

Only the Salesforce Platform can fire this event; Apex code and the API cannot. Users with Customize Application Permission have read access.

Fields

Field Name	Details
`AsyncApexJobId`	**Type** string **Properties** Nillable **Description** The AsyncApexJob record for the batch Apex job that fired this event.
`DoesExceedJobScopeMaxLength`	**Type** boolean **Properties** Defaulted on create **Description** True if the JobScope field is truncated due to the message exceeding the character limit.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`ExceptionType`	**Type** string **Properties** Nillable **Description** The Apex exception type name. Internal platform errors are represented as the `System.UnexpectedException` type.
`JobScope`	**Type** textarea **Properties** Nillable **Description** The Record IDs that are in scope if the event was fired from the `execute()` method of a batch job. If the batch job uses custom iterators instead of sObjects, `JobScope` is the `toString()` representation of the iterable objects. Maximum length is 40000 characters.

Field Name	Details
`Message`	**Type** string **Properties** Nillable **Description** Exception message text. Maximum length is 5000 characters.
`Phase`	**Type** string **Properties** Nillable **Description** The phase of the batch job when it encountered an error. **Possible Values** • START • EXECUTE • FINISH
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`RequestId`	**Type** string **Properties** Nillable **Description** The unique ID of the batch job that fired the event. Event monitoring customers can use this information to correlate the error with logging information.
`StackTrace`	**Type** string **Properties** Nillable

Field Name	Details
	Description The Apex stacktrace of the exception, if available. Maximum length is 5000 characters.

Usage

`BatchApexErrorEvent` messages are generated by batch Apex jobs that implement the `Database.RaisesPlatformEvents` interface and have unhandled Apex exceptions during processing. For more information, see the Apex Developer Guide.

CommerceDiagnosticEvent

Tracks checkout, pricing, search, and other activity within your Commerce implementation to monitor events and diagnose issues. This object is available in API version 49.0 and later.

Supported Calls

`create(),describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	✓
Flows	✓
Processes	✓
Streaming API (CometD)	✓

Streaming API Subscription Channel

`/event/CommerceDiagnosticEvent`

Special Access Rules

CommerceDiagnosticEvent is available only if the B2B Commerce license is enabled.

Fields

Field	Details
`B2bEdition`	**Type** string

Field	Details
	Properties Create, Nillable **Description** The edition of B2B Commerce. The edition can include Lightning (LB2B), CCRZ, or future flavors. This field is available in API version 51.0 and later.
`B2bVersion`	**Type** string **Properties** Create, Nillable **Description** This field is optional. For a managed package, `B2BVersion` includes Major, Minor, Patch revision numbers. For Lightning, `B2BVersion` includes the optional service version. This field is available in API version 51.0 and later.
`BrowswerDeviceType`	**Type** int **Properties** Create, Nillable **Description** A code used to identify the browser and device type. This field is available in API version 51.0 and later. The code is in the format "BBVVVXYZ," with the following signification: • BB — Two digits that indicate the browser type. – INTERNET_EXPLORER: "10" – CHROME: "13" – FIREFOX: "11" – SAFARI: "14" – OPERA: "15" – ANDROID_WEBKIT: "16" – NETSCAPE: "17" – OTHER_WEBKIT: "18" – OTHER_GECKO: "19" – OTHER_KHTML: "20" – OTHER_MOBILE: "21" – SALESFORCE_DESKTOP: "22" – BLACKBERRY: "23" – GOOD_ACCESS: "24" – EDGE: "25" – SALESFORCE_MOBILE: "26"

Field	Details
	• VVV—Three digits that indicate version, with leading zeroes. • XYZ—Browser-type specific flags or options. Each digit in XYZ represents a different flag depending on the BrowserType: – X=1: If the parser recognizes a "touch" browser. Here, touch means the older touch native client, not that the device supports touch. – Y=1: If the parser recognizes a browser in compatibility mode. Only for IE. – Z=1: If the browser is recognized as `MOBILE`. – Z=2: If the browser is recognized as `PHONE`. – Z=3: If the browser is recognized as `TABLET`. – Z=4: If the browser is a recognized as `MEDIA PLAYER`. – Z=6: Only for Opera Mini.
`ContextId`	**Type** string **Properties** Create, Nillable **Description** The Key Business Domain Value in which the operation is done. For example, for Cart, the `ContextId` is *`cartId`*.
`ContextId2`	**Type** string **Properties** Create, Nillable **Description** Another field used to identify a context ID for a given operation.
`ContextMap`	**Type** string **Properties** Create, Nillable **Description** A JSON string that captures extra operational context or other diagnostic information.
`CorrelationId`	**Type** string **Properties** Create, Nillable **Description** Used to correlate client and server calls, and other async calls to Commerce subsystems. Calls can take place across several services and operations.

Field	Details
`Count`	**Type** int **Properties** Create, Nillable **Description** The number of records impacted by an operation.
`EffectiveAccountId`	**Type** string **Properties** Create, Nillable **Description** The Commerce Effective Account ID in the context of an operation.
`ErrorCode`	**Type** string **Properties** Create, Nillable **Description** The API error code that appears when an operation fails.
`ErrorMessage`	**Type** string **Properties** Create, Nillable **Description** The user-friendly error message that appears when an operation fails.
`EventDate`	**Type** dateTime **Properties** Create, Nillable **Description** The date when the event occurred.
`EventIdentifier`	**Type** string **Properties** Create, Nillable

Field	Details
	Description The unique ID of the event, which is shared with the corresponding object. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`. Use this field value to correlate the event with its corresponding object.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`IsRetry`	**Type** boolean **Properties** Create, Defaulted on create **Description** Describes whether an event occurred during a retried operation (`true`), or not (`false`). Default value is `false`.
`Operation`	**Type** string **Properties** Create, Nillable **Description** The operation where the event originated. For example, `CreateCart`, `EditCart`, and `CreateOrder`.
`OperationStage`	**Type** string **Properties** Create, Nillable **Description** The stage of the operation where the event originated. This value varies depending on the operation.
`OperationStatus`	**Type** string **Properties** Create, Nillable

Field	Details
	Description The status of the operation. Values include: • `Success` • `SystemError` • `AdminError` • `UserError` • `DependencyError`
`OperationTime`	**Type** string **Properties** Create, Nillable **Description** Duration of the operation in minutes and/or seconds.
`OsVersion`	**Type** int **Properties** Create, Nillable **Description** Code used to identify the operating system and version. `OsVersion` is equal to 9999 for an unknown platform. This field is available in API version 51.0 and later.
`RelatedEventIdentifier`	**Type** string **Properties** Create, Nillable **Description** EventIdentifier (UUID) of the related event.
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`ServiceName`	**Type** string

Field	Details
	Properties Create, Nillable **Description** The service where the event originated. When Commerce generates the event, possible values include: • `BuyerGroup` • `BuyerAccount` • `BuyerManagement` • `Cart` • `CartAsync` • `Checkout` • `Entitlements` • `Order` • `Pricing` • `ProductEtl` • `Products` • `ReOrder` • `Search` • `Storefront` • `Integration` • `Wishlist` • `ExternalManagedAccouts` • `EffectiveAccountService` • `EffectiveAccountUIService`
`UserId`	**Type** string **Properties** Create, Nillable **Description** The ID of the user associated with this event.
`Username`	**Type** string **Properties** Create, Nillable **Description** Reserved for future use.

Field	Details
`WebStoreId`	**Type** string **Properties** Create, Nillable **Description** The ID of the Webstore associated with this event.
`WebStoreType`	**Type** string **Properties** Create, Nillable **Description** The type of webstore. For example: `B2B`, `B2C`, and `OMS`. This field is available in API version 51.0 and later.

SEE ALSO:

Subscribing to Platform Events

ConsentEvent

Notifies subscribers of changes to consent fields or contact information on all core objects. This object is available in API version 50.0 and later.

Supported Calls

`describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	✓
Flows	✓
Processes	✓
Streaming API (CometD)	✓

Streaming API Subscription Channel

`/event/ConsentEvent`

Special Access Rules

Users with ReadAllData or PrivacyDataAccess permissions have read access.

Fields

Field	Details
`AssociatedIds`	**Type** string **Properties** Nillable **Description** A list of IDs associated with the changed record. Possible IDs are: • `globalPartyId` • `individual` • `lead` • `contact` • `personAccount` • `user` • `contactPoint` • `contactPointConsent` • `contactPointTypeConsent`
`ChangeInitiator`	**Type** string **Properties** Nillable **Description** The ID of the user who changed the record.
`ChangeTimestamp`	**Type** dateTime **Properties** Nillable **Description** Indicates the date and time the change event occurred.
`ChangeType`	**Type** picklist **Properties** Nillable, Restricted picklist

Field	Details
	Description Indicates the type of change made to the record. Possible values are: • `Create` • `Delete` • `Undelete` • `Unknown` • `Update`
`ConsentCaptureSource`	**Type** string **Properties** Nillable **Description** Indicates how consent was captured. For example, if the ConsentCaptureType is a website, the ConsentCaptureSource is the website URL.
`ConsentCaptureType`	**Type** string **Properties** Nillable **Description** Indicates the type of source consent was captured through. For example, a website or online form.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`NewValues`	**Type** string **Properties** Nillable **Description** Indicates new values that were added to the object, if relevant.

Field	Details
`ObjectName`	**Type** string **Properties** Nillable **Description** The name of the object for which the change event was captured.
`RecordId`	**Type** string **Properties** Nillable **Description** The ID of the record that was changed.
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.

DatasetExportEvent

Notifies subscribers on the export of a Tableau CRM dataset. This object is available in API version 41.0 and later.

Supported Calls

`create()`, `describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	✔
Flows	✔
Processes	✔
Streaming API (CometD)	✔

Streaming API Subscription Channel

`/event/DatasetExportEvent`

Special Access Rules

DatasetExportEvent is available only if the Tableau CRM license is enabled.

Fields

Field	Details
`DataflowInstanceId`	**Type** string **Properties** Create, Nillable **Description** The ID of the dataflow instance for the dataset.
`DataflowExportId`	**Type** string **Properties** Create, Nillable **Description** The ID of the dataset export.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message.
`Message`	**Type** string **Properties** Create, Nillable **Description** The message for the dataset export.
`Owner`	**Type** string **Properties** Create, Nillable

Field	Details
	Description The owner of the dataset export.
`PublisherInfo`	**Type** string **Properties** Create, Nillable **Description** The publisher information for the dataset export.
`PublisherType`	**Type** picklist **Properties** Create, Nillable, Restricted picklist **Description** The publisher type for the dataset export. Values include: • `EinsteinDiscovery`
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`Status`	**Type** picklist **Properties** Create, Nillable, Restricted picklist **Description** The status the dataset export. Values include: • `Cancelled` • `Completed` • `Failed` • `InProgess` • `New`

FlowExecutionErrorEvent

Notifies subscribers of errors related to screen flow executions. Messages for this platform event aren't published for autolaunched flows or processes. This object is available in API version 47.0 and later.

Supported Calls

`describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	
Flows	✓
Processes	✓
Streaming API (CometD)	

Fields

Field	Details
`ContextObject`	**Description** Reserved for future use.
`ContextRecordId`	**Description** Reserved for future use.
`ElementApiName`	**Type** string **Properties** Nillable **Description** The API name of the flow element that was executed when the flow execution error occurred.
`ElementType`	**Type** string **Properties** Nillable **Description** The type of flow element.
`ErrorId`	**Type** string

Field	Details
	Properties Nillable **Description** The ID of the error.
`ErrorMessage`	**Type** string **Properties** Nillable **Description** The message about the error that occurred.
`EventDate`	**Type** dateTime **Properties** None **Description** Required. The date and time when the error occurred. This field always contains a value.
`EventIdentifier`	**Type** string **Properties** None **Description** Required. The unique ID of the event, which is shared with the corresponding storage object. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`. Use this field to correlate the event with its storage object. This field always contains a value.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`EventType`	**Type** string **Properties** None

Field	Details
	Description Required. The type of flow event. Valid value is Error—An event that occurs when a flow execution generates an error. This field always contains a value.
`ExtendedErrorCode`	**Type** string **Properties** Nillable **Description** The code that references more details about the error.
`FlowApiName`	**Type** string **Properties** None **Description** Required. The API name of the flow that the error occurred for. This field always contains a value.
`FlowExecutionEndDate`	**Description** Reserved for future use.
`FlowExecutionStartDate`	**Type** dateTime **Properties** Nillable **Description** The date and time when the error-generating flow execution starts.
`FlowNamespace`	**Type** string **Properties** Nillable **Description** The namespace of the error-generating flow.
`FlowVersionId`	**Type** string **Properties** None **Description** Required. The ID of the error-generating flow version. This field always contains a value.

Field	Details
`InterviewBatchId`	**Description** Reserved for future use.
`InterviewGuid`	**Type** string **Properties** None **Description** Required. The globally unique identifier of the error-generating flow interview. This field always contains a value.
`InterviewRequestId`	**Description** Reserved for future use.
`InterviewStartDate`	**Type** dateTime **Properties** None **Description** Required. The date and time when the error-generating flow interview starts. This field always contains a value.
`InterviewStartedById`	**Type** reference **Properties** None **Description** Required. The ID of the flow interview when it was started. This field always contains a value.
`ProcessType`	**Type** string **Properties** Nillable **Description** The type of the flow. Valid value is: • `Flow`—A flow that requires user interaction because it contains one or more screens or local actions, choices, or dynamic choices. In the UI and Salesforce Help, it's a screen flow. Screen flows can be launched from the UI, such as with a flow action, Lightning page, or web tab.
`RelatedRecordId`	**Description** Reserved for future use.

Field	Details
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`StageQualifiedApiName`	**Description** Reserved for future use.

FOStatusChangedEvent

Notifies subscribers of changes to the status of a fulfillment order record. Use this event to trigger flows and processes in your order workflow. This object is available in API version 48.0 and later.

Supported Calls

`describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	✔
Flows	✔
Processes	✔
Streaming API (CometD)	✔

Streaming API Subscription Channel

`/event/FOStatusChangedEvent`

Special Access Rules

FOStatusChangedEvent is available as part of Salesforce Order Management.

Fields

Field	Details
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`FulfillmentOrderId`	**Type** reference **Properties** Nillable **Description** ID of the FulfillmentOrder whose status changed. This value is functionally required, but is nillable because fulfillment order records can be deleted to comply with data protection and privacy requirements.
`NewStatus`	**Type** picklist **Properties** None **Description** Required. The new value of the Status field on the FulfillmentOrder. Possible values are defined by the Status field picklist on the FulfillmentOrder object.
`NewStatusCategory`	**Type** picklist **Properties** Restricted picklist **Description** Required. The new value of the StatusCategory field on the FulfillmentOrder. Possible values are: • `Activated` • `Cancelled` • `Closed` • `Draft` • `Fulfilling`

Field	Details
`OldStatus`	**Type** picklist **Properties** Nillable **Description** The previous value of the Status field on the FulfillmentOrder. Possible values are defined by the Status field picklist on the FulfillmentOrder object.
`OldStatusCategory`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The previous value of the StatusCategory field on the FulfillmentOrder. Possible values are: • `Activated` • `Cancelled` • `Closed` • `Draft` • `Fulfilling`
`OrderSummaryId`	**Type** reference **Properties** Nillable **Description** ID of the OrderSummary associated with the FulfillmentOrder.
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.

OrderStatusChangedEvent

Notifies subscribers of changes to the status of an order record. Use this event to trigger flows and processes in your order workflow. This object is available in API version 51.0 and later.

Supported Calls

`describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	✓
Flows	✓
Processes	✓
Streaming API (CometD)	✓

Streaming API Subscription Channel

`/event/OrderStatusChangedEvent`

Fields

Field	Details
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`NewStatus`	**Type** picklist **Properties** Restricted picklist **Description** The order's status after the status change. Possible values are: • `Activated` • `Draft`

Field	Details
`NewStatusCode`	**Type** picklist **Properties** Restricted picklist **Description** The order `StatusCode` after the status change. Possible values are: • `Activated` • `Canceled` • `Draft` • `Expired`
`OldStatus`	**Type** picklist **Properties** Restricted picklist **Description** The order's status before the status change. Possible values are: • `Activated` • `Draft`
`OldStatusCode`	**Type** picklist **Properties** Restricted picklist **Description** The order `StatusCode` before the status change. Possible values are: • `Activated` • `Canceled` • `Draft` • `Expired`
`OrderId`	**Type** reference **Properties** Nillable **Description** ID of the order whose status was changed. Used only if the order is an Original Order.

Field	Details
`RelatedOrderId`	**Type** reference **Properties** Nillable **Description** ID of the order whose status was changed. Used only if the order isn't an Original Order.
`RelatedOrderType`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The type of related order. Shown only if the order with the changed status isn't an OriginalOrder. Possible values are: • `Change Order` • `Reduction Order`
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.

Usage

To use OrderStatusChangedEvent, Enable Order Events must be enabled in the Order Settings page.

When an order is created and activated in one transaction, `OldStatus` is `Draft` and `NewStatus` is `Activated`.

When an order's status is updated multiple times in one transaction, `OldStatus` is the status at the beginning of the transaction before any changes. `NewStatus` is the final status after all updates.

OrderSummaryCreatedEvent

Notifies subscribers of the creation of an order summary record. Use this event to trigger flows and processes in your order workflow. This object is available in API version 48.0 and later.

Supported Calls

`describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	✓
Flows	✓
Processes	✓
Streaming API (CometD)	✓

Streaming API Subscription Channel

`/event/OrderSummaryCreatedEvent`

Special Access Rules

OrderSummaryCreatedEvent is available as part of Salesforce Order Management.

Fields

Field	Details
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`OrderId`	**Type** reference **Properties** Nillable **Description** ID of the original order associated with the created OrderSummary.
`OrderSummaryId`	**Type** reference **Properties** Nillable

Field	Details
	Description ID of the created OrderSummary
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.

OrderSumStatusChangedEvent

Notifies subscribers of changes to the status of an order summary record. Use this event to trigger flows and processes in your order workflow. This object is available in API version 48.0 and later.

Supported Calls

`describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	✔
Flows	✔
Processes	✔
Streaming API (CometD)	✔

Streaming API Subscription Channel

`/event/OrderSumStatusChangedEvent`

Special Access Rules

OrderSumStatusChangedEvent is available as part of Salesforce Order Management.

Fields

Field	Details
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`NewStatus`	**Type** picklist **Properties** Defaulted on create **Description** Required. The new value of the Status field on the OrderSummary. Possible values are based on the OrderSummary statuses defined in your org.
`OldStatus`	**Type** picklist **Properties** Defaulted on create **Description** Required. The previous value of the Status field on the OrderSummary. Possible values are based on the OrderSummary statuses defined in your org.
`OrderId`	**Type** reference **Properties** Nillable **Description** ID of the original order associated with the OrderSummary.
`OrderSummaryId`	**Type** reference **Properties** Nillable **Description** The ID of the OrderSummary that changed. This value is functionally required, but is nillable because order summary records can be deleted to comply with data protection and privacy requirements.

Field	Details
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.

PlatformStatusAlertEvent

Notifies subscribers of alerts that occur during the processing of a user request or service job execution. This object is available in API version 45.0 and later.

For example, suppose that a formula is evaluated as part of processing user requests. A platform event message can be generated during the processing of a user request when an error is encountered from evaluating an invalid formula.

Supported Calls

`describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	✓
Flows	✓
Processes	✓
Streaming API (CometD)	✓

Streaming API Subscription Channel

`/event/PlatformStatusAlertEvent`

Special Access Rules

Accessing this object requires the Customize Application, Modify All Data, or Manage Next Best Action Strategies user permission.

Fields

Field	Details
`ApiErrorCode`	**Type** string **Properties** Nillable **Description** The API error code.
`ComponentName`	**Type** string **Properties** Nillable **Description** Name of the component in which the alert occurred.
`EventDate`	**Type** datetime **Properties** Nillable **Description** Date and time when the event occurred. Example: 2018-12-18 21:59:48
`EventIdentifier`	**Type** string **Properties** Nillable **Description** Unique identifier of the event. This field is reserved for future use and is always null in API version 45.0.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`ExtendErrorCode`	**Type** string

Field	Details
	Properties Nillable **Description** Extended error code which provides more details about the issue.
`RelatedEventIdentifier`	**Type** string **Properties** Nillable **Description** EventIdentifier (uuid) of the related event. This field is reserved for future use and is always null in API version 45.0.
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`RequestId`	**Type** string **Properties** Nillable **Description** The unique ID of the service job that fired the event. It can be used to correlate the alert with logging information.
`ServiceJobId`	**Type** string **Properties** Nillable **Description** Service-specific job ID, if one exists. For Next Best Action, the service job ID is `executionToken`. This field can be used to correlate the alert with logging information.
`ServiceName`	**Type** string

Field	Details
	Properties Nillable **Description** Name of the service that triggered the alert.
`StatusType`	**Type** string **Properties** Nillable **Description** Status of the event.
`SubComponentName`	**Type** string **Properties** Nillable **Description** Name of the subcomponent where the alert occurs.
`Subject`	**Type** string **Properties** Nillable **Description** Short description of the alert.
`UserId`	**Type** reference **Properties** Nillable **Description** ID of the user who caused the event.
`Username`	**Type** string **Properties** Nillable **Description** Username of the user who caused the event.

Usage

The following example shows how to process platform status alert events. Only internal services can publish these events. This Apex trigger example fires when a platform event message is published and creates a Chatter post on the admin profile with event details.

```
trigger trigger1 on PlatformStatusAlertEvent (after insert) {
    Id profileId = [select Id from User where User.Profile.Name = 'System Administrator'
limit 1].Id;
    for(PlatformStatusAlertEvent e : trigger.new) {
       Feeditem Post = New Feeditem();
       Post.ParentId= profileId;
       Post.Body = 'Alert occurred in the service: ' + e.ServiceName + '\n' +
            'APIErrorCode: ' + e.APIErrorCode + '\n' +
            'ComponentName: ' + e.ComponentName + '\n' +
            'EventDate: ' + e.EventDate + '\n'+
            'EventIdentifier: ' + e.EventIdentifier + '\n' +
            'ExtendedErrorCode: '+ e.ExtendedErrorCode + '\n' +
            'RelatedEventIdentifier: ' + e.RelatedEventIdentifier + '\n' +
            'ReplayId: ' + e.ReplayId + '\n' +
            'RequestId: ' + e.RequestId + '\n' +
            'ServiceJobId: ' + e.ServiceJobId + '\n' +
            'ServiceName: ' + e.ServiceName + '\n'+
            'StatusType: ' + e.StatusType + '\n' +
            'SubComponentName: ' + e.SubComponentName + '\n' +
            'Subject: '+ e.Subject + '\n' +
            'UserId: ' + e.UserId + '\n' +
            'Username: ' + e.Username + '\n';
       insert Post;
    }
}
```

Example: The code example ultimately displays as a Chatter post that contains the following:

Alert occurred in the service: Next Best Action Strategy

APIErrorCode: INVALID_OPERATION

ComponentName: Strategy_for_error_event_demo

EventDate: 2018-12-18 21:59:48

EventIdentifier: null

ExtendedErrorCode: FORMULA_EXPRESSION_INVALID

RelatedEventIdentifier: null

ReplayId: 63

RequestId: TID:89715900005e40b69a

ServiceJobId: 1014fd4e-4a19-4910-be36-377a7f2f1b75

ServiceName: Next Best Action Strategy

StatusType: Error

SubComponentName: filter_node1

Subject: Something went wrong with filter element 'filter_node1': 'Unknown function ISBLANC. Check spelling.'

UserId: 005RM000001ZnzAYAS

Username: xxx@yyy.com

ProcessExceptionEvent

Notifies subscribers of errors that occur during payment processing (capture, apply, and refund) on an order summary. Use this event to trigger flows and processes in your order workflow. This object is available in API version 50.0 and later.

Supported Calls

`describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	✔
Flows	✔
Processes	✔
Streaming API (CometD)	✔

Streaming API Subscription Channel

`/event/ProcessExceptionEvent`

Fields

Field	Details
`AttachedToId`	**Type** reference **Properties** Create **Description** ID of the object associated with the ProcessException. This is a polymorphic relationship field. **Relationship Name** AttachedTo **Relationship Type** Lookup **Refers To** CreditMemo, Invoice, Order, OrderItem, Payment, PaymentAuthorization, Refund, ReturnOrder
`BackgroundOperationId`	**Type** reference

Field	Details
	Properties Create, Nillable **Description** The operation where the exception occurred. This is a relationship field. **Relationship Name** BackgroundOperation **Relationship Type** Lookup **Refers To** BackgroundOperation
`Description`	**Type** textarea **Properties** Create, Nillable **Description** Detailed description of the ProcessException.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`ExceptionType`	**Type** picklist **Properties** Create **Description** Process type that caused the exception. Possible values are: • `OM Apply Failed` • `OM Capture Failed` • `OM Refund Failed`
`ExternalReference`	**Type** string

Field	Details
	Properties Create, Nillable **Description** Description of external entities associated with the ProcessException.
`Message`	**Type** string **Properties** Create **Description** Short description of the ProcessException
`OrderSummaryId`	**Type** reference **Properties** Create, Nillable **Description** ID of the OrderSummary associated with the ProcessException. The ProcessException component is displayed on this OrderSummary.
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`Severity`	**Type** picklist **Properties** Create, Defaulted on create, Nillable **Description** Severity of the ProcessException. Each severity value corresponds to one severity category. You can customize the severity picklist to represent your business processes. If you customize the severity picklist, include at least one severity value for each severity category. Severity is set to Null when creating events for payment failures. Possible values are: • `High`

Field	Details
	• `Low` • `Null`

PublishStatusEvent (Beta)

Tracks the results of one or more asynchronous publish operations of high-volume platform events. The results are grouped by status and event API name. This object is available in API version 49.0 and later.

Note: As a beta feature, Publish Status Events is a preview and isn't part of the "Services" under your master subscription agreement with Salesforce. Use this feature at your sole discretion, and make your purchase decisions only on the basis of generally available products and features. Salesforce doesn't guarantee general availability of this feature within any particular time frame or at all, and we can discontinue it at any time. This feature is for evaluation purposes only, not for production use. It's offered as is and isn't supported, and Salesforce has no liability for any harm or damage arising out of or in connection with it. All restrictions, Salesforce reservation of rights, obligations concerning the Services, and terms for related Non-Salesforce Applications and Content apply equally to your use of this feature. You can provide feedback and suggestions for Publish Status Events in the Trailblazer Community. **For information on enabling this feature in your org, contact Salesforce.**

Supported Calls

`describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	✔
Flows	✔
Processes	✔
Streaming API (CometD)	✔

Streaming API Subscription Channel

`/event/PublishStatusEvent`

Fields

Field	Details
`AdditionalInfo`	**Type** string **Properties** Nillable

Field	Details
	Description Reserved for future use. Optional information about the event that is not provided in the other fields.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`PublishStatusDetails`	**Type** PublishStatusDetail[] **Properties** Nillable **Description** A list of event publish operation results, including information about each event.
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`Status`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The status of the event publish operations. Possible values are: • `FAILURE`—The event message couldn't be published due to a transient failure in the system. Try republishing the event message. • `INVALID`—The event message caused a validation error. Ensure your event message is valid before you republish it.

Field	Details
	• `ROLLBACK`—The event message was rolled back and wasn't published because the transaction was rolled back. This status applies to events configured with the Publish after Commit publish behavior. • `SUCCESS`—The event message was published successfully.
`Topic`	**Type** string **Properties** Nillable **Description** The API name of the platform event. For example, `MyEvent__e`.

IN THIS SECTION:

PublishStatusDetail (Beta)
Represents the result of an asynchronous publish operation of a high-volume platform event, and contains information about the event. You can't subscribe to this object, but you can subscribe to PublishStatusEvent, which includes this object. This object is available in API version 49.0 and later.

PublishStatusDetail (Beta)

Represents the result of an asynchronous publish operation of a high-volume platform event, and contains information about the event. You can't subscribe to this object, but you can subscribe to PublishStatusEvent, which includes this object. This object is available in API version 49.0 and later.

Note: As a beta feature, Publish Status Events is a preview and isn't part of the "Services" under your master subscription agreement with Salesforce. Use this feature at your sole discretion, and make your purchase decisions only on the basis of generally available products and features. Salesforce doesn't guarantee general availability of this feature within any particular time frame or at all, and we can discontinue it at any time. This feature is for evaluation purposes only, not for production use. It's offered as is and isn't supported, and Salesforce has no liability for any harm or damage arising out of or in connection with it. All restrictions, Salesforce reservation of rights, obligations concerning the Services, and terms for related Non-Salesforce Applications and Content apply equally to your use of this feature. You can provide feedback and suggestions for Publish Status Events in the Trailblazer Community. **For information on enabling this feature in your org, contact Salesforce.**

Supported Calls

`describeSObjects()`

Fields

Field	Details
`EventUuid`	**Type** string

Field	Details
	Properties Nillable **Description** A universally unique identifier (UUID) that identifies the platform event message for which the publish result is provided in this object. This UUID is returned in the SaveResult of a publish call. Use `EventUuid` to match the event result with the event published.
`FailureReason`	**Type** string **Properties** Nillable **Description** The error message explaining the cause of a failed event publish.
`Replay`	**Type** long **Properties** Nillable **Description** If the event publish was successful, this field contains the replay ID of the published event.
`StatusCode`	**Type** string **Properties** Nillable **Description** The error status code of an event publish failure.

RemoteKeyCalloutEvent

Notifies subscribers of callouts that fetch encrypted key material from a customer endpoint. This object is available in API versions 45.0 and later.

The `RemoteKeyCalloutEvent` captures events related to the success or failure of a callout that fetches encrypted key material from an end point. Based on the Platform Events framework, a `RemoteKeyCalloutEvent` is published every time a callout is made to an external key service. This event lets you monitor your cache-only key callouts in real time, and receive alerts about any errors that might occur. You can subscribe to events with after insert Apex triggers and store events in custom objects, security information event management (SIEM), or other back-end systems.

Supported Calls

`describeSObjects()`

Special Access Rules

Access to `RemoteKeyCalloutEvent` data requires purchasing Salesforce Shield or Shield Platform Encryption. The `RemoteKeyCalloutEvent` only applies to callouts that fetch cache-only key material.

Fields

Field	Details
`Details`	**Type** textarea **Properties** Nillable **Description** A JSON representation with more information about the `StatusCode`. Not all status codes (for example, SUCCESS) show a populated Details field. Populated Details fields include key-value pairs that you can use to make Apex triggers and other programmatic assertions.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`ReplayID`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`RequestIdentifier`	**Type** string **Properties** Nillable **Description** When Replay Detection for Cache-Only Keys is enabled, a unique marker automatically generated and sent with every callout. This marker includes the key identifier, a nonce generated for that callout instance, and the nonce required from the endpoint. Available in API version 45.0 and later.

Field	Details
`StatusCode`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** A code that characterizes the error. The full list of status codes is available in the WSDL file for your org (see Generating the WSDL File for Your Organization).
`TenantSecretID`	**Type** reference **Properties** Nillable **Description** The record ID of the tenant secret associated with the published event.

Usage

To view a `RemoteKeyCalloutEvent` and perform custom actions after your callout, create an after insert Apex trigger in Dev Console. These triggers let you assign custom actions for your event. You can set in-app alerts and send email alerts to people who maintain your key service, including users who don't have a Salesforce login.

For longer-term monitoring, you can store `RemoteKeyCalloutEvent` data in custom objects and custom fields, SIEM, or other back-end systems. Then use business rules to send alerts. For example, you can set an alert that sends admins an email when something is wrong with a key service.

Here's an example of an after insert trigger that stores `RemoteKeyCalloutEvent` results in a custom object called Key Service Callout Log. The custom object also draws data from the `TenantSecret` object.

Table 3: Sample Custom Object: Key Service Callout Log

Field Label	Field Name	Data Type
Key Service Callout Log ID	Name	Auto Number
Details	Details__c	Text(255)
Replay Detection	Replay_Detection__c	Text (255)
Status Code	Status_Code__c	Text(255)
Tenant Secret Id	Tenant_Secret_Id__c	Text(50)
Tenant Secret Status	Tenant_Secret_Status__c	Text(255)
Type	Type__c	Text(10)
Version	Version__c	Number(10,0)

If you use this trigger sample, adjust the field API names to suit your needs.

```
trigger RemoteKeyCalloutEvent on RemoteKeyCalloutEvent (after insert){
    List<Key_Service_Callout_Log__c> l = new List<Key_Service_Callout_Log__c>();
    Set<ID> TenantSecretIds = new Set<ID>();
    Map<ID, TenantSecret> TenantSecrets;
    for(RemoteKeyCalloutEvent event : Trigger.new){
       if(event.TenantSecretId != null && !TenantSecretIds.contains(event.TenantSecretId))

            TenantSecretIds.add(event.TenantSecretId);
    }
    if(TenantSecretIds != null && !TenantSecretIds.isEmpty())
      TenantSecrets = new Map<ID, TenantSecret>([SELECT Type, Version, Status FROM
TenantSecret where Id In: TenantSecretIds]);

    for(RemoteKeyCalloutEvent event : Trigger.new){
        Key_Service_Callout_Log__c log = new Key_Service_Callout_Log__c();
      log.Status_Code__c = event.StatusCode;
        log.Tenant_Secret_ID__c = event.TenantSecretId;
          log.Replay_Detection__c = event.RequestIdentifier;
      log.Details__c = event.Details;
        if(TenantSecrets != null && TenantSecrets.containsKey(event.TenantSecretId)){
            log.Type__c = TenantSecrets.get(event.TenantSecretId).Type;
            log.Version__c = TenantSecrets.get(event.TenantSecretId).Version;
            log.Tenant_Secret_Status__c = TenantSecrets.get(event.TenantSecretId).Status;

        }
        l.add(log);
    }

    insert l;
}
```

To troubleshoot callout errors, review the `StatusCode` and `Details` fields. These fields give you information about remote key callout errors or exceptions in raw JSON format. Successful, empty callout, and timeout responses return empty `Details` fields.

Table 4: Cache-Only Key Service Errors and Status Codes

RemoteKeyCalloutEvent Status Code	Error	Tips for Fixing the Problem
DESTROY_HTTP_CODE	The remote key service returned an HTTP error: {000}. A successful HTTP response will return a 200 code.	To find out what went wrong, review the HTTP response code.
ERROR_HTTP_CODE	The remote key service returned an unsupported HTTP response code: {000}. A successful HTTP response will return a 200 code.	To find out what went wrong, review the HTTP response code.
MALFORMED_CONTENT_ENCRYPTION_KEY	The remote key service returned a content encryption key in the JWE that couldn't be decrypted with the certificate's private key. Either the JWE is corrupted, or the content	Check that you set up your named credential properly and are using the correct BYOK-compatible certificate.

RemoteKeyCalloutEvent Status Code	Error	Tips for Fixing the Problem
	encryption key is encrypted with a different key.	
MALFORMED_DATA_ENCRYPTION_KEY	The content encryption key couldn't decrypt the data encryption key that was returned in the remote key service's JWE. The data encryption key is either malformed, or encrypted with a different content encryption key.	Check that you set up your named credential properly and are using the correct BYOK-compatible certificate. Named credentials must call out to an HTTPS endpoint.
MALFORMED_JSON_RESPONSE	We can't parse the JSON returned by your remote key service. Contact your remote key service for help.	Contact your remote key service.
MALFORMED_JWE_RESPONSE	The remote key service returned a malformed JWE token that can't be decoded. Contact your remote key service for help.	Contact your remote key service.
EMPTY_RESPONSE	The remote key service callout returned an empty response. Contact your remote key service for help.	Contact your remote key service.
RESPONSE_TIMEOUT	The remote key service callout took too long and timed out. Try again.	If your key service is unavailable after multiple callout attempts, contact your remote key service.
UNKNOWN_ERROR	The remote key service callout failed and returned an error: {000}.	Contact your remote key service.
INCORRECT_KEYID_IN_JSON	The remote key service returned JSON with an incorrect key ID. Expected: {valid keyID}. Actual: {invalid keyID}.	Check that you set up your named credential properly and are using the correct BYOK-compatible certificate.
INCORRECT_KEYID_IN_JWE_HEADER	The remote key service returned a JWE header with an incorrect key ID. Expected: {valid keyID}. Actual: {invalid keyID}.	Check that you set up your named credential properly and are using the correct BYOK-compatible certificate.
INCORRECT_ALGORITHM_IN_JWE_HEADER	The remote key service returned a JWE header that specified an unsupported algorithm (alg): {algorithm}.	The algorithm for encrypting the content encryption key in your JWE header must be in RSA-OAEP format.
INCORRECT_ENCRYPTION_ALGORITHM_IN_JWE_HEADER	The remote key service returned a JWE header that specified an unsupported encryption algorithm (enc): {your enc}.	The algorithm for encrypting the data encryption key in your JWE header must be in A256GCM format.
INCORRECT_DATA_ENCRYPTION_KEY_SIZE	Data encryption keys encoded in a JWE must be 32 bytes. Yours is {value} bytes.	Make sure that your data encryption key is 32 bytes.
ILLEGAL_PARAMETERS_IN_JWE_HEADER	Your JWE header must use {0}, but no others. Found: {1}.	Remove the unsupported parameters from your JWE header.

RemoteKeyCalloutEvent Status Code	Error	Tips for Fixing the Problem
MISSING_PARAMETERS_IN_JWE_HEADER	Your JWE header is missing one or more parameters. Required: {0}. Found:{1}.	Make sure that your JWE header includes all required values. For example, if Replay Detection is enabled, the JWE header must include the nonce value extracted from the cache-only key callout.
AUTHENTICATION_FAILURE_RESPONSE	Authentication with the remote key service failed with the following error: {error}.	Check the authentication settings for your chosen named credential.
POTENTIAL_REPLAY_ATTACK_DETECTED	The remote key service returned a JWE header with an incorrect nonce value. Expected: {0}. Actual: {1}	Make sure that your JWE header includes the RequestID included in the callout.
UNKNOWN_ERROR	The remote key service callout failed and returned an error: java.security.cert.CertificateExpiredException: NotAfter: {date and time of expiration}	The certificate for your cache-only key expired. Update your cache-only key material to use an active BYOK-compatible certificate.

SEE ALSO:

Apex Developer Guide: Triggers

Apex Developer Guide: Add an Apex Trigger

SOAP API Developer Guide: Custom Objects

Salesforce Help: Cache-Only Key Service

Real-Time Event Monitoring Objects

Check out the standard platform event and object pairs for Real-Time Event Monitoring. For most platform events used in Real-Time Event Monitoring, corresponding objects store the event data. For more information, see Real-Time Event Monitoring in Salesforce Help.

Note: Real-Time Event Monitoring objects sometimes contain sensitive data. Assign object permissions to Real-Time Events accordingly in profiles or permission sets.

Platform Event	Object for Event Storage	Can Be Used in a Transaction Security Policy?
ApiAnomalyEvent	ApiAnomalyEventStore	✓
ApiEventStream	ApiEvent	✓
BulkApiResultEvent	BulkApiResultEventStore	✓
ConcurLongRunApexErrEvent	Not Available	
CredentialStuffingEvent	CredentialStuffingEventStore	✓
Not Available	IdentityVerificationEvent	
Not Available	IdentityProviderEventStore	
LightningUriEventStream	LightningUriEvent	

Platform Event	Object for Event Storage	Can Be Used in a Transaction Security Policy?
ListViewEventStream	ListViewEvent	✓
LoginAsEventStream	LoginAsEvent	
LoginEventStream	LoginEvent	✓
LogoutEventStream	LogoutEvent	
MobileEmailEvent	Not Available	
MobileEnforcedPolicyEvent	Not Available	
MobileScreenshotEvent	Not Available	
MobileTelephonyEvent	Not Available	
PermissionSetEvent (Pilot)	PermissionSetEventStore (Pilot)	✓
ReportAnomalyEvent	ReportAnomalyEventStore	✓
ReportEventStream	ReportEvent	✓
SessionHijackingEvent	SessionHijackingEventStore	✓
UriEventStream	UriEvent	

Note: Real-Time Event monitoring objects that were introduced as part of the beta release in API version 46.0 follow a naming convention that is no longer used in later API versions. In particular:

- The name format of a platform event object was `ObjectNameEventStream`.
- The name format of the corresponding big object used for storage was `ObjectNameEvent`.

New event objects introduced after API version 46.0 use the following standard platform event naming convention.

- The name format of a platform event object is `ObjectNameEvent`.
- The name format of the corresponding object used for storage is `ObjectNameEventStore`.

ApiAnomalyEvent

Track anomalies in how users make API calls. This object is available in API version 50.0 and later.

Supported Calls

`describeSObjects()`

Special Access Rules

Accessing this object requires either the Salesforce Shield or Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Supported Subscribers

Subscriber	Supported?
Apex Triggers	
Flows	
Processes	
Streaming API (CometD)	✔

Fields

Field	Details
`EvaluationTime`	**Type** double **Properties** Nillable **Description** The amount of time it took to evaluate the policy in milliseconds.
`EventDate`	**Type** dateTime **Properties** Nillable **Description** The time when the anomaly was reported. For example, `2020-01-20T19:12:26.965Z`. Milliseconds is the most granular setting.
`EventIdentifier`	**Type** string **Properties** Nillable **Description** The unique ID of the event, which is shared with the corresponding storage object. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`. Use this field to correlate the event with its storage object.
`EventUuid`	**Type** string **Properties** Nillable

Field	Details
	Description A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`LoginKey`	**Type** string **Properties** Nillable **Description** The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring. For example, `lUqjLPQTWRdvRG4`.
`Operation`	**Type** string **Properties** Nillable **Description** The API call that generated the event. For example, `Query`.
`PolicyId`	**Type** reference **Properties** Nillable **Description** The ID of the transaction policy associated with this event. For example, `0NIB000000000KOOAY`.
`PolicyOutcome`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The result of the transaction policy. Possible values include: • `Error`—The policy caused an undefined error when it executed. • `NoAction`—The policy didn't trigger. • `Notified`—A notification was sent to the recipient.
`QueriedEntities`	**Type** string **Properties** Nillable

Field	Details
	Description The type of entities associated with the event.
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`RequestIdentifier`	**Type** string **Properties** Nillable **Description** The unique ID of a single transaction. A transaction can contain one or more events. Each event in a given transaction has the same REQUEST_ID. For example, `3nWgxWbDKWWDIk0FKfF5D`.
`RowsProcessed`	**Type** double **Properties** Nillable **Description** Total row count for the current operation. For example, `2500`.
`Score`	**Type** double **Properties** Nillable **Description** A number from 0 through 100 that represents the anomaly score for the API execution or export tracked by this event. The anomaly score shows how the user's current API activity is different from their typical activity. A low score indicates that the user's current API activity is similar to their usual activity, a high score indicates that it's different.
`SecurityEventData`	**Type** textarea

Field	Details
	Properties Nillable **Description** The set of features about the API activity that triggered this anomaly event. See the Threat Detection documentation for the list of possible features. Let's say, for example, that a user typically downloads 10 accounts but then they deviate from that pattern and download 1,000 accounts. This event is triggered and the contributing features are captured in this field. Potential features include row count, column count, average row size, the day of week, and the browser's user agent used for the report activity. The data captured in this field also shows how much a particular feature contributed to this anomaly event being triggered, represented as a percentage. The data is in JSON format. **Example** This example shows that the average row count contributed more than 95% to the anomaly being triggered. Other anomalous features, such as the autonomous system, day of the week the report was run, the browser used, and the number of columns, contributed much less. `[{ "featureName": "rowCount", "featureValue": "1937568", "featureContribution": "95.00 %" }, { "featureName": "autonomousSystem", "featureValue": "Bigleaf Networks, Inc.", "featureContribution": "1.62 %" }, { "featureName": "dayOfWeek", "featureValue": "Sunday", "featureContribution": "1.42 %" }, { "featureName": "userAgent", "featureValue": "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/76.0.3809.132 Safari/537.36}", "featureContribution": "1.21 %" }, { "featureName": "periodOfDay", "featureValue": "Evening", "featureContribution": ".09 %" }, { "featureName": "averageRowSize", "featureValue": "744", "featureContribution": "0.08 %" },`

Field	Details

	<pre>{
	"featureName": "screenResolution",
	"featureValue": "900x1440",
	"featureContribution": "0.07 %"
	}
	]</pre>

`SessionKey`	**Type** string **Properties** Nillable **Description** The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started. For example, `vMASKIU6AxEr+Op5`.
`SourceIp`	**Type** string **Properties** Nillable **Description** The source IP address of the client that logged in. For example, `126.7.4.2`.
`Summary`	**Type** textarea **Properties** Nillable **Description** A text summary of the API anomaly that caused this event to be created. **Example** • `API was exported from an infrequent network (BigLeaf Networks Inc.)` • `API was generated with an unusually high number of rows (111141)`
`Uri`	**Type** string **Properties** Nillable **Description** The URI of the page that's receiving the request.

Field	Details
`UserAgent`	**Type** string **Properties** Nillable **Description** UserAgent used in HTTP request, post-processed by the server.
`UserId`	**Type** reference **Properties** Nillable **Description** The origin user's unique ID. For example, `005000000000123`.
`Username`	**Type** string **Properties** Nillable **Description** The origin username in the format of `user@company.com` at the time the event was created.

ApiAnomalyEventStore

Tracks anomalies in how users make API calls. ApiAnomalyEventStore is an object that stores the event data of ApiAnomalyEvent. This object is available in API version 50.0 and later.

Supported Calls

`describeLayout()describeSObjects()`, `getDeleted()`, `getUpdated()`, `query()`

Special Access Rules

Accessing this object requires either the Salesforce Shield or Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Fields

Field	Details
`ApiAnomalyEventNumber`	**Type** string

Field	Details
	Properties Autonumber, Defaulted on create, Filter, idLookup, Sort **Description** The unique number automatically assigned to the event when it's created. You can't change the format or value for this field.
`EvaluationTime`	**Type** double **Properties** Filter, Nillable, Sort **Description** The amount of time it took to evaluate the policy in milliseconds.
`EventDate`	**Type** dateTime **Properties** Filter, Sort **Description** Required. The time when the anomaly was reported. For example, `2020-01-20T19:12:26.965Z`. Milliseconds is the most granular setting.
`EventIdentifier`	**Type** string **Properties** Filter, Group, Sort **Description** Required. The unique ID of the event. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`.
`LastReferencedDate`	**Type** dateTime **Properties** Filter, Nillable, Sort **Description** The timestamp for when the current user last viewed a record related to this record.
`LastViewedDate`	**Type** dateTime **Properties** Filter, Nillable, Sort

Field	Details
	Description The timestamp for when the current user last viewed this record. If this value is null, it's possible that this record was referenced (`LastReferencedDate`) and not viewed.
`LoginKey`	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring. For example, `lUqjLPQTWRdvRG4`.
`Operation`	**Type** string **Properties** Nillable **Description** The API call that generated the event. For example, `Query`.
`PolicyId`	**Type** reference **Properties** Filter, Group, Nillable, Sort **Description** The ID of the transaction policy associated with this event. For example, `0NIB000000000KOOAY`.
`PolicyOutcome`	**Type** picklist **Properties** Filter, Group, Nillable, Restricted picklist, Sort **Description** The result of the transaction policy. Possible values include: • `Error`—The policy caused an undefined error when it executed. • `NoAction`—The policy didn't trigger. • `Notified`—A notification was sent to the recipient.
`QueriedEntities`	**Type** string **Properties** Nillable

Field	Details
	Description The type of entities associated with the event.
`RequestIdentifier`	**Type** string **Properties** Nillable **Description** The unique ID of a single transaction. A transaction can contain one or more events. Each event in a given transaction has the same REQUEST_ID. For example, `3nWgxWbDKWWDIk0FKfF5D`.
`RowsProcessed`	**Type** double **Properties** Nillable **Description** Total row count for the current operation. For example, `2500`.
`Score`	**Type** double **Properties** Filter, Nillable, Sort **Description** A number from 0 through 100 that represents the anomaly score for the API execution or export tracked by this event. The anomaly score shows how the user's current API activity is different from their typical activity. A low score indicates that the user's current API activity is similar to their usual activity, a high score indicates that it's different.
`SecurityEventData`	**Type** textarea **Properties** Nillable **Description** The set of features about the API activity that triggered this anomaly event. See the Threat Detection documentation for the list of possible features. Let's say, for example, that a user typically downloads 10 accounts but then they deviate from that pattern and download 1,000 accounts. This event is triggered and the contributing features are captured in this field. Potential features include row count, column count, average row size, the day of week, and the browser's user agent used for the report activity. The data captured in this field also shows how much a particular feature contributed to this anomaly event being triggered, represented as a percentage. The data is in JSON format.

Field	Details
	Example This example shows that the average row count contributed more than 95% to the anomaly being triggered. Other anomalous attributes, such as the autonomous system, day of the week the report was run, the browser used, and the number of columns, contributed much less. `[{ "featureName": "rowCount", "featureValue": "1937568", "featureContribution": "95.00 %" }, { "featureName": "autonomousSystem", "featureValue": "Bigleaf Networks, Inc.", "featureContribution": "1.62 %" }, { "featureName": "dayOfWeek", "featureValue": "Sunday", "featureContribution": "1.42 %" }, { "featureName": "userAgent", "featureValue": "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/76.0.3809.132 Safari/537.36}", "featureContribution": "1.21 %" }, { "featureName": "periodOfDay", "featureValue": "Evening", "featureContribution": ".09 %" }, { "featureName": "averageRowSize", "featureValue": "744", "featureContribution": "0.08 %" }, { "featureName": "screenResolution", "featureValue": "900x1440", "featureContribution": "0.07 %" }]`
`SessionKey`	**Type** string **Properties** Filter, Group, Nillable, Sort

Field	Details
	Description The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started. For example, `vMASKIU6AxEr+Op5`.
`SourceIp`	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** The source IP address of the client that logged in. For example, `126.7.4.2`.
`Summary`	**Type** textarea **Properties** Nillable **Description** A text summary of the report anomaly that caused this event to be created. **Example** • `Report was exported from an infrequent network (BigLeaf Networks Inc.)` • `Report was generated with an unusually high number of rows (111141)`
`Uri`	**Type** string **Properties** Nillable **Description** The URI of the page that's receiving the request.
`UserAgent`	**Type** string **Properties** Nillable **Description** UserAgent used in HTTP request, post-processed by the server.
`UserId`	**Type** reference **Properties** Nillable

Field	Details
	Description The origin user's unique ID. For example, `005000000000123`.
`Username`	**Type** string **Properties** Nillable **Description** The origin username in the format of `user@company.com` at the time the event was created.

Associated Object

This object has the following associated object. It's available in the same API version as this object.

ApiAnomalyEventStoreFeed
Feed tracking is available for the object.

ApiEvent

Tracks these user-initiated read-only API calls: `query()`, `queryMore()`, and `count()`. Captures API requests through SOAP API, REST API, and Bulk API for the Enterprise and Partner WSDLs. Tooling API calls and API calls originating from a Salesforce mobile app aren't captured. You can use ApiEvent in a transaction security policy. ApiEvent is a big object that stores the event data of ApiEventStream. This object is available in API version 46.0 and later.

Supported Calls

`describeSObjects()`, `query()`

Special Access Rules

Accessing this object requires either the Salesforce Shield or Salesforce Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Fields

Field	Details
`AdditionalInfo`	**Type** string **Properties** Nillable **Description** JSON serialization of additional information that's captured from the `HTTP` headers during an API request. For example, `{"field1": "value1", "field2": "value2"}`.

Field	Details
	See Working With `AdditionalInfo`.
`ApiType`	**Type** string **Properties** Nillable **Description** The API that was used. Values include: • `SOAP Enterprise` • `SOAP Partner` • `REST API` • `N/A`
`ApiVersion`	**Type** double **Properties** Nillable **Description** The version number of the API.
`Application`	**Type** string **Properties** Nillable **Description** The application used to access the org. For example, Einstein Analytics or Salesforce Developers Connector.
`Client`	**Type** string **Properties** Nillable **Description** The service that executed the API event. If you're using an unrecognized client, this field returns "Unknown" or a blank value.
`ConnectedAppId`	**Type** reference **Properties** Nillable

Field	Details
	Description The 15-character ID of the connected app associated with the API call. For example, 0H4RM00000000Kr0AI.
`ElapsedTime`	**Type** int **Properties** Nillable **Description** The amount of time it took for the request to complete in milliseconds. The measurement of this value begins before the query executes and ends when the query completes. It doesn't include the amount of time it takes to return the result over the network.
`EvaluationTime`	**Type** double **Properties** Nillable **Description** The amount of time it took to evaluate the policy in milliseconds.
`EventDate`	**Type** dateTime **Properties** Filter, Sort **Description** The time when the specified API event was captured (after query execution takes place). For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.
`EventIdentifier`	**Type** string **Properties** Filter, Sort **Description** The unique ID of the event. For example, 0a4779b0-0da1-4619-a373-0a36991dff90.
`LoginHistoryId`	**Type** reference **Properties** Nillable **Description** Tracks a user session so you can correlate user activity with a particular series of API events. This field is also available on the LoginEvent, AuthSession, and LoginHistory objects, making

Field	Details
	it easier to trace events back to a user's original authentication. For example, 0YaB000002knVQLKA2.
`LoginKey`	**Type** string **Properties** Nillable **Description** The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring. For example, lUqjLPQTWRdvRG4.
`Operation`	**Type** picklist **Properties** Nillable, Restricted Picklist **Description** The API call that generated the event. Possible values are `Query`, `QueryAll`, or `QueryMore`.
`Platform`	**Type** string **Properties** Nillable **Description** The operating system on the login machine. For example, iPhone, Mac OS, Linux, or Unknown.
`PolicyId`	**Type** reference **Properties** Nillable **Description** The ID of the transaction policy associated with this event. For example, 0NIB000000000KOOAY.
`PolicyOutcome`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The result of the transaction policy. For this event, possible values are: • `Block` - The user was blocked from performing the operation that triggered the policy.

Field	Details
	• `Error` - The policy caused an undefined error when it executed. • `NoAction` - The policy didn't trigger. • `Notified` - A notification was sent to the recipient.
`QueriedEntities`	**Type** string **Properties** Nillable **Description** The entities in the SOQL query. For example, Opportunity, Lead, Account, or Case. Can also include custom objects. For relationship queries, the value of this field contains all entities involved in the query. **Examples** • For `SELECT Contact.FirstName, Contact.Account.Name from Contact`, the value of `QueriedEntities` is `Account, Contact`. • For `SELECT Account.Name, (SELECT Contact.FirstName, Contact.LastName FROM Account.Contacts) FROM Account`, the value of `QueriedEntities` is `Account, Contact`. • For `SELECT Id, Name, Account.Name FROM Contact WHERE Account.Industry = 'media'`, the value of `QueriedEntities` is `Account, Contact`.
`Query`	**Type** string **Properties** Nillable **Description** The SOQL query. For example, `SELECT id FROM Lead`.
`Records`	**Type** json **Properties** Nillable **Description** A JSON string that represents the queried objects' metadata. This metadata includes the number of results of a query per entity type and the entity IDs. **Example** `{ "totalSize" : 1, "done" : true, "records" : [ { "attributes" : { "type" : "Account"`

Field	Details

	<pre> },
	    "Id" : "001xx000003DMvCAAW",
	    "Contacts" : {
	      "totalSize" : 3,
	      "done" : true,
	      "records" : [{
	        "attributes" : {
	          "type" : "Contact"
	        },
	        "Id" : "003xx000004U7xKAAS"
	      }, {
	        "attributes" : {
	          "type" : "Contact"
	        },
	        "Id" : "003xx000004U7xLAAS"
	      }, {
	        "attributes" : {
	          "type" : "Contact"
	        },
	        "Id" : "003xx000004U7xMAAS"
	      }]
	    }
	  }]
	}</pre>

`RelatedEventIdentifier`	**Type** string **Properties** Nillable **Description** Represents the `EventIdentifier` of the related event. For example, bd76f3e7-9ee5-4400-9e7f-54de57ecd79c. This field is populated only when the activity that this event monitors requires extra authentication, such as multi-factor authentication. In this case, Salesforce generates more events and sets the `RelatedEventIdentifier` field of the new events to the value of the `EventIdentifier` field of the original event. Use this field with the `EventIdentifier` field to correlate all the related events. If no extra authentication is required, this field is blank.
`RowsProcessed`	**Type** double **Properties** Nillable **Description** The total number of rows of data returned from the API query when the user executed the query.

Field	Details
	For big objects, if the total number of returned rows is greater than the API batch size, `RowsProcessed` is `-1`.
`RowsReturned`	**Type** double **Properties** Nillable **Description** The number of rows of data returned in the current API batch. If `RowsProcessed` is less than the API batch size, `RowsReturned` is equal to `RowsProcessed`. If `RowsProcessed` is greater than the API batch size, `RowsReturned` equals either the API batch size or the number of rows in the last batch.
`SessionKey`	**Type** string **Properties** Nillable **Description** The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started. For example, vMASKIU6AxEr+Op5.
`SessionLevel`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** Session-level security controls user access to features that support it, such as connected apps and reporting. Possible values are: • `HIGH_ASSURANCE` - A high assurance session was used for resource access. For example, when the user tries to access a resource such as a connected app, report, or dashboard that requires a high-assurance session level. • `LOW` - The user's security level for the current session meets the lowest requirements. Note: This low level is not available, nor used, in the Salesforce UI. User sessions through the UI are either standard or high assurance. You can set this level using the API, but users assigned this level experience unpredictable and reduced functionality in their Salesforce org. • `STANDARD` - The user's security level for the current session meets the Standard requirements set in the current organization Session Security Levels.
`SourceIp`	**Type** string

Field	Details
	Properties Nillable **Description** The IP from which the API events originated. A Salesforce internal IP (such as from an API event originating from Salesforce AppExchange) is shown as "Salesforce.com IP".
`UserAgent`	**Type** string **Properties** Nillable **Description** The platform or environment in which the API call originated. This field could include information about the operating system, application, or web protocol. For example, `Mozilla/5.0 (iPhone; CPU iPhone OS 13_0 like Mac OS X) AppleWebKit/605.1.15 (KHTML, like Gecko)`
`UserId`	**Type** reference **Properties** Nillable **Description** The origin user's unique ID. For example, `005000000000123`.
`Username`	**Type** string **Properties** Nillable **Description** The origin username in the format of `user@company.com` at the time the event was created.

Working With `AdditionalInfo`

`AdditionalInfo` enables you to extend the API event with custom data that can be queried later. For example, you can capture a correlation ID when a user executes a SOQL query from an external system that shares that unique ID. This process enables tracking API calls across systems. To store data with ApiEvent, begin all `AdditionalInfo` field names with `x-sfdc-addinfo-{field name}`. For example, a valid field assignment is `x-sfdc-addinfo-correlation_id = ABC123` where `x-sfdc-addinfo-correlation_id` is the field name and `ABC123` is the field value.

When defining field names, note the following:

- `x-sfdc-addinfo-` is case-*insensitive*; `x-sfdc-addinfo-{field name}` is the same as `X-SFDC-ADDINFO-{field name}` and `x-SfDc-AdDiNfO-{field name}`.
- Fields can contain only alphanumeric and "_" (underscore) characters.

- Field names must be from 2 through 29 characters in length, excluding `x-sfdc-addinfo-`.
- Field names that don't start with `x-sfdc-addinfo-` are ignored.
- Names that contain invalid characters after `x-sfdc-addinfo-` are ignored, and nothing is stored. For example, a valid field name is `x-sfdc-addinfo-correlation_id` but `x-sfdc-addinfo-correlation->id` is not valid.
- Only the first 30 valid field names are stored in `AdditionalInfo`. If you store two valid field names—for example, `x-sfdc-addinfo-correlation_id` and `x-sfdc-addinfo-correlation_number`— you can store 28 extra field names. Field names are not necessarily stored in the same order in which they were passed to authentication.

When defining field values, keep the following in mind:

- You can't use existing API field names as `AdditionalInfo` names in the HTTP header. If the `AdditionalInfo` name conflicts with an object's API name, the field value isn't stored. For example, the HTTP header `X-SFDC-ADDINFO-UserId='abc123'` doesn't get stored in `AdditionalInfo`.
- Extra field values can contain only alphanumeric, "_," and "-" characters.
- Field values must be 255 characters in length or fewer. If a field value exceeds 255 characters, only the first 255 characters are stored, and the rest are truncated.
- Field values that contain invalid characters are saved with a field header of Empty String ("").
- Only the first 30 valid field names are stored in the `AdditionalInfo` field. They are not guaranteed to be stored in the same order that they were passed into the authentication.
- When `AggregationFieldName` or `PlatformEventMetrics` is `SourceIp`, you can't filter on `AggregationFieldValue` if its value is *`Salesforce.com IP.`*

How to Pass Additional Information by Using HTTP with cURL

```
curl
https://yourInstance.salesforce.com/services/data/v34.0/query?q=SELECT+Name+From+Account
 -H "X-PrettyPrint:1" -H "x-sfdc-addinfo-correlationid:
d18c5a3f-4fba-47bd-bbf8-6bb9a1786624"
```

Example of Using Java

```
//adding additional info headers ..
Map<String, String> httpHeaders = new HashMap<String,String>();
httpHeaders.put("x-sfdc-addinfo-fieldname1" /* additional info field*/ ,
"d18c5a3f-4fba-47bd-bbf8-6bb9a1786624" /* value*/);
httpHeaders.put("x-sfdc-addinfo-fieldname2" /* additional info field*/ ,
"d18c5a3f-4fba-47bd-bbf8-6bb9a1786624" /* value*/);

ConnectorConfig config = new ConnectorConfig();
config.setUsername(userId);
config.setPassword(passwd);
config.setAuthEndpoint(authEndPoint);
config.setProxy(proxyHost, proxyPort);

//setting additional info headers
for (Map.Entry<String, String> entry : httpHeaders.entrySet()) {
     config.setRequestHeader(entry.getKey(), entry.getValue());
}
// Set the username and password if your proxy must be authenticated
     config.setProxyUsername(proxyUsername);
```

```
config.setProxyPassword(proxyPassword);
try {
  QueryResult queryResult = connection.query("SELECT Id, Name FROM Account");
  // etc.
} catch (ConnectionException ce) {
 ce.printStackTrace();
}
```

For the user interface, use proxy servers to intercept call and add required information.

Standard SOQL Usage

ApiEvent allows filtering over two fields: `EventDate` and `EventIdentifier`. The only supported SOQL functions on the ApiEvent object are `WHERE`, `ORDER BY`, and `LIMIT`. In the `WHERE` clause, you can only use comparison operators (<, >, <=, and >=). The != operator isn't supported. In the `ORDER BY` clause, you can only use EventDate `DESC`. Ascending order isn't supported with EventDate, and EventIdentifier sorting isn't supported.

Note: Date functions such as `convertTimeZone()` aren't supported—for example, `SELECT CALENDAR_YEAR(EventDate), Count(Id) FROM ApiEvent GROUP BY CALENDAR_YEAR(EventDate)` returns an error. You can use date literals in your queries and some date/time functions like `TODAY()`, `YESTERDAY()`, and `LAST_n_DAYS:1`. However, these functions use comparison operators behind the scenes. Therefore you can only use them in the final expression in the `WHERE` clause.

The following list provides some examples of valid and invalid queries:

- **Unfiltered**
  - **Valid**—Contains no `WHERE` clause, so no special rules apply.

    ```
    SELECT ApiType, Client, ElapsedTime, QueriedEntities, Username
    FROM ApiEvent
    ```

- **Filtered on** `EventDate`—you can filter solely on `EventDate`, but single filters on other fields fail. You can also use a comparison operator in this query type.
  - **Valid**—you can filter solely on `EventDate`, but single filters on other fields fail. You can also use a comparison operator in this query type.

    ```
    SELECT ApiType, Client, ElapsedTime, QueriedEntities, Username
    FROM ApiEvent
    WHERE EventDate>=2014-11-27T14:54:16.000Z
    ```

Async SOQL Usage

With Async SOQL, you can filter on any field in ApiEvent and use any comparison operator in your query.

Example: Find all queries that users ran against Patent__c

```
SELECT EventDate, EventIdentifier, PolicyOutcome, EvaluationTime, Query FROM ApiEvent
WHERE QueriedEntities='Patent__c'
```

SEE ALSO:

Big Objects Implementation Guide

ApiEventStream

Tracks these user-initiated read-only API calls: `query()`, `queryMore()`, and `count()`. Captures API requests through SOAP API, REST API, and Bulk API for the Enterprise and Partner WSDLs. Tooling API calls and API calls originating from a Salesforce mobile app aren't captured. This object is available in API version 46.0 and later.

Supported Calls

`describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	
Flows	
Processes	
Streaming API (CometD)	✔

Streaming API Subscription Channel

`/event/ApiEventStream`

Special Access Rules

Accessing this object requires either the Salesforce Shield or Salesforce Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Fields

Field	Details
`AdditionalInfo`	**Type** string **Properties** Nillable **Description** JSON serialization of additional information that's captured from the `HTTP` headers during an API request. For example, `{"field1": "value1", "field2": "value2"}`.
`ApiType`	**Type** string **Properties** Nillable **Description** The API that was used. Values include:

Field	Details
	• `SOAP Enterprise` • `SOAP Partner` • `REST API` • `N/A`
`ApiVersion`	**Type** double **Properties** Nillable **Description** The version number of the API.
`Application`	**Type** string **Properties** Nillable **Description** The application used to access the org. For example, Tableau CRM or Salesforce Developers Connector.
`Client`	**Type** string **Properties** Nillable **Description** The service that executed the API event. If you're using an unrecognized client, this field returns "Unknown" or a blank value.
`ConnectedAppId`	**Type** string **Properties** Nillable **Description** The 15-character ID of the connected app associated with the API call. For example, 0H4RM00000000Kr0AI.
`ElapsedTime`	**Type** int **Properties** Nillable

Field	Details
	Description The amount of time it took for the request to complete in milliseconds. The measurement of this value begins before the query executes and ends when the query completes. It doesn't include the amount of time it takes to return the result over the network.
`EvaluationTime`	**Type** double **Properties** Nillable **Description** The amount of time it took to evaluate the policy in milliseconds.
`EventDate`	**Type** dateTime **Properties** Nillable **Description** The time when the specified API event was captured (after query execution takes place). For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.
`EventIdentifier`	**Type** string **Properties** Nillable **Description** The unique ID of the event, which is shared with the corresponding storage object. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`. Use this field to correlate the event with its storage object.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`LoginHistoryId`	**Type** reference **Properties** Nillable

Field	Details
	Description Tracks a user session so you can correlate user activity with a particular series of API events. This field is also available on the LoginEvent, AuthSession, and LoginHistory objects, making it easier to trace events back to a user's original authentication. For example, 0YaB000002knVQLKA2.
`LoginKey`	**Type** string **Properties** Nillable **Description** The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring. For example, lUqjLPQTWRdvRG4.
`Operation`	**Type** picklist **Properties** Nillable, Restricted Picklist **Description** The API call that generated the event. Possible values are `Query`, `QueryAll`, or `QueryMore`.
`Platform`	**Type** string **Properties** Nillable **Description** The operating system on the login machine. For example, iPhone, Mac OS, Linux, or Unknown.
`PolicyId`	**Type** reference **Properties** Nillable **Description** The ID of the transaction policy associated with this event. For example, 0NIB000000000KOOAY.
`PolicyOutcome`	**Type** picklist **Properties** Nillable, Restricted picklist

Field	Details
	Description The result of the transaction policy. For this event, possible values are: • `Block` - The user was blocked from performing the operation that triggered the policy. • `Error` - The policy caused an undefined error when it executed. • `NoAction` - The policy didn't trigger. • `Notified` - A notification was sent to the recipient.
`QueriedEntities`	**Type** string **Properties** Nillable **Description** The entities in the SOQL query. For example, Opportunity, Lead, Account, or Case. Can also include custom objects. For relationship queries, the value of this field contains all entities involved in the query. **Examples** • For `SELECT Contact.FirstName, Contact.Account.Name from Contact`, the value of `QueriedEntities` is `Account, Contact`. • For `SELECT Account.Name, (SELECT Contact.FirstName, Contact.LastName FROM Account.Contacts) FROM Account`, the value of `QueriedEntities` is `Account, Contact`. • For `SELECT Id, Name, Account.Name FROM Contact WHERE Account.Industry = 'media'`, the value of `QueriedEntities` is `Account, Contact`.
`Query`	**Type** textarea **Properties** Nillable **Description** The SOQL query. For example, `SELECT id FROM Lead`.
`Records`	**Type** json **Properties** Nillable **Description** A JSON string that represents the queried objects' metadata. This metadata includes the number of results of a query per entity type and the entity IDs.

Field	Details
	Example `{ "totalSize" : 1, "done" : true, "records" : [{ "attributes" : { "type" : "Account" }, "Id" : "001xx000003DMvCAAW", "Contacts" : { "totalSize" : 3, "done" : true, "records" : [{ "attributes" : { "type" : "Contact" }, "Id" : "003xx000004U7xKAAS" }, { "attributes" : { "type" : "Contact" }, "Id" : "003xx000004U7xLAAS" }, { "attributes" : { "type" : "Contact" }, "Id" : "003xx000004U7xMAAS" }] } }] }`
`RelatedEventIdentifier`	**Type** string **Properties** Nillable **Description** Represents the `EventIdentifier` of the related event. For example, bd76f3e7-9ee5-4400-9e7f-54de57ecd79c. This field is populated only when the activity that this event monitors requires extra authentication, such as multi-factor authentication. In this case, Salesforce generates more events and sets the `RelatedEventIdentifier` field of the new events to the value of the `EventIdentifier` field of the original event. Use this field with the `EventIdentifier` field to correlate all the related events. If no extra authentication is required, this field is blank.
`ReplayId`	**Type** string

Field	Details
	Properties Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`RowsProcessed`	**Type** double **Properties** Nillable **Description** The total number of rows of data returned from the API query when the user executed the query. For big objects, if the total number of returned rows is greater than the API batch size, `RowsProcessed` is `-1`.
`RowsReturned`	**Type** double **Properties** Nillable **Description** The number of rows of data returned in the current API batch. If `RowsProcessed` is less than the API batch size, `RowsReturned` is equal to `RowsProcessed`. If `RowsProcessed` is greater than the API batch size, `RowsReturned` equals either the API batch size or the number of rows in the last batch.
`SessionKey`	**Type** string **Properties** Nillable **Description** The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started. For example, vMASKIU6AxEr+Op5.
`SessionLevel`	**Type** picklist **Properties** Nillable, Restricted picklist

Field	Details
	Description Session-level security controls user access to features that support it, such as connected apps and reporting. Possible values are: • HIGH_ASSURANCE - A high assurance session was used for resource access. For example, when the user tries to access a resource such as a connected app, report, or dashboard that requires a high-assurance session level. • LOW - The user's security level for the current session meets the lowest requirements. Note: This low level is not available, nor used, in the Salesforce UI. User sessions through the UI are either standard or high assurance. You can set this level using the API, but users assigned this level experience unpredictable and reduced functionality in their Salesforce org. • STANDARD - The user's security level for the current session meets the Standard requirements set in the current organization Session Security Levels.
`SourceIp`	**Type** string **Properties** Nillable **Description** The IP from which the API events originated. A Salesforce internal IP (such as from an API event originating from Salesforce AppExchange) is shown as "Salesforce.com IP".
`UserAgent`	**Type** string **Properties** Nillable **Description** The platform or environment in which the API call originated. This field could include information about the operating system, application, or web protocol. For example, `Mozilla/5.0 (iPhone; CPU iPhone OS 13_0 like Mac OS X) AppleWebKit/605.1.15 (KHTML, like Gecko)`
`UserId`	**Type** reference **Properties** Nillable **Description** The origin user's unique ID. For example, `005000000000123`.
`Username`	**Type** string

Field	Details
	Properties Nillable **Description** The origin username in the format of `user@company.com` at the time the event was created.

BulkApiResultEvent

Tracks when a user downloads the results of a Bulk API request.

Supported Calls

`describeSObjects()`

Special Access Rules

Accessing this object requires either the Salesforce Shield or Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Fields

Field	Details
`EvaluationTime`	**Type** double **Properties** Nillable **Description** The amount of time it took to evaluate the policy in milliseconds.
`EventDate`	**Type** dateTime **Properties** Nillable **Description** The time when the anomaly was reported. For example, `2020-01-20T19:12:26.965Z`. Milliseconds is the most granular setting.
`EventIdentifier`	**Type** string **Properties** Nillable

Field	Details
	Description The unique ID of the event, which is shared with the corresponding storage object. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`. Use this field to correlate the event with its storage object.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`LoginHistoryId`	**Type** reference **Properties** Nillable **Description** Tracks a user session so you can correlate user activity with a particular login instance. This field is also available on the LoginHistory, AuthSession, and LoginHistory objects, making it easier to trace events back to a user's original authentication.
`LoginKey`	**Type** string **Properties** Nillable **Description** The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring. For example, `lUqjLPQTWRdvRG4`.
`PolicyId`	**Type** reference **Properties** Nillable **Description** The ID of the transaction policy associated with this event. For example, `0NIB000000000KOOAY`.
`PolicyOutcome`	**Type** picklist

Field	Details
	Properties Nillable, Restricted picklist **Description** The result of the transaction policy. Possible values include: • `Error`—The policy caused an undefined error when it executed. • `NoAction`—The policy didn't trigger. • `Notified`—A notification was sent to the recipient.
`Query`	**Type** string **Properties** Nillable **Description** The SOQL query. For example, `SELECT Id FROM Account`
`RelatedEventIdentifier`	**Type** string **Properties** Nillable **Description** Represents the `EventIdentifier` of the related event. For example, `bd76f3e7-9ee5-4400-9e7f-54de57ecd79c`. This field is populated only when the activity that this event monitors requires extra authentication, such as multi-factor authentication. In this case, Salesforce generates more events and sets the `RelatedEventIdentifier` field of the new events to the value of the `EventIdentifier` field of the original event. Use this field with the `EventIdentifier` field to correlate all the related events. If no extra authentication is required, this field is blank.
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`SessionKey`	**Type** string

Field	Details
	Properties Nillable **Description** The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started. For example, `vMASKIU6AxEr+Op5`.
`SessionLevel`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** Session-level security controls user access to features that support it, such as connected apps and reporting. Possible values are: • `HIGH_ASSURANCE`—A high assurance session was used for resource access. For example, when the user tries to access a resource such as a connected app, report, or dashboard that requires a high-assurance session level. • `LOW`—The user's security level for the current session meets the lowest requirements. Note: This low level is not available or used in the Salesforce UI. User sessions through the UI are either standard or high assurance. You can set this level using the API, but users who are assigned this level experience unpredictable and reduced functionality in their Salesforce org. • `STANDARD`—The user's security level for the current session meets the Standard requirements set in the current organization Session Security Levels.
`SourceIp`	**Type** string **Properties** Nillable **Description** The source IP address of the client that logged in. For example, `126.7.4.2`.
`UserId`	**Type** reference **Properties** Nillable **Description** The origin user's unique ID. For example, `005000000000123`.
`Username`	**Type** string

Field	Details
	Properties Nillable **Description** The origin username in the format of `user@company.com` at the time the event was created.

BulkApiResultEventStore

Tracks when a user downloads the results of a Bulk API request. BulkApiResultEventStore is a big object that stores the event data of BulkApiResultEvent. This object is available in API version 50.0 and later.

Supported Calls

`describeSObjects()`, `query()`

Special Access Rules

Accessing this object requires either the Salesforce Shield or Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Fields

Field	Details
`EvaluationTime`	**Type** double **Properties** Nillable **Description** The amount of time it took to evaluate the policy in milliseconds.
`EventDate`	**Type** dateTime **Properties** Nillable **Description** The time when the anomaly was reported. For example, `2020-01-20T19:12:26.965Z`. Milliseconds is the most granular setting.
`EventIdentifier`	**Type** string **Properties** Nillable

Field	Details
	Description The unique ID of the event. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`.
`LoginHistoryId`	**Type** reference **Properties** Nillable **Description** Tracks a user session so you can correlate user activity with a particular login instance. This field is also available on the LoginHistory, AuthSession, and LoginHistory objects, making it easier to trace events back to a user's original authentication.
`LoginKey`	**Type** string **Properties** Nillable **Description** The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring. For example, `lUqjLPQTWRdvRG4`.
`PolicyId`	**Type** reference **Properties** Nillable **Description** The ID of the transaction policy associated with this event. For example, `0NIB000000000KOOAY`.
`PolicyOutcome`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The result of the transaction policy. Possible values include: • `Error`—The policy caused an undefined error when it executed. • `NoAction`—The policy didn't trigger. • `Notified`—A notification was sent to the recipient.
`Query`	**Type** string

Field	Details
	Properties Nillable **Description** The SOQL query. For example, `SELECT Id FROM Account`
`RelatedEventIdentifier`	**Type** string **Properties** Nillable **Description** Represents the `EventIdentifier` of the related event. For example, `bd76f3e7-9ee5-4400-9e7f-54de57ecd79c`. This field is populated only when the activity that this event monitors requires extra authentication, such as multi-factor authentication. In this case, Salesforce generates more events and sets the `RelatedEventIdentifier` field of the new events to the value of the `EventIdentifier` field of the original event. Use this field with the `EventIdentifier` field to correlate all the related events. If no extra authentication is required, this field is blank.
`SessionKey`	**Type** string **Properties** Nillable **Description** The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started. For example, `vMASKIU6AxEr+Op5`.
`SessionLevel`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** Session-level security controls user access to features that support it, such as connected apps and reporting. Possible values are: • `HIGH_ASSURANCE`—A high assurance session was used for resource access. For example, when the user tries to access a resource such as a connected app, report, or dashboard that requires a high-assurance session level. • `LOW`—The user's security level for the current session meets the lowest requirements. Note: This low level is not available or used in the Salesforce UI. User sessions through the UI are either standard or high assurance. You can set this level using

Field	Details
	the API, but users assigned this level experience unpredictable and reduced functionality in their Salesforce org. • `STANDARD`—The user's security level for the current session meets the Standard requirements set in the current organization Session Security Levels.
`SourceIp`	**Type** string **Properties** Nillable **Description** The source IP address of the client that logged in. For example, `126.7.4.2`.
`UserId`	**Type** reference **Properties** Nillable **Description** The origin user's unique ID. For example, `005000000000123`.
`Username`	**Type** string **Properties** Nillable **Description** The origin username in the format of `user@company.com` at the time the event was created.

ConcurLongRunApexErrEvent

Notifies subscribers of errors that occur when a Salesforce org exceeds the concurrent long-running Apex limit. If a high volume of these events occur concurrently in an org, we may rate limit the events based on resource availability. Event log files, which are the predecessor of Real-time Event Monitoring, provide a list of Apex-related events. For more information, see Apex-related EventLogFile events. This object is available in API version 49.0 and later.

Supported Calls

`describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	

Subscriber	Supported?
Flows	
Processes	
Streaming API (CometD)	✔

Streaming API Subscription Channel

`/event/ConcurLongRunApexErrEvent`

Fields

Field	Details
`CurrentValue`	**Type** int **Properties** Nillable **Description** The current count of concurrent long-running Apex requests in the org.
`EventDate`	**Type** dateTime **Properties** Nillable **Description** The time when the Apex request failed to start and generated the error. For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.
`EventIdentifier`	**Type** string **Properties** Nillable **Description** The unique ID of the event, which is shared with the corresponding storage object, if any. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.

Field	Details
`LimitValue`	**Type** int **Properties** Nillable **Description** The limit value that was exceeded.
`LoginKey`	**Type** string **Properties** Nillable **Description** The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring.
`Quiddity`	**Type** string **Properties** Nillable **Description** The type of outer execution associated with this event. **Example** • `A`–QueryLocator Batch Apex (Batch Apex jobs run faster when the start method returns a QueryLocator object that doesn't include related records via a subquery. See Best Practices in Using Batch Apex.) • `B`– Bulk API and Bulk API 2.0 • `BA`–Batch Apex (for debugger) • `C`–Scheduled Apex • `E`–Inbound Email Service • `F`–Future • `H`–Apex REST • `I`–Invocable Action • `K`–Quick Action • `L`–Lightning • `M`–Remote Action • `Q`–Queuable • `R`–Synchronous uncategorized (default value for transactions not specified elsewhere) • `S`–Serial Batch Apex • `TA`–Tests Async

Field	Details
	• `TD`–Tests Deployment • `TS`–Tests Synchronous • `V`–Visualforce • `W`–SOAP Webservices • `X`–Execute Anonymous
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`RequestId`	**Type** string **Properties** Nillable **Description** The unique ID of the Apex request that fired the event.
`RequestUri`	**Type** string **Properties** Nillable **Description** The URI of the Apex request that failed to start and generated the error. **Example** /apex/ApexClassName
`SessionKey`	**Type** string **Properties** Nillable **Description** The user's unique session ID. You can use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started.
`SessionLevel`	**Type** picklist

Field	Details
	Properties Nillable, Restricted picklist **Description** Session-level security controls user access to features that support it, such as connected apps and reporting. Possible values are: • HIGH_ASSURANCE - A high assurance session was used for resource access. For example, when the user tries to access a resource such as a connected app, report, or dashboard that requires a high-assurance session level. • LOW - The user's security level for the current session meets the lowest requirements. Note: This low level is not available, nor used, in the Salesforce UI. User sessions through the UI are either standard or high assurance. You can set this level using the API, but users assigned this level experience unpredictable and reduced functionality in their Salesforce org. • STANDARD - The user's security level for the current session meets the Standard requirements set in the current organization Session Security Levels.
`SourceIp`	**Type** string **Properties** Nillable **Description** The IP address from which the Apex request originated.
`UserId`	**Type** reference **Properties** Nillable **Description** The unique ID of the user associated with the Apex request.
`Username`	**Type** string **Properties** Nillable **Description** The username of the user associated with the Apex request.

CredentialStuffingEvent

Tracks when a user successfully logs into Salesforce during an identified credential stuffing attack. Credential stuffing refers to large-scale automated login requests using stolen user credentials. This object is available in API version 49.0 and later.

Supported Calls

`describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	
Flows	
Processes	
Streaming API (CometD)	✔

Streaming API Subscription Channel

`/event/CredentialStuffingEvent`

Special Access Rules

Accessing this object requires either the Salesforce Shield or Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Fields

Field	Details
`AcceptLanguage`	**Type** string **Properties** Nillable **Description** List of HTTP Headers that specify the natural language, such as English, that the client understands. **Example** `zh, en-US;q=0.8, en;q=0.6`
`EvaluationTime`	**Type** double **Properties** Nillable **Description** The amount of time it took to evaluate the policy in milliseconds.
`EventDate`	**Type** dateTime

Field	Details
	Properties Nillable **Description** The time when the hijacking event was reported. For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.
`EventIdentifier`	**Type** string **Properties** Nillable **Description** The unique ID of the event, which is shared with the corresponding storage object. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`. Use this field to correlate the event with its storage object.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`LoginKey`	**Type** string **Properties** Nillable **Description** The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring. For example, lUqjLPQTWRdvRG4.
`LoginType`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The type of login used to access the session. See the LoginType field of LoginHistory in the Object Reference guide for the list of possible values.
`LoginUrl`	**Type** string

Field	Details
	Properties Nillable **Description** The URL of the login page. For example, `login.salesforce.com`.
`PolicyId`	**Type** reference **Properties** Nillable **Description** The ID of the transaction policy associated with this event. For example, 0NIB000000000KOOAY.
`PolicyOutcome`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The result of the transaction policy. Possible values are: • `Error` - The policy caused an undefined error when it executed. • `NoAction` - The policy didn't trigger. • `Notified` - A notification was sent to the recipient.
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`Score`	**Type** double **Properties** Nillable **Description** Indicates that a user successfully logged into Salesforce during an identified credential stuffing attack. The value of this field is always `1`.

Field	Details
`SessionKey`	**Type** string **Properties** Nillable **Description** The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started. For example, vMASKIU6AxEr+Op5.
`SourceIp`	**Type** string **Properties** Nillable **Description** The source IP address of the unauthorized user that successfully logged in after the credential stuffing attack. For example, `126.7.4.2`.
`Summary`	**Type** textarea **Properties** Nillable **Description** A text summary of the threat that caused this event to be created. **Example** `Successful login from Credential Stuffing attack.`
`UserAgent`	**Type** textarea **Properties** Nillable **Description** The User-Agent header of the HTTP request of the unauthorized login. For example, `Mozilla/5.0 (Macintosh; Intel Mac OS X 10_14_6) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/78.0.3904.108 Safari/537.36`.
`UserId`	**Type** reference **Properties** Nillable **Description** The origin user's unique ID. For example, `005000000000123`.

Field	Details
`Username`	**Type** string **Properties** Nillable **Description** The origin username in the format of `user@company.com` at the time the event was created.

CredentialStuffingEventStore

Tracks when a user successfully logs into Salesforce during an identified credential stuffing attack. Credential stuffing refers to large-scale automated login requests using stolen user credentials. CredentialStuffingEventStore is an object that stores the event data of CredentialStuffingEvent. This object is available in API version 49.0 and later.

Supported Calls

```
describeLayout(), describeSObjects(), getDeleted(), getUpdated(), query()
```

Special Access Rules

Accessing this object requires either the Salesforce Shield or Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Fields

Field	Details
`AcceptLanguage`	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** List of HTTP Headers that specify the natural language, such as English, that the client understands. **Example** `zh, en-US;q=0.8, en;q=0.6`
`CredentialStuffingEventNumber`	**Type** string **Properties** Autonumber, Defaulted on create, Filter, idLookup, Sort

Field	Details
	Description The unique number automatically assigned to the event when it's created. You can't change the format or value for this field.
`EvaluationTime`	**Type** double **Properties** Filter, Nillable, Sort **Description** The amount of time it took to evaluate the policy in milliseconds.
`EventDate`	**Type** dateTime **Properties** Filter, Sort **Description** Required. The time when the hijacking event was reported. For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.
`EventIdentifier`	**Type** string **Properties** Filter, Group, Sort **Description** Required. The unique ID of the event. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`.
`LastReferencedDate`	**Type** dateTime **Properties** Filter, Nillable, Sort **Description** The timestamp for when the current user last viewed a record related to this record.
`LastViewedDate`	**Type** dateTime **Properties** Filter, Nillable, Sort **Description** The timestamp for when the current user last viewed this record. If this value is null, it's possible that this record was referenced (`LastReferencedDate`) and not viewed.

Field	Details
`LoginKey`	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring. For example, lUqjLPQTWRdvRG4.
`LoginType`	**Type** picklist **Properties** Filter, Group, Nillable, Restricted picklist, Sort **Description** The type of login used to access the session. See the LoginType field of LoginHistory in the Object Reference guide for the list of possible values.
`LoginUrl`	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** The URL of the login page. For example, `login.salesforce.com`.
`PolicyId`	**Type** reference **Properties** Filter, Group, Nillable, Sort **Description** The ID of the transaction policy associated with this event. For example, 0NIB000000000KOOAY.
`PolicyOutcome`	**Type** picklist **Properties** Filter, Group, Nillable, Restricted picklist, Sort **Description** The result of the transaction policy. Possible values are: • `Error` - The policy caused an undefined error when it executed. • `NoAction` - The policy didn't trigger. • `Notified` - A notification was sent to the recipient.

Field	Details
`Score`	**Type** double **Properties** Filter, Nillable, Sort **Description** Indicates that a user successfully logged into Salesforce during an identified credential stuffing attack. The value of this field is always `1`.
`SessionKey`	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started. For example, vMASKIU6AxEr+Op5.
`SourceIp`	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** The source IP address of the unauthorized user that successfully logged in after the credential stuffing attack. For example, `126.7.4.2`.
`Summary`	**Type** textarea **Properties** Nillable **Description** A text summary of the threat that caused this event to be created. **Example** `Successful login from Credential Stuffing attack.`
`UserAgent`	**Type** textarea **Properties** Nillable **Description** The User-Agent header of the HTTP request of the unauthorized login. For example, `Mozilla/5.0 (Macintosh; Intel Mac OS X 10_14_6) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/78.0.3904.108 Safari/537.36`.

Field	Details
`UserId`	**Type** reference **Properties** Filter, Group, Nillable, Sort **Description** The origin user's unique ID. For example, `005000000000123`.
`Username`	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** The origin username in the format of `user@company.com` at the time the event was created.

Associated Object

This object has the following associated object. It's available in the same API version as this object.

CredentialStuffingEventStoreFeed
Feed tracking is available for the object.

IdentityProviderEventStore

Tracks problems and successes with inbound SAML or OpenID Connect authentication requests from another app provider. It also records outbound SAML responses when Salesforce is acting as an identity provider. IdentityProviderEventStore is a big object. This object is available in API version 51.0 and later.

Supported Calls

`describeSObjects()`, `query()`

Special Access Rules

Accessing this object requires either the Salesforce Shield or Salesforce Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Fields

Field	Details
`AppId`	**Type** reference **Properties** Nillable

Field	Details
	Description The ID of the app provider seeking authentication.
`AuthSessionId`	**Type** reference **Properties** Nillable **Description** The ID of the authentication session.
`ErrorCode`	**Type** picklist **Properties** Restricted picklist **Description** The error code for the authentication issue. Possible values are: • `AppAccessDenied`—Error: App access denied • `AppBlocked`—Error: App blocked • `ClientUnapproved`—Error: Invalid grant • `CodeExpired`—Error: Expired authorization code • `InternalError`—Error: Internal Error • `InvalidAuthnRequest`—Error: Unable to parse AuthnRequest from service provider • `InvalidClientCredentials`—Error: Invalid client credentials • `InvalidCode`—Error: Invalid authorization code • `InvalidDeviceId`—Error: Invalid device ID • `InvalidIdpEndpoint`—Error: Invalid Identity Provider Endpoint URL • `InvalidIssuer`—Error: Invalid Issuer • `InvalidScope`—Error: One or more invalid scopes • `InvalidSessionLevel`—Error: Invalid session level • `InvalidSettings`—Error: IdP certificate is invalid or doesn't exist • `InvalidSignature`—Error: Invalid Signature • `InvalidSp`—Error: Misconfigured or invalid service provider • `InvalidSpokeSp`—Error: Invalid spoke SP settings • `InvalidUserCredentials`—Error: Invalid user credentials • `NoAccess`—Error: User doesn't have access to this service provider • `NoCustomAttrValue`—Error: User doesn't have a value for the subject custom attribute

Field	Details
	• `NoCustomField`—Error: Custom field not found • `NoSpokeId`—Error: No Spoke ID found • `NoSubdomain`—Error: Org hasn't configured My Domains yet • `NoUserFedId`—Error: User doesn't have a Federation Identifier selected • `OauthError`—OAuth Error • `Success` • `UnableToResolve`—Error: Unable to resolve request into a Service Provider • `UnknownError`—Unknown Error
`EventDate`	**Type** dateTime **Properties** Filter, Sort **Description** The date and time of the event.
`EventIdentifier`	**Type** string **Properties** Filter, Sort **Description** The unique identifier for each record in IdentityProviderEventStore.
`HasLogoutUrl`	**Type** boolean **Properties** Defaulted on create **Description** Whether a logout URL has been assigned to the app. Users are redirected to this URL when they log out. The default value is `false`.
`IdentityUsed`	**Type** string **Properties** Nillable **Description** The identity (username) of the user being authenticated.
`InitiatedBy`	**Type** picklist

Field	Details
	Properties Restricted picklist **Description** The code describing how the authentication request was initiated. Possible values are: • `IdP`—IdP-Initiated SAML • `OauthAuthorize`—OAuth Authorization • `OauthTokenExchange`—OAuth Token Exchange • `SP`—SP-Initiated SAML • `Unused`
`SamlEntityUrl`	**Type** string **Properties** **Description** The authentication URL of the SAML provider.
`SsoType`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The type of SSO. Possible values are: • `Oidc` • `Saml`
`UserId`	**Type** reference **Properties** Nillable **Description** The ID of the user seeking authentication.

SEE ALSO:

Big Objects Implementation Guide

IdentityVerificationEvent

Tracks user identity verification events in your org. IdentityVerificationEvent is a big object that stores the event data when users are prompted to verify their identity. This object is available in API version 47.0 and later.

Supported Calls

`describeSObjects()`, `query()`

Special Access Rules

Accessing this object requires either the Salesforce Shield or Salesforce Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Fields

Field	Details
`Activity`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The action the user attempted that requires identity verification. Possible values include: • `AccessReports`—The user attempted to access reports or dashboards. • `Apex`—The user attempted to access a Salesforce resource with a verification Apex method. • `ChangeEmail`—The user attempted to change an email address. • `ConnectSms`—The user attempted to connect a phone number. • `ConnectToopher`—The user attempted to connect Salesforce Authenticator. • `ConnectTotp`—The user attempted to connect a one-time password generator. • `ConnectU2F`—The user attempted to register a U2F security key. • `ConnectedApp`—The user attempted to access a connected app. • `EnableLL`—The user attempted to enroll in Lightning Login. • `ExportPrintReports`—The user attempted to export or print reports or dashboards. • `ExtraVerification`—`ExtraVerification`—Reserved for future use. • `ListView`—The user attempted to access a list view. • `Login`—The user attempted to log in. • `Registration`—Reserved for future use. • `TempCode`—The user attempted to generate a temporary verification code.
`City`	**Type** string **Properties** Nillable

Field	Details
	Description The city where the user's IP address is physically located. This value isn't localized. Note: Due to the nature of geolocation technology, the accuracy of this field can vary.
`Country`	**Type** string **Properties** Nillable **Description** The country where the user's IP address is physically located. This value isn't localized. Note: Due to the nature of geolocation technology, the accuracy of this field can vary.
`CountryIso`	**Type** string **Properties** Nillable **Description** The ISO 3166 code for the country where the user's IP address is physically located. For more information, see Country Codes - ISO 3166.
`EventDate`	**Type** dateTime **Properties** Filter, Sort **Description** The date and time of the identity verification attempt, for example, `7/19/2025, 3:19:13 PM PDT`. The time zone is based on GMT.
`EventGroup`	**Type** string **Properties** Nillable **Description** ID of the verification attempt. Verification can involve several attempts and use different verification methods. For example, in a user's session, a user enters an invalid verification code (first attempt). The user then enters the correct code and successfully verifies identity (second attempt). Both attempts are part of a single verification and, therefore, have the same ID.
`EventIdentifier`	**Type** string

Field	Details
	Properties Filter, Sort **Description** The unique ID of the event, which is shared with the corresponding storage object. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`. Use this field to correlate the event with its storage object.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`Latitude`	**Type** double **Properties** Nillable **Description** The latitude where the user's IP address is physically located. Note: Due to the nature of geolocation technology, the accuracy of this field can vary.
`LoginHistoryId`	**Type** reference **Properties** Nillable **Description** Tracks a user session so that you can correlate user activity with a particular login instance.
`LoginKey`	**Type** string **Properties** Nillable **Description** The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring.
`Longitude`	**Type** double

Field	Details
	Properties Nillable **Description** The longitude where the user's IP address is physically located. Note: Due to the nature of geolocation technology, the accuracy of this field can vary.
`Policy`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The identity verification security policy or setting. • `CustomApex`—Identity verification made by a verification Apex method. • `DeviceActivation`—Identity verification required for users logging in from an unrecognized device or new IP address. This verification is part of Salesforce's risk-based authentication. • `EnableLightningLogin`— Identity verification required for users enrolling in Lightning Login. This verification is triggered when the user attempts to enroll. Users are eligible to enroll if they have the Lightning Login User user permission and the org has enabled Allow Lightning Login in Session Settings. • `ExtraVerification`—Reserved for future use. • `HighAssurance`—High assurance session required for resource access. This verification is triggered when the user tries to access a resource, such as a connected app, report, or dashboard, that requires a high-assurance session level. • `LightningLogin`—Identity verification required for internal users logging in via Lightning Login. This verification is triggered when the enrolled user attempts to log in. Users are eligible to log in if they have the Lightning Login User user permission and have successfully enrolled in Lightning Login. Also, from Session Settings in Setup, Allow Lightning Login must be enabled. • `PageAccess`—Identity verification required for users attempting to perform an action, such as changing an email address or adding a verification method for multi-factor authentication (MFA). • `Passwordless Login`—Identity verification required for customers attempting to log in to an Experience Cloud site that is set up for passwordless login. The admin controls which registered verification methods can be used, for example, email, SMS, Salesforce Authenticator, or TOTP. • `ProfilePolicy`—Session security level required at login. This verification is triggered by the Session security level required at login setting on the user's profile. • `TwoFactorAuthentication`—Multi-factor authentication (formerly called two-factor authentication) required at login. This verification is triggered by the Multi-Factor Authentication for User Interface Logins user permission assigned to a custom profile. Or the user permission is included in a permission set that is assigned to a user.

Field	Details
`PostalCode`	**Type** string **Properties** Nillable **Description** The postal code where the user's IP address is physically located. This value isn't localized. Note: Due to the nature of geolocation technology, the accuracy of this field can vary.
`Remarks`	**Type** string **Properties** Nillable **Description** The text users see on the page or in Salesforce Authenticator when prompted to verify their identity. For example, if identity verification is required for users to log in, they see "You're trying to Log In to Salesforce." In this case, the Remarks value is "Log In to Salesforce." But if the Activity value is Apex, the Remarks value is a custom description specified in the Apex method. If users are verifying their identity using Salesforce Authenticator, the custom description also appears in the app. If the custom description isn't specified, the Remarks value is the name of the Apex method. The label is Activity Message.
`ResourceId`	**Type** reference **Properties** Nillable **Description** If the `Activity` value is ConnectedApp, the `ResourceId` value is the ID of the connected app. The label is Connected App ID.
`SessionKey`	**Type** string **Properties** Nillable **Description** The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started.
`SessionLevel`	**Type** picklist **Properties** Nillable, Restricted picklist

Field	Details
	Description Session-level security controls user access to features that support it, such as connected apps and reporting. Possible values are: • `HIGH_ASSURANCE`—Used for resource access. For example, when the user tries to access a resource such as a connected app, report, or dashboard that requires a high-assurance session level. • `LOW`—Indicates that the user's security level for the current session meets the lowest requirements. Note: This low level is not available or used in the Salesforce UI. User sessions through the UI are either standard or high assurance. You can set this level using the API, but users assigned this level experience unpredictable and reduced functionality in their Salesforce org. • `STANDARD`—Indicates that the user's security level for the current session meets the Standard requirements set in the org's Session Security Levels.
`SourceIp`	**Type** string **Properties** Nillable **Description** The IP address of the machine from which the user attempted the action that requires identity verification. For example, the IP address of the machine from where the user tried to log in or access reports. If it's a non-login action that required verification, the IP address can be different from the address from where the user logged in. This address can be an IPv4 or IPv6 address.
`Status`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The status of the identity verification attempt. • `AutomatedSuccess`—Salesforce approved the request for access because the request came from a trusted location. After a user enables location services in Salesforce, the user can designate trusted locations. When the user trusts a location for a particular activity, such as logging in from a recognized device, that activity is approved from the trusted location for as long as the location is trusted. • `Denied`—The user denied the approval request in the authenticator app. • `FailedGeneralError`—An error caused by something other than an invalid verification code, too many verification attempts, or authenticator app connectivity. • `FailedInvalidCode`—The user entered an invalid verification code. • `FailedInvalidPassword`—The user entered an invalid password. • `FailedPasswordLockout`—The user attempted to enter a password too many times.

Field	Details
	• `FailedTooManyAttempts`—The user attempted to verify identity too many times. For example, the user entered an invalid verification code repeatedly. • `InProgress`—Salesforce challenged the user to verify identity and is waiting for either the user to respond or for Salesforce to send an automated response. • `Initiated`—Salesforce initiated identity verification but hasn't yet challenged the user. • `ReportedDenied`—The user denied the approval request in the authenticator app, such as Salesforce Authenticator, and also flagged the approval request to report to an administrator. • `Succeeded`—The user's identity was verified.
`Subdivision`	**Type** string **Properties** Nillable **Description** The name of the subdivision where the user's IP address is physically located. In the United States, this value is usually the state name (for example, Pennsylvania). This value isn't localized. Note: Due to the nature of geolocation technology, the accuracy of this field can vary.
`UserId`	**Type** reference **Properties** Nillable **Description** ID of the user verifying identity.
`Username`	**Type** string **Properties** Nillable **Description** The username of the user challenged for identity verification in `user@company.com` format.
`VerificationMethod`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The method by which the user attempted to verify identity in the verification event. • `BuiltInAuthenticator`—Reserved for future use. • `Email`—Salesforce sent an email with a verification code to the address associated with the user's account.

Field	Details
	• `EnableLL`—Salesforce Authenticator sent a notification to the user's mobile device to enroll in Lightning Login. • `LL`—Salesforce Authenticator sent a notification to the user's mobile device to approve login via Lightning Login. • `Password`—Salesforce prompted for a password. • `SalesforceAuthenticator`—Salesforce Authenticator sent a notification to the user's mobile device to verify account activity. • `Sms`—Salesforce sent a text message with a verification code to the user's mobile device. SMS messaging requires a Salesforce add-on license for Identity Verification Credits. • `TempCode`—A Salesforce admin or a user with the Manage Multi-Factor Authentication in User Interface permission generated a temporary verification code for the user. • `Totp`—An authenticator app generated a time-based, one-time password (TOTP) on the user's mobile device. • `U2F`—A U2F security key-generated required credentials for the user.

Standard SOQL Usage

Example

```
SELECT Username, EventGroup, Activity, Policy, Status, VerificationMethod, City, Country,
Latitude, Longitude FROM IdentityVerificationEvent
```

Async SOQL Usage

With Async SOQL, you can filter on any field in IdentityVerificationEvent and use any comparison operator in your query.

Example: Find all successful identity verification events in the org

```
SELECT Username, EventGroup, Activity, Policy, Status, VerificationMethod, Latitude,
Longitude FROM IdentityVerificationEvent WHERE Status='Succeeded'
```

LightningUriEvent

Detects when a user creates, accesses, updates, or deletes a record in Lightning Experience only. LightningUriEvent is a big object that stores the event data of LightningUriEventStream. This object is available in API version 46.0 and later.

Supported Calls

`describeSObjects()`, `query()`

Special Access Rules

Accessing this object requires either the Salesforce Shield or Salesforce Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Note: LightningUriEvent doesn't track Setup events.

Fields

Field	Details
`AppName`	**Type** string **Properties** Nillable **Description** The name of the application that the user accessed.
`ConnectionType`	**Type** string **Properties** Nillable **Description** The type of connection. **Possible Values** • `CDMA1x` • `CDMA` • `EDGE` • `EVDO0` • `EVDOA` • `EVDOB` • `GPRS` • `HRPD` • `HSDPA` • `HSUPA` • `LTE` • `WIFI`
`DeviceId`	**Type** string **Properties** Nillable **Description** The unique identifier used to identify a device when tracking events. `DEVICE_ID` is a generated value that's created when the mobile app is initially run after installation.
`DeviceModel`	**Type** string

Field	Details
	Properties Nillable **Description** The name of the device model.
`DevicePlatform`	**Type** string **Properties** Nillable **Description** The type of application experience in `name:experience:form` format. **Possible Values** Name • `APP_BUILDER` • `CUSTOM` • `S1` • `SFX` Experience • `BROWSER` • `HYBRID` Form • `DESKTOP` • `PHONE` • `TABLET`
`DeviceSessionId`	**Type** string **Properties** Nillable **Description** The unique identifier of the user's session based on page load time. When the user reloads a page, a new session is started.
`Duration`	**Type** double **Properties** Nillable **Description** The duration in milliseconds since the page start time.

Field	Details
	Warning: This field is being deprecated. Use `EffectivePageTime` instead.
`EffectivePageTime`	**Type** double **Properties** Nillable **Description** Indicates how many milliseconds it took for the page to load before a user could interact with the page's functionality. Multiple factors can affect effective page time, such as network speed, hardware performance, or page complexity. If an effective page time greater than 60 seconds is detected, the value of this field is set to 0.
`EventDate`	**Type** dateTime **Properties** Nillable **Description** The time when the specified URI event was captured (after query execution takes place). For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.
`EventIdentifier`	**Type** string **Properties** Filter, Sort **Description** The unique ID of the event. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`.
`LoginKey`	**Type** string **Properties** Nillable **Description** The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring. For example, `8gHOMQu+xvjCmRUt`.
`Operation`	**Type** picklist **Properties** Nillable, Restricted picklist

Field	Details
	Description The operation being performed on the entity. For example, `Read, Create, Update`, or `Delete`. Create and update operations are captured in pairs; that is, expect two event records for each operation. The first record represents the start of the operation, and the second record represents whether the operation was successful or not. The two records are correlated by `RelatedEventIdentifier`. If there isn't a second event recorded for a create or update operation, the user canceled the operation or the operation failed with client-side validation. For example, when a required field is empty.
`OsName`	**Type** string **Properties** Nillable **Description** The operating system name.
`OsVersion`	**Type** string **Properties** Nillable **Description** The operating system version.
`PageStartTime`	**Type** dateTime **Properties** Nillable **Description** The time when the page was initially loaded, measured in milliseconds. **Example** `1471564788642`
`PageUrl`	**Type** url **Properties** Nillable **Description** Relative URL of the top-level Lightning Experience or Salesforce mobile app page that the user opened. The page can contain one or more Lightning components. Multiple record IDs can be associated with `PageUrl`.

Field	Details
	Example `/sObject/0064100000JXITSAA5/view`
`PreviousPageAppName`	**Type** string **Properties** Nillable **Description** The internal name of the previous application that the user accessed from the App Launcher.
`PreviousPageEntityId`	**Type** reference **Properties** Nillable **Description** The unique previous page entity identifier of the event.
`PreviousPageEntityType`	**Type** string **Properties** Nillable **Description** The previous page entity type of the event.
`PreviousPageUrl`	**Type** url **Properties** Nillable **Description** The relative URL of the previous Lightning Experience or Salesforce mobile app page that the user opened. **Example** `/sObject/006410000`
`QueriedEntities`	**Type** string **Properties** Nillable **Description** The API name of the objects referenced by the URI.

Field	Details
`RecordId`	**Type** reference **Properties** Nillable **Description** The id of the record being viewed or edited. For example, `001RM000003cjx6YAA`.
`RelatedEventIdentifier`	**Type** string **Properties** Nillable **Description** Represents the EventIdentifier of the related event.
`SdkAppType`	**Type** string **Properties** Nillable **Description** The mobile SDK application type. **Possible Values** • `HYBRID` • `HYBRIDLOCAL` • `HYBRIDREMOTE` • `NATIVE` • `REACTNATIVE`
`SdkAppVersion`	**Type** string **Properties** Nillable **Description** The version of the mobile SDK the application uses.
`SdkVersion`	**Type** string **Properties** Nillable **Description** The mobile SDK application version number.

Field	Details
	Example `5.0`
`SessionKey`	**Type** string **Properties** Nillable **Description** The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started.
`SessionLevel`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** Session-level security controls user access to features that support it, such as connected apps and reporting. Possible values are: • `HIGH_ASSURANCE`—A high assurance session was used for resource access. For example, when the user tries to access a resource such as a connected app, report, or dashboard that requires a high-assurance session level. • `LOW`—The user's security level for the current session meets the lowest requirements. Note: This low level isn't available, or used, in the Salesforce UI. User sessions through the UI are either standard or high assurance. You can set this level using the API, but users assigned this level experience unpredictable and reduced functionality in their Salesforce org. • `STANDARD`—The user's security level for the current session meets the Standard requirements set in the org's Session Security Levels.
`SourceIp`	**Type** string **Properties** Nillable **Description** The source IP address of the client logging in. For example, `126.7.4.2`.
`UserId`	**Type** reference **Properties** Nillable

Field	Details
	Description The user's unique ID. For example, `005RM000001ctYJYAY`.
`Username`	**Type** string **Properties** Nillable **Description** The username in the format of `user@company.com` at the time the event was created.
`UserType`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The category of user license. Each `UserType` is associated with one or more UserLicense records. Each UserLicense is associated with one or more profiles. Valid values are: • `CsnOnly`—Users whose access to the application is limited to Chatter. This user type includes Chatter Free and Chatter moderator users. • `CspLitePortal`—CSP Lite Portal license. Users whose access is limited because they're organization customers, and they access the application through a customer portal or Experience Cloud site. • `CustomerSuccess`—Customer Success license. Users whose access is limited because they're organization customers and access the application through a customer portal. • `Guest` • `PowerCustomerSuccess`—Power Customer Success license. Users whose access is limited because they're organization customers and access the application through a customer portal. Users with this license type can view and edit data they directly own or data owned by or shared with users below them in the customer portal role hierarchy. • `PowerPartner`—Power Partner license. Users whose access is limited because they're partners and typically access the application through a partner portal or site. • `SelfService` • `Standard`—Standard user license. This user type also includes Salesforce Platform and Salesforce Platform One user licenses.

Standard SOQL Usage

LightningUriEvent allows filtering over two fields: `EventDate` and `EventIdentifier`. The only supported SOQL functions on the LightningUriEvent object are `WHERE`, `ORDER BY`, and `LIMIT`. In the `WHERE` clause, you can only use comparison operators (<, >, <=, and >=). The != operator isn't supported. In the `ORDER BY` clause, you can only use EventDate `DESC`. Ascending order isn't supported with EventDate, and EventIdentifier sorting isn't supported.

Note: Date functions such as `convertTimeZone()` aren't supported—for example, `SELECT CALENDAR_YEAR(EventDate), Count(Id) FROM UriEvent GROUP BY CALENDAR_YEAR(EventDate)` returns an error. You can use date literals in your queries and some date/time functions like `TODAY()`, `YESTERDAY()`, and `LAST_n_DAYS:1`. However, these functions use comparison operators behind the scenes. Therefore you can only use them in the final expression in the `WHERE` clause.

The following list provides some examples of valid queries:

- **Unfiltered**
  - **Valid**—Contains no `WHERE` clause, so no special rules apply.

```
SELECT EntityType, UserName, UserType
FROM LightningUriEvent
```

- **Filtered on** `EventDate`—you can filter solely on `EventDate`, but single filters on other fields fail. You can also use a comparison operator in this query type.
  - **Valid**—you can filter solely on `EventDate`, but single filters on other fields fail. You can also use a comparison operator in this query type.

```
SELECT EntityType, UserName, UserType
FROM LightningUriEvent
WHERE EventDate>=2014-11-27T14:54:16.000Z
```

Async SOQL Usage

With Async SOQL, you can filter on any field in LightningUriEvent and use any comparison operator in your query.

Find who is accessing Opportunities and related Contacts

```
SELECT EventDate, EventIdentifier, UserName, UserType, Name, EntityType, Operation,
LoginKey, SessionKey FROM LightningUriEvent WHERE RecordId='1000000000001'
```

SEE ALSO:

UriEvent

Big Objects Implementation Guide

LightningUriEventStream

Detects when a user creates, accesses, updates, or deletes a record in Lightning Experience only. This object is available in API version 46.0 and later.

Supported Calls

`describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	

Subscriber	Supported?
Flows	
Processes	
Streaming API (CometD)	✔

Streaming API Subscription Channel

`/event/LightningUriEventStream`

Special Access Rules

Accessing this object requires either the Salesforce Shield or Salesforce Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Note: LightningUriEventStream doesn't track Setup events.

Fields

Field	Details
`AppName`	**Type** string **Properties** Nillable **Description** The name of the application that the user accessed.
`ConnectionType`	**Type** string **Properties** Nillable **Description** The type of connection. **Possible Values** • `CDMA1x` • `CDMA` • `EDGE` • `EVDO0` • `EVDOA` • `EVDOB` • `GPRS` • `HRPD`

Field	Details
	• HSDPA • HSUPA • LTE • WIFI
DeviceId	**Type** string **Properties** Nillable **Description** The unique identifier used to identify a device when tracking events. DEVICE_ID is a generated value that's created when the mobile app is initially run after installation.
DeviceModel	**Type** string **Properties** Nillable **Description** The name of the device model.
DevicePlatform	**Type** string **Properties** Nillable **Description** The type of application experience in name:experience:form format. **Possible Values** Name • APP_BUILDER • CUSTOM • S1 • SFX Experience • BROWSER • HYBRID Form • DESKTOP • PHONE • TABLET

Field	Details
`DeviceSessionId`	**Type** string **Properties** Nillable **Description** The unique identifier of the user's session based on page load time. When the user reloads a page, a new session is started.
`Duration`	**Type** double **Properties** Nillable **Description** The duration in milliseconds since the page start time. Warning: This field is being deprecated. Use `EffectivePageTime` instead.
`EffectivePageTime`	**Type** double **Properties** Nillable **Description** Indicates how many milliseconds it took for the page to load before a user could interact with the page's functionality. Multiple factors can affect effective page time, such as network speed, hardware performance, or page complexity. If an effective page time greater than 60 seconds is detected, the value of this field is set to 0.
`EventDate`	**Type** dateTime **Properties** Nillable **Description** The time when the specified URI event was captured (after query execution takes place). For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.
`EventIdentifier`	**Type** string **Properties** Nillable

Field	Details
	Description The unique ID of the event, which is shared with the corresponding storage object. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`. Use this field to correlate the event with its storage object.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`LoginKey`	**Type** string **Properties** Nillable **Description** The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring.For example, 8gHOMQu+xvjCmRUt
`Operation`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The operation being performed on the entity. For example, `Read, Create, Update`, or `Delete`. Create and update operations are captured in pairs; that is, expect two event records for each operation. The first record represents the start of the operation, and the second record represents whether the operation was successful or not. The two records are correlated by `RelatedEventIdentifier`. If there isn't a second event recorded for a create or update operation, then the user canceled the operation, or the operation failed with client-side validation (for example, when a required field is empty).
`OsName`	**Type** string **Properties** Nillable

Field	Details
	Description The operating system name.
`OsVersion`	**Type** string **Properties** Nillable **Description** The operating system version.
`PageStartTime`	**Type** dateTime **Properties** Nillable **Description** The time when the page was initially loaded, measured in milliseconds. **Example** `1471564788642`
`PageUrl`	**Type** url **Properties** Nillable **Description** Relative URL of the top-level Lightning Experience or Salesforce mobile app page that the user opened. The page can contain one or more Lightning components. Multiple record IDs can be associated with `PageUrl`. **Example** `/sObject/0064100000JXITSAA5/view`
`PreviousPageAppName`	**Type** string **Properties** Nillable **Description** The internal name of the previous application that the user accessed from the App Launcher.
`PreviousPageEntityId`	**Type** string **Properties** Nillable

Field	Details
	Description The unique previous page entity identifier of the event.
`PreviousPageEntityType`	**Type** string **Properties** Nillable **Description** The previous page entity type of the event.
`PreviousPageUrl`	**Type** url **Properties** Nillable **Description** The relative URL of the previous Lightning Experience or Salesforce mobile app page that the user opened. **Example** `/sObject/006410000`
`QueriedEntities`	**Type** string **Properties** Nillable **Description** The API name of the objects referenced by the URI.
`RecordId`	**Type** string **Properties** Nillable **Description** The id of the record being viewed or edited. For example, `001RM000003cjx6YAA`.
`RelatedEventIdentifier`	**Type** string **Properties** Nillable **Description** Represents the EventIdentifier of the related event.

Field	Details
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`SdkAppType`	**Type** string **Properties** Nillable **Description** The mobile SDK application type. **Possible Values** • `HYBRID` • `HYBRIDLOCAL` • `HYBRIDREMOTE` • `NATIVE` • `REACTNATIVE`
`SdkAppVersion`	**Type** string **Properties** Nillable **Description** The version of the mobile SDK the application uses.
`SdkVersion`	**Type** string **Properties** Nillable **Description** The mobile SDK application version number. **Example** 5.0
`SessionKey`	**Type** string

Field	Details
	Properties Nillable **Description** The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started.
`SessionLevel`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** Session-level security controls user access to features that support it, such as connected apps and reporting. Possible values are: • `HIGH_ASSURANCE`—A high assurance session was used for resource access. For example, when the user tries to access a resource such as a connected app, report, or dashboard that requires a high-assurance session level. • `LOW`—The user's security level for the current session meets the lowest requirements. Note: This low level is not available, nor used, in the Salesforce UI. User sessions through the UI are either standard or high assurance. You can set this level using the API, but users assigned this level will experience unpredictable and reduced functionality in their Salesforce org. • `STANDARD`—The user's security level for the current session meets the Standard requirements set in the org's Session Security Levels.
`SourceIp`	**Type** string **Properties** Nillable **Description** The source IP address of the client logging in. For example, `126.7.4.2`.
`UserId`	**Type** reference **Properties** Nillable **Description** The user's unique ID. For example, `005RM000001ctYJYAY`.
`Username`	**Type** string

Field	Details
	Properties Nillable **Description** The username in the format of `user@company.com` at the time the event was created.
`UserType`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The category of user license. Each `UserType` is associated with one or more UserLicense records. Each UserLicense is associated with one or more profiles. Valid values are: • `CsnOnly`—Users whose access to the application is limited to Chatter. This user type includes Chatter Free and Chatter moderator users. • `CspLitePortal`—CSP Lite Portal license. Users whose access is limited because they are organization customers and access the application through a customer portal or an Experience Cloud site. • `CustomerSuccess`—Customer Success license. Users whose access is limited because they are organization customers and access the application through a customer portal. • `Guest` • `PowerCustomerSuccess`—Power Customer Success license. Users whose access is limited because they are organization customers and access the application through a customer portal. Users with this license type can view and edit data they directly own or data owned by or shared with users below them in the customer portal role hierarchy. • `PowerPartner`—Power Partner license. Users whose access is limited because they are partners and typically access the application through a partner portal or site. • `SelfService` • `Standard`—Standard user license. This user type also includes Salesforce Platform and Salesforce Platform One user licenses.

SEE ALSO:

UriEventStream

ListViewEvent

Tracks when users access data with list views using Lightning Experience, Salesforce Classic, or the API. It doesn't track list views of Setup entities. You can use ListViewEvent in a transaction security policy. ListViewEvent is a big object that stores the event data of ListViewEventStream. This object is available in API version 46.0 and later.

Supported Calls

`describeSObjects()`, `query()`

Special Access Rules

Accessing this object requires either the Salesforce Shield or Salesforce Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Fields

Note: For some default list views (such as the list view that displays when a user clicks the Groups tab in Salesforce Classic), the `DeveloperName`, `ListViewId`, and `Name` fields are blank because the list view wasn't explicitly created by a user.

Field	Details
`AppName`	**Type** string **Properties** Nillable **Description** The name of the application that the user accessed. Possible values include `one:one` (browser) and `native:bridge` (mobile app).
`ColumnHeaders`	**Type** string **Properties** Nillable **Description** Comma-separated values of column headers of the list view. These values are the API names, not the labels shown in the UI. For example, `Name, BillingState, Phone,Type, Owner.Alias, CaseNumber, Contact.Name, Subject, Status, Priority, CreatedDate, Owner.NameOrAlias`.
`DeveloperName`	**Type** string **Properties** Nillable **Description** The unique name of the object in the API. This name contains only underscores and alphanumeric characters, and is unique in your org. If blank, the list view is a default list view (such as the list view that displays when a user clicks the Groups tab in Salesforce Classic) and not explicitly created by a user. For example, AllAccounts or AllOpenLeads.
`EvaluationTime`	**Type** double

Field	Details
	Properties Nillable **Description** The amount of time it took to evaluate the transaction security policy, in milliseconds.
`EventDate`	**Type** dateTime **Properties** Filter, Sort **Description** The time when the specified list view event was captured. For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.
`EventIdentifier`	**Type** string **Properties** Filter, Sort **Description** The unique ID of the event. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`.
`EventSource`	**Type** string **Properties** Nillable, Restricted picklist **Description** The source of the event. Possible values are: • `API`—The user generated the list view from an API call. • `Classic`—The user generated the list view from a page in the Salesforce Classic UI. • `Lightning`—The user generated the list view from a page in the Lightning Experience UI.
`ExecutionIdentifier`	**Type** string **Properties** Nillable **Description** When list view execution data is divided into multiple list view events, use this unique identifier to correlate the multiple data chunks. For example, each chunk might have the same `ExecutionIdentifier` of a50a4025-84f2-425d-8af9-2c780869f3b5, enabling you to link them together to get all the data for the list view execution. The `Sequence`

Field	Details
	field contains the incremental sequence numbers that indicate the order of the multiple events. For more information, see `Sequence`.
`FilterCriteria`	**Type** json **Properties** Nillable **Description** A JSON string that represents the list view's filter criteria at the time the event was captured. **Example** Here's a JSON string that represents filter criteria for an accounts list view. The list view shows only accounts of type "Prospect". `{"whereCondition": {"type":"soqlCondition","field":"Type", "operator":"equals","values":["'Prospect'"]} }`
`ListViewId`	**Type** reference **Properties** Nillable **Description** The ID of the list view associated with this event. If blank, the list view is a default list view (such as the list view that displays when a user clicks the Groups tab in Salesforce Classic) and not explicitly created by a user. For example, 00BB0000001c73kMAA.
`LoginHistoryId`	**Type** reference **Properties** Nillable **Description** Tracks a user session so you can correlate user activity with a particular series of list view events. This field is also available in the LoginEvent, AuthSession, and LoginHistory objects, making it easier to trace events back to a user's original authentication. For example, 0YaB000002knVQLKA2.
`LoginKey`	**Type** string **Properties** Nillable

Field	Details
	Description The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring. For example, lUqjLPQTWRdvRG4.
`Name`	**Type** string **Properties** Nillable **Description** The display name of the list view. If blank, the list view is a default list view (such as the list view that displays when a user clicks the Groups tab in Salesforce Classic) and not explicitly created by a user. For example, All Accounts and All Open Leads.
`NumberOfColumns`	**Type** int **Properties** Nillable **Description** The number of columns in the list view.
`OrderBy`	**Type** string **Properties** Nillable **Description** The column that the list view is sorted by. For example, if a list view of accounts is sorted alphabetically by name, the `OrderBy` value is `[Name ASC NULLS FIRST, Id ASC NULLS FIRST]`. If the list is sorted alphabetically by type, the `OrderBy` value is `[Type ASC NULLS FIRST, Id ASC NULLS FIRST]`.
`OwnerId`	**Type** reference **Properties** Nillable **Description** The ID of the org or user who owns the list view. If the list view wasn't saved, this value is the same as `UserId`. For example, 005B0000001vURvIAM.
`PolicyId`	**Type** reference

Field	Details
	Properties Nillable **Description** The ID of the transaction security policy associated with this event. For example, 0NIB000000000KOOAY.
`PolicyOutcome`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The result of the transaction policy. Possible values are: • `Block`—The user was blocked from performing the operation that triggered the policy. • `Error`—The policy caused an undefined error when it executed. • `FailedInvalidPassword`—The user entered an invalid password. • `FailedPasswordLockout`—The user entered an invalid password too many times. • `NoAction`—The policy didn't trigger. • `Notified`—A notification was sent to the recipient. • `TwoFAAutomatedSuccess`—Salesforce Authenticator approved the request for access because the request came from a trusted location. After users enable location services in Salesforce Authenticator, they can designate trusted locations. When a user trusts a location for a particular activity, such as logging in from a recognized device, that activity is approved from the trusted location for as long as the location is trusted. • `TwoFADenied`—The user denied the approval request in the authenticator app, such as Salesforce Authenticator. • `TwoFAFailedGeneralError`—An error caused by something other than an invalid verification code, too many verification attempts, or authenticator app connectivity. • `TwoFAFailedInvalidCode`—The user provided an invalid verification code. • `TwoFAFailedTooManyAttempts`—The user attempted to verify identity too many times. For example, the user entered an invalid verification code repeatedly. • `TwoFAInitiated`—Salesforce initiated identity verification but hasn't yet challenged the user. • `TwoFAInProgress`—Salesforce challenged the user to verify identity and is waiting for the user to respond or for Salesforce Authenticator to send an automated response. • `TwoFANoAction`—The policy specifies multi-factor authentication (formerly called two-factor authentication) as an action, but the user is already in a high-assurance session. • `TwoFARecoverableError`—Salesforce can't reach the authenticator app to verify identity, but will retry. • `TwoFAReportedDenied`—The user denied the approval request in the authenticator app, such as Salesforce Authenticator, and also flagged the approval request to report to an administrator.

Field	Details
	• `TwoFASucceeded`—The user's identity was verified.
`QueriedEntities`	**Type** string **Properties** Nillable **Description** The type of entities in the list view. For example, `Opportunity, Lead, Account,` or `Case`. Can also include custom objects.
`Records`	**Type** json **Properties** Nillable **Description** A JSON string that represents the list view's data. For example, `{"totalSize":1,"rows":[{"datacells":["005B0000001vURv","001B000000fewai"]}]}`.
`RelatedEventIdentifier`	**Type** string **Properties** Nillable **Description** Represents the `EventIdentifier` of the related event. For example, bd76f3e7-9ee5-4400-9e7f-54de57ecd79c. This field is populated only when the activity that this event monitors requires extra authentication, such as multi-factor authentication. In this case, Salesforce generates more events and sets the `RelatedEventIdentifier` field of the new events to the value of the `EventIdentifier` field of the original event. Use this field with the `EventIdentifier` field to correlate all the related events. If no extra authentication is required, this field is blank.
`RowsProcessed`	**Type** double **Properties** Nillable **Description** The total number of rows returned in the list view. When list data is divided into multiple list view events, this value is the same for all data chunks.
`Scope`	**Type** string

Field	Details
	Properties Nillable **Description** Represents the filter criteria for the list view. Possible values are: • `Delegated`—Records delegated to another user for action; for example, a delegated task. • `Everything`—All records, for example All Opportunities. • `Mine`—Records owned by the user running the list view, for example My Opportunities. • `MineAndMyGroups`—Records owned by the user running the list view, and records assigned to the user's queues. • `MyTerritory`—Records in the territory of the user seeing the list view. This option is available if territory management is enabled for your org. • `MyTeamTerritory`—Records in the territory of the team of the user seeing the list view. This option is available if territory management is enabled for your org. • `Queue`—Records assigned to a queue. • `Team`—Records assigned to a team.
`Sequence`	**Type** int **Properties** Nillable **Description** Incremental sequence number that indicates the order of multiple events that result from a given list view execution. When a list view execution returns many records, Salesforce splits this data into chunks based on the size of the records, and then creates multiple correlated ListViewEvents. The field values in each of these correlated ListViewEvents are the same, except for `Records`, which contains the different data chunks, and `Sequence`, which identifies each chunk in order. Every list view execution has a unique `ExecutionIdentifier` value to differentiate it from other list view executions. To view all the data chunks from a single list view execution, use the `Sequence` and `ExecutionIdentifier` fields in combination. For more information, `ExecutionIdentifier`.
`SessionKey`	**Type** string **Properties** Nillable **Description** The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started. For example, vMASKIU6AxEr+Op5.

Field	Details
`SessionLevel`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** Session-level security controls user access to features that support it, such as connected apps and reporting. Possible values are: • `HIGH_ASSURANCE`—A high assurance session was used for resource access. For example, when the user tries to access a resource such as a connected app, report, or dashboard that requires a high-assurance session level. • `LOW`—The user's security level for the current session meets the lowest requirements. Note: This low level is not available, nor used, in the Salesforce UI. User sessions through the UI are either standard or high assurance. You can set this level using the API, but users assigned this level will experience unpredictable and reduced functionality in their Salesforce org. • `STANDARD`—The user's security level for the current session meets the Standard requirements set in the org's Session Security Levels.
`SourceIp`	**Type** string **Properties** Nillable **Description** The source IP address of the client that logged in. For example, `126.7.4.2`.
`UserId`	**Type** reference **Properties** Nillable **Description** The user's unique ID. For example, `005000000000123`.
`Username`	**Type** string **Properties** Nillable **Description** The username in the format of `user@company.com` at the time the event was created.

Standard SOQL Usage

You can filter on two ordered fields: `EventDate` and `EventIdentifier`.

Example

```
SELECT Username, QueriedEntities, ListViewData, PolicyOutcome, Name FROM ListViewEvent
```

Async SOQL Usage

With Async SOQL, you can filter on any field in ListViewEvent and use any comparison operator in your query.

Example: Find all list views that users ran against Patent__c

```
SELECT EventDate, EventIdentifier, PolicyOutcome, EvaluationTime, ListViewId, Name FROM
ListViewEvent WHERE QueriedEntities='Patent__c'
```

SEE ALSO:

Big Objects Implementation Guide

ListViewEventStream

Tracks actions related to list views in Lightning Experience, Salesforce Classic, or the API. For example, the event captures when a user runs or exports a list view. It doesn't capture list view events of Setup entities. This object is available in API version 46.0 and later.

Supported Calls

`describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	
Flows	
Processes	
Streaming API (CometD)	✔

Streaming API Subscription Channel

`/event/ListViewEventStream`

Special Access Rules

Accessing this object requires either the Salesforce Shield or Salesforce Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Fields

Note: For some default list views (such as the list view that displays when a user clicks the Groups tab in Salesforce Classic), the `DeveloperName`, `ListViewId`, and `Name` fields are blank because the list view wasn't explicitly created by a user.

Field	Details
`AppName`	**Type** string **Properties** Nillable **Description** The name of the application that the user accessed. Possible values include `one:one` (browser) and `native:bridge` (mobile app).
`ColumnHeaders`	**Type** string **Properties** Nillable **Description** Comma-separated values of column headers of the list view. These values are the API names, not the labels shown in the UI. For example, `Name, BillingState, Phone,Type, Owner.Alias, CaseNumber, Contact.Name, Subject, Status, Priority, CreatedDate, Owner.NameOrAlias`.
`DeveloperName`	**Type** string **Properties** Nillable **Description** The unique name of the object in the API. This name contains only underscores and alphanumeric characters, and is unique in your org. If blank, the list view is a default list view (such as the list view that displays when a user clicks the Groups tab in Salesforce Classic) and not explicitly created by a user. For example, AllAccounts or AllOpenLeads.
`EvaluationTime`	**Type** double **Properties** Nillable **Description** The amount of time it took to evaluate the transaction security policy, in milliseconds.
`EventDate`	**Type** dateTime

Field	Details
	Properties Filter, Sort **Description** The time when the specified list view event was captured. For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.
`EventIdentifier`	**Type** string **Properties** Filter, Sort **Description** The unique ID of the event, which is shared with the corresponding storage object. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`. Use this field to correlate the event with its storage object.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`EventSource`	**Type** string **Properties** Nillable, Restricted picklist **Description** The source of the event. Possible values are: • `API`—The user generated the list view from an API call. • `Classic`—The user generated the list view from a page in the Salesforce Classic UI. • `Lightning`—The user generated the list view from a page in the Lightning Experience UI.
`ExecutionIdentifier`	**Type** string **Properties** Nillable **Description** When list view execution data is divided into multiple list view events, use this unique identifier to correlate the multiple data chunks. For example, each chunk might have the same `ExecutionIdentifier` of a50a4025-84f2-425d-8af9-2c780869f3b5, enabling

Field	Details
	you to link them together to get all the data for the list view execution. The `Sequence` field contains the incremental sequence numbers that indicate the order of the multiple events. For more information, see `Sequence`.
`FilterCriteria`	**Type** json **Properties** Nillable **Description** A JSON string that represents the list view's filter criteria at the time the event was captured. **Example** Here's a JSON string that represents filter criteria for an accounts list view. The list view shows only accounts of type "Prospect". `{"whereCondition": {"type":"soqlCondition","field":"Type", "operator":"equals","values":["'Prospect'"]} }`
`ListViewId`	**Type** reference **Properties** Nillable **Description** The ID of the list view associated with this event. If blank, the list view is a default list view (such as the list view that displays when a user clicks the Groups tab in Salesforce Classic) and not explicitly created by a user. For example, 00BB0000001c73kMAA.
`LoginHistoryId`	**Type** reference **Properties** Nillable **Description** Tracks a user session so you can correlate user activity with a particular series of list view events. This field is also available in the LoginEvent, AuthSession, and LoginHistory objects, making it easier to trace events back to a user's original authentication. For example, 0YaB000002knVQLKA2.
`LoginKey`	**Type** string **Properties** Nillable

Field	Details
	Description The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring. For example, lUqjLPQTWRdvRG4.
`Name`	**Type** string **Properties** Nillable **Description** The display name of the list view. If blank, the list view is a default list view (such as the list view that displays when a user clicks the Groups tab in Salesforce Classic) and not explicitly created by a user. For example, All Accounts and All Open Leads.
`NumberOfColumns`	**Type** int **Properties** Nillable **Description** The number of columns in the list view.
`OrderBy`	**Type** string **Properties** Nillable **Description** The column that the list view is sorted by. For example, if a list view of accounts is sorted alphabetically by name, the `OrderBy` value is `[Name ASC NULLS FIRST, Id ASC NULLS FIRST]`. If the list is sorted alphabetically by type, the `OrderBy` value is `[Type ASC NULLS FIRST, Id ASC NULLS FIRST]`.
`OwnerId`	**Type** reference **Properties** Nillable **Description** The ID of the org or user who owns the list view. If the list view wasn't saved, this value is the same as `UserId`. For example, 005B0000001vURvIAM.
`PolicyId`	**Type** reference

Field	Details
	Properties Nillable **Description** The ID of the transaction security policy associated with this event. For example, 0NIB000000000KOOAY.
`PolicyOutcome`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The result of the transaction policy. Possible values are: • `Block`—The user was blocked from performing the operation that triggered the policy. • `Error`—The policy caused an undefined error when it executed. • `FailedInvalidPassword`—The user entered an invalid password. • `FailedPasswordLockout`—The user entered an invalid password too many times. • `NoAction`—The policy didn't trigger. • `Notified`—A notification was sent to the recipient. • `TwoFAAutomatedSuccess`—Salesforce Authenticator approved the request for access because the request came from a trusted location. After users enable location services in Salesforce Authenticator, they can designate trusted locations. When a user trusts a location for a particular activity, such as logging in from a recognized device, that activity is approved from the trusted location for as long as the location is trusted. • `TwoFADenied`—The user denied the approval request in the authenticator app, such as Salesforce Authenticator. • `TwoFAFailedGeneralError`—An error caused by something other than an invalid verification code, too many verification attempts, or authenticator app connectivity. • `TwoFAFailedInvalidCode`—The user provided an invalid verification code. • `TwoFAFailedTooManyAttempts`—The user attempted to verify identity too many times. For example, the user entered an invalid verification code repeatedly. • `TwoFAInitiated`—Salesforce initiated identity verification but hasn't yet challenged the user. • `TwoFAInProgress`—Salesforce challenged the user to verify identity and is waiting for the user to respond or for Salesforce Authenticator to send an automated response. • `TwoFANoAction`—The policy specifies multi-factor authentication (formerly called two-factor authentication) as an action, but the user is already in a high-assurance session. • `TwoFARecoverableError`—Salesforce can't reach the authenticator app to verify identity, but will retry. • `TwoFAReportedDenied`—The user denied the approval request in the authenticator app, such as Salesforce Authenticator, and also flagged the approval request to report to an administrator.

Field	Details
	• `TwoFASucceeded`—The user's identity was verified.
`QueriedEntities`	**Type** string **Properties** Nillable **Description** The type of entities in the list view. For example, `Opportunity, Lead, Account,` or `Case`. Can also include custom objects.
`Records`	**Type** json **Properties** Nillable **Description** A JSON string that represents the list view's data. For example, `{"totalSize":1,"rows":[{"datacells":["005B0000001vURv","001B000000fewai"]}]}`.
`RelatedEventIdentifier`	**Type** string **Properties** Nillable **Description** Represents the `EventIdentifier` of the related event. For example, bd76f3e7-9ee5-4400-9e7f-54de57ecd79c. This field is populated only when the activity that this event monitors requires extra authentication, such as multi-factor authentication. In this case, Salesforce generates more events and sets the `RelatedEventIdentifier` field of the new events to the value of the `EventIdentifier` field of the original event. Use this field with the `EventIdentifier` field to correlate all the related events. If no extra authentication is required, this field is blank.
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.

Field	Details
`RowsProcessed`	**Type** double **Properties** Nillable **Description** The total number of rows returned in the list view. When list data is divided into multiple list view events, this value is the same for all data chunks.
`Scope`	**Type** string **Properties** Nillable **Description** Represents the filter criteria for the list view. Possible values are: • `Delegated`—Records delegated to another user for action; for example, a delegated task. • `Everything`—All records, for example All Opportunities. • `Mine`—Records owned by the user running the list view, for example My Opportunities. • `MineAndMyGroups`—Records owned by the user running the list view, and records assigned to the user's queues. • `MyTerritory`—Records in the territory of the user seeing the list view. This option is available if territory management is enabled for your org. • `MyTeamTerritory`—Records in the territory of the team of the user seeing the list view. This option is available if territory management is enabled for your org. • `Queue`—Records assigned to a queue. • `Team`—Records assigned to a team.
`Sequence`	**Type** int **Properties** Nillable **Description** Incremental sequence number that indicates the order of multiple events that result from a given list view execution. When a list view execution returns many records, Salesforce splits this data into chunks based on the size of the records, and then creates multiple correlated ListViewEventStreams. The field values in each of these correlated ListViewEventStreams are the same, except for `Records`, which contains the different data chunks, and `Sequence`, which identifies each chunk in order. Every list view execution has a unique `ExecutionIdentifier` value to differentiate it from other list view executions. To view all the data chunks from a single list view execution, use the `Sequence` and `ExecutionIdentifier` fields in combination.

Field	Details
	For more information, see `ExecutionIdentifier`.
`SessionKey`	**Type** string **Properties** Nillable **Description** The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started. For example, vMASKIU6AxEr+Op5.
`SessionLevel`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** Session-level security controls user access to features that support it, such as connected apps and reporting. Possible values are: • `HIGH_ASSURANCE`—A high assurance session was used for resource access. For example, when the user tries to access a resource such as a connected app, report, or dashboard that requires a high-assurance session level. • `LOW`—The user's security level for the current session meets the lowest requirements. Note: This low level is not available, nor used, in the Salesforce UI. User sessions through the UI are either standard or high assurance. You can set this level using the API, but users assigned this level will experience unpredictable and reduced functionality in their Salesforce org. • `STANDARD`—The user's security level for the current session meets the Standard requirements set in the org's Session Security Levels.
`SourceIp`	**Type** string **Properties** Nillable **Description** The source IP address of the client that logged in. For example, `126.7.4.2`.
`UserId`	**Type** reference **Properties** Nillable **Description** The user's unique ID. For example, `005000000000123`.

Field	Details
`Username`	**Type** string **Properties** Nillable **Description** The username in the format of `user@company.com` at the time the event was created.

LoginAsEvent

LoginAsEvent tracks when an admin logs in as another user in your org. In Real-Time Event Monitoring, it captures events for org admins and Experience Cloud sites only. LoginAsEvent is a big object that stores the event data of LoginAsEventStream. This object is available in API version 46.0 and later.

Supported Calls

describeSObjects(), `query()`

Special Access Rules

Accessing this object requires either the Salesforce Shield or Salesforce Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Fields

Field	Details
`Application`	**Type** string **Properties** Nillable **Description** The application name in English. For example, Salesforce Internal Application, or Microsoft SOAP Toolkit.
`Browser`	**Type** string **Properties** Nillable **Description** The browser name and version if known. Possible values for the browser name are: • Chrome • Firefox • Safari

Field	Details
	• Unknown For example, “Chrome 77”.
DelegatedOrganizationId	**Type** string **Properties** Nillable **Description** Organization Id of the admin who performs logs in as another user. For example, 00Dxx0000001gEH
DelegatedUsername	**Type** string **Properties** Nillable **Description** Username of the admin who logs in as another user. For example, `admin@company.com`
EventDate	**Type** dateTime **Properties** Filter, Sort **Description** The time and date of the event. For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.
EventIdentifier	**Type** string **Properties** Filter, Sort **Description** The unique identifier for each record in LoginAsEvent. Use this field as the primary key in your queries.
LoginAsCategory	**Type** picklist **Properties** Nillable, Restricted picklist **Description** Represents how the user logs in as another user. Possible values are: • OrgAdmin—An administrator logs in to Salesforce as an individual user. Depending on your org settings, the individual user grants login access to the administrator.

Field	Details
	• Community—A user who has been granted access to a Salesforce Experience Cloud site logs in.
`LoginHistoryId`	**Type** reference **Properties** Nillable **Description** The ID from the LoginHistory entity associated with this login event. Tracks a user session so you can correlate user activity with a particular login instance. For example, 0Yaxx0000000019.
`LoginKey`	**Type** string **Properties** Nillable **Description** The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring. For example, 8gHOMQu+xvjCmRUt.
`LoginType`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The event's type of login. For example, "Application."
`Platform`	**Type** string **Properties** Nillable **Description** The platform name and version that are used during the login event. If no platform name is available, "Unknown" is returned. Platform names are in English. For example, "Mac OSX".
`SessionKey`	**Type** string **Properties** Nillable **Description** The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started. For LoginAsEvent, this field is usually null because the event is captured before a session is created.

Field	Details
`SessionLevel`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** Session-level security controls user access to features that support it, such as connected apps and reporting. Possible values are: • HIGH_ASSURANCE - A high assurance session was used for resource access. For example, when the user tries to access a resource such as a connected app, report, or dashboard that requires a high-assurance session level. • LOW - The user's security level for the current session meets the lowest requirements. Note: This low level is available, nor used, in the Salesforce UI. User sessions through the UI are either standard or high assurance. You can set this level using the API, but users assigned this level experience unpredictable and reduced functionality in their Salesforce org. • STANDARD - The user's security level for the current session meets the Standard requirements set in the current organization Session Security Levels.
`SourceIp`	**Type** string **Properties** Nillable **Description** The source IP address of the client logging in. For example, 126.7.4.2.
`TargetUrl`	**Type** string **Properties** Nillable **Description** The URL redirected to after logging in as another user succeeds.
`UserId`	**Type** reference **Properties** Nillable **Description** Unique ID that identifies the user who is being logged in as by the admin. For example, `005000000000123`.

Field	Details
`Username`	**Type** string **Properties** Nillable **Description** Username of the user who is being logged in as by the admin, in the format of `someuser@company.com`.
`UserType`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The category of user license of the user who is being logged in as by the admin. Each `UserType` is associated with one or more UserLicense records. Each UserLicense is associated with one or more profiles. Valid values are: • `CsnOnly`—Users whose access to the application is limited to Chatter. This user type includes Chatter Free and Chatter moderator users. • `CspLitePortal`—CSP Lite Portal license. Users whose access is limited because they're organization customers and access the application through a customer portal or an Experience Cloud site. • `CustomerSuccess`—Customer Success license. Users whose access is limited because they're organization customers and access the application through a customer portal. • `Guest`—Users whose access is limited so that your customers can view and interact with your site without logging in. • `PowerCustomerSuccess`—Power Customer Success license. Users whose access is limited because they're organization customers and access the application through a customer portal. Users with this license type can view and edit data they directly own or data owned by or shared with users below them in the customer portal role hierarchy. • `PowerPartner`—Power Partner license. Users whose access is limited because they're partners and typically access the application through a partner portal or site. • `SelfService`—Users whose access is limited because they're organization customers and access the application through a self-service portal. • `Standard`—Standard user license. This user type also includes Salesforce Platform and Salesforce Platform One user licenses, and admins for this org.

Standard SOQL Usage

Currently, the only supported SOQL function on LoginAsEvent is `WHERE`, and you can only use comparison operators (=, <, >, <=, and >=) on the final expression in a `WHERE` clause. The != operator isn't supported.

Note: Date functions such as `convertTimezone()` aren't supported. For example, `SELECT CALENDAR_YEAR(EventDate), Count(EventIdentifier) FROM LoginAsEvent GROUP BY`

`CALENDAR_YEAR(EventDate)` returns an error. You can use date literals in your queries and some date and date/time functions like `TODAY`, `YESTERDAY`, and `LAST_n_DAYS:1`. However, these functions use comparison operators behind the scenes. This means you can only use them in the final expression of a `WHERE` clause.

LoginAsEvent allows filtering over two ordered fields: `EventDate` and `EventIdentifier`. There's a catch here; your query doesn't work unless you use the correct order and combination of these fields. The following list provides some examples of valid and invalid queries:

- **Unfiltered**
  - **Valid**—Contains no `WHERE` clause, so no special rules apply.

```
SELECT Application, Browser, EventDate, EventIdentifier, LoginHistoryId, UserId
FROM LoginAsEvent
```

- **Filtered on** `EventDate`
  - **Valid**—You can filter solely on `EventDate`, but single filters on other fields fail. You can also use a comparison operator in this query type.

```
SELECT Application, Browser, EventDate, EventIdentifier, LoginHistoryId, UserId
FROM LoginAsEvent
WHERE EventDate<=2014-11-27T14:54:16.000Z
```

  - **Valid**—You can filter on `EventDate` using date literals.

```
SELECT Application, Browser, EventDate, EventIdentifier, LoginHistoryId, UserId
FROM LoginAsEvent
WHERE EventDate<=TODAY
```

- **Filtered on** `EventDate` **and** `EventIdentifier`
  - **Valid**—Successful queries on LoginAsEvent filter over both fields.

```
SELECT Application, Browser, EventDate, EventIdentifier, LoginHistoryId, UserId
FROM LoginAsEvent
WHERE EventDate=2014-11-27T14:54:16.000Z and
EventIdentifier='f0b28782-1ec2-424c-8d37-8f783e0a3754'
```

  - **Invalid**—Queries on LoginAsEvent with `EventDate` and standard date literals.

```
SELECT Application, Browser, EventDate, EventIdentifier, LoginHistoryId, UserId
FROM LoginAsEvent
WHERE EventDate=TODAY and EventIdentifier='f0b28782-1ec2-424c-8d37-8f783e0a3754'
```

  - **Invalid**—Filtering only on `EventDate` with <= or >= operator and `EventIdentifier` field isn't supported.

```
SELECT Application, Browser, EventDate, EventIdentifier, LoginHistoryId, UserId
FROM LoginAsEvent
WHERE EventDate<=2014-11-27T14:54:16.000Z and
EventIdentifier='f0b28782-1ec2-424c-8d37-8f783e0a3754'
```

Async SOQL Usage

With Async SOQL, you can filter on any field in LoginAsEvent and use any comparison operator in your query.

Example: Get yesterday's LoginAs events where an Org Admin is logging into the portal as another user.

```
SELECT DelegatedUsername, DelegatedOrganizationId, EventDate, LoginAsCategory,
LoginHistoryId, LoginType, SourceIp, TargetUrl, UserId, Username, UserType FROM
LoginAsEvent WHERE EventDate=Yesterday AND LoginAsCategory='OrgAdmin'
```

SEE ALSO:

Big Objects Implementation Guide

LoginAsEventStream

LoginAsEvent tracks when an admin logs in as another user in your org. In Real-Time Event Monitoring, it captures events for org admins and Experience Cloud site only. This object is available in API version 46.0 and later.

Supported Calls

`describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	
Flows	
Processes	
Streaming API (CometD)	✔

Streaming API Subscription Channel

`/event/LoginAsEventStream`

Special Access Rules

Accessing this object requires either the Salesforce Shield or Salesforce Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Fields

Field	Details
`Application`	**Type** string **Properties** Nillable

Field	Details
	Description The application name in English. For example, Salesforce Internal Application, or Microsoft SOAP Toolkit.
`Browser`	**Type** string **Properties** Nillable **Description** The browser name and version if known. Possible values for the browser name are: • Chrome • Firefox • Safari • Unknown For example, "Chrome 77".
`DelegatedOrganizationId`	**Type** string **Properties** Nillable **Description** Organization Id of the user who is logging in as another user. For example, 00Dxx0000001gEH
`DelegatedUsername`	**Type** string **Properties** Nillable **Description** Username of the admin who is logging in as another user. For example, `admin@company.com`
`EventDate`	**Type** dateTime **Properties** Filter, Sort **Description** The time and date of the event. For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.
`EventIdentifier`	**Type** string

Field	Details
	Properties Filter, Sort **Description** The unique ID of the event, which is shared with the corresponding storage object. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`. Use this field to correlate the event with its storage object. Also, use this field as the primary key in your queries.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`LoginAsCategory`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** Represents how the user logs in as another user. Possible values are: • OrgAdmin—An administrator logs in to Salesforce as an individual user. Depending on your org settings, the individual user grants login access to the administrator. • Community—A user who has been granted access to a Salesforce Experience Cloud site logs in.
`LoginHistoryId`	**Type** reference **Properties** Nillable **Description** Tracks a user session so you can correlate user activity with a particular login instance. The ID from the LoginHistory entity associated with this login event. For example, 0Yaxx0000000019.
`LoginKey`	**Type** string **Properties** Nillable **Description** The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring. For example, 8gHOMQu+xvjCmRUt.

Field	Details
`LoginType`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The event's type of login. For example, "Application."
`Platform`	**Type** string **Properties** Nillable **Description** The platform name and version that are used during the login event. If no platform name is available, "Unknown" is returned. Platform names are in English. For example, "Mac OSX".
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`SessionKey`	**Type** string **Properties** Nillable **Description** The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started. For LoginAsEvent, this field is usually null because the event is captured before a session is created.
`SessionLevel`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** Session-level security controls user access to features that support it, such as connected apps and reporting. Possible values are:

Field	Details
	• HIGH_ASSURANCE - A high assurance session was used for resource access. For example, when the user tries to access a resource such as a connected app, report, or dashboard that requires a high-assurance session level. • LOW - The user's security level for the current session meets the lowest requirements. Note: This low level is not available, nor used, in the Salesforce UI. User sessions through the UI are either standard or high assurance. You can set this level using the API, but users assigned this level experience unpredictable and reduced functionality in their Salesforce org. • STANDARD - The user's security level for the current session meets the Standard requirements set in the current organization Session Security Levels.
`SourceIp`	**Type** string **Properties** Nillable **Description** The source IP address of the client logging in. For example, 126.7.4.2.
`TargetUrl`	**Type** string **Properties** Nillable **Description** The URL redirected to after logging in as another user succeeds.
`UserId`	**Type** reference **Properties** Nillable **Description** Unique ID that identifies the user who is being logged in as by the admin. For example, `005000000000123`.
`Username`	**Type** string **Properties** Nillable **Description** Username of the user who is being logged in as by the admin, in the format of `admin@company.com`.

Field	Details
`UserType`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The category of user license of the user who is being logged in as by the admin. Each `UserType` is associated with one or more UserLicense records. Each UserLicense is associated with one or more profiles. Valid values: • CsnOnly—Users whose access to the application is limited to Chatter. This user type includes Chatter Free and Chatter moderator users. • CspLitePortal—CSP Lite Portal license. Users whose access is limited because they're organization customers and access the application through a customer portal or an Experience Cloud site. • CustomerSuccess—Customer Success license. Users whose access is limited because they're organization customers and access the application through a customer portal. • Guest • PowerCustomerSuccess—Power Customer Success license. Users whose access is limited because they'reare organization customers and access the application through a customer portal. Users with this license type can view and edit data they directly own or data owned by or shared with users below them in the customer portal role hierarchy. • PowerPartner—Power Partner license. Users whose access is limited because they're partners and typically access the application through a partner portal or site. • SelfService • Standard—Standard user license. This user type also includes Salesforce Platform and Salesforce Platform One user licenses, and admins for this org.

LoginEvent

LoginEvent tracks the login activity of users who log in to Salesforce. You can use LoginEvent in a transaction security policy. LoginEvent is a big object that stores the event data of LoginEventStream. This object is available in API version 36.0 and later.

Supported Calls

`describeSObjects()`, `query()`

Special Access Rules

Accessing this object requires either the Salesforce Shield or Salesforce Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Fields

Field	Details
`AdditionalInfo`	**Type** string **Properties** Nillable **Description** JSON serialization of additional information that's captured from the `HTTP` headers during a login request. For example, `{"field1": "value1","field2": "value2"}`. See Working with `AdditionalInfo` on page 274.
`ApiType`	**Type** string **Properties** Nillable **Description** The type of API that's used to log in. Values include: • `SOAP Enterprise` • `SOAP Partner` • `REST API`
`ApiVersion`	**Type** string **Properties** Nillable **Description** The version number of the API. If no version number is available, "Unknown" is returned.
`Application`	**Type** string **Properties** Nillable **Description** The application used to access the org. Possible values include: • `AppExchange` • `Browser` • `Salesforce for iOS` • `Salesforce Developers API Explorer` • `N/A`

Field	Details
`AuthMethodReference`	**Type** string **Properties** Nillable **Description** The authentication method used by a third-party identification provider for an OpenID Connect single sign-on protocol. This field is available in API version 51.0 and later.
`AuthServiceId`	**Type** reference **Properties** Nillable **Description** The 18-character ID for an authentication service for a login event. For example, you can use this field to identify the SAML or authentication provider configuration with which the user logged in.
`Browser`	**Type** string **Properties** Nillable **Description** The browser name and version if known. Possible values for the browser name are: • Chrome • Firefox • Safari • Unknown For example, “Chrome 77”.
`CipherSuite`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The TLS cipher suite used for the login. Values are OpenSSL-style cipher suite names, with hyphen delimiters, for example, `ECDHE-RSA-AES256-GCM-SHA384`. Available in API version 37.0 and later.
`City`	**Type** string **Properties** Nillable

Field	Details
	Description The city where the user's IP address is physically located. This value isn't localized. This field is available in API version 47.0 and later. Note: Due to the nature of geolocation technology, the accuracy of this field can vary.
`ClientVersion`	**Type** string **Properties** Nillable **Description** The version number of the login client. If no version number is available, "Unknown" is returned.
`Country`	**Type** string **Properties** Nillable **Description** The country where the user's IP address is physically located. This value isn't localized.This field is available in API version 47.0 and later. Note: Due to the nature of geolocation technology, the accuracy of this field can vary.
`CountryIso`	**Type** string **Properties** Nillable **Description** The ISO 3166 code for the country where the user's IP address is physically located. For more information, see Country Codes - ISO 3166. This field is available in API version 37.0 and later.
`EvaluationTime`	**Type** double **Properties** Nillable **Description** The amount of time it took to evaluate the transaction security policy, in milliseconds. This field is available in API version 46.0 and later.
`EventDate`	**Type** dateTime **Properties** Filter, Sort

Field	Details
	Description The login time of the specified event. For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.
`EventIdentifier`	**Type** string **Properties** Filter, Sort **Description** The unique identifier for each record in LoginEvent. Use this field as the primary key in your queries. Available in API version 42.0 and later.
`HttpMethod`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The HTTP method of the login request; possible values are `GET`, `POST`, and `Unknown`.
`LoginGeoId`	**Type** reference **Properties** Nillable **Description** The Salesforce ID of the LoginGeo object associated with the login user's IP address. For example, 04FB000001TvhiPMAR.
`LoginHistoryId`	**Type** reference **Properties** Nillable **Description** Tracks a user session so you can correlate user activity with a particular login instance. This field is also available on the LoginHistory, AuthSession, and LoginHistory objects, making it easier to trace events back to a user's original authentication. For example, 0YaB000002knVQLKA2.
`LoginKey`	**Type** string **Properties** Nillable

Field	Details
	Description The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring. This field is available in API version 46.0 and later. For example, lUqjLPQTWRdvRG4.
`LoginLatitude`	**Type** double **Properties** Nillable **Description** The latitude where the user's IP address is physically located.This field is available in API version 47.0 and later. Note: Due to the nature of geolocation technology, the accuracy of this field can vary.
`LoginLongitude`	**Type** double **Properties** Nillable **Description** The longitude where the user's IP address is physically located.This field is available in API version 47.0 and later. Note: Due to the nature of geolocation technology, the accuracy of this field can vary.
`LoginType`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The type of login used to access the session. See the LoginType field of LoginHistory in the Object Reference guide for the list of possible values.
`LoginUrl`	**Type** string **Properties** Nillable **Description** The URL of the login host from which the request is coming. For example, ***`yourInstance`***`.salesforce.com`.
`NetworkId`	**Type** reference

Field	Details
	Properties Nillable **Description** The ID of the Experience Cloud site that the user is logging in to. This field is available if Salesforce Experience Cloud is enabled for your organization.
`Platform`	**Type** string **Properties** Nillable **Description** The operating system name and version that are used during the login event. If no platform name is available, "Unknown" is returned. For example, Mac OSX or iOS/Mac.
`PolicyId`	**Type** reference **Properties** Nillable **Description** The ID of the transaction security policy associated with this event. This field is available in API version 46.0 and later. For example, 0NIB000000000KOOAY.
`PolicyOutcome`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The result of the transaction policy. Possible values are: • `Block`—The user was blocked from performing the operation that triggered the policy. • `Error`—The policy caused an undefined error when it executed. • `FailedInvalidPassword`—The user entered an invalid password. • `FailedPasswordLockout`—The user entered an invalid password too many times. • `NoAction`—The policy didn't trigger. • `Notified`—A notification was sent to the recipient. • `TwoFAAutomatedSuccess`—Salesforce Authenticator approved the request for access because the request came from a trusted location. After users enable location services in Salesforce Authenticator, they can designate trusted locations. When a user trusts a location for a particular activity, that activity is approved from the trusted location for as long as the location is trusted. An example of a particular activity is logging in from a recognized device. • `TwoFADenied`—The user denied the approval request in the authenticator app, such as Salesforce Authenticator.

Field	Details
	• `TwoFAFailedGeneralError`—An error caused by something other than an invalid verification code, too many verification attempts, or authenticator app connectivity. • `TwoFAFailedInvalidCode`—The user provided an invalid verification code. • `TwoFAFailedTooManyAttempts`—The user attempted to verify identity too many times. For example, the user entered an invalid verification code repeatedly. • `TwoFAInitiated`—Salesforce initiated identity verification but hasn't yet challenged the user. • `TwoFAInProgress`—Salesforce challenged the user to verify identity and is waiting for the user to respond or for Salesforce Authenticator to send an automated response. • `TwoFANoAction`—The policy specifies multi-factor authentication (formerly called two-factor authentication) as an action, but the user is already in a high-assurance session. • `TwoFARecoverableError`—Salesforce can't reach the authenticator app to verify identity, but will retry. • `TwoFAReportedDenied`—The user denied the approval request in the authenticator app, such as Salesforce Authenticator, and also flagged the approval request to report to an administrator. • `TwoFASucceeded`—The user's identity was verified. This field is available in API version 46.0 and later.
`PostalCode`	**Type** string **Properties** Nillable **Description** The postal code where the user's IP address is physically located. This value isn't localized.This field is available in API version 47.0 and later. Note: Due to the nature of geolocation technology, the accuracy of this field can vary.
`RelatedEventIdentifier`	**Type** string **Properties** Nillable **Description** Represents the `EventIdentifier` of the related event. For example, bd76f3e7-9ee5-4400-9e7f-54de57ecd79c. This field is populated only when the activity that this event monitors requires extra authentication, such as multi-factor authentication. In this case, Salesforce generates more events and sets the `RelatedEventIdentifier` field of the new events to the value of the `EventIdentifier` field of the original event. Use this field with the `EventIdentifier` field to correlate all the related events. If no extra authentication is required, this field is blank.

Field	Details
`RemoteIdentifier`	**Type** string **Properties** Nillable **Description** Reserved for future use.
`SessionKey`	**Type** string **Properties** Nillable **Description** The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started. For LoginEvent, this field is often null because the event is captured before a session is created. For example, vMASKIU6AxEr+Op5. This field is available in API version 46.0 and later.
`SessionLevel`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** Session-level security controls user access to features that support it, such as connected apps and reporting. Possible values are: • `HIGH_ASSURANCE`—A high assurance session was used for resource access. For example, when the user tries to access a resource such as a connected app, report, or dashboard that requires a high-assurance session level. • `LOW`—The user's security level for the current session meets the lowest requirements. Note: This low level isn't available, nor used, in the Salesforce UI. User sessions through the UI are either standard or high assurance. You can set this level using the API, but users assigned this level experience unpredictable and reduced functionality in their Salesforce org. • `STANDARD`—The user's security level for the current session meets the Standard requirements set in the org's Session Security Levels. This field is available in API version 42.0 and later.
`SourceIp`	**Type** string **Properties** Nillable

Field	Details
	Description The source IP address of the client logging in. For example, `126.7.4.2`.
`Status`	**Type** string **Properties** Nillable **Description** Displays the status of the attempted login. Status is either success or a reason for failure.
`Subdivision`	**Type** string **Properties** Nillable **Description** The name of the subdivision where the user's IP address is physically located. In the U.S., this value is usually the state name (for example, Pennsylvania). This value isn't localized.This field is available in API version 47.0 and later. Note: Due to the nature of geolocation technology, the accuracy of this field can vary.
`TlsProtocol`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The TLS protocol version used for the login. Available in API version 37.0 and later. Valid values are: • `TLS 1.0` • `TLS 1.1` • `TLS 1.2` • `TLS 1.3` • `Unknown`
`UserId`	**Type** reference **Properties** Nillable **Description** The user's unique ID. For example, `005000000000123`.
`Username`	**Type** string

Field	Details
	Properties Nillable **Description** The username in the format of `user@company.com`.
`UserType`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The category of user license. Each `UserType` is associated with one or more UserLicense records. Each UserLicense is associated with one or more profiles. Valid values are: • `CsnOnly`—Users whose access to the application is limited to Chatter. This user type includes Chatter Free and Chatter moderator users. • `CspLitePortal`—CSP Lite Portal license. Users whose access is limited because they're organization customers and access the application through a customer portal or Experience Cloud site. • `CustomerSuccess`—Customer Success license. Users whose access is limited because they're organization customers and access the application through a customer portal. • `Guest` • `PowerCustomerSuccess`—Power Customer Success license. Users whose access is limited because they're organization customers and access the application through a customer portal. Users with this license type can view and edit data they directly own or data owned by or shared with users below them in the customer portal role hierarchy. • `PowerPartner`—Power Partner license. Users whose access is limited because they're partners and typically access the application through a partner portal or site. • `SelfService` • `Standard`—Standard user license. This user type also includes Salesforce Platform and Salesforce Platform One user licenses. This field is available only in the Real-Time Event Monitoring in API version 42.0 and later.

Working with `AdditionalInfo`

`AdditionalInfo` enables you to extend the login event with custom data that can be queried later. For example, you can capture a correlation ID when a user logs in from an external system that shares that unique ID. This process enables tracking logins across systems. To store data with LoginEvent, begin all `AdditionalInfo` field names with `x-sfdc-addinfo-{`***`fieldname`***`}`. For example, a valid field assignment is `x-sfdc-addinfo-correlation_id = ABC123` where `x-sfdc-addinfo-correlation_id` is the field name and `ABC123` is the field value.

When defining field names, note the following:

- `x-sfdc-addinfo-` is case-*insensitive*. `x-sfdc-addinfo-{`***`field name`***`}` is the same as `X-SFDC-ADDINFO-{`***`FIELD NAME`***`}`.

- Fields can contain only alphanumeric and "_" (underscore) characters.
- Field names must be from 2 and 29 characters in length, excluding `x-sfdc-addinfo-`.
- Field names that don't start with `x-sfdc-addinfo-` are ignored.
- Field names that contain invalid characters after `x-sfdc-addinfo-` may cause an HTTP 400 Bad Request error.
- Only the first 30 valid field names are stored in `AdditionalInfo`. Field names aren't necessarily stored in the same order in which they were passed to authentication.

When determining field values, keep the following in mind:

- You can't use existing API field names as `AdditionalInfo` names in the HTTP header. If the `AdditionalInfo` name conflicts with an object's API name, the field value isn't stored. For example, the HTTP header `X-SFDC-ADDINFO-UserId='abc123'` doesn't get stored in `AdditionalInfo`.
- Additional field values can contain only alphanumeric, "_" and "-" characters.
- Field values must be 255 characters in length or fewer. If a field value exceeds 255 characters, only the first 255 characters are stored and the rest are truncated.
- Field values that contain invalid characters are saved with a field header of Empty String ("").
- Only the first 30 valid field names are stored in the `AdditionalInfo` field. They aren't guaranteed to be stored in the same order that they were passed into the authentication.
- When `AggregationFieldName` is `SourceIp`, you can't filter on `AggregationFieldValue` if its value is *`Salesforce.com IP`*.

How to Pass Additional Information by Using HTTP with cURL

Here's an example of passing additional information via the command line.

```
curl https://yourInstance.salesforce.com/services/oauth2/token -d "grant_type=password"
-d
"client_id=3MVG9PhR6g6B7ps4RF_kNPoWSxVQstrazijsE8njPtkpUzVPPffzy8
jIoRE6q9rPznNtlsqbP9ob8kUfMjXXX" -d "client_secret=4180313776440635XXX" -d
"username=user@company.com" -d "password=123456" -H "X-PrettyPrint:1" -H
"x-sfdc-addinfo-correlationid:
d18c5a3f-4fba-47bd-bbf8-6bb9a1786624"
```

How to Pass Additional Information in Java

Here's an example of passing additional information in Java.

```
//adding additional info headers ..
Map<String, String> httpHeaders = new HashMap<String,String>();
httpHeaders.put("x-sfdc-addinfo-fieldname1" /* additional info field*/ ,
"d18c5a3f-4fba-47bd-bbf8-6bb9a1786624" /* value*/);
httpHeaders.put("x-sfdc-addinfo-fieldname2" /* additional info field*/ ,
"d18c5a3f-4fba-47bd-bbf8-6bb9a1786624" /* value*/);
ConnectorConfig config = new ConnectorConfig();
config.setUsername(userId);
config.setPassword(passwd);
config.setAuthEndpoint(authEndPoint);
config.setProxy(proxyHost, proxyPort);
//setting additional info headers
for (Map.Entry<String, String> entry : httpHeaders.entrySet()) {
config.setRequestHeader(entry.getKey(), entry.getValue());
```

```
}
// Set the username and password if your proxy must be authenticated
9
LoginEvent
config.setProxyUsername(proxyUsername);
config.setProxyPassword(proxyPassword);
try {
EnterpriseConnection connection = new EnterpriseConnection(config);
// etc.
} catch (ConnectionException ce) {
ce.printStackTrace();
}
```

Standard SOQL Usage

Currently, the only supported SOQL function on LoginEvent is `WHERE`, and you can only use comparison operators (=, <, >, <=, and >=) on the final expression in a `WHERE` clause. The `!=` operator isn't supported.

Note: Date functions such as `convertTimezone()` aren't supported. For example, `SELECT CALENDAR_YEAR(EventDate), Count(EventIdentifier) FROM LoginEvent GROUP BY CALENDAR_YEAR(EventDate)` returns an error. You can use date literals in your queries and some date and date/time functions like `TODAY`, `YESTERDAY`, and `LAST_n_DAYS:1`. However, these functions use comparison operators behind the scenes which means you can only use them in the final expression of a `WHERE` clause.

LoginEvent allows filtering over two ordered fields: `EventDate` and `EventIdentifier`. There's a catch here; your query doesn't work unless you use the correct order and combination of these fields. The following list provides some examples of valid and invalid queries:

- **Unfiltered**
  - **Valid**—Contains no `WHERE` clause, so no special rules apply.

    ```
    SELECT Application, Browser, EventDate, EventIdentifier, LoginUrl, UserId
    FROM LoginEvent
    ```

- **Filtered on** `EventDate`
  - **Valid**—You can filter solely on `EventDate`, but single filters on other fields fail. You can also use a comparison operator in this query type.

    ```
    SELECT Application, Browser, EventDate, EventIdentifier, LoginUrl, UserId
    FROM LoginEvent
    WHERE EventDate<=2014-11-27T14:54:16.000Z
    ```

  - **Valid**—You can filter on `EventDate` using date literals.

    ```
    SELECT Application, Browser, EventDate, EventIdentifier, LoginUrl, UserId
    FROM LoginEvent
    WHERE EventDate<=TODAY
    ```

- **Filtered on** `EventDate` **and** `EventIdentifier`
  - **Valid**—Successful queries on LoginEvent filter over both fields.

    ```
    SELECT Application, Browser, EventDate, EventIdentifier, LoginUrl, UserId
    FROM LoginEvent
    ```

```
WHERE EventDate=2014-11-27T14:54:16.000Z and
EventIdentifier='f0b28782-1ec2-424c-8d37-8f783e0a3754'
```

- **Invalid**—Queries on LoginEvent with `EventDate` and standard date literals.

```
SELECT Application, Browser, EventDate, EventIdentifier, LoginUrl, UserId
FROM LoginEvent
WHERE EventDate=TODAY and EventIdentifier='f0b28782-1ec2-424c-8d37-8f783e0a3754'
```

- **Invalid**—Filtering only on `EventDate` with <= or >= operator and `EventIdentifier` field isn't supported.

```
SELECT Application, Browser, EventDate, EventIdentifier, LoginUrl, UserId
FROM LoginEvent
WHERE EventDate<=2014-11-27T14:54:16.000Z and
EventIdentifier='f0b28782-1ec2-424c-8d37-8f783e0a3754'
```

Async SOQL Usage

With Async SOQL, you can filter on any field in LoginEvent and use any comparison operator in your query.

Example: Get Yesterday's Successful Logins

```
SELECT Application, Browser, EventDate, EventIdentifier, LoginUrl, UserId FROM LoginEvent
WHERE EventDate<Yesterday AND Status='Success'
```

SEE ALSO:

LoginEventStream

Async SOQL Guide (Pilot)

Big Objects Implementation Guide

LoginEventStream

LoginEventStream tracks login activity of users who log in to Salesforce. This object is available in API version 46.0 and later.

Supported Calls

`describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	
Flows	
Processes	
Streaming API (CometD)	✔

Streaming API Subscription Channel

`/event/LoginEventStream`

Special Access Rules

Accessing this object requires either the Salesforce Shield or Salesforce Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Fields

Field	Details
`AdditionalInfo`	**Type** string **Properties** Nillable **Description** JSON serialization of additional information that's captured from the `HTTP` headers during a login request. For example, `{"field1": "value1","field2": "value2"}`.
`ApiType`	**Type** string **Properties** Nillable **Description** The type of API that's used to log in. Values include: • `SOAP Enterprise` • `SOAP Partner` • `REST API`
`ApiVersion`	**Type** string **Properties** Nillable **Description** The version number of the API. If no version number is available, "Unknown" is returned.
`Application`	**Type** string **Properties** Nillable **Description** The application used to access the org. Possible values include: • `AppExchange`

Field	Details
	• `Browser` • `Salesforce for iOS` • `Salesforce Developers API Explorer` • `N/A`
`AuthMethodReference`	**Type** string **Properties** Nillable **Description** The authentication method used by a third-party identification provider for an OpenID Connect single sign-on protocol. This field is available in API version 51.0 and later.
`AuthServiceId`	**Type** string **Properties** Nillable **Description** The 18-character ID for an authentication service for a login event. For example, you can use this field to identify the SAML or authentication provider configuration with which the user logged in.
`Browser`	**Type** string **Properties** Nillable **Description** The browser name and version if known. Possible values for the browser name are: • Chrome • Firefox • Safari • Unknown For example, “Chrome 77”.
`CipherSuite`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The TLS cipher suite used for the login. Values are OpenSSL-style cipher suite names, with hyphen delimiters, for example, `ECDHE-RSA-AES256-GCM-SHA384`. Available in API version 37.0 and later.

Field	Details
`City`	**Type** string **Properties** Nillable **Description** The city where the user's IP address is physically located. This value isn't localized. This field is available in API version 47.0 and later. Note: Due to the nature of geolocation technology, the accuracy of this field can vary.
`ClientVersion`	**Type** string **Properties** Nillable **Description** The version number of the login client. If no version number is available, "Unknown" is returned.
`Country`	**Type** string **Properties** Nillable **Description** The country where the user's IP address is physically located. This value isn't localized.This field is available in API version 47.0 and later. Note: Due to the nature of geolocation technology, the accuracy of this field can vary.
`CountryIso`	**Type** string **Properties** Nillable **Description** The ISO 3166 code for the country where the user's IP address is physically located. For more information, see Country Codes - ISO 3166.
`EvaluationTime`	**Type** double **Properties** Nillable **Description** The amount of time it took to evaluate the transaction security policy, in milliseconds.

Field	Details
`EventDate`	**Type** dateTime **Properties** Nillable **Description** The login time of the specified event. For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.
`EventIdentifier`	**Type** string **Properties** (none) **Description** The unique ID of the event, which is shared with the corresponding storage object. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`. Use this field to correlate the event with its storage object. Also, use this field as the primary key in your queries. Available in API version 42.0 and later.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`HttpMethod`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The HTTP method of the login request; possible values are `GET`, `POST`, and `Unknown`.
`LoginGeoId`	**Type** string **Properties** Nillable **Description** The Salesforce ID of the LoginGeo object associated with the login user's IP address. For example, 04FB000001TvhiPMAR.

Field	Details
`LoginHistoryId`	**Type** reference **Properties** Nillable **Description** Tracks a user session so you can correlate user activity with a particular login instance. This field is also available on the LoginHistory, AuthSession, and LoginHistory objects, making it easier to trace events back to a user's original authentication. For example, 0YaB000002knVQLKA2.
`LoginKey`	**Type** string **Properties** Nillable **Description** The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring. For example, lUqjLPQTWRdvRG4.
`LoginLatitude`	**Type** double **Properties** Nillable **Description** The latitude where the user's IP address is physically located.This field is available in API version 47.0 and later. Note: Due to the nature of geolocation technology, the accuracy of this field can vary.
`LoginLongitude`	**Type** double **Properties** Nillable **Description** The longitude where the user's IP address is physically located.This field is available in API version 47.0 and later. Note: Due to the nature of geolocation technology, the accuracy of this field can vary.
`LoginType`	**Type** picklist **Properties** Nillable, Restricted picklist

Field	Details
	Description The type of login used to access the session. See the LoginType field of LoginHistory in the Object Reference guide for the list of possible values.
`LoginUrl`	**Type** string **Properties** Nillable **Description** The URL of the login host from which the request is coming. For example, ***`yourInstance`***`.salesforce.com`.
`NetworkId`	**Type** string **Properties** Nillable **Description** The ID of the Experience Cloud site that the user is logging in to. This field is available if Salesforce Experience Cloud is enabled for your organization.
`Platform`	**Type** string **Properties** Nillable **Description** The operating system name and version that are used during the login event. If no platform name is available, "Unknown" is returned. For example, Mac OSX or iOS/Mac.
`PolicyId`	**Type** reference **Properties** Nillable **Description** The ID of the transaction security policy associated with this event. For example, 0NIB000000000KOOAY.
`PolicyOutcome`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The result of the transaction policy. Possible values are:

Field	Details
	• `Block`—The user was blocked from performing the operation that triggered the policy. • `Error`—The policy caused an undefined error when it executed. • `FailedInvalidPassword`—The user entered an invalid password. • `FailedPasswordLockout`—The user entered an invalid password too many times. • `NoAction`—The policy didn't trigger. • `Notified`—A notification was sent to the recipient. • `TwoFAAutomatedSuccess`—Salesforce Authenticator approved the request for access because the request came from a trusted location. After users enable location services in Salesforce Authenticator, they can designate trusted locations. When a user trusts a location for a particular activity, that activity is approved from the trusted location for as long as the location is trusted. An example of a particular activity is logging in from a recognized device. • `TwoFADenied`—The user denied the approval request in the authenticator app, such as Salesforce Authenticator. • `TwoFAFailedGeneralError`—An error caused by something other than an invalid verification code, too many verification attempts, or authenticator app connectivity. • `TwoFAFailedInvalidCode`—The user provided an invalid verification code. • `TwoFAFailedTooManyAttempts`—The user attempted to verify identity too many times. For example, the user entered an invalid verification code repeatedly. • `TwoFAInitiated`—Salesforce initiated identity verification but hasn't yet challenged the user. • `TwoFAInProgress`—Salesforce challenged the user to verify identity and is waiting for the user to respond or for Salesforce Authenticator to send an automated response. • `TwoFANoAction`—The policy specifies multi-factor authentication (formerly called two-factor authentication) as an action, but the user is already in a high-assurance session. • `TwoFARecoverableError`—Salesforce can't reach the authenticator app to verify identity, but will retry. • `TwoFAReportedDenied`—The user denied the approval request in the authenticator app, such as Salesforce Authenticator, and also flagged the approval request to report to an administrator. • `TwoFASucceeded`—The user's identity was verified.
`PostalCode`	**Type** string **Properties** Nillable **Description** The postal code where the user's IP address is physically located. This value isn't localized.This field is available in API version 47.0 and later. Note: Due to the nature of geolocation technology, the accuracy of this field can vary.

Field	Details
`RelatedEventIdentifier`	**Type** string **Properties** Nillable **Description** Represents the `EventIdentifier` of the related event. For example, bd76f3e7-9ee5-4400-9e7f-54de57ecd79c. This field is populated only when the activity that this event monitors requires extra authentication, such as multi-factor authentication. In this case, Salesforce generates more events and sets the `RelatedEventIdentifier` field of the new events to the value of the `EventIdentifier` field of the original event. Use this field with the `EventIdentifier` field to correlate all the related events. If no extra authentication is required, this field is blank.
`RemoteIdentifier`	**Type** string **Properties** Nillable **Description** Reserved for future use.
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`SessionKey`	**Type** string **Properties** Nillable **Description** The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started. For example, vMASKIU6AxEr+Op5.
`SessionLevel`	**Type** picklist **Properties** Nillable, Restricted picklist

Field	Details
	Description Session-level security controls user access to features that support it, such as connected apps and reporting. Possible values are: • `HIGH_ASSURANCE`—A high assurance session was used for resource access. For example, when the user tries to access a resource such as a connected app, report, or dashboard that requires a high-assurance session level. • `LOW`—The user's security level for the current session meets the lowest requirements. Note: This low level isn't available, nor used, in the Salesforce UI. User sessions through the UI are either standard or high assurance. You can set this level using the API, but users assigned this level experience unpredictable and reduced functionality in their Salesforce org. • `STANDARD`—The user's security level for the current session meets the Standard requirements set in the org's Session Security Levels.
`SourceIp`	**Type** string **Properties** Nillable **Description** The source IP address of the client logging in. For example, `126.7.4.2`.
`Status`	**Type** string **Properties** Nillable **Description** Displays the status of the attempted login. Status is either success or a reason for failure.
`Subdivision`	**Type** string **Properties** Nillable **Description** The name of the subdivision where the user's IP address is physically located. In the U.S., this value is usually the state name (for example, Pennsylvania). This value isn't localized.This field is available in API version 47.0 and later. Note: Due to the nature of geolocation technology, the accuracy of this field can vary.
`TlsProtocol`	**Type** picklist

Field	Details
	Properties Nillable, Restricted picklist **Description** The TLS protocol version used for the login. Valid values are: • `TLS 1.0` • `TLS 1.1` • `TLS 1.2` • `TLS 1.3` • `Unknown`
`UserId`	**Type** reference **Properties** Nillable **Description** The user's unique ID. For example, `005000000000123`.
`Username`	**Type** string **Properties** Nillable **Description** The username in the format of `user@company.com`.
`UserType`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The category of user license. Each `UserType` is associated with one or more UserLicense records. Each UserLicense is associated with one or more profiles. Valid values are: • `CsnOnly`—Users whose access to the application is limited to Chatter. This user type includes Chatter Free and Chatter moderator users. • `CspLitePortal`—CSP Lite Portal license. Users whose access is limited because they're organization customers and access the application through a customer portal or an Experience Cloud site. • `CustomerSuccess`—Customer Success license. Users whose access is limited because they're organization customers and access the application through a customer portal. • `Guest` • `PowerCustomerSuccess`—Power Customer Success license. Users whose access is limited because they're organization customers and access the application through a customer

Field	Details
	portal. Users with this license type can view and edit data they directly own or data owned by or shared with users below them in the customer portal role hierarchy. • `PowerPartner`—Power Partner license. Users whose access is limited because they're partners and typically access the application through a partner portal or site. • `SelfService` • `Standard`—Standard user license. This user type also includes Salesforce Platform and Salesforce Platform One user licenses.

SEE ALSO:

LoginEvent

LogoutEvent

Tracks user UI logouts. A logout event records a successful user logout from your org's UI. LogoutEvent is a big object that stores the event data of LogoutEventStream. This object is available in API version 46.0 and later.

Use LogoutEvent data to implement custom logic during logout. For example, you can revoke all refresh tokens for a user at logout.

Note: LogoutEvent records logouts, not timeouts. Timeouts don't cause a LogoutEventStream object to be published. An exception is when a user is automatically logged out of the org after their session times out because the org has the **Force logout on session timeout** setting enabled. In this case, a logout event is recorded. However, if users close their browser during a session, regardless of whether the **Force logout on session timeout** setting is enabled, a logout event isn't recorded.

Supported Calls

`describeSObjects()`, `query()`

Special Access Rules

Accessing this object requires either the Salesforce Shield or Salesforce Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Fields

Field Name	Details
`EventDate`	**Type** dateTime **Properties** Filter, Sort **Description** The time when the specified logout event was captured. For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.

Field Name	Details
`EventIdentifier`	**Type** string **Properties** Filter, Sort **Description** The unique ID of the event. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`.
`LoginKey`	**Type** string **Properties** Nillable **Description** The string that ties together all events in a given user's login session. It starts with a login event and ends with either a logout event or the user session expiring.
`SessionKey`	**Type** string **Properties** Nillable **Description** The user's unique session ID. You can use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started.
`SessionLevel`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** Indicates the session-level security of the session that the user is logging out of for this event. Session-level security controls user access to features that support it, such as connected apps and reporting. Possible values are: • `HIGH_ASSURANCE`—A high assurance session was used for resource access. For example, when the user tries to access a resource such as a connected app, report, or dashboard that requires a high-assurance session level. • `LOW`—The user's security level for the current session meets the lowest requirements. Note: This low level is not available, nor used, in the Salesforce UI. User sessions through the UI are either standard or high assurance. You can set this level using the API, but users assigned this level will

Field Name	Details
	experience unpredictable and reduced functionality in their Salesforce org. • `STANDARD`—The user's security level for the current session meets the Standard requirements set in the org's Session Security Levels.
`SourceIp`	**Type** string **Properties** Nillable **Description** The source IP address of the client logging out. For example, `126.7.4.2`.
`UserId`	**Type** reference **Properties** Nillable **Description** Represents the ID of the user associated with the logout event.
`Username`	**Type** string **Properties** Nillable **Description** Represents the username of the user associated with the logout event.

Standard SOQL Usage

Currently, the only supported SOQL function on LogoutEvent is `WHERE`, and you can only use comparison operators (=, <, >, <=, and >=) on the final expression in a `WHERE` clause. The != operator isn't supported.

Note: Date functions such as `convertTimezone()` aren't supported. For example, `SELECT CALENDAR_YEAR(EventDate), Count(EventIdentifier) FROM LogoutEvent GROUP BY CALENDAR_YEAR(EventDate)` returns an error. You can use date literals in your queries and some date and date/time functions like `TODAY`, `YESTERDAY`, and `LAST_n_DAYS:1`. However, these functions use comparison operators behind the scenes. This means you can only use them in the final expression of a `WHERE` clause.

LogoutEvent allows filtering over two ordered fields: `EventDate` and `EventIdentifier`. There's a catch here; your query won't work unless you use the correct order and combination of these fields. The following list provides some examples of valid and invalid queries:

- **Unfiltered**

  - **Valid**—Contains no `WHERE` clause, so no special rules apply.

```
SELECT EventDate, EventIdentifier, SourceIp, UserId
FROM LogoutEvent
```

- **Filtered on** `EventDate`
  - **Valid**—You can filter solely on `EventDate`, but single filters on other fields fail. You can also use a comparison operator in this query type.

```
SELECT EventDate, EventIdentifier, SourceIp, UserId
FROM LogoutEvent
WHERE EventDate<=2014-11-27T14:54:16.000Z
```

  - **Valid**—You can filter on `EventDate` using date literals.

```
SELECT EventDate, EventIdentifier, SourceIp, UserId
FROM LogoutEvent
WHERE EventDate<=TODAY
```

- **Filtered on** `EventDate` **and** `EventIdentifier`
  - **Valid**—Successful queries on LogoutEvent filter over both fields.

```
SELECT EventDate, EventIdentifier, SourceIp, UserId
FROM LogoutEvent
WHERE EventDate=2014-11-27T14:54:16.000Z and
EventIdentifier='f0b28782-1ec2-424c-8d37-8f783e0a3754'
```

  - **Invalid**—Queries on LogoutEvent with `EventDate` and standard date literals.

```
SELECT EventDate, EventIdentifier, SourceIp, UserId
FROM LogoutEvent
WHERE EventDate=TODAY and EventIdentifier='f0b28782-1ec2-424c-8d37-8f783e0a3754'
```

  - **Invalid**—Filtering only on `EventDate` with <= or >= operator and `EventIdentifier` field isn't supported.

```
SELECT EventDate, EventIdentifier, SourceIp, UserId
FROM LogoutEvent
WHERE EventDate<=2014-11-27T14:54:16.000Z and
EventIdentifier='f0b28782-1ec2-424c-8d37-8f783e0a3754'
```

Async SOQL Usage

With Async SOQL, you can filter on any field in LogoutEvent and use any comparison operator in your query.

Example: Get Yesterday's Successful Logouts

```
SELECT EventDate, EventIdentifier, SourceIp, UserId FROM LogoutEvent WHERE
EventDate<Yesterday
```

SEE ALSO:

Big Objects Implementation Guide

LogoutEventStream

Tracks user UI logout. A logout event records a successful user logout from your org's UI. This object is read only, and you can't retrieve it using a SOQL query. This object is available in API version 41.0 and later.

When LogoutEventStream is enabled, Salesforce publishes logout events, and you can add an Apex trigger to subscribe to those events. You can then implement custom logic during logout. For example, you can revoke all refresh tokens for a user at logout.

Note: LogoutEventStream records logouts, not timeouts. Timeouts don't cause a LogoutEventStream object to be published. An exception is when a user is automatically logged out of the org after their session times out because the org has the **Force logout on session timeout** setting enabled. In this case, a logout event is recorded. However, if users close their browser during a session, regardless of whether the **Force logout on session timeout** setting is enabled, a logout event isn't recorded.

Supported Calls

`describeSObjects()`

Special Access Rules

As of Summer '20 and later, only users with the Customize Application user permission can access this object.

Supported Subscribers

Subscriber	Supported?
Apex Triggers	✔
Flows	
Processes	
Streaming API (CometD)	✔

Streaming API Subscription Channel

`/event/LogoutEventStream`

Fields

Field Name	Details
`EventDate`	**Type** datetime **Properties** Nillable **Description** Represents when the event started. For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.

Field Name	Details
`EventIdentifier`	**Type** string **Properties** Nillable **Description** The unique ID of the event, which is shared with the corresponding storage object. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`. Use this field to correlate the event with its storage object.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`LoginKey`	**Type** string **Properties** Nillable **Description** The string that ties together all events in a given user's login session. It starts with a login event and ends with either a logout event or the user session expiring.
`RelatedEventIdentifier`	**Type** string **Properties** Nillable **Description** Represents the EventIdentifier of the related event.
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.

Field Name	Details
`SessionKey`	**Type** string **Properties** Nillable **Description** The user's unique session ID. You can use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started.
`SessionLevel`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** Indicates the session-level security of the session that the user is logging out of for this event. Session-level security controls user access to features that support it, such as connected apps and reporting. Possible values are: • `HIGH_ASSURANCE`—A high assurance session was used for resource access. For example, when the user tries to access a resource such as a connected app, report, or dashboard that requires a high-assurance session level. • `LOW`—The user's security level for the current session meets the lowest requirements. Note: This low level is not available, nor used, in the Salesforce UI. User sessions through the UI are either standard or high assurance. You can set this level using the API, but users assigned this level experience unpredictable and reduced functionality in their Salesforce org. • `STANDARD`—The user's security level for the current session meets the Standard requirements set in the org's Session Security Levels.
`SourceIp`	**Type** string **Properties** Nillable **Description** The source IP address of the client logging out. For example, `126.7.4.2`.
`UserId`	**Type** reference **Properties** Nillable

Field Name	Details
	Description Represents the ID of the user associated with the logout event.
`Username`	**Type** string **Properties** Nillable **Description** Represents the username of the user associated with the logout event.

Usage

In this example, the subscriber inserts a custom logout event record during logout.

```
trigger LogoutEventTrigger on LogoutEventStream (after insert) {
  LogoutEventStream event = Trigger.new[0];
  LogoutEvent__c record = new LogoutEvent__c();
  record.EventIdentifier__c = event.EventIdentifier;
  record.UserId__c = event.UserId;
  record.Username__c = event.Username;
  record.EventDate__c = event.EventDate;
  record.RelatedEventIdentifier__c = event.RelatedEventIdentifier;
  record.SessionKey__c = event.SessionKey;
  record.LoginKey__c = event.LoginKey;
  insert(record);
}
```

MobileEmailEvent

Tracks your users' email activity in a Salesforce mobile app with Enhanced Mobile Security. This object is available in API version 47.0 and later.

Use the Mobile Security SDK to publish these events. Learn more in the *Salesforce Mobile App Security Guide*.

Supported Calls

`create()`,`describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	✔
Flows	✔
Processes	✔

Subscriber	Supported?
Streaming API (CometD)	✔

Streaming API Subscription Channel

`/event/MobileEmailEvent`

Special Access Rules

Accessing this object requires the Enhanced Mobile App Security and Salesforce Event Monitoring add-on subscriptions and the Enforce Enhanced Mobile App Security user permission.

As of Summer '20 and later, only authenticated internal and external users can access this object.

Fields

Field	Details
`AppPackageIdentifier`	**Type** string **Properties** Create **Description** Generic package identifier for the app.
`AppVersion`	**Type** string **Properties** Create **Description** Version number of the application.
`DeviceIdentifier`	**Type** string **Properties** Create **Description** Unique identifier for the device. Generated by Apple® or Google™.
`DeviceModel`	**Type** string **Properties** Create **Description** Model name of the device.

Field	Details
`EmailAddress`	**Type** string **Properties** Create **Description** Email address of the email recipient.
`EventDate`	**Type** dateTime **Properties** Create, Nillable **Description** The date of the mobile event. For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.
`EventDescription`	**Type** string **Properties** Create, Nillable **Description** Description of the mobile event.
`EventIdentifier`	**Type** string **Properties** Create, Nillable **Description** The unique ID of the event, which is shared with the corresponding storage object, if any. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`OsName`	**Type** string **Properties** Create

Field	Details
	Description Name of the operating system.
`OsVersion`	**Type** string **Properties** Create **Description** Version number of the operating system.
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`UserId`	**Type** reference **Properties** Create, Namepointing **Description** ID of the user who triggered the event.
`WebkitVersion`	**Type** string **Properties** Create, Nillable **Description** Version of WebKit™ used to render web components.

MobileEnforcedPolicyEvent

Tracks enforcement of Enhanced Mobile Security policy events on a Salesforce mobile app with Enhanced Mobile Security. Events are created on first launch of the mobile app and user rechecks, and are batched and published when the app is in the background. This object is available in API version 47.0 and later.

Use the Mobile Security SDK to publish these events. Learn more in the *Salesforce Mobile App Security Guide*.

Supported Calls

`create()`, `describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	✓
Flows	✓
Processes	✓
Streaming API (CometD)	✓

Streaming API Subscription Channel

`/event/MobileEnforcedPolicyEvent`

Special Access Rules

Accessing this object requires the Enhanced Mobile App Security and Salesforce Event Monitoring add-on subscriptions and the Enforce Enhanced Mobile App Security user permission.

As of Summer '20 and later, only authenticated internal and external users can access this object.

Fields

Field	Details
`AppPackageIdentifier`	**Type** string **Properties** Create **Description** Generic package identifier for the application.
`AppVersion`	**Type** string **Properties** Create **Description** Version number of the application.
`DeviceIdentifier`	**Type** string

Field	Details
	Properties Create **Description** Unique identifier for the device. Generated by Apple® or Google™.
`DeviceModel`	**Type** string **Properties** Create **Description** Model name of the device.
`EnforcedAction`	**Type** json **Properties** Create **Description** Action that the policy enforced. Possible values are: • `Warn` • `Error` • `Critical Error`
`EventDate`	**Type** dateTime **Properties** Create, Nillable **Description** Date of the mobile event. For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.
`EventDescription`	**Type** string **Properties** Create, Nillable **Description** Description of the mobile event.
`EventIdentifier`	**Type** string

Field	Details
	Properties Create, Nillable **Description** The unique ID of the event, which is shared with the corresponding storage object, if any. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`OsName`	**Type** string **Properties** Create **Description** Operating system name iOS or Android.
`OsVersion`	**Type** string **Properties** Create **Description** Operating system version number.
`PolicyResults`	**Type** json **Properties** Create **Description** Collection of the results of all policies enforced at the time of the event.
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive

Field	Details
	events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`UserId`	**Type** reference **Properties** Create, Namepointing **Description** ID of the user for whom policies were enforced.
`WebkitVersion`	**Type** string **Properties** Create, Nillable **Description** Version of WebKit™ used to render web components.

MobileScreenshotEvent

Tracks your users' screenshots in a Salesforce mobile app with Enhanced Mobile Security. This object is available in API version 47.0 and later.

Use the Mobile Security SDK to publish these events. Learn more in the *Salesforce Mobile App Security Guide*.

Supported Calls

`create()`, `describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	✓
Flows	✓
Processes	✓
Streaming API (CometD)	✓

Streaming API Subscription Channel

`/event/MobileScreenshotEvent`

Special Access Rules

Accessing this object requires the Enhanced Mobile App Security and Salesforce Event Monitoring add-on subscriptions and the Enforce Enhanced Mobile App Security user permission.

Fields

Field	Details
`AppPackageIdentifier`	**Type** string **Properties** Create **Description** Generic package identifier for the application.
`AppVersion`	**Type** string **Properties** Create **Description** Version number of the application.
`DeviceIdentifier`	**Type** string **Properties** Create **Description** Unique identifier for the device. Generated by Apple® or Google™.
`DeviceModel`	**Type** string **Properties** Create **Description** Model name of the device.
`EventDate`	**Type** dateTime **Properties** Create, Nillable **Description** Date of the mobile event. For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.

Field	Details
`EventDescription`	**Type** string **Properties** Create, Nillable **Description** Description of the mobile event.
`EventIdentifier`	**Type** string **Properties** Create, Nillable **Description** The unique ID of the event, which is shared with the corresponding storage object, if any. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`OsName`	**Type** string **Properties** Create **Description** Name of the operating system.
`OsVersion`	**Type** string **Properties** Create **Description** Version number of the operating system.
`ReplayId`	**Type** string **Properties** Nillable

Field	Details
	Description Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`ScreenDescription`	**Type** string **Properties** Create **Description** Description of what was viewable on the screen when the user took a screenshot, such as Chatter Feed or Record Detail View.
`UserId`	**Type** reference **Properties** Create, Namepointing **Description** ID of the user who triggered the event.
`WebkitVersion`	**Type** string **Properties** Create, Nillable **Description** Version of WebKit™ used to render web components.

MobileTelephonyEvent

Tracks your users' phone calls and text messages in a Salesforce mobile app with Enhanced Mobile Security. This object is available in API version 47.0 and later.

Use the Mobile Security SDK to publish these events. Learn more in the *Salesforce Mobile App Security Guide*.

Supported Calls

`create()`, `describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	✔

Subscriber	Supported?
Flows	✓
Processes	✓
Streaming API (CometD)	✓

Streaming API Subscription Channel

`/event/MobileTelephonyEvent`

Special Access Rules

Accessing this object requires the Enhanced Mobile App Security and Salesforce Event Monitoring add-on subscriptions and the Enforce Enhanced Mobile App Security user permission.

As of Summer '20 and later, only authenticated internal and external users can access this object.

Fields

Field	Details
`AppPackageIdentifier`	**Type** string **Properties** Create **Description** Generic package identifier for the application.
`AppVersion`	**Type** string **Properties** Create **Description** Version number of the application.
`DeviceIdentifier`	**Type** string **Properties** Create **Description** Unique identifier for the device. Generated by Apple® or Google™.
`DeviceModel`	**Type** string

Field	Details
	Properties Create **Description** Model name of the device.
`EventDate`	**Type** dateTime **Properties** Create, Nillable **Description** Date of the mobile event. For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.
`EventDescription`	**Type** string **Properties** Create, Nillable **Description** Description of the mobile event.
`EventIdentifier`	**Type** string **Properties** Create, Nillable **Description** The unique ID of the event, which is shared with the corresponding storage object, if any. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`Operation`	**Type** picklist **Properties** Create, Restricted picklist **Description** Type of operation that triggered the event.

Field	Details
	Possible values are: • `PhoneCall` • `SMS`
`OsName`	**Type** string **Properties** Create **Description** Name of the operating system.
`OsVersion`	**Type** string **Properties** Create **Description** Version number of the operating system.
`PhoneNumber`	**Type** string **Properties** Create **Description** Phone number for the recipient of the phone call or text message.
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`UserId`	**Type** reference **Properties** Create, Namepointing **Description** ID of the user who triggered the event.

Field	Details
`WebkitVersion`	**Type** string **Properties** Create, Nillable **Description** Version of WebKit™ used to render web components.

PermissionSetEvent (Pilot)

Tracks changes to permission sets and permission set groups. This object is available in API version 52.0 and later.

Note: This feature is not generally available and is being piloted with certain Customers subject to additional terms and conditions. It is not part of your purchased Services. This feature is subject to change, may be discontinued with no notice at any time in SFDC's sole discretion, and SFDC may never make this feature generally available. Make your purchase decisions only on the basis of generally available products and features. This feature is made available on an AS IS basis and use of this feature is at your sole risk.

Supported Calls

`describeSObjects()`

Special Access Rules

To be nominated for this pilot, contact Salesforce. Accessing this object requires either the Salesforce Shield or Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Supported Subscribers

Subscriber	Supported?
Apex Triggers	
Flows	
Processes	
Streaming API (CometD)	✔

Fields

Field	Details
`EvaluationTime`	**Type** double **Properties** Nillable

Field	Details
	Description The amount of time it took to evaluate the policy in milliseconds.
`EventDate`	**Type** dateTime **Properties** Nillable **Description** The time when the anomaly was reported. For example, `2020-01-20T19:12:26.965Z`. Milliseconds is the most granular setting.
`EventIdentifier`	**Type** string **Properties** Nillable **Description** The unique ID of the event, which is shared with the corresponding storage object. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`. Use this field to correlate the event with its storage object.
`EventSource`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The source of the event. Possible values are: • `API`—The user made changes to a permission set or permission set group from an API call. • `Classic`—The user made changes to a permission set or permission set group from a page in the Salesforce Classic UI. • `Lightning`—The user made changes to a permission set or permission set group from a page in the Lightning Experience UI.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message.
`ImpactedUserIds`	**Type** json

Field	Details
	Properties Nillable **Description** A comma-separated list of IDs of the users affected by the event. A maximum of 1,000 user IDs are included. For example, if a permission set assigned to two users is updated, the users' IDs are recorded in this field.
`LoginHistoryId`	**Type** reference **Properties** Nillable **Description** Tracks a user session so you can correlate user activity with a particular series of permission set events. This field is also available in the LoginEvent, AuthSession, and LoginHistory objects, making it easier to trace events back to a user's original authentication. For example, `0YaB000002knVQLKA2`. This is a relationship field. **Relationship Name** LoginHistory **Relationship Type** Lookup **Refers To** LoginHistory
`LoginKey`	**Type** string **Properties** Nillable **Description** The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring. For example, `lUqjLPQTWRdvRG4`.
`Operation`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The change to the permission set or permission set group. Possible values are:

Field	Details
	• `AssignedToUsers`—A permission set or permission set group is assigned to one or more users. • `CriticalPerms`—The View All Data, Modify All Data, or Customize Application permissions are enabled. This event is detected by a transaction security policy and blocked. • `PermsDisabled`—Permissions are disabled. • `PermsEnabled`—Permissions are enabled. • `UnassignedFromUsers`—A permission set or permission set group is unassigned from one or more users.
`ParentIdList`	**Type** json **Properties** Nillable **Description** The IDs of the affected permission sets or permission set groups.
`ParentNameList`	**Type** json **Properties** Nillable **Description** The names of the affected permission sets or permission set groups.
`PermissionList`	**Type** json **Properties** Nillable **Description** The list of permissions that are enabled or disabled in the event.
`PermissionType`	**Type** string **Properties** Nillable **Description** The type of permission that is updated in the event. Possible values are: • `ObjectPermission` • `UserPermission`
`PolicyId`	**Type** reference

Field	Details
	Properties Nillable **Description** The ID of the transaction security policy associated with this event. For example, `0NIB000000000KOOAY`. This is a relationship field. **Relationship Name** Policy **Relationship Type** Lookup **Refers To** TransactionSecurityPolicy
`PolicyOutcome`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The result of the transaction policy. Possible values are: • `Block`—The user was blocked from performing the operation that triggered the policy. • `EndSession`—The user's session is terminated. • `Error`—The policy caused an undefined error when it executed. • `FailedInvalidPassword`—The user entered an invalid password. • `FailedPasswordLockout`—The user entered an invalid password too many times. • `NoAction`—The policy didn't trigger. • `Notified`—A notification was sent to the recipient. • `TwoFAAutomatedSuccess`—Salesforce Authenticator approved the request for access because the request came from a trusted location. After users enable location services in Salesforce Authenticator, they can designate trusted locations. When a user trusts a location for a particular activity, such as logging in from a recognized device, that activity is approved from the trusted location for as long as the location is trusted. • `TwoFADenied`—The user denied the approval request in the authenticator app, such as Salesforce Authenticator. • `TwoFAFailedGeneralError`—An error caused by something other than an invalid verification code, too many verification attempts, or authenticator app connectivity. • `TwoFAFailedInvalidCode`—The user provided an invalid verification code. • `TwoFAFailedTooManyAttempts`—The user attempted to verify identity too many times. For example, the user entered an invalid verification code repeatedly.

Field	Details
	• `TwoFAInProgress`—Salesforce challenged the user to verify identity and is waiting for the user to respond or for Salesforce Authenticator to send an automated response. • `TwoFAInitiated`—Salesforce initiated identity verification but hasn't yet challenged the user. • `TwoFANoAction`—The policy specifies multi-factor authentication (formerly called two-factor authentication) as an action, but the user is already in a high-assurance session. • `TwoFARecoverableError`—Salesforce can't reach the authenticator app to verify identity, but will retry. • `TwoFAReportedDenied`—The user denied the approval request in the authenticator app, such as Salesforce Authenticator, and also flagged the approval request to report to an administrator. • `TwoFASucceeded`—The user's identity was verified.
`RelatedEventIdentifier`	**Type** string **Properties** Nillable **Description** Represents the `EventIdentifier` of the related event. For example, `bd76f3e7-9ee5-4400-9e7f-54de57ecd79c`. This field is populated only when the activity that this event monitors requires extra authentication, such as multi-factor authentication. In this case, Salesforce generates more events and sets the `RelatedEventIdentifier` field of the new events to the value of the `EventIdentifier` field of the original event. Use this field with the `EventIdentifier` field to correlate all the related events. If no extra authentication is required, this field is blank.
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`SessionKey`	**Type** string **Properties** Nillable

Field	Details
	Description The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started. For example, `vMASKIU6AxEr+Op5`.
`SessionLevel`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** Session-level security controls user access to features that support it, such as connected apps and reporting. Possible values are: • `HIGH_ASSURANCE`—A high assurance session was used for resource access. For example, when the user tries to access a resource such as a connected app, report, or dashboard that requires a high-assurance session level. • `LOW`—The user's security level for the current session meets the lowest requirements. Note: This low level isn't available or used in the Salesforce UI. User sessions through the UI are either standard or high assurance. You can set this level using the API, but users assigned this level experience unpredictable and reduced functionality in their Salesforce org. • `STANDARD`—The user's security level for the current session meets the Standard requirements set in the org's Session Security Levels.
`SourceIp`	**Type** string **Properties** Nillable **Description** The source IP address of the client that logged in. For example, `126.7.4.2`.
`UserCount`	**Type** string **Properties** Nillable **Description** The number of users affected by the event. This field has a maximum value of 1,000. If the user appears more than 1,000 times, the value remains at 1,000.
`UserId`	**Type** reference **Properties** Nillable

Field	Details
	Description The user's unique ID. For example, `005000000000123`. This is a polymorphic relationship field. **Relationship Name** User **Relationship Type** Lookup **Refers To** User
`Username`	**Type** string **Properties** Nillable **Description** The username in the format of `user@company.com` at the time the event was created.

PermissionSetEventStore (Pilot)

Tracks changes to permission sets and permission set groups. PermissionSetEventStore is a big object that stores the event data of PermissionSetEvent. This object is available in API version 52.0 and later.

Note: This feature is not generally available and is being piloted with certain Customers subject to additional terms and conditions. It is not part of your purchased Services. This feature is subject to change, may be discontinued with no notice at any time in SFDC's sole discretion, and SFDC may never make this feature generally available. Make your purchase decisions only on the basis of generally available products and features. This feature is made available on an AS IS basis and use of this feature is at your sole risk.

Supported Calls

`describeSObjects()`, `query()`

Special Access Rules

To be nominated for this pilot, contact Salesforce. Accessing this object requires either the Salesforce Shield or Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Fields

Field	Details
`EvaluationTime`	**Type** double **Properties** Nillable

Field	Details
	Description The amount of time it took to evaluate the policy in milliseconds.
`EventDate`	**Type** dateTime **Properties** Filter, Sort **Description** The time when the anomaly was reported. For example, `2020-01-20T19:12:26.965Z`. Milliseconds is the most granular setting.
`EventIdentifier`	**Type** string **Properties** Filter, Sort **Description** The unique ID of the event, which is shared with the corresponding storage object. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`. Use this field to correlate the event with its storage object.
`EventSource`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The source of the event. Possible values are: • `API`—The user made changes to a permission set or permission set group from an API call. • `Classic`—The user made changes to a permission set or permission set group from a page in the Salesforce Classic UI. • `Lightning`—The user made changes to a permission set or permission set group from a page in the Lightning Experience UI.
`ImpactedUserIds`	**Type** json **Properties** Nillable **Description** A comma-separated list of IDs of the users affected by the event. A maximum of 1,000 user IDs are included. For example, if a permission set assigned to two users is updated, the users' IDs are recorded in this field.

Field	Details
`LoginHistoryId`	**Type** reference **Properties** Nillable **Description** Tracks a user session so you can correlate user activity with a particular series of permission set events. This field is also available in the LoginEvent, AuthSession, and LoginHistory objects, making it easier to trace events back to a user's original authentication. For example, `0YaB000002knVQLKA2`. This is a relationship field. **Relationship Name** LoginHistory **Relationship Type** Lookup **Refers To** LoginHistory
`LoginKey`	**Type** string **Properties** Nillable **Description** The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring. For example, `lUqjLPQTWRdvRG4`.
`Operation`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The change to the permission set or permission set group. Possible values are: • `AssignedToUsers`—A permission set or permission set group is assigned to one or more users. • `CriticalPerms`—The View All Data, Modify All Data, or Customize Application permissions are enabled. This event is detected by a transaction security policy and blocked. • `PermsDisabled`—Permissions are disabled. • `PermsEnabled`—Permissions are enabled.

Field	Details
	• `UnassignedFromUsers`—A permission set or permission set group is unassigned from one or more users.
`ParentIdList`	**Type** json **Properties** Nillable **Description** The IDs of the affected permission sets or permission set groups.
`ParentNameList`	**Type** json **Properties** Nillable **Description** The names of the affected permission sets or permission set groups.
`PermissionList`	**Type** json **Properties** Nillable **Description** The list of permissions that are enabled or disabled in the event.
`PermissionType`	**Type** string **Properties** Nillable **Description** The type of permission that is updated in the event. Possible values are: • `ObjectPermission` • `UserPermission`
`PolicyId`	**Type** reference **Properties** Nillable **Description** The ID of the transaction security policy associated with this event. For example, `0NIB000000000KOOAY`. This is a relationship field.

Field	Details
	Relationship Name Policy **Relationship Type** Lookup **Refers To** TransactionSecurityPolicy
`PolicyOutcome`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The result of the transaction policy. Possible values are: • `Block`—The user was blocked from performing the operation that triggered the policy. • `EndSession`—The user's session is terminated. • `Error`—The policy caused an undefined error when it executed. • `FailedInvalidPassword`—The user entered an invalid password. • `FailedPasswordLockout`—The user entered an invalid password too many times. • `NoAction`—The policy didn't trigger. • `Notified`—A notification was sent to the recipient. • `TwoFAAutomatedSuccess`—Salesforce Authenticator approved the request for access because the request came from a trusted location. After users enable location services in Salesforce Authenticator, they can designate trusted locations. When a user trusts a location for a particular activity, such as logging in from a recognized device, that activity is approved from the trusted location for as long as the location is trusted. • `TwoFADenied`—The user denied the approval request in the authenticator app, such as Salesforce Authenticator. • `TwoFAFailedGeneralError`—An error caused by something other than an invalid verification code, too many verification attempts, or authenticator app connectivity. • `TwoFAFailedInvalidCode`—The user provided an invalid verification code. • `TwoFAFailedTooManyAttempts`—The user attempted to verify identity too many times. For example, the user entered an invalid verification code repeatedly. • `TwoFAInProgress`—Salesforce challenged the user to verify identity and is waiting for the user to respond or for Salesforce Authenticator to send an automated response. • `TwoFAInitiated`—Salesforce initiated identity verification but hasn't yet challenged the user. • `TwoFANoAction`—The policy specifies multi-factor authentication (formerly called two-factor authentication) as an action, but the user is already in a high-assurance session.

Field	Details
	• `TwoFARecoverableError`—Salesforce can't reach the authenticator app to verify identity, but will retry. • `TwoFAReportedDenied`—The user denied the approval request in the authenticator app, such as Salesforce Authenticator, and also flagged the approval request to report to an administrator. • `TwoFASucceeded`—The user's identity was verified.
`RelatedEventIdentifier`	**Type** string **Properties** Nillable **Description** Represents the `EventIdentifier` of the related event. For example, `bd76f3e7-9ee5-4400-9e7f-54de57ecd79c`. This field is populated only when the activity that this event monitors requires extra authentication, such as multi-factor authentication. In this case, Salesforce generates more events and sets the `RelatedEventIdentifier` field of the new events to the value of the `EventIdentifier` field of the original event. Use this field with the `EventIdentifier` field to correlate all the related events. If no extra authentication is required, this field is blank.
`SessionKey`	**Type** string **Properties** Nillable **Description** The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started. For example, `vMASKIU6AxEr+Op5`.
`SessionLevel`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** Session-level security controls user access to features that support it, such as connected apps and reporting. Possible values are: • `HIGH_ASSURANCE`—A high assurance session was used for resource access. For example, when the user tries to access a resource such as a connected app, report, or dashboard that requires a high-assurance session level. • `LOW`—The user's security level for the current session meets the lowest requirements.

Field	Details
	Note: This low level isn't available or used in the Salesforce UI. User sessions through the UI are either standard or high assurance. You can set this level using the API, but users assigned this level experience unpredictable and reduced functionality in their Salesforce org. • `STANDARD`—The user's security level for the current session meets the Standard requirements set in the org's Session Security Levels.
`SourceIp`	**Type** string **Properties** Nillable **Description** The source IP address of the client that logged in. For example, `126.7.4.2`.
`UserCount`	**Type** string **Properties** Nillable **Description** The number of users affected by the event. This field has a maximum value of 1,000. If the user appears more than 1,000 times, the value remains at 1,000.
`UserId`	**Type** reference **Properties** Nillable **Description** The user's unique ID. For example, `005000000000123`. This is a polymorphic relationship field. **Relationship Name** User **Relationship Type** Lookup **Refers To** User
`Username`	**Type** string **Properties** Nillable

Field	Details
	Description The username in the format of `user@company.com` at the time the event was created.

ReportAnomalyEvent

Tracks anomalies in how users run or export reports, including unsaved reports. This object is available in API version 49.0 and later.

Supported Calls

`describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	
Flows	
Processes	
Streaming API (CometD)	✔

Streaming API Subscription Channel

`/event/ReportAnomalyEvent`

Special Access Rules

Accessing this object requires either the Salesforce Shield or Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Fields

Field	Details
`EvaluationTime`	**Type** double **Properties** Nillable **Description** The amount of time it took to evaluate the policy in milliseconds.
`EventDate`	**Type** dateTime

Field	Details
	Properties Nillable **Description** The time when the anomaly was reported. For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.
`EventIdentifier`	**Type** string **Properties** Nillable **Description** The unique ID of the event, which is shared with the corresponding storage object. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`. Use this field to correlate the event with its storage object.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`LoginKey`	**Type** string **Properties** Nillable **Description** The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring. For example, lUqjLPQTWRdvRG4.
`PolicyId`	**Type** reference **Properties** Nillable **Description** The ID of the transaction policy associated with this event. For example, 0NIB000000000KOOAY. This is a relationship field. **Relationship Name** Policy

Field	Details
	Relationship Type Lookup **Refers To** TransactionSecurityPolicy
`PolicyOutcome`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The result of the transaction policy. Possible values are: • `Error` - The policy caused an undefined error when it executed. • `NoAction` - The policy didn't trigger. • `Notified` - A notification was sent to the recipient.
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`Report`	**Type** string **Properties** Nillable **Description** The report ID for the report for which this anomaly event was detected. For example, `00OD0000001leVCMAY`. If this anomaly resulted from a user executing an unsaved report, the value of this field is null.
`Score`	**Type** double **Properties** Nillable **Description** A number from 0 through 100 that represents the anomaly score for the report execution or export tracked by this event. The anomaly score shows how the user's current report

Field	Details
	activity is different from their typical activity. A low score indicates that the user's current report activity is similar to their usual activity, a high score indicates that it's different.

SecurityEventData	**Type**
	textarea
	Properties
	Nillable
	Description
	The set of features about the report activity that triggered this anomaly event. See the Threat Detection documentation for the list of possible features.
	Let's say, for example, that a user typically downloads 10 accounts but then they deviate from that pattern and download 1,000 accounts. This event is triggered and the contributing features are captured in this field. Potential features include row count, column count, average row size, the day of week, and the browser's user agent used for the report activity. The data captured in this field also shows how much a particular feature contributed to this anomaly event being triggered, represented as a percentage. The data is in JSON format.
	Example
	This example shows that the average row count contributed more than 95% to the anomaly being triggered. Other anomalous features, such as the autonomous system, day of the week the report was run, the browser used, and the number of columns, contributed much less.
	`[`
	`{`
	`"featureName": "rowCount",`
	`"featureValue": "1937568",`
	`"featureContribution": "95.00 %"`
	`},`
	`{`
	`"featureName": "autonomousSystem",`
	`"featureValue": "Bigleaf Networks, Inc.",`
	`"featureContribution": "1.62 %"`
	`},`
	`{`
	`"featureName": "dayOfWeek",`
	`"featureValue": "Sunday",`
	`"featureContribution": "1.42 %"`
	`},`
	`{`
	`"featureName": "userAgent",`
	`"featureValue": "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/76.0.3809.132 Safari/537.36}",`
	`"featureContribution": "1.21 %"`
	`},`
	`{`
	`"featureName": "periodOfDay",`
	`"featureValue": "Evening",`
	`"featureContribution": ".09 %"`
	`},

Field	Details

	<pre>{
	"featureName": "averageRowSize",
	"featureValue": "744",
	"featureContribution": "0.08 %"
	},
	{
	"featureName": "screenResolution",
	"featureValue": "900x1440",
	"featureContribution": "0.07 %"
	}
	]</pre>

`SessionKey`	**Type** string **Properties** Nillable **Description** The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started. For example, vMASKIU6AxEr+Op5.
`SourceIp`	**Type** string **Properties** Nillable **Description** The source IP address of the client that logged in. For example, `126.7.4.2`.
`Summary`	**Type** textarea **Properties** Nillable **Description** A text summary of the report anomaly that caused this event to be created. **Example** • `Report was exported from an infrequent network (BigLeaf Networks Inc.)` • `Report was generated with an unusually high number of rows (111141)`
`UserId`	**Type** reference **Properties** Nillable

Field	Details
	Description The origin user's unique ID. For example, `005000000000123`. This is a polymorphic relationship field. **Relationship Name** User **Relationship Type** Lookup **Refers To** User
`Username`	**Type** string **Properties** Nillable **Description** The origin username in the format of `user@company.com` at the time the event was created.

ReportAnomalyEventStore

Tracks anomalies in how users run or export reports, including unsaved reports. ReportAnomalyEventStore is an object that stores the event data of ReportAnomalyEvent. This object is available in API version 49.0 and later.

Supported Calls

`describeLayout()describeSObjects()`, `getDeleted()`, `getUpdated()`, `query()`

Special Access Rules

Accessing this object requires either the Salesforce Shield or Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Fields

Field	Details
`EvaluationTime`	**Type** double **Properties** Filter, Nillable, Sort **Description** The amount of time it took to evaluate the policy in milliseconds.

Field	Details
`EventDate`	**Type** dateTime **Properties** Filter, Sort **Description** Required. The time when the anomaly was reported. For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.
`EventIdentifier`	**Type** string **Properties** Filter, Group, Sort **Description** Required. The unique ID of the event. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`.
`LastReferencedDate`	**Type** dateTime **Properties** Filter, Nillable, Sort **Description** The timestamp for when the current user last viewed a record related to this record.
`LastViewedDate`	**Type** dateTime **Properties** Filter, Nillable, Sort **Description** The timestamp for when the current user last viewed this record. If this value is null, it's possible that this record was referenced (`LastReferencedDate`) and not viewed.
`LoginKey`	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring. For example, lUqjLPQTWRdvRG4.
`PolicyId`	**Type** reference

Field	Details
	Properties Filter, Group, Nillable, Sort **Description** The ID of the transaction policy associated with this event. For example, 0NIB000000000KOOAY. This is a relationship field. **Relationship Name** Policy **Relationship Type** Lookup **Refers To** TransactionSecurityPolicy
`PolicyOutcome`	**Type** picklist **Properties** Filter, Group, Nillable, Restricted picklist, Sort **Description** The result of the transaction policy. Possible values are: • `Error` - The policy caused an undefined error when it executed. • `NoAction` - The policy didn't trigger. • `Notified` - A notification was sent to the recipient.
`Report`	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** The report ID for the report for which this anomaly event was detected. For example, `00OD00000011eVCMAY`. If this anomaly resulted from a user executing an unsaved report, the value of this field is null.
`ReportAnomalyEventNumber`	**Type** string **Properties** Autonumber, Defaulted on create, Filter, idLookup, Sort **Description** The unique number automatically assigned to the event when it's created. You can't change the format or value for this field.

Field	Details
`Score`	**Type** double **Properties** Filter, Nillable, Sort **Description** A number from 0 through 100 that represents the anomaly score for the report execution or export tracked by this event. The anomaly score shows how the user's current report activity is different from their typical activity. A low score indicates that the user's current report activity is similar to their usual activity, a high score indicates that it's different.

`SecurityEventData`	**Type**
	textarea
	Properties
	Nillable
	Description
	The set of features about the report activity that triggered this anomaly event. See the Threat Detection documentation for the list of possible features.
	Let's say, for example, that a user typically downloads 10 accounts but then they deviate from that pattern and download 1,000 accounts. This event is triggered and the contributing features are captured in this field. Potential features include row count, column count, average row size, the day of week, and the browser's user agent used for the report activity. The data captured in this field also shows how much a particular feature contributed to this anomaly event being triggered, represented as a percentage. The data is in JSON format.
	Example
	This example shows that the average row count contributed more than 95% to the anomaly being triggered. Other anomalous attributes, such as the autonomous system, day of the week the report was run, the browser used, and the number of columns, contributed much less.
	`[`
	`{`
	`"featureName": "rowCount",`
	`"featureValue": "1937568",`
	`"featureContribution": "95.00 %"`
	`},`
	`{`
	`"featureName": "autonomousSystem",`
	`"featureValue": "Bigleaf Networks, Inc.",`
	`"featureContribution": "1.62 %"`
	`},`
	`{`
	`"featureName": "dayOfWeek",`
	`"featureValue": "Sunday",`
	`"featureContribution": "1.42 %"`
	`},`
	`{`
	`"featureName": "userAgent",`

Field	Details

	"featureValue": "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/76.0.3809.132 Safari/537.36}",
	"featureContribution": "1.21 %"
	},
	{
	"featureName": "periodOfDay",
	"featureValue": "Evening",
	"featureContribution": ".09 %"
	},
	{
	"featureName": "averageRowSize",
	"featureValue": "744",
	"featureContribution": "0.08 %"
	},
	{
	"featureName": "screenResolution",
	"featureValue": "900x1440",
	"featureContribution": "0.07 %"
	}
	]

SessionKey	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started. For example, vMASKIU6AxEr+Op5.
SourceIp	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** The source IP address of the client that logged in. For example, `126.7.4.2`.
Summary	**Type** textarea **Properties** Nillable **Description** A text summary of the report anomaly that caused this event to be created.

Field	Details
	Example • `Report was exported from an infrequent network (BigLeaf Networks Inc.)` • `Report was generated with an unusually high number of rows (111141)`
`UserId`	**Type** reference **Properties** Filter, Group, Nillable, Sort **Description** The origin user's unique ID. For example, `005000000000123`. This is a polymorphic relationship field. **Relationship Name** User **Relationship Type** Lookup **Refers To** User
`Username`	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** The origin username in the format of `user@company.com` at the time the event was created.

Associated Object

This object has the following associated object. It's available in the same API version as this object.

ReportAnomalyEventStoreFeed
Feed tracking is available for the object.

ReportEvent

Tracks when reports are run in your org. You can use ReportEvent in a transaction security policy. ReportEvent is a big object that stores the event data of ReportEventStream. This object is available in API version 46.0 and later.

Supported Calls

`describeSObjects()`, `query()`

Special Access Rules

Accessing this object requires either the Salesforce Shield or Salesforce Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Fields

Field	Details
`ColumnHeaders`	**Type** string **Properties** Nillable **Description** Comma-separated values of column headers of the report. For example, [USERNAME, ACCOUNT.NAME, TYPE, DUE_DATE, LAST_UPDATE, ADDRESS1_STATE].
`DashboardId`	**Type** reference **Properties** Nillable **Description** The ID of the dashboard that the report was part of. For example, 01ZB0000000PmoQ. This is a relationship field. **Relationship Name** Dashboard **Relationship Type** Lookup **Refers To** Dashboard
`DashboardName`	**Type** string **Properties** Nillable **Description** The title of the dashboard that the report was part of.
`Description`	**Type** string **Properties** Nillable **Description** The description of the report.

Field	Details
`DisplayedFieldEntities`	**Type** string **Properties** Nillable **Description** The API values of the fields that are displayed on the report, including the names of the entities of the grouped column fields. For example: `[ACCOUNTS, OWNERS]`.
`EvaluationTime`	**Type** double **Properties** Nillable **Description** The amount of time it took to evaluate the policy in milliseconds.
`EventDate`	**Type** dateTime **Properties** Filter, Sort **Description** The time when the specified report event was captured (after query execution takes place). For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.
`EventIdentifier`	**Type** string **Properties** Filter, Sort **Description** The unique ID of the event. For example, 0a4779b0-0da1-4619-a373-0a36991dff90.
`EventSource`	**Type** picklist **Properties** Nillable, Restricted Picklist **Description** The source of the event. Possible values are: • `API`—The user generated the report from an API call. • `Classic`—The user generated the report from the Salesforce Classic UI. • `Lightning`—The user generated the report from Lightning Experience.

Field	Details
`ExecutionIdentifier`	**Type** string **Properties** Nillable **Description** When report data is divided into multiple report events, use this unique identifier to correlate the multiple data chunks. For example, if each chunk has the same `ExecutionIdentifier` of a50a4025-84f2-425d-8af9-2c780869f3b5, enabling you to link them together to get all the data for the report execution. The `Sequence` field contains the incremental sequence numbers that indicate the order of the multiple events. For more information, see `Sequence`.
`ExportFileFormat`	**Type** string **Properties** Nillable **Description** If the user exported the report, this value indicates the format of the exported report. Possible values are: • CSV • Excel
`Format`	**Type** picklist **Properties** Defaulted on create, Nillable, Restricted picklist **Description** The format of the report. Possible values are: • `Matrix` • `MultiBlock` • `Summary` • `Tabular`
`GroupedColumnHeaders`	**Type** string **Properties** Nillable **Description** Comma-separated values of grouped column fields in summary, matrix, and joined reports. For example: `[USERNAME, ACCOUNT.NAME, TYPE, DUE_DATE, LAST_UPDATE, ADDRESS1_STATE]`.

Field	Details
IsScheduled	**Type** boolean **Properties** Defaulted on create **Description** If TRUE, the report was scheduled. If FALSE, the report wasn't scheduled.
LoginHistoryId	**Type** reference **Properties** Nillable **Description** Tracks a user session so you can correlate user activity with a particular series of report events. This field is also available on the LoginEvent, AuthSession, and LoginHistory objects, making it easier to trace events back to a user's original authentication. This value is null if the event that was generated was from a dashboard refresh, a multi-block report, or a scheduled report. For example, 0YaB000002knVQLKA2. This is a relationship field. **Relationship Name** LoginHistory **Relationship Type** Lookup **Refers To** LoginHistory
LoginKey	**Type** string **Properties** Nillable **Description** The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring. This value is null if the event that was generated was from a dashboard refresh, a multi-block report, or a scheduled report. For example, lUqjLPQTWRdvRG4.
Name	**Type** string **Properties** Nillable **Description** The display name of the report. The value is null for report previews.

Field	Details
`NumberOfColumns`	**Type** int **Properties** Nillable **Description** The number of columns in the report.
`Operation`	**Type** picklist **Properties** Nillable, Restricted Picklist **Description** The context in which the report executed, such as from a UI (Classic, Lightning, Mobile), through an API (synchronous, asynchronous, Apex), or through a dashboard. Session information contained in the fields `SessionKey`, `LoginKey`, `SessionLevel`, and `SourceIp` isn't captured in any report resulting from an asynchronous operation. Possible values are: • `ChartRenderedInEmbeddedAnalyticsApp`: Report executed from a rendered chart in an embedded Analytics app. • `ChartRenderedOnHomePage`: Report executed from a rendered chart on the home page. • `ChartRenderedOnVisualforcePage`: Report executed from a rendered chart on a VisualForce Page. • `DashboardComponentPreviewed`: Report executed from a Lightning dashboard component preview. • `DashboardComponentUpdated`: Report executed when a user refreshed a dashboard component. • `ProbeQuery`: Report executed from a probe query. • `ReportAddedToCampaign`: Report was added from an Add to Campaign action. • `ReportExported`: Report executed from a printable view or report export that wasn't asynchronous nor an API export. • `ReportExportedAsynchronously`: Report was exported asynchronously. • `ReportExportedUsingExcelConnector`: Report was exported using the Excel connector. • `ReportOpenedFromMobileDashboard`: Report executed when a user clicked a dashboard component on a mobile device and drilled down to a report. • `ReportPreviewed`: Report executed when a user got preview results while using the report builder. • `ReportResultsAddedToEinsteinDiscovery`: Report executed synchronously from Einstein Discovery. • `ReportResultsAddedToWaveTrending`: Report executed when a user trended a report in Tableau CRM.

Field	Details
	• `ReportRunAndNotificationSent`: Report executed through the notifications API. • `ReportRunFromClassic`: Report executed from the Run Report option of Salesforce Classic. • `ReportRunFromLightning`: Report executed from the Run option in Lightning Experience from a non-mobile browser. • `ReportRunFromMobile`: Report executed from the Run Report option of the mobile Salesforce app. • `ReportRunFromReportingSnapshot`: Report executed through Snapshot Analytics. • `ReportRunFromRestApi`: Report executed from REST API. • `ReportRunUsingApexAsynchronousApi`: Report executed from the asynchronous Apex API. • `ReportRunUsingApexSynchronousApi`: Report executed from the synchronous Apex API. • `ReportRunUsingAsynchronousApi`: Report executed from an asynchronous API. • `ReportRunUsingSynchronousApi`: Report executed from a synchronous API. • `ReportScheduled`: Report was scheduled. • `Test`: Report execution resulted from a test. • `Unknown`: Report execution origin is unknown.
`OwnerId`	**Type** reference **Properties** Nillable **Description** The ID of the folder, organization, or user who owns the report. If the report wasn't saved, this value is the same as `UserId`. For example, 005B0000001vURv. This is a polymorphic relationship field. **Relationship Name** Owner **Relationship Type** Lookup **Refers To** Folder, Organization, User
`PolicyId`	**Type** reference **Properties** Nillable

Field	Details
	Description The ID of the transaction policy associated with this event. For example, 0NIB000000000KOOAY. This is a relationship field. **Relationship Name** Policy **Relationship Type** Lookup **Refers To** TransactionSecurityPolicy
`PolicyOutcome`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The result of the transaction policy. Possible values are: • `Block` - The user was blocked from performing the operation that triggered the policy. • `Error` - The policy caused an undefined error when it executed. • `FailedInvalidPassword` - The user entered an invalid password. • `FailedPasswordLockout` - The user entered an invalid password too many times. • `NoAction` - The policy didn't trigger. • `Notified` - A notification was sent to the recipient. • `TwoFAAutomatedSuccess` - Salesforce Authenticator approved the request for access because the request came from a trusted location. After users enable location services in Salesforce Authenticator, they can designate trusted locations. When a user trusts a location for a particular activity, that activity is approved from the trusted location for as long as the location is trusted. Logging in from a recognized device is an example. • `TwoFADenied` - The user denied the approval request in the authenticator app, such as Salesforce Authenticator. • `TwoFAFailedGeneralError` - An error caused by something other than an invalid verification code, too many verification attempts, or authenticator app connectivity. • `TwoFAFailedInvalidCode` - The user provided an invalid verification code. • `TwoFAFailedTooManyAttempts` - The user attempted to verify identity too many times. For example, the user entered an invalid verification code repeatedly. • `TwoFAInitiated` - Salesforce initiated identity verification but hasn't yet challenged the user. • `TwoFAInProgress` - Salesforce challenged the user to verify identity and is waiting for the user to respond or for Salesforce Authenticator to send an automated response. • `TwoFANoAction` - The policy specifies multi-factor authentication (formerly called two-factor authentication) as an action, but the user is already in a high-assurance session.

Field	Details
	• `TwoFARecoverableError` - Salesforce can't reach the authenticator app to verify identity, but retries. • `TwoFAReportedDenied` - The user denied the approval request in the authenticator app, such as Salesforce Authenticator, and also flagged the approval request to report to an administrator. • `TwoFASucceeded` - The user's identity was verified.
`QueriedEntities`	**Type** string **Properties** Nillable **Description** The entities in the SOQL query. For example, Opportunity, Lead, Account, or Case. Can also include custom objects. For relationship queries, the value of this field contains all entities involved in the query. If the query returns 0 records, then the value of this field is null. **Examples** • For `SELECT Contact.FirstName, Contact.Account.Name from Contact`, the value of `QueriedEntities` is `Account, Contact`. • For `SELECT Account.Name, (SELECT Contact.FirstName, Contact.LastName FROM Account.Contacts) FROM Account`, the value of `QueriedEntities` is `Account, Contact`. • For `SELECT Id, Name, Account.Name FROM Contact WHERE Account.Industry = 'media'`, the value of `QueriedEntities` is `Account, Contact`.
`Records`	**Type** json **Properties** Nillable **Description** A JSON string that represents the report's data. For example, `{"totalSize":1,"rows":[{"datacells":["005B0000001vURv","001B000000fewai"]}]}`.
`RelatedEventIdentifier`	**Type** string **Properties** Nillable **Description** Represents the `EventIdentifier` of the related event. For example, bd76f3e7-9ee5-4400-9e7f-54de57ecd79c. This field is populated only when the activity that this event monitors requires extra authentication, such as multi-factor authentication. In this case, Salesforce generates more

Field	Details
	events and sets the `RelatedEventIdentifier` field of the new events to the value of the `EventIdentifier` field of the original event. Use this field with the `EventIdentifier` field to correlate all the related events. If no extra authentication is required, this field is blank.
`ReportId`	**Type** reference **Properties** Nillable **Description** The ID of the report associated with this event. For example, 00OB00000032FHdMAM. This is a relationship field. **Relationship Name** Report **Relationship Type** Lookup **Refers To** Report
`RowsProcessed`	**Type** double **Properties** Nillable **Description** The total number of rows returned in the report. When report data is divided into multiple report events, this value is the same for all data chunks. For more information, see `ExecutionIdentifier`.
`Scope`	**Type** string **Properties** Nillable **Description** Defines the scope of the data on which the user ran the report. For example, users can run the report against all opportunities, opportunities they own, or opportunities their team owns. Possible values are: • `user` - User owns the objects the report was run against. • `team` - Team owns the objects the report was run against. • `organization` - Report was run against all applicable objects.
`Sequence`	**Type** int

Field	Details
	Properties Nillable **Description** Incremental sequence number that indicates the order of multiple events that result from a given report execution. When a report execution returns many records, Salesforce splits this data into chunks based on the size of the records, and then creates separate multiple ReportEventStreams. The field values in each of these correlated ReportEventStreams are the same, except for `Records` and `Sequence`. `Records` contains the different data chunks. `Sequence` identifies each chunk in order. Every report execution has a unique `ExecutionIdentifier` value to differentiate it from other report executions. To view all the data chunks from a single report execution, use the `Sequence` and `ExecutionIdentifier` fields in combination. Important: When a report executes, we provide the first 1000 events with data in the `Records` field. Use the `ReportId` field to view the full report. For more information, see `ExecutionIdentifier`.
`SessionKey`	**Type** string **Properties** Nillable **Description** The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started. This value is null if the event that was generated was from a dashboard refresh, a multi-block report, or a scheduled report. For example, vMASKIU6AxEr+Op5.
`SessionLevel`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** Session-level security controls user access to features that support it, such as connected apps and reporting. Possible values are: • `HIGH_ASSURANCE` - A high assurance session was used for resource access. For example, when the user tries to access a resource such as a connected app, report, or dashboard that requires a high-assurance session level. • `LOW` - The user's security level for the current session meets the lowest requirements. Note: This low level isn't available, nor used, in the Salesforce UI. User sessions through the UI are either standard or high assurance. You can set this level using the API, but users assigned this level experience unpredictable and reduced functionality in their Salesforce org.

Field	Details
	• `STANDARD` - The user's security level for the current session meets the Standard requirements set in the org's Session Security Levels. This value is null if the event that was generated was from a dashboard refresh, a multi-block report, or a scheduled report.
`SourceIp`	**Type** string **Properties** Nillable **Description** The source IP address of the client that logged in. For example, 126.7.4.2.
`UserId`	**Type** reference **Properties** Filter, Sort **Description** The origin user's unique ID. For example, `005B0000001vURv`. This is a polymorphic relationship field. **Relationship Name** User **Relationship Type** Lookup **Refers To** User
`Username`	**Type** string **Properties** Nillable **Description** The origin username in the format of `user@company.com` at the time the event was created.

Standard SOQL Usage

Currently, the only supported SOQL function on ReportEvent is `WHERE`, and you can only use comparison operators (=, <, >, <=, and >=) on the final expression in a `WHERE` clause. The `!=` operator isn't supported.

Date functions such as `convertTimezone()` aren't supported. For example, `SELECT CALENDAR_YEAR(EventDate), Count(EventIdentifier) FROM ReportEvent GROUP BY CALENDAR_YEAR(EventDate)` returns an error. You can use date literals in your queries and some date and date/time functions like `TODAY`, `YESTERDAY`, and `LAST_n_DAYS:1`.

However, these functions use comparison operators behind the scenes, so you can only use them in the final expression of a `WHERE` clause.

ReportEvent allows filtering over three ordered fields: `UserId` (Beta), `EventDate`, and `EventIdentifier`. There's a catch here; your query doesn't work unless you use the correct order and combination of these fields.

Valid filters for ReportEvent queries are:

- `UserId` alone
- `EventDate` alone
- `UserId` with `EventDate`
- `EventDate` with `EventIdentifier`
- `EventDate` can have a range filter when the order of the filter is `UserId`, `EventDate`.
- `EventIdentifier` can have a range query when the order is `EventDate`, `EventIdentifier`.

Note: As a beta feature, the UserId filter in ReportEvent is a preview and isn't part of the "Services" under your master subscription agreement with Salesforce. Use this feature at your sole discretion, and make your purchase decisions only on the basis of generally available products and features. Salesforce doesn't guarantee general availability of this feature within any particular time frame or at all, and we can discontinue it at any time. This feature is for evaluation purposes only, not for production use. It's offered as is and isn't supported, and Salesforce has no liability for any harm or damage arising out of or in connection with it. All restrictions, Salesforce reservation of rights, obligations concerning the Services, and terms for related Non-Salesforce Applications and Content apply equally to your use of this feature.

The following list provides some examples of valid and invalid queries.

- **Unfiltered query**
  - **Valid**—Contains no `WHERE` clause, so no special rules apply.

```
SELECT DashboardId,Description,DisplayedFieldEntities,EventDate,Format,UserId
FROM ReportEvent
```

- **Filter on** `UserId` (Beta)
  - **Valid**—You can filter solely on `UserId` (Beta). You can include a range query when you filter on `UserId` (Beta) alone.

```
SELECT DashboardId,Description,DisplayedFieldEntities,EventDate,Format,UserId
FROM ReportEvent
WHERE UserId='005B0000001vURv'<=TODAY
```

  - **Valid**—Filter on `UserId` (Beta) and `EventDate`. EventDate can also have a range filter if the order of the filter is UserId (Beta), EventDate.

```
SELECT DashboardId,Description,DisplayedFieldEntities,EventDate,Format,UserId
FROM ReportEvent
WHERE UserId='005B0000001vURv' AND EventDate<=TODAY
```

  - **Valid**— Filter on `UserId` (Beta) and sort the results.

```
SELECT DashboardId,Description,DisplayedFieldEntities,EventDate,Format,UserId
FROM ReportEvent
WHERE UserId = '005B0000001vURv'
ORDER BY EventDate DESC
```

  - **Invalid**—Filtering on `UserId` (Beta) and `EventIdentifier` field isn't supported.

```
SELECT DashboardId,Description,DisplayedFieldEntities,EventDate,Format,UserId
FROM ReportEvent
WHERE UserId='005B0000001vURv' AND
EventIdentifier='f0b28782-1ec2-424c-8d37-8f783e0a3754'
```

- **Filter on** `EventDate`
  - **Valid**—You can filter on `EventDate` using date literals. Or, you can include a range query when you filter on `EventDate` alone.

```
SELECT DashboardId,Description,DisplayedFieldEntities,EventDate,Format,UserId
FROM ReportEvent
WHERE EventDate<=TODAY
```

  - **Invalid**—Filtering on `EventDate` with standard date literals isn't supported.

```
SELECT DashboardId,Description,DisplayedFieldEntities,EventDate,Format,UserId
FROM ReportEvent
WHERE EventDate=TODAY AND EventIdentifier='f0b28782-1ec2-424c-8d37-8f783e0a3754'
```

  - **Invalid**—Filtering on `EventDate` with <= or >= operator and `EventIdentifier` field isn't supported.

```
SELECT DashboardId,Description,DisplayedFieldEntities,EventDate,Format,UserId
FROM ReportEvent
WHERE EventDate<=2014-11-27T14:54:16.000Z AND
EventIdentifier='f0b28782-1ec2-424c-8d37-8f783e0a3754'
```

Async SOQL Usage

With Async SOQL, you can filter on any field in ReportEvent and use any comparison operator in your query.

Example: Find all reports that users ran against Patent__c

```
SELECT EventDate, EventIdentifier, PolicyOutcome, EvaluationTime, ReportId, Name FROM
ReportEvent WHERE QueriedEntities='Patent__c'
```

SEE ALSO:

Big Objects Implementation Guide

ReportEventStream

Tracks report-related actions, such as when a user runs or exports a report. This object is available in API version 46.0 and later.

Supported Calls

`describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	
Flows	
Processes	
Streaming API (CometD)	✔

Streaming API Subscription Channel

`/event/ReportEventStream`

Special Access Rules

Accessing this object requires either the Salesforce Shield or Salesforce Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Fields

Field	Details
`ColumnHeaders`	**Type** string **Properties** Nillable **Description** Comma-separated values of column headers of the report. For example, [USERNAME, ACCOUNT.NAME, TYPE, DUE_DATE, LAST_UPDATE, ADDRESS1_STATE].
`DashboardId`	**Type** string **Properties** Nillable **Description** The ID of the dashboard that the report was part of. For example, 01ZB0000000PmoQ.
`DashboardName`	**Type** string **Properties** Nillable **Description** The title of the dashboard that the report was part of.

Field	Details
`Description`	**Type** string **Properties** Nillable **Description** The description of the report.
`DisplayedFieldEntities`	**Type** string **Properties** Nillable **Description** The API values of the fields that are displayed on the report, including the names of the entities of the grouped column fields. For example: `[ACCOUNTS, OWNERS]`.
`EvaluationTime`	**Type** double **Properties** Nillable **Description** The amount of time it took to evaluate the policy in milliseconds.
`EventDate`	**Type** dateTime **Properties** Nillable **Description** The time when the specified report event was captured (after query execution takes place). For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.
`EventIdentifier`	**Type** string **Properties** Nillable **Description** The unique ID of the event. For example, 0a4779b0-0da1-4619-a373-0a36991dff90.
`EventSource`	**Type** picklist **Properties** Nillable, Restricted Picklist

Field	Details
	Description The source of the event. Possible values are: • `API`—The user generated the report from an API call. • `Classic`—The user generated the report from the Salesforce Classic UI. • `Lightning`—The user generated the report from Lightning Experience.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`ExecutionIdentifier`	**Type** string **Properties** Nillable **Description** When report data is divided into multiple report events, use this unique identifier to correlate the multiple data chunks. For example, each chunk might have the same `ExecutionIdentifier` of a50a4025-84f2-425d-8af9-2c780869f3b5, enabling you to link them together to get all the data for the report execution. The `Sequence` field contains the incremental sequence numbers that indicate the order of the multiple events. For more information, see `Sequence`.
`ExportFileFormat`	**Type** string **Properties** Nillable **Description** If the user exported the report, this value indicates the format of the exported report. Possible values are: • CSV • Excel
`Format`	**Type** picklist **Properties** Defaulted on create, Nillable, Restricted picklist

Field	Details
	Description The format of the report. Possible values are: • `Matrix` • `MultiBlock` • `Summary` • `Tabular`
`GroupedColumnHeaders`	**Type** string **Properties** Nillable **Description** Comma-separated values of grouped column fields in summary, matrix, and joined reports. For example: `[USERNAME, ACCOUNT.NAME, TYPE, DUE_DATE, LAST_UPDATE, ADDRESS1_STATE]`.
`IsScheduled`	**Type** boolean **Properties** Defaulted on create **Description** If TRUE, the report was scheduled. If FALSE, the report wasn't scheduled.
`LoginHistoryId`	**Type** reference **Properties** Nillable **Description** Tracks a user session so you can correlate user activity with a particular series of report events. This field is also available on the LoginHistory, AuthSession, and LoginHistory objects, making it easier to trace events back to a user's original authentication. This value is null if the event that was generated was from a dashboard refresh, a multi-block report, or a scheduled report. For example, 0YaB000002knVQLKA2. This is a relationship field. **Relationship Name** LoginHistory **Relationship Type** Lookup **Refers To** LoginHistory

Field	Details
`LoginKey`	**Type** string **Properties** Nillable **Description** The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring. This value is null if the event that was generated was from a dashboard refresh, a multi-block report, or a scheduled report. For example, lUqjLPQTWRdvRG4.
`Name`	**Type** string **Properties** Nillable **Description** The display name of the report. The value is null for report previews.
`NumberOfColumns`	**Type** int **Properties** Nillable **Description** The number of columns in the report.
`Operation`	**Type** picklist **Properties** Nillable, Restricted Picklist **Description** The context in which the report executed, such as from a UI (Classic, Lightning, Mobile), through an API (synchronous, asynchronous, Apex), or through a dashboard. Possible values are: • `ChartRenderedInEmbeddedAnalyticsApp`: Report executed from a rendered chart in an embedded Analytics app. • `ChartRenderedOnHomePage`: Report executed from a rendered chart on the home page. • `ChartRenderedOnVisualforcePage`: Report executed from a rendered chart on a VisualForce Page. • `DashboardComponentPreviewed`: Report executed from a Lightning dashboard component preview. • `DashboardComponentUpdated`: Report executed when a user refreshed a dashboard component. Because the report resulted from an asynchronous operation,

Field	Details
	session information (contained in the fields `SessionKey`, `LoginKey`, `SessionLevel`, and `SourceIp`) isn't captured. • `ProbeQuery`: Report executed from a probe query. • `ReportAddedToCampaign`: Report was added from an Add to Campaign action. • `ReportExported`: Report executed from a printable view or report export that was not asynchronous nor an API export. • `ReportExportedAsynchronously`: Report was exported asynchronously. • `ReportExportedUsingExcelConnector`: Report was exported using the Excel connector. • `ReportOpenedFromMobileDashboard`: Report executed when a user clicked a dashboard component on a mobile device and drilled down to a report. • `ReportPreviewed`: Report executed when a user got preview results while using the report builder. • `ReportResultsAddedToEinsteinDiscovery`: Report executed synchronously from Einstein Discovery. • `ReportResultsAddedToWaveTrending`: Report executed when a user trended a report in Einstein Analytics. • `ReportRunAndNotificationSent`: Report executed through the notifications API. • `ReportRunFromClassic`: Report executed from the Run Report option of Salesforce Classic. • `ReportRunFromLightning`: Report executed from the Run option in Lightning Experience from a non-mobile browser. • `ReportRunFromMobile`: Report executed from the Run Report option of the mobile Salesforce app. • `ReportRunFromReportingSnapshot`: Report executed through Snapshot Analytics. • `ReportRunFromRestApi`: Report executed from the REST API. • `ReportRunUsingApexAsynchronousApi`: Report executed from the asynchronous Apex API. • `ReportRunUsingApexSynchronousApi`: Report executed from the synchronous Apex API. • `ReportRunUsingAsynchronousApi`: Report executed from an asynchronous API. • `ReportRunUsingSynchronousApi`: Report executed from a synchronous API. • `ReportScheduled`: Report was scheduled. • `Test`: Report execution resulted from a test. • `Unknown`: Report execution origin is unknown.
`OwnerId`	**Type** string

Field	Details
	Properties Nillable **Description** The ID of the folder, organization, or user who owns the report. This value is blank if the report was not saved. For example, 005B0000001vURvIAM.
`PolicyId`	**Type** reference **Properties** Nillable **Description** The ID of the transaction policy associated with this event. For example, 0NIB000000000KOOAY. This is a relationship field. **Relationship Name** Policy **Relationship Type** Lookup **Refers To** TransactionSecurityPolicy
`PolicyOutcome`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The result of the transaction policy. Possible values are: • `Block` - The user was blocked from performing the operation that triggered the policy. • `Error` - The policy caused an undefined error when it executed. • `FailedInvalidPassword` - The user entered an invalid password. • `FailedPasswordLockout` - The user entered an invalid password too many times. • `NoAction` - The policy didn't trigger. • `Notified` - A notification was sent to the recipient. • `TwoFAAutomatedSuccess` - Salesforce Authenticator approved the request for access because the request came from a trusted location. After users enable location services in Salesforce Authenticator, they can designate trusted locations. When a user trusts a location for a particular activity, such as logging in from a recognized device, that activity is approved from the trusted location for as long as the location is trusted. • `TwoFADenied` - The user denied the approval request in the authenticator app, such as Salesforce Authenticator.

Field	Details
	• `TwoFAFailedGeneralError` - An error caused by something other than an invalid verification code, too many verification attempts, or authenticator app connectivity. • `TwoFAFailedInvalidCode` - The user provided an invalid verification code. • `TwoFAFailedTooManyAttempts` - The user attempted to verify identity too many times. For example, the user entered an invalid verification code repeatedly. • `TwoFAInitiated` - Salesforce initiated identity verification but hasn't yet challenged the user. • `TwoFAInProgress` - Salesforce challenged the user to verify identity and is waiting for the user to respond or for Salesforce Authenticator to send an automated response. • `TwoFANoAction` - The policy specifies multi-factor authentication (formerly called two-factor authentication) as an action, but the user is already in a high-assurance session. • `TwoFARecoverableError` - Salesforce can't reach the authenticator app to verify identity, but will retry. • `TwoFAReportedDenied` - The user denied the approval request in the authenticator app, such as Salesforce Authenticator, and also flagged the approval request to report to an administrator. • `TwoFASucceeded` - The user's identity was verified.
`QueriedEntities`	**Type** string **Properties** Nillable **Description** The entities in the SOQL query. For example, Opportunity, Lead, Account, or Case. Can also include custom objects. For relationship queries, the value of this field contains all entities involved in the query. If the query returns 0 records, then the value of this field is null. **Examples** • For `SELECT Contact.FirstName, Contact.Account.Name from Contact`, the value of `QueriedEntities` is `Account, Contact`. • For `SELECT Account.Name, (SELECT Contact.FirstName, Contact.LastName FROM Account.Contacts) FROM Account`, the value of `QueriedEntities` is `Account, Contact`. • For `SELECT Id, Name, Account.Name FROM Contact WHERE Account.Industry = 'media'`, the value of `QueriedEntities` is `Account, Contact`.
`Records`	**Type** json **Properties** Nillable

Field	Details
	Description A JSON string that represents the report's data. For example, `{"totalSize":1,"rows":[{"datacells":["005B0000001vURv","001B000000fewai"]}]}`.
`RelatedEventIdentifier`	**Type** string **Properties** Nillable **Description** Represents the `EventIdentifier` of the related event. For example, bd76f3e7-9ee5-4400-9e7f-54de57ecd79c. This field is populated only when the activity that this event monitors requires extra authentication, such as multi-factor authentication. In this case, Salesforce generates more events and sets the `RelatedEventIdentifier` field of the new events to the value of the `EventIdentifier` field of the original event. Use this field with the `EventIdentifier` field to correlate all the related events. If no extra authentication is required, this field is blank.
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`ReportId`	**Type** string **Properties** Nillable **Description** The ID of the report associated with this event. For example, 00OB00000032FHdMAM.
`RowsProcessed`	**Type** double **Properties** Nillable **Description** The total number of rows returned in the report. When report data is divided into multiple report events, this value is the same for all data chunks. For more information, see `ExecutionIdentifier`.

Field	Details
`Scope`	**Type** string **Properties** Nillable **Description** Defines the scope of the data on which the user ran the report. For example, users can run the report against all opportunities, opportunities they own, or opportunities their team owns. Possible values are: • `user` - User owns the objects the report was run against. • `team` - Team owns the objects the report was run against. • `organization` - Report was run against all applicable objects.
`Sequence`	**Type** int **Properties** Nillable **Description** Incremental sequence number that indicates the order of multiple events that result from a given report execution. When a report execution returns many records, Salesforce splits this data into chunks based on the size of the records, and then creates multiple correlated ReportEventStreams. The field values in each of these correlated ReportEventStreams are the same, except for `Records`, which contains the different data chunks, and `Sequence`, which identifies each chunk in order. Every report execution has a unique `ExecutionIdentifier` value to differentiate it from other report executions. To view all the data chunks from a single report execution, use the `Sequence` and `ExecutionIdentifier` fields in combination. Important: When a report executes, we provide the first 1000 events with data in the `Records` field. Use the `ReportId` field to view the full report. For more information, see `Sequence`.
`SessionKey`	**Type** string **Properties** Nillable **Description** The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started. This value is null if the event that was generated was from a dashboard refresh, a multi-block report, or a scheduled report. For example, vMASKIU6AxEr+Op5.

Field	Details
`SessionLevel`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** Session-level security controls user access to features that support it, such as connected apps and reporting. Possible values are: • `HIGH_ASSURANCE` - A high assurance session was used for resource access. For example, when the user tries to access a resource such as a connected app, report, or dashboard that requires a high-assurance session level. • `LOW` - The user's security level for the current session meets the lowest requirements. Note: This low level is not available, nor used, in the Salesforce UI. User sessions through the UI are either standard or high assurance. You can set this level using the API, but users assigned this level will experience unpredictable and reduced functionality in their Salesforce org. • `STANDARD` - The user's security level for the current session meets the Standard requirements set in the org's Session Security Levels. This value is null if the event that was generated was from a dashboard refresh, a multi-block report, or a scheduled report.
`SourceIp`	**Type** string **Properties** Nillable **Description** The source IP address of the client that logged in. For example, 126.7.4.2.
`UserId`	**Type** reference **Properties** Nillable **Description** The origin user's unique ID. For example, `005000000000123`. This is a polymorphic relationship field. **Relationship Name** User **Relationship Type** Lookup **Refers To** User

Field	Details
`Username`	**Type** string **Properties** Nillable **Description** The origin username in the format of `user@company.com` at the time the event was created.

SessionHijackingEvent

Tracks when unauthorized users gain ownership of a Salesforce user's session with a stolen session identifier. To detect such an event, Salesforce evaluates how significantly a user's current browser fingerprint diverges from the previously known fingerprint using a probabilistically inferred significance of change. This object is available in API version 49.0 and later.

Supported Calls

`describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	
Flows	
Processes	
Streaming API (CometD)	✔

Streaming API Subscription Channel

`/event/SessionHijackingEvent`

Special Access Rules

Accessing this object requires either the Salesforce Shield or Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Fields

Field	Details
`CurrentIp`	**Type** string

Field	Details
	Properties Nillable **Description** The IP address of the newly observed fingerprint that deviates from the previous fingerprint. The difference between the current and previous values is one indicator that a session hijacking attack has occurred. See the `PreviousIp` field for the previous IP address. If the IP address didn't contribute to the observed fingerprint deviation, the value of this field is the same as the `PreviousIp` field value. For example, `126.7.4.2`.
`CurrentPlatform`	**Type** string **Properties** Nillable **Description** The platform of the newly observed fingerprint that deviates from the previous fingerprint. The difference between the current and previous values is one indicator that a session hijacking attack has occurred. See the `PreviousPlatform` field for the previous platform. If the platform didn't contribute to the observed fingerprint deviation, the value of this field is the same as the `PreviousPlatform` field value. For example, `MacIntel` or `Win32`.
`CurrentScreen`	**Type** string **Properties** Nillable **Description** The screen of the newly observed fingerprint that deviates from the previous fingerprint. The difference between the current and previous values is one indicator that a session hijacking attack has occurred. See the `PreviousScreen` field for the previous screen. If the screen didn't contribute to the observed fingerprint deviation, the value of this field is the same as the `PreviousScreen` field value. For example, `(900.0,1440.0)` or `(720,1280)`.
`CurrentUserAgent`	**Type** textarea **Properties** Nillable **Description** The user agent of the newly observed fingerprint that deviates from the previous fingerprint. The difference between the current and previous values is one indicator that a session hijacking attack has occurred. See the `PreviousUserAgent` field for the previous user agent. If the user agent didn't contribute to the observed fingerprint deviation, the value of this field is the same as the `PreviousUserAgent` field value. For example, `Mozilla/5.0 (Macintosh; Intel Mac OS X 10_14_6)`

Field	Details
	`AppleWebKit/537.36 (KHTML, like Gecko) Chrome/76.0.3809.100 Safari/537.36`.
`CurrentWindow`	**Type** string **Properties** Nillable **Description** The browser window of the newly observed fingerprint that deviates from the previous fingerprint. The difference between the current and previous values is one indicator that a session hijacking attack has occurred. See the `PreviousWindow` field for the previous window. If the window didn't contribute to the observed fingerprint deviation, the value of this field is the same as the `PreviousWindow` field value. For example, `(1200.0,1920.0)`.
`EvaluationTime`	**Type** double **Properties** Nillable **Description** The amount of time it took to evaluate the policy in milliseconds.
`EventDate`	**Type** dateTime **Properties** Nillable **Description** The time when the anomaly was detected. For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.
`EventIdentifier`	**Type** string **Properties** Nillable **Description** The unique ID of the event, which is shared with the corresponding storage object. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`. Use this field to correlate the event with its storage object.
`EventUuid`	**Type** string **Properties** Nillable

Field	Details
	Description A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`LoginKey`	**Type** string **Properties** Nillable **Description** The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring. For example, lUqjLPQTWRdvRG4.
`PolicyId`	**Type** reference **Properties** Nillable **Description** The ID of the transaction policy associated with this event. For example, 0NIB000000000KOOAY. This is a relationship field. **Relationship Name** Policy **Relationship Type** Lookup **Refers To** TransactionSecurityPolicy
`PolicyOutcome`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The result of the transaction policy. Possible values are: • `Error` - The policy caused an undefined error when it executed. • `NoAction` - The policy didn't trigger. • `Notified` - A notification was sent to the recipient.
`PreviousIp`	**Type** string

Field	Details
	Properties Nillable **Description** The IP address of the previous fingerprint. The IP address of the newly observed fingerprint deviates from this value. The difference between the current and previous values is one indicator that a session hijacking attack has occurred. See the `CurrentIp` field for the newly observed IP address. For example, `128.7.5.2`.
`PreviousPlatform`	**Type** string **Properties** Nillable **Description** The platform of the previous fingerprint. The platform of the newly observed fingerprint deviates from this value. The difference between the current and previous values is one indicator that a session hijacking attack has occurred. See the `CurrentPlatform` field for the newly observed platform. For example, `Win32` or `iPhone`.
`PreviousScreen`	**Type** string **Properties** Nillable **Description** The screen of the previous fingerprint. The screen of the newly observed fingerprint deviates from this value. The difference between the current and previous values is one indicator that a session hijacking attack has occurred. See the `CurrentScreen` field for the newly observed screen. For example, `(1200.0,1920.0)`.
`PreviousUserAgent`	**Type** textarea **Properties** Nillable **Description** The user agent of the previous fingerprint. The user agent of the newly observed fingerprint deviates from this value. The difference between the current and previous values is one indicator that a session hijacking attack has occurred. See the `CurrentUserAgent` field for the newly observed user agent. For example, `Mozilla/5.0 (iPhone; CPU iPhone OS 13_0 like Mac OS X) AppleWebKit/605.1.15 (KHTML, like Gecko)`.
`PreviousWindow`	**Type** string

Field	Details
	Properties Nillable **Description** The browser window of the previous fingerprint. The window of the newly observed fingerprint deviates from this value. The difference between the current and previous values is one indicator that a session hijacking attack has occurred. See the `CurrentWindow` field for the newly observed window. For example, `(1600.0,1920.0)`.
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`Score`	**Type** double **Properties** Nillable **Description** Specifies how significant the new browser fingerprint deviates from the previous one. The score is a number from 6.0 through 21.0. The event exposes five field pairs (such as `CurrentIp` and `PreviousIp`) to view the before and after data for the five most interesting browser features that contributed to this anomaly. See the `SecurityEventData` field for all contributing features in JSON format. Salesforce detects session hijacking by comparing browser fingerprints in a given user session and evaluating how significantly a newly observed fingerprint deviates from the existing one. A large deviation score (6.0 or more) between two intra-session fingerprints indicates that two different browsers are active in the same session. The presence of two active browsers usually means that session hijacking has occurred.
`SecurityEventData`	**Type** string **Properties** Nillable **Description** The set of browser fingerprint features about the session hijacking that triggered this event. See the Threat Detection documentation for the list of possible features. For example, let's say that a user's current browser fingerprint diverges from their previously known fingerprint. If Salesforce concludes their session was hijacked, it fires this event and

Field	Details
	the contributing features are captured in this field in JSON format. Each feature describes a particular browser fingerprint property, such as the browser user agent, window, or platform. The data includes the current and previous values for each feature. **Example** `[{ "featureName": "userAgent", "featureContribution": "0.45 %", "previousValue": "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/75.0.3770.142", "currentValue": "Mozilla/5.0 (Macintosh; Intel Mac OS X 10_14_6) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/76.0.3809.100 Safari/537.36." }, { "featureName": "ipAddress", "featureContribution": "0.23 %", "previousValue": "201.17.237.77", "currentValue": "182.64.210.144" }, { "featureName": "platform", "featureContribution": "0.23 %", "previousValue": "Win32", "currentValue": "MacIntel" }, { "featureName": "screen", "featureContribution": "0.23 %", "previousValue":"(1050.0,1680.0)", "currentValue": "(864.0,1536.0)" }, { "featureName": "window", "featureContribution": "0.17 %", "previousValue": "1363x1717", "currentValue": "800x1200" }]`
`SessionKey`	**Type** string **Properties** Nillable **Description** The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started. For example, vMASKIU6AxEr+Op5.

Field	Details
`SourceIp`	**Type** string **Properties** Nillable **Description** The source IP address of the client that logged in. For example, `126.7.4.2`.
`Summary`	**Type** textarea **Properties** Nillable **Description** A text summary of the threat that caused this event to be created. The summary lists the browser fingerprint features that most contributed to the threat detection along with their contribution to the total score. **Example** • `Changes to (userAgent, platform, ipAddress) were not expected based on this user's profile. These top 3 deviations contributed (1, 1, 0.922) to the total score, respectively` • `Changes to (ipAddress, userAgent, platform, languages, color) were not expected based on this user's profile. These top 5 deviations contributed (1, 0.695, 0.695, 0.25, 0.223) to the total score, respectively`
`UserId`	**Type** reference **Properties** Nillable **Description** The origin user's unique ID. For example, `005000000000123`. This is a polymorphic relationship field. **Relationship Name** User **Relationship Type** Lookup **Refers To** User
`Username`	**Type** string

Field	Details
	Properties Nillable **Description** The origin username in the format of `user@company.com` at the time the event was created.

SessionHijackingEventStore

Tracks when unauthorized users gain ownership of a Salesforce user's session with a stolen session identifier. To detect such an event, Salesforce evaluates how significantly a user's current browser fingerprint diverges from the previously known fingerprint using a probabilistically inferred significance of change. SessionHijackingEventStore is an object that stores the event data of SessionHijackingEvent. This object is available in API version 49.0 and later.

Supported Calls

`describeLayout()`, `describeSObjects()`, `getDeleted()`, `getUpdated()`, `query()`

Special Access Rules

Accessing this object requires either the Salesforce Shield or Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Fields

Field	Details
`CurrentIp`	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** The IP address of the newly observed fingerprint that deviates from the previous fingerprint. The difference between the current and previous values is one indicator that a session hijacking attack has occurred. See the `PreviousIp` field for the previous IP address. If the IP address didn't contribute to the observed fingerprint deviation, the value of this field is the same as the `PreviousIp`field value. For example, `126.7.4.2.`
`CurrentPlatform`	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** The platform of the newly observed fingerprint that deviates from the previous fingerprint. The difference between the current and previous values is one indicator that a session

Field	Details
	hijacking attack has occurred. See the `PreviousPlatform` field for the previous platform. If the platform didn't contribute to the observed fingerprint deviation, the value of this field is the same as the `PreviousPlatform` field value. For example, `MacIntel` or `Win32`.
`CurrentScreen`	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** The screen of the newly observed fingerprint that deviates from the previous fingerprint. The difference between the current and previous values is one indicator that a session hijacking attack has occurred. See the `PreviousScreen` field for the previous screen. If the screen didn't contribute to the observed fingerprint deviation, the value of this field is the same as the `PreviousScreen` field value. For example, `(900.0,1440.0)` or `(720,1280)`.
`CurrentUserAgent`	**Type** textarea **Properties** Nillable **Description** The user agent of the newly observed fingerprint that deviates from the previous fingerprint. The difference between the current and previous values is one indicator that a session hijacking attack has occurred. See the `PreviousUserAgent` field for the previous user agent. If the user agent didn't contribute to the observed fingerprint deviation, the value of this field is the same as the `PreviousUserAgent` field value. For example, `Mozilla/5.0 (Macintosh; Intel Mac OS X 10_14_6) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/76.0.3809.100 Safari/537.36`.
`CurrentWindow`	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** The browser window of the newly observed fingerprint that deviates from the previous fingerprint. The difference between the current and previous values is one indicator that a session hijacking attack has occurred. See the `PreviousWindow` field for the previous window. If the window didn't contribute to the observed fingerprint deviation, the value of this field is the same as the `PreviousWindow` field value. For example, `(1200.0,1920.0)`.
`EvaluationTime`	**Type** double

Field	Details
	Properties Filter, Nillable, Sort **Description** The amount of time it took to evaluate the policy in milliseconds.
`EventDate`	**Type** dateTime **Properties** Filter, Sort **Description** Required. The time when the anomaly was detected. For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.
`EventIdentifier`	**Type** string **Properties** Filter, Group, Sort **Description** Required. The unique ID of the event. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`.
`LastReferencedDate`	**Type** dateTime **Properties** Filter, Nillable, Sort **Description** The timestamp for when the current user last viewed a record related to this record.
`LastViewedDate`	**Type** dateTime **Properties** Filter, Nillable, Sort **Description** The timestamp for when the current user last viewed this record. If this value is null, it's possible that this record was referenced (`LastReferencedDate`) and not viewed.
`LoginKey`	**Type** string **Properties** Filter, Group, Nillable, Sort

Field	Details
	Description The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring. For example, lUqjLPQTWRdvRG4.
`PolicyId`	**Type** reference **Properties** Filter, Group, Nillable, Sort **Description** The ID of the transaction policy associated with this event. For example, 0NIB000000000KOOAY. This is a relationship field. **Relationship Name** Policy **Relationship Type** Lookup **Refers To** TransactionSecurityPolicy
`PolicyOutcome`	**Type** picklist **Properties** Filter, Group, Nillable, Restricted picklist, Sort **Description** The result of the transaction policy. Possible values are: • `Error` - The policy caused an undefined error when it executed. • `NoAction` - The policy didn't trigger. • `Notified` - A notification was sent to the recipient.
`PreviousIp`	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** The IP address of the previous fingerprint. The IP address of the newly observed fingerprint deviates from this value. The difference between the current and previous values is one indicator that a session hijacking attack has occurred. See the `CurrentIp` field for the newly observed IP address. For example, `128.7.5.2`.
`PreviousPlatform`	**Type** string

Field	Details
	Properties Filter, Group, Nillable, Sort **Description** The platform of the previous fingerprint. The platform of the newly observed fingerprint deviates from this value. The difference between the current and previous values is one indicator that a session hijacking attack has occurred. See the `CurrentPlatform` field for the newly observed platform. For example, `Win32` or `iPhone`.
`PreviousScreen`	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** The screen of the previous fingerprint. The screen of the newly observed fingerprint deviates from this value. The difference between the current and previous values is one indicator that a session hijacking attack has occurred. See the `CurrentScreen` field for the newly observed screen. For example, `(1200.0,1920.0)`.
`PreviousUserAgent`	**Type** textarea **Properties** Nillable **Description** The user agent of the previous fingerprint. The user agent of the newly observed fingerprint deviates from this value. The difference between the current and previous values is one indicator that a session hijacking attack has occurred. See the `CurrentUserAgent` field for the newly observed user agent. For example, `Mozilla/5.0 (iPhone; CPU iPhone OS 13_0 like Mac OS X) AppleWebKit/605.1.15 (KHTML, like Gecko)`.
`PreviousWindow`	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** The browser window of the previous fingerprint. The window of the newly observed fingerprint deviates from this value. The difference between the current and previous values is one indicator that a session hijacking attack has occurred. See the `CurrentWindow` field for the newly observed window. For example, `(1600.0,1920.0)`.
`Score`	**Type** double

Field	Details
	Properties Filter, Nillable, Sort **Description** Specifies how significant the new browser fingerprint deviates from the previous one. The score is a number from 6.0 through 21.0. The event exposes five field pairs (such as `CurrentIp` and `PreviousIp`) to view the before and after data for the five most interesting browser features that contributed to this anomaly. See the `SecurityEventData` field for all contributing features in JSON format. Salesforce detects session hijacking by comparing browser fingerprints in a given user session and evaluating how significantly a newly observed fingerprint deviates from the existing one. A large deviation score (6.0 or more) between two intra-session fingerprints indicates that two different browsers are active in the same session. The presence of two active browsers usually means that session hijacking has occurred.
`SecurityEventData`	**Type** textarea **Properties** Nillable **Description** The set of browser fingerprint features about the session hijacking that triggered this event. See the Threat Detection documentation for the list of possible features. For example, let's say that a user's current browser fingerprint diverges from their previously known fingerprint. If Salesforce concludes their session was hijacked, it fires this event and the contributing features are captured in this field in JSON format. Each feature describes a particular browser fingerprint property, such as the browser user agent, window, or platform. The data includes the current and previous values for each feature. **Example** `[{ "featureName": "userAgent", "featureContribution": "0.45 %", "previousValue": "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/75.0.3770.142", "currentValue": "Mozilla/5.0 (Macintosh; Intel Mac OS X 10_14_6) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/76.0.3809.100 Safari/537.36." }, { "featureName": "ipAddress", "featureContribution": "0.23 %", "previousValue": "201.17.237.77", "currentValue": "182.64.210.144" }, { "featureName": "platform",`

Field	Details

	<pre>"featureContribution": "0.23 %",
	"previousValue": "Win32",
	"currentValue": "MacIntel"
	},
	{
	"featureName": "screen",
	"featureContribution": "0.23 %",
	"previousValue":"(1050.0,1680.0)",
	"currentValue": "(864.0,1536.0)"
	},
	{
	"featureName": "window",
	"featureContribution": "0.17 %",
	"previousValue": "1363x1717",
	"currentValue": "800x1200"
	}
	]</pre>

SessionHijackingEventNumber	**Type** string **Properties** Autonumber, Defaulted on create, Filter, idLookup, Sort **Description** The unique number assigned by the system after the event is received in Salesforce. This ID is different than the replayID field on the streaming event SessionHijackingEvent. You can't change the format or value for this field.
SessionKey	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started. For example, vMASKIU6AxEr+Op5.
SourceIp	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** The source IP address of the client that logged in. For example, `126.7.4.2`.
Summary	**Type** textarea

Field	Details
	Properties Nillable **Description** A text summary of the threat that caused this event to be created. The summary lists the browser fingerprint features that most contributed to the threat detection along with their contribution to the total score. **Example** • `Changes to (userAgent, platform, ipAddress) were not expected based on this user's profile. These top 3 deviations contributed (1, 1, 0.922) to the total score, respectively` • `Changes to (ipAddress, userAgent, platform, languages, color) were not expected based on this user's profile. These top 5 deviations contributed (1, 0.695, 0.695, 0.25, 0.223) to the total score, respectively`
`UserId`	**Type** reference **Properties** Filter, Group, Nillable, Sort **Description** The origin user's unique ID. For example, `005000000000123`. This is a polymorphic relationship field. **Relationship Name** User **Relationship Type** Lookup **Refers To** User
`Username`	**Type** string **Properties** Filter, Group, Nillable, Sort **Description** The origin username in the format of `user@company.com` at the time the event was created.

Associated Object

This object has the following associated object. It's available in the same API version as this object.

SessionHijackingEventStoreFeed
Feed tracking is available for the object.

UriEvent

Detects when a user creates, accesses, updates, or deletes a record in Salesforce Classic only. Doesn't detect record operations done through a Visualforce page or Visualforce page views. UriEvent and is a big object that stores the event data of UriEventStream. This object is available in API version 46.0 and later.

Supported Calls

`describeSObjects()`, `query()`

Special Access Rules

Accessing this object requires either the Salesforce Shield or Salesforce Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Note: UriEvent doesn't track Setup events.

Fields

Field	Details
`EventDate`	**Type** dateTime **Properties** Filter. Sort **Description** The time when the specified URI event was captured (after query execution takes place). For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.
`EventIdentifier`	**Type** string **Properties** Filter, Sort **Description** The unique ID of the event. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`.
`LoginKey`	**Type** string **Properties** Nillable

Field	Details
	Description The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring. For example, `8gHOMQu+xvjCmRUt`.
`Message`	**Type** string **Properties** Nillable **Description** The failure message if the operation being performed on the entity failed (`OperationStatus`=FAILURE).
`Name`	**Type** string **Properties** Nillable **Description** The value of the record being viewed/edited.
`Operation`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The operation being performed on the entity. For example, `Read, Create, Update`. or `Delete`. Create and update operations are captured in pairs; that is, expect two event records for each operation. The first record represents the start of the operation, and the second record represents whether the operation was successful or not. The two records are correlated by `RelatedEventIdentifier`. If there isn't a second event recorded for a create or update operation, then the user cancelled the operation, or the operation failed with client-side validation (for example, when a required field is empty).
`OperationStatus`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** Whether the operation performed on the entity (such as create) succeeded or failed. When the operation starts, the value is always INITIATED. Possible values are:

Field	Details
	• `Failure`—The operation failed. • `Initiated`—The operation started. Note: Create and update operations can generate an extra `OperationStatus=Initiated` event after an operation fails. Ignore this extra record. • `Success`—The operation succeeded.
`QueriedEntities`	**Type** string **Properties** Nillable **Description** The API name of the objects referenced by the URI.
`RecordId`	**Type** reference **Properties** Nillable **Description** The ID of the record being viewed or edited. For example, `001RM000003cjx6YAA`.
`RelatedEventIdentifier`	**Type** string **Properties** Nillable **Description** Represents the EventIdentifier of the related event.
`SessionKey`	**Type** string **Properties** Nillable **Description** The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started.
`SessionLevel`	**Type** picklist **Properties** Nillable, Restricted picklist

Field	Details
	Description Session-level security controls user access to features that support it, such as connected apps and reporting. Possible values are: • `HIGH_ASSURANCE`—A high assurance session was used for resource access. For example, when the user tries to access a resource such as a connected app, report, or dashboard that requires a high-assurance session level. • `LOW`—The user's security level for the current session meets the lowest requirements. Note: This low level is not available, nor used, in the Salesforce UI. User sessions through the UI are either standard or high assurance. You can set this level using the API, but users assigned this level will experience unpredictable and reduced functionality in their Salesforce org. • `STANDARD`—The user's security level for the current session meets the Standard requirements set in the org's Session Security Levels.
`SourceIp`	**Type** string **Properties** Nillable **Description** The source IP address of the client logging in. For example, `126.7.4.2`.
`UserId`	**Type** reference **Properties** Nillable **Description** The user's unique ID. For example, `005RM000001ctYJYAY`. This is a polymorphic relationship field. **Relationship Name** User **Relationship Type** Lookup **Refers To** User
`UserName`	**Type** string **Properties** Nillable **Description** The username in the format of `user@company.com` at the time the event was created.

Field	Details
`UserType`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The category of user license. Each `UserType` is associated with one or more UserLicense records. Each UserLicense is associated with one or more profiles. Valid values are: • `CsnOnly`—Users whose access to the application is limited to Chatter. This user type includes Chatter Free and Chatter moderator users. • `CspLitePortal`—CSP Lite Portal license. Users whose access is limited because they are organization customers and access the application through a customer portal or Experience Cloud site. • `CustomerSuccess`—Customer Success license. Users whose access is limited because they are organization customers and access the application through a customer portal. • `Guest` • `PowerCustomerSuccess`—Power Customer Success license. Users whose access is limited because they are organization customers and access the application through a customer portal. Users with this license type can view and edit data they directly own or data owned by or shared with users below them in the customer portal role hierarchy. • `PowerPartner`—Power Partner license. Users whose access is limited because they are partners and typically access the application through a partner portal or site. • `SelfService` • `Standard`—Standard user license. This user type also includes Salesforce Platform and Salesforce Platform One user licenses.

Standard SOQL Usage

UriEvent allows filtering over two fields: `EventDate` and `EventIdentifier`. The only supported SOQL functions on the UriEvent object are `WHERE`, `ORDER BY`, and `LIMIT`. In the `WHERE` clause, you can only use comparison operators (<, >, <=, and >=). The != operator isn't supported. In the `ORDER BY` clause, you can only use EventDate `DESC`. Ascending order isn't supported with EventDate, and EventIdentifier sorting isn't supported.

Note: Date functions such as `convertTimeZone()` aren't supported—for example, `SELECT CALENDAR_YEAR(EventDate), Count(Id) FROM UriEvent GROUP BY CALENDAR_YEAR(EventDate)` returns an error. You can use date literals in your queries and some date/time functions like `TODAY()`, `YESTERDAY()`, and `LAST_n_DAYS:1`. However, these functions use comparison operators behind the scenes. Therefore you can only use them in the final expression in the `WHERE` clause.

The following list provides some examples of valid queries:

- **Unfiltered**

  - **Valid**—Contains no `WHERE` clause, so no special rules apply.

    ```
    SELECT EntityType, UserName, UserType
    FROM UriEvent
    ```

- **Filtered on** `EventDate`—you can filter solely on `EventDate`, but single filters on other fields fail. You can also use a comparison operator in this query type.
  - **Valid**—you can filter solely on `EventDate`, but single filters on other fields fail. You can also use a comparison operator in this query type.

    ```
    SELECT EntityType, UserName, UserType
    FROM UriEvent
    WHERE EventDate>=2014-11-27T14:54:16.000Z
    ```

Async SOQL Usage

With Async SOQL, you can filter on any field in UriEvent and use any comparison operator in your query.

Find who is accessing Opportunities and related Contacts

```
SELECT EventDate, EventIdentifier, UserName, UserType, Name, EntityType, Operation,
LoginKey, SessionKey FROM UriEvent WHERE RecordId='001B000000AkcHxIAJ'
```

SEE ALSO:

LightningUriEvent

Big Objects Implementation Guide

UriEventStream

Detects when a user creates, accesses, updates, or deletes a record in Salesforce Classic only. Doesn't detect record operations done through a Visualforce page or Visualforce page views. This object is available in API version 46.0 and later.

Supported Calls

`describeSObjects()`

Supported Subscribers

Subscriber	Supported?
Apex Triggers	
Flows	
Processes	
Streaming API (CometD)	✔

Streaming API Subscription Channel

`/event/UriEventStream`

Special Access Rules

Accessing this object requires either the Salesforce Shield or Salesforce Event Monitoring add-on subscription and the View Real-Time Event Monitoring Data user permission.

Note: UriEventStream doesn't track Setup events.

Fields

Field	Details
`EventDate`	**Type** dateTime **Properties** Nillable **Description** The time when the specified URI event was captured (after query execution takes place). For example, `2020-01-20T19:12:26.965Z`. Milliseconds are the most granular setting.
`EventIdentifier`	**Type** string **Properties** Nillable **Description** The unique ID of the event, which is shared with the corresponding storage object. For example, `0a4779b0-0da1-4619-a373-0a36991dff90`. Use this field to correlate the event with its storage object.
`EventUuid`	**Type** string **Properties** Nillable **Description** A universally unique identifier (UUID) that identifies a platform event message. This field is available in API version 52.0 and later.
`LoginKey`	**Type** string **Properties** Nillable **Description** The string that ties together all events in a given user's login session. The session starts with a login event and ends with either a logout event or the user session expiring. For example, 8gHOMQu+xvjCmRUt

Field	Details
`Message`	**Type** string **Properties** Nillable **Description** The failure message if the operation being performed on the entity failed (`OperationStatus=Failure`).
`Name`	**Type** string **Properties** Nillable **Description** The value of the record being viewed or edited.
`Operation`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The operation being performed on the entity. For example, `Read, Create, Update`, or `Delete`. Create and update operations are captured in pairs; that is, expect two event records for each operation. The first record represents the start of the operation, and the second record represents whether the operation was successful or not. The two records are correlated by `RelatedEventIdentifier`. If there isn't a second event recorded for a create or update operation, then the user canceled the operation, or the operation failed with client-side validation (for example, when a required field is empty).
`OperationStatus`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** Whether the operation performed on the entity (such as create) succeeded or failed. When the operation starts, the value is always INITIATED. Possible values are: • `Failure`—The operation failed. • `Initiated`—The operation started.

Field	Details
	Note: Create and update operations can generate an extra `OperationStatus=Initiated` event after an operation fails. Ignore this extra record. • `Success`—The operation succeeded.
`QueriedEntities`	**Type** string **Properties** Nillable **Description** The API name of the objects referenced by the URI.
`RecordId`	**Type** string **Properties** Nillable **Description** The id of the record being viewed or edited. For example, `001RM000003cjx6YAA`.
`RelatedEventIdentifier`	**Type** string **Properties** Nillable **Description** Represents the EventIdentifier of the related event.
`ReplayId`	**Type** string **Properties** Nillable **Description** Represents an ID value that is populated by the system and refers to the position of the event in the event stream. Replay ID values aren't guaranteed to be contiguous for consecutive events. A subscriber can store a replay ID value and use it on resubscription to retrieve missed events that are within the retention window.
`SessionKey`	**Type** string **Properties** Nillable

Field	Details
	Description The user's unique session ID. Use this value to identify all user events within a session. When a user logs out and logs in again, a new session is started.
`SessionLevel`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** Session-level security controls user access to features that support it, such as connected apps and reporting. Possible values are: • `HIGH_ASSURANCE`—A high assurance session was used for resource access. For example, when the user tries to access a resource such as a connected app, report, or dashboard that requires a high-assurance session level. • `LOW`—The user's security level for the current session meets the lowest requirements. Note: This low level is not available, nor used, in the Salesforce UI. User sessions through the UI are either standard or high assurance. You can set this level using the API, but users assigned this level will experience unpredictable and reduced functionality in their Salesforce org. • `STANDARD`—The user's security level for the current session meets the Standard requirements set in the org's Session Security Levels.
`SourceIp`	**Type** string **Properties** Nillable **Description** The source IP address of the client logging in. For example, `126.7.4.2`.
`UserId`	**Type** reference **Properties** Nillable **Description** The user's unique ID. For example, `005RM000001ctYJYAY`. This is a polymorphic relationship field. **Relationship Name** User **Relationship Type** Lookup

Field	Details
	Refers To User
`UserName`	**Type** string **Properties** Nillable **Description** The username in the format of `user@company.com` at the time the event was created.
`UserType`	**Type** picklist **Properties** Nillable, Restricted picklist **Description** The category of user license. Each `UserType` is associated with one or more UserLicense records. Each UserLicense is associated with one or more profiles. Valid values are: • `CsnOnly`—Users whose access to the application is limited to Chatter. This user type includes Chatter Free and Chatter moderator users. • `CspLitePortal`—CSP Lite Portal license. Users whose access is limited because they are organization customers and access the application through a customer portal or an Experience Cloud site. • `CustomerSuccess`—Customer Success license. Users whose access is limited because they are organization customers and access the application through a customer portal. • `Guest` • `PowerCustomerSuccess`—Power Customer Success license. Users whose access is limited because they are organization customers and access the application through a customer portal. Users with this license type can view and edit data they directly own or data owned by or shared with users below them in the customer portal role hierarchy. • `PowerPartner`—Power Partner license. Users whose access is limited because they are partners and typically access the application through a partner portal or site. • `SelfService` • `Standard`—Standard user license. This user type also includes Salesforce Platform and Salesforce Platform One user licenses.

SEE ALSO:

LightningUriEventStream