



PUBLIC

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# Flow Extension API

## SAP Business Network

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# Flow Extension API

This guide is for a customer developer creating a client application that interrupts the normal flow of a document.

The customer developer creates a client application to intercept a document at specific points within its normal flow. You can also temporarily suspend the flow of a document if desired. During this interception, you can

- Access data associated with the document
- Post attachments to the document
- Resume or halt the workflow entirely

The Flow Extension API can be used to intercept documents of the following types:

- purchase order
- order confirmation
- advanced ship notice
- invoice
- goods receipt notice
- payment receipt

The integrity of the original document is retained: No changes can be made directly to the document.

This guide applies to:

- SAP Ariba APIs
- SAP Ariba developer portal
- SAP Business Network

## Prerequisites

To consume the Flow extension API in a client application, you must first provide flow extension configurations for each document type whose flow you wish to extend. These configurations can also specify additional conditions. For example, a configuration might specify that invoices in excess of a certain amount will trigger a flow extension. For details, see [Configuration of Your Flow Extension \[page 6\]](#).

Flow extension API applications must provide authentication credentials according to the HTTP Basic Authentication Scheme.

## Related Guides

[Help for the SAP Ariba Developer Portal](#)

[Use Cases for the Flow Extension API \[page 4\]](#)

[Endpoints Included in the Flow Extension API \[page 5\]](#)

# Use Cases for the Flow Extension API

When to use the Flow Extension API.

## Business Uses

Here are a few likely business uses for the Flow extension API:

- A purchase order-based financing application would involve three distinct flow extensions: one would stop the flow of a purchase order for financial review, then attach financing approval notification. When the transaction is approved and in process, a second flow extension would forward a copy of the goods receipt to the financing company for auditing purposes. Finally, a third flow extension would redirect the invoice to the financing company for enrichment on its way to the buyer.
- An accounting firm might use a flow extension to attach taxation advice to a financial document.
- Shipping notices are of interest not only to buyers, but also to logistics providers. When a supplier sends a shipping notice to a buyer, a flow extension can be used to ensure that the shipping agent receives a copy.

## Use Cases

The Flow extension API supports the following usages:

| Use Case                     | Description   |
|------------------------------|---|
| <b>simple flow extension</b> | In this simplest case, you temporarily suspend the document flow, optionally gather and analyze data from the document, optionally post an attachment and a comment to the document, and then instruct the flow to resume. A real-world example of this use case would be to detect when a buyer sends a PO to a supplier, and attach a URL to a bar code site that allows the supplier to print shipping labels. |
| <b>halt flow extension</b>   | This use case is similar to the simple flow extension, except that you have the option to halt the approval flow rather than instructing it to resume. You might choose this case, for example, if you want to approve invoices up to a certain amount, and cancel any that exceed that amount.   |

| Use Case                          | Description  |
|-----------------------------------|--|
| <b>non-suspend flow extension</b> | This use case grants access to the document data but does not suspend the document flow. Because the flow is not suspended, this use case does not permit appending attachments to the document. You might use a non-suspend flow extension, for example, for third-party archiving. |

**Note**

For the goods received notice (GRN) document type, non-suspend flow extension is the only supported flow extension use case.

## Endpoints Included in the Flow Extension API

Query these endpoints to interrupt the flow of a document using the Flow Extension API.

The Flow Extension API includes the following endpoints:

| Endpoint  | Description   |
|---|---|
| POST /action/flowextensions/{flowExtensionId}/events/{eventId}/halt         | Complete the flow extension and rejects the document by returning it to the sender in 'FAILED' status.  |
| POST /actions/flowextensions/{flowExtensionId}/events/acknowledge           | Acknowledge receipt of an Event retrieved using the Get Next Event API.   |
| POST /action/flowextensions/{flowExtensionId}/events/{eventId}/complete     | For flow extensions in the non-suspend use case. Indicate completion of the flow extension processing for the event.  |
| POST /action/flowextensions/{flowExtensionId}/events/{eventId}/resume       | Complete the flow extension and allows the document to continue with its normal processing flow.  |
| POST /flowextensions/{flowExtensionId}/events/{eventId}                     | Post a comment or attachments to a document event.  |
| GET /flowextensions/{flowExtensionId}/events                                | Retrieve the most recent events from Extension Queue.   |
| GET /flowextensions/{flowExtensionId}/events/{eventId}/eventdata            | Retrieve relevant document data from SAP Business Network for a specific event that external party has received a notification for.   |
| GET /flowextensions/{flowExtensionId}/events/{eventId}/eventdata/attachment | Retrieve relevant document data for a specific document based on the document contentid (cid) from SAP Business Network for a specific event that external party has received a notification for. |

# Workflow for the Flow Extension API

1. An event that satisfies the criteria specified in your flow extension configuration triggers generation of a flow extension event and adds the event to the flow extension event queue.
2. The client application retrieves the event from the flow extension event queue and acknowledges receipt.
3. The client application retrieves data (and attachments, if desired) from the event.
4. Optionally, the intercepted document can be enriched with comments and attachments.
5. The client application triggers completion of the flow extension. The mechanism and consequences of flow extension completion differ based on flow extension use case.

[Configuration of Your Flow Extension \[page 6\]](#)

[Development of an Application That Consumes the Flow Extension API \[page 7\]](#)

[Error Messages Returned by the Flow Extension API \[page 9\]](#)

## Configuration of Your Flow Extension

Each application that uses the Flow extension API must have an associated back-end XML configuration file. You can create this configuration file from a template. Contact your SAP Ariba representative to receive this template.

To configure your flow extension, complete the configuration template with the following information:

| XML Element     | Attribute | Description   |
|-----------------|-----------|---|
| FlowExtension   | id        | The flow extension ID. This name must be unique across the SAP Business Network. The filename for your configuration file should be this ID with the <code>.xml</code> extension.   |
| FlowExtension   | type      | The use case of your flow extension. Possible values are: <ul style="list-style-type: none"><li>• <code>suspendresume</code> - simple flow extension</li><li>• <code>suspendresumehalt</code> - halt flow extension</li><li>• <code>nonsuspend</code> - non-suspend flow extension</li></ul>  |
| Stage           | name      | Indicates whether the flow extension takes place before or after the document has been transmitted to its intended recipient. Possible values are <ul style="list-style-type: none"><li>• <code>POST_PROPAGATION</code> - use for non-suspend flow extension</li><li>• <code>PRE_PROPAGATION</code> - use for all other use cases</li></ul>   |
| GroupConditions | n/a       | Enter the match conditions that will trigger the flow extension. This is a URI drilling into the XML for a certain value. For example: <pre>fn:compare(\$src/cXML/Request/OrderRequest/OrderRequestHeader/Extrinsic[@name='name'], 'My Financial Trade Company Name')</pre> <p>In this example, the flow extension would trigger if the document contains an <code>Extrinsic</code> element in the correct place and the value of its <code>name</code> attribute is "My Financial Trade Company Name".</p> |

| XML Element | Attribute | Description  |
|-------------|-----------|--|
| Source      | n/a       | The document type you wish to intercept. Possible values are: <ul style="list-style-type: none"> <li>ConfirmationDocument</li> <li>InvoiceDetailDocument</li> <li>ShipNoticeDocument</li> <li>PurchaseOrder</li> <li>ReceiptDocument</li> <li>PaymentReceiptDocument</li> </ul>  |
| SLA         | n/a       | The maximum time in hours that can pass before your flow suspension expires and the document goes to its recipient without API intervention.   |
| Outbound    | n/a       | This block defines the XML response template, which allows you to define whether the API responses will include all or only parts of the document, and which parts. You can use the following variables in the <code>Source</code> sub-block nested within the <code>Outbound</code> element: <ul style="list-style-type: none"> <li><b>\$src</b> adds the body of the source cXML document to the response</li> <li><b>\$hdrSrc</b> adds the following header elements of the source cXML document to the response: <code>FromANId</code>, <code>ToANId</code>, <code>SystemId</code>, <code>Version</code>, <code>PayloadId</code>, and <code>Timestamp</code></li> <li><b>\$ref</b> adds header elements of the reference document to the response</li> <li><b>\$hdrRef</b> adds header elements of the reference document to the response</li> <li><b>\$attachmentInfo</b> adds attachment details of the source document</li> </ul> |

## Development of an Application That Consumes the Flow Extension API

### Note

In the sample URLs in this topic, replace `{{runtime_url}}` with the desired runtime URL from the **Environment Details** table on the SAP Ariba developer portal discovery page for this API.

Once your flow extension configuration is complete, you can develop a client application that calls the APIs in the Flow extension API, as follows:

1. If a document being delivered satisfies the criteria specified in your flow extension configuration, a flow extension event is generated and added to the flow extension event queue.
2. To retrieve events from the flow extension event queue, your application calls the `flowextensions/{flowExtensionID}/events` endpoint:

```
GET {{runtime_url}}/flowextensions/{flowExtensionID}/events?count=n
```

3. To acknowledge receipt of the event or events retrieved, your client application calls the `/acknowledge` endpoint. Invoking this API informs the flow extension service that the events have been successfully delivered, preventing the service from returning the same events in response to a later request to retrieve events from

the flow extension event queue. Subsequent API calls for these events (for example requests to enrich the document or resume the normal flow) will not function until after the `/acknowledge` call.

```
POST {{runtime_url}}/flowextensions/action/{flowExtensionID}/events/acknowledge
{
  <events>
    <event><eventId>event_id</eventId></event>
  </events>
}
```

- To retrieve event data (and attachments, if desired) from a flow extension event, your client application calls the `/eventdata` endpoint. The exact structure of the output this API call returns is defined in your configuration file.

- To retrieve data without downloading attachments:

```
GET {{runtime_url}}/flowextensions/{flowExtensionID}/events/{eventID}/
eventdata
```

- You can use this API to download one or more attachments. The maximum size for attachments is 20 mb. To download a single attachment, call the API as follows:

```
GET {{runtime_url}}/flowextensions/{flowExtensionID}/events/{eventID}/
eventdata/attachment?cid={attachmentID}
```

- To download all attachments, set the http Accept to `multipart/mixed` and call the API as follows:

```
GET {{runtime_url}}/flowextensions/{flowExtensionID}/events/{eventID}/
eventdata/attachment
{
  "Accept": "multipart/mixed"
}
```

- Optional. To enrich the intercepted document, your client application calls the `/extId/events/{eventID}` endpoint. This API lets you post a comment or attachments to the event. This API is not supported in the non-suspend flow extension use case. The maximum size for attachments is 20 mb.

```
POST {{runtime_url}}/{extId}/events/{eventID}
{
  "comment": "my comment here"
}
```

- Depending on the use case, complete the flow extension by calling one of the following APIs:

- in the simple flow extension use case and the halt flow extension use case, you can allow the normal document flow to resume by having your client application call the `/resume` endpoint.

```
POST {{runtime_url}}/flowextensions/action/{flowExtensionID}/events/{eventID}/
resume
```

- In the halt flow extension use case, you can complete the flow extension and reject the document, returning it to the sender in `FAILED` status. to do so, the client application should call the `/halt` endpoint:

```
POST {{runtime_url}}/flowextensions/action/{flowExtensionID}/events/{eventID}/
halt
```

- In the non-suspend flow extension use case, you can indicate completion of the flow extension processing for the event by calling the `/complete` endpoint:

```
POST {{runtime_url}}/flowextensions/action/{flowExtensionID}/events/{eventID}/
complete
```



# Error Messages Returned by the Flow Extension API

Use this information to troubleshoot your queries to the Flow Extension API.

| Error Code | Message   | Description  |
|------------|---|--|
| 400        | The API key passed in the request is not valid. | The API key passed in the query headers does not match the API key in the OAuth token.                       |
| 401        | Unauthorized                                    | Authentication failed. Confirm your ANID and shared secret and make sure you are using basic authentication. |
| 403        | Forbidden                                       | Query attempts to access a resource for which it does not have permission.                                   |
| 404        | Not Found                                       | Query attempts to access a resource that cannot be found in the system.                                      |

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