

SAP CLOUD PLATFORM | EXTERNAL

Setup & Configuration

Purchase Requisition Approval and Release in SAP
ERP using SAP Cloud Platform Workflow Management

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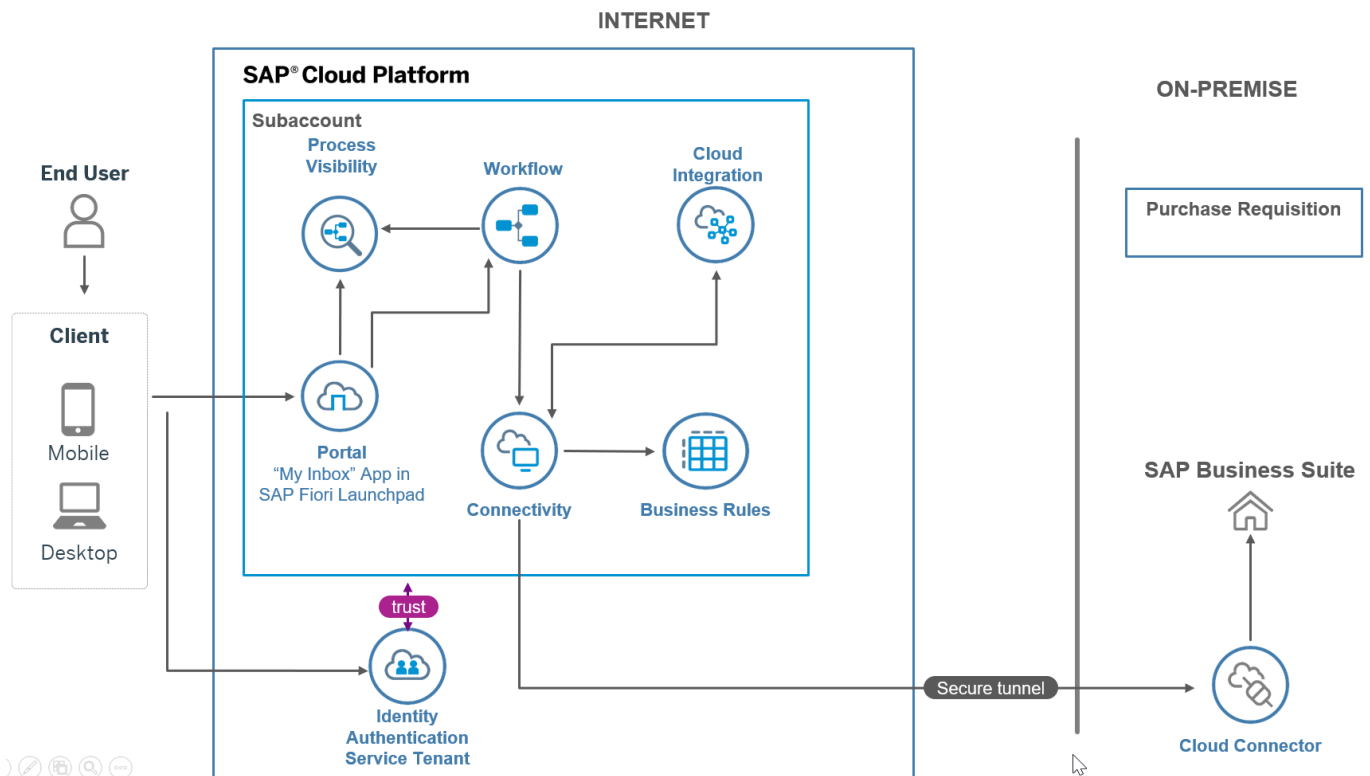
Overview

This document provides information about configuration steps to consume the Live Process Package Purchase Requisition Approval and Release. The main audience of this document are technical IT Administrators and Developers.

This content package enables SAP ERP customers to automate Purchase Request approval and release process using SAP Cloud Platform Workflow Management without additional development in SAP ERP. Salient features of this content package are

- Plug and Play with SAP ERP without additional development.
- Process steps are delivered to create net new variants.
- New Process variants can be configured in a low code no code approach.
- Agent determination using Business Rules or SAP ERP or external systems.
- Validation of Line item attributes using Business Rules.
- Process visibility and key process performance indicators out of the box.
- Insight to actions using process visibility.
- Business Rules to provide flexibility in determining workflow templates and approvers
- Integration content to call SAP ERP BAPIs from SAP Cloud Platform Workflow Management.

SAP ERP – Purchase Requisition Approval & Release



Purchase Requisition Approval and Release Process enable customers to automate approval and release of Line Items in a flexible and transparent way. It provides flexibility in choosing process variants depending on attributes like Request date, Price, Material Group, Document Type, Plant,

Purchasing Group and Purchasing Organization etc. When a requestor creates a Purchase Request with line items in SAP ERP, pre-configured Process Variants are triggered in SAP Cloud Platform Workflow Management.

- Line Item data validated using Business Rules before approval.
- Approvers are determined using a Business Rule / external system.
- Approvers are notified via email.
- Approvers have two decision options (Approve, Reject), and based on the decision, the next approval step will be created or requested for a rework or delete the line item and terminate the approval process.
- Line Item released in SAP ERP for Purchase Order creation.

SAP Cloud Platform Workflow Management shall not be used to store or process sensitive personal data. This service can be used if you have a legal ground to process personal data.

Required SAP Cloud Platform Services

The following SAP Cloud Platform services are required to consume the content package **Purchase Requisition Approval and Release**:

- SAP Cloud Platform Workflow management

- SAP Cloud Platform Integration (in SAP Cloud Platform Neo landscape)

- SAP Cloud Platform Portal

- SAP Cloud Platform Cloud Connector

- SAP Cloud Platform Identity Authentication Service (optional)

This content package requires SAP ERP 6.0 as the back-end application.

Setup and Configuration

Purchase Requisition Approval and Release content package requires SAP Cloud Platform Workflow Management subscription or a CPEA contract. Follow the setup and configuration section of SAP Workflow Management.

<https://help.sap.com/viewer/6f55baaf330443bd8132d071581bbae6/Cloud/en-US/d7910e2bf7f64afc9d0eb21b0cc9e84d.html>

Configure Workflow Email Destination

Configure workflow email destination. For more information on configuring destination, see [configure workflow email destination](#).

Configure OAuth2ClientCredentials Workflow Destination

Configure a destination with the following parameters:

Name	Workflow
Type	HTTP
Proxy Type	Internet
Authentication	OAuth2ClientCredentials
URL	https://api.workflow.<region-host>.hana.ondemand.com/workflow-service/rest
Client ID	
Client Secret	
Token Service URL	<"uaa":"url"/>/oauth/token
Additional Properties:	Name: bpmprocessvisibility.triggerWorkflow Value: system

Please refer help documentation [how to get URL, Client ID, Client Secret and Token Service URL](#). For more information refer to how to [create a HTTP destination](#) and [how to use Workflow APIs](#).

Configure OAuth2UserTokenExchange Workflow Destination

Configure a destination with the following parameters:

Name	WorkflowActions
Type	HTTP
Proxy Type	Internet
Authentication	OAuth2UserTokenExchange
URL	https://api.workflow.<region-host>.hana.ondemand.com/workflow-service/rest
Client ID	
Client Secret	
Token Service URL	<"uaa":"url">/oauth/token
Additional Properties:	Name: bpmprocessvisibility.triggerWorkflow Value: user

Please refer help documentation [how to get URL, Client ID, Client Secret and Token Service URL](#). For more information refer to how to [create a HTTP destination](#) and [how to use Workflow APIs](#).

Configure OAuth2ClientCredentials Business Rules Destination

Configure a Business Rules destination with the following parameters:

Name	BusinessRules
Type	HTTP
Proxy Type	Internet
Authentication	OAuth2ClientCredentias
URL	{rule_runtime_url}/rules-service
Client ID	
Client Secret	
Token Service URL	<"uaa":"url">/oauth/token

Please refer help documentation [how to get URL, Client ID, Client Secret and Token Service URL](#). For more information refer to how to [create a HTTP destination](#) and [how to access business rules APIs](#) using OAuth 2.0 Authentication (client credentials)

Configure OAuth2ClientCredentials Integration Destination

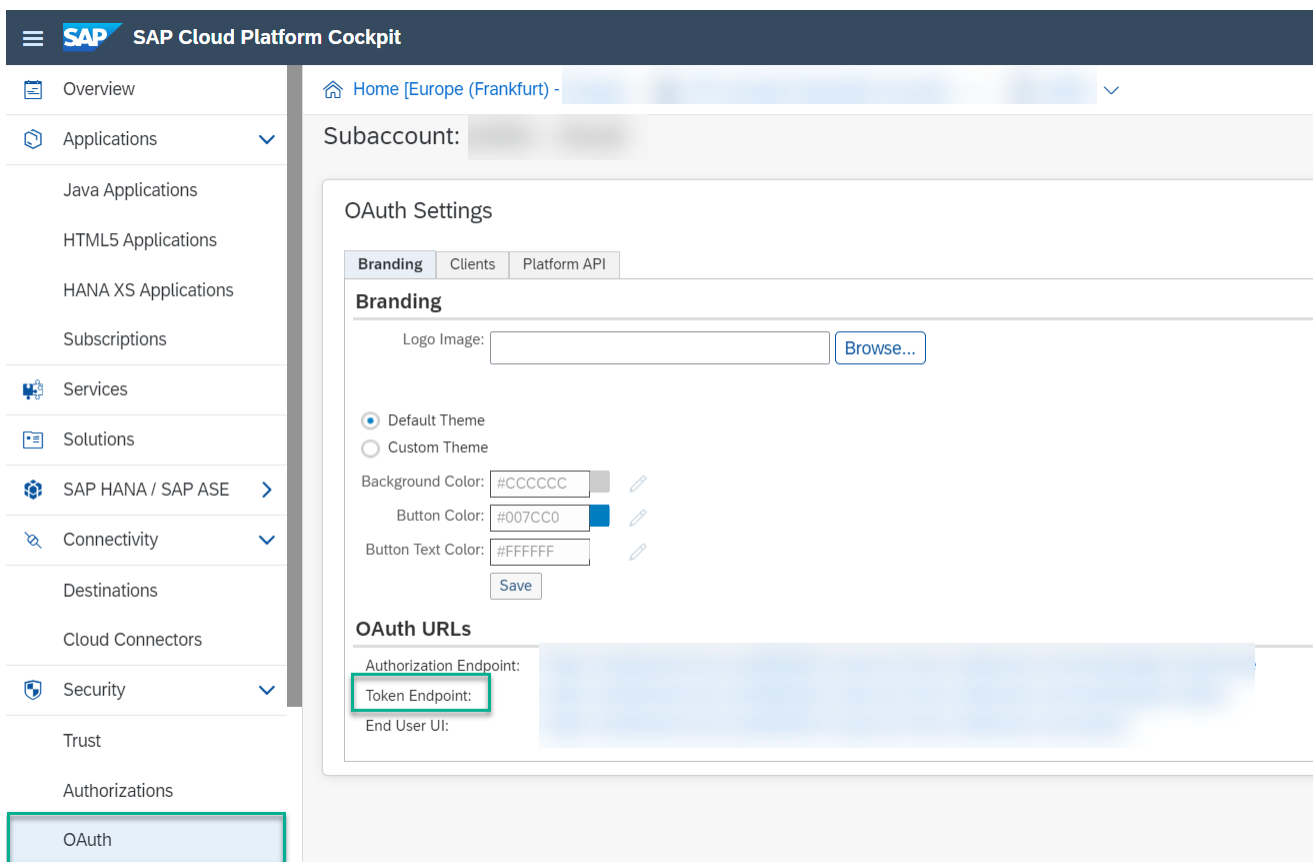
A HTTP destination is required in the Cloud Foundry account where SAP Cloud Platform Workflow Management is subscribed.

Name	CPI
Type	HTTP

Proxy Type	Internet
Authentication	OAuth2ClientCredentias
URL	
Token Service URL	

For more information refer how to [create a HTTP destination](#) and Authentication (client credentials).The URL should be the runtime url. Please refer how to get your Cloud Platform Integration tenant [runtime url](#). Create an OAuth client in Cloud Platform Integration Neo tenant and enter Client ID and Client Secret. Please refer [how to create a OAuth client in Neo](#).

Token Service Url is available in your Cloud Platform Integration Neo account as showed below.



Assign the required [Cloud Platform Integration roles](#) to your OAuth client (oauth_client_<client ID>).

Configure Integration Destination – Basic Authentication

A HTTP destination is required in the Cloud Foundry account where SAP Cloud Platform Workflow Management is subscribed. This destination is required only if you are creating the Purchase Requisition in SAP Cloud Platform using the user interface part of this content package. Assign the

[required roles](#) to this user.

Name	CPI-Basic
Type	HTTP
Proxy Type	Internet
Authentication	Basic
URL	
User ID	

Configure SAP ERP Destination

An RFC destination is required in the Neo account where SAP Cloud Platform Integration is subscribed.

Configure destination, Type as RFC, Proxy Type as OnPremise. Please refer how to [create a RFC destination](#) .

Add Additioanl Properties jco.client.ashost, jco.client.client, jco.client.sysnr

Destination Configuration

Name: *

Type:

Description:

Proxy Type:

User:

Password:

Alias User:

Repository User:

Repository Password:

Location ID:

Additional Properties

jco.client.ash...	<input type="text"/>	
jco.client.client	<input type="text"/>	
jco.client.sysnr	<input type="text"/>	

Configure Cloud Connector

Configure your SAP Cloud Platform Integration account and ECC system in Cloud Connector to enable secure tunnel for RFC calls. Please refer the help documentation to [configure Cloud Connector](#).

Configure SAP ERP

General Prerequisites

Purchasing is configured in SAP ERP and relevant purchase requisitions can be maintained accordingly.

Necessary authorizations for the technical Cloud Platform user to call the following function modules in SAP ECC in the relevant in purchasing areas:

- BAPI_REQUISITION_CREATE
- BAPI_REQUISITION_CHANGE
- BAPI_REQUISITION_RELEASE
- BAPI_MATERIAL_GETLIST
- BAPI_MATERIAL_GET_DETAIL
- SLS_LORD_GET_VALUES_WERKS
- BAPI_COSTCENTER_GETDETAIL1

For Configuration Scenario 2 the enhancement of transaction ME51(N) is required, as described in chapter "Create Purchase Requisition from SAP ERP and Start Approval, Release in SAP Cloud Platform".

Configuration Scenario 1 - Requisition Block

Scenario description

Purchase requisitions, that are to be created in the SAP Cloud Platform and replicated into SAP ERP via BAPI are controlled from SAP Cloud Platform Workflow Management until the release has taken place.

Before release, the BAPI replicates new "**purchases requisitions for approval**" together with Block ID = 3 (Blocked for Central Processing).

The Block ID will be removed as soon as the requisition is released in SAP Cloud Platform Workflow Management.

Scenario configuration

Release Strategy must not be maintained for the relevant purchase requisitions, as the SAP Cloud Platform Workflow will only remove the Block ID after the release has taken place.

Configuration Scenario 2 - Release Strategy

Scenario description

In case the purchase requisitions are to be created within SAP ERP and not via BAPI using the Requisition Block described above, then a Release Strategy must be customized to identify the "**purchases requisitions for approval**", that are to be released in our Cloud Platform Workflow Management.

Scenario configuration

As all details of the release process are controlled within the SAP Cloud Platform Workflow Management, in SAP ERP the following fix values for Release Strategy and Release Code must be maintained for the relevant purchase requisitions:

- Release Strategy named "EX" (External Release Strategy)
- Release Code named "EX" (External Approval)

The Release Strategy must be defined within the Standard Release Procedure for Purchases Requisitions, that is available within transaction SPRO, SAP reference IMG, under the following path:

SAP Customizing Implementation Guide > Materials Management > Purchasing > Purchase Requisition > Release Procedure

Both standard options can be used "Procedure without Classification" and "Procedure with Classification" as well.

It's not the scope of this document to explain all details regarding those configuration options, but in the following paragraph a simple example is introduced.

Important notes for maintenance of Release Strategy "EX":

- Use Release indicator = X (blocked) for creation of new purchase requisitions
- Use a single release step with Release Code "EX" that leads directly into Release indicator = 2 (RFQ/purchase order)

Additional notes:

- It's recommended that the fields in purchase requisitions are not editable in ERP, while release indicator is X (blocked). The detailed customizing is not in scope of this document.
- It is also recommended that the authority to approve the respective purchase requisitions in ERP is only given in an emergency. Means the Approval for Release Code EX-EX must be reserved for the Cloud Platform Approval.

Scenario example

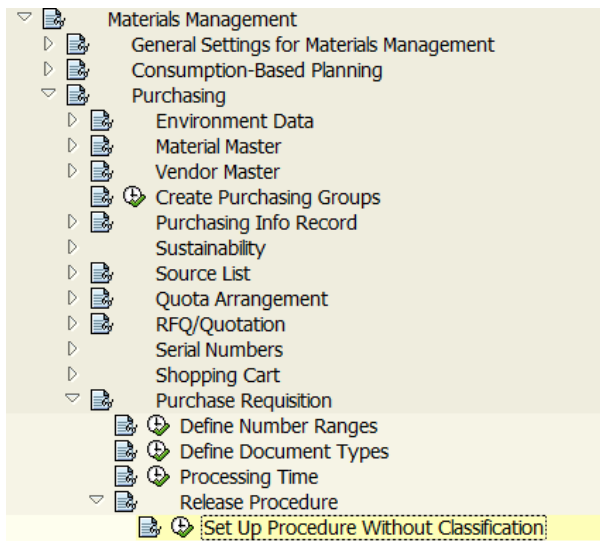
In this simple example we use a "Procedure without Classification" and restrict/define the "purchase requisitions for approval" only with one value:

- Plant of purchase requisition = 0001

That means all purchase requisitions for plant 0001 are to be released via SAP Cloud Platform Workflow.

Starting point is transaction SPRO, SAP reference IMG. For this easy example it is prerequisite that no procedure with classification is maintained.

Step 1 – Choose “Set Up Procedure Without Classification” in the “SAP Customizing Implementation Guide”:



Step 2 – Choose “Release Codes” and maintain:

Release code	Description
EX	External Approval

Step 3 – Choose “Release indicator” and check the values, especially “2” and “X”:

Release ID	Description
1	Request for quotation
2	RFQ/purchase order
3	RFQ/PO no change of date
4	RFQ/PO no changes
A	Fixed RFQ
B	Fixed RFQ/purchase order
R	Released
X	Blocked

Step 3 – Choose “Assign Release Indicators” and maintain:

Rel.Str.	C1	C2	C3	C4	C5	C6	C7	C8	Rel. ID	Description
EX									X	Blocked
EX	X								2	RFQ/purchase order

Step 3 – Choose “Release Points: Prerequisites” and maintain:

Rel.Strat.	Release code	Description	C1	C2	C3	C4	C5	C6	C7	C8
EX	EX	External Approval	X							

Step 3 – Choose “Determination of Release Strategy” and maintain:

















AcctAssCat	Mat. Grp	Plnt	Value of purch. req.	Crcy	Release Strategy
		0001	0,00	EUR	EX

Import, Configure and deploy Integration Content

This Live Process content package requires SAP Cloud Platform Integration in Neo Platform to create, modify and release purchase requisition line items. An integration content package [SAP ERP integration with SAP Cloud Platform Workflow Management](#) is available in SAP API Business hub to integrate SAP Cloud Platform Workflow Management with SAP ERP. The following Integration models are available in this package. All integration models are using RFC Adapter to call the required APIs in SAP ECC.

 [SAP ERP Integration with SAP Cloud Platform Workflow Management /](#) Save Publish Cancel Delete Package
SAP ERP Integration with SAP Cloud Platform Workflow Management

Header Overview **Artifacts (8)** Documents (1) Comments Tags

<input type="checkbox"/>	Name	Type	Version	Actions
<input type="checkbox"/>	Create Purchase Requisition in SAP ERP Creates Purchase Requisition in SAP ERP Created	Integration Flow	1.0.0	 
<input type="checkbox"/>	Delete Purchase Requisition Items in SAP ERP Deletes Purchase Requisition Items in SAP ERP Created	Integration Flow	1.0.0	 
<input type="checkbox"/>	Get Material list from SAP ERP Query to get available materials from SAP ERP Created	Integration Flow	1.0.0	 
<input type="checkbox"/>	Get Material from SAP ERP Read Material data from SAP ERP Created	Integration Flow	1.0.0	 
<input type="checkbox"/>	Get Plant List from SAP ERP Query to get Plant List from SAP ERP Created	Integration Flow	1.0.0	 
<input type="checkbox"/>	Get Purchase Requisition from SAP ERP Read Purchase Requisition data from SAP ERP Created	Integration Flow	1.0.0	 
<input type="checkbox"/>	Release Purchase Requisition in SAP ERP Releases Purchase Requisition Items in SAP ERP Created	Integration Flow	1.0.0	 
<input type="checkbox"/>	Update Purchase Requisition in SAP ERP Updates Purchase Requisition in SAP ERP Created	Integration Flow	1.0.0	 

Import the Content package to your SAP Cloud Platform Integration tenant. To be able to import and deploy integration flows, you need the AuthGroup.IntegrationDeveloper role assigned in your tenant.

Import Prepackaged Integration content using SAP Cloud Platform integration

- Access your SAP Cloud Platform Integration Tenant management node. Please refer [help documentation](#) on how to get Tenant management node address.
- <https://<cpitenant>.hana.ondemand.com/itspaces>
- View all pre-packaged integration flow under Discover->Integration.
- <https://<cpitenant>.hana.ondemand.com/itspaces/shell/discover>
- Search content package “SAP ECC Purchase Requisition Approval with SAP Cloud Platform Workflow Management”

- Click on the package SAP ECC Purchase Requisition Approval with SAP Cloud Platform Workflow Management.
- Click Copy to import the Integration content package to your workspace.
- Navigate to Design to open the imported content package.
- <https://<cpitenant>.hana.ondemand.com/itspaces/shell/design>
- Open all Integration models, select Externalized Parameters, set configured value as RFC Destination created in the section [Configure SAP ECC Destination](#)

Configure "Create Purchase Requisition in SAP ERP"

- Deploy the integration model

These Integration models are used from the Live Process content package Purchase Requisition Approval and Release.

Configure SAP Cloud Platform Integration Interface for External Approver Determination

If an approval step requires task owner determination logic using SAP ERP or SuccessFactors or 3rd party systems, an interface using SAP Cloud Platform Integration (CPI) needs to be implemented. Approvers can be determined using header level or line item level. Depending on the use case, implement a CPI interface as given below.

Purchase Requisition Approval – Line Item level

Interface Signature

<CPI destination Url>/http/DetermineApproval

The approval workflow will be using a destination CPI and http/DetermineApproval as relative path.

Input: Purchase Requisition Line Item (Structure data type)

ATTRIBUTE	TYPE	DESCRIPTION
Requisition Id	String	Purchase Requisition Number
Requisition Date	Date	Purchase Requisition Date
Document Type	String	Purchase Requisition Document Type
Total Value	Number	Price of Line item
Purchasing Organisation	String	Purchasing organisation

Material Group	String	Material Group
Purchasing Group	String	Purchasing Group
Plant	String	Plant
Step Name	String	Process Step Name
Accounts Assignment Category	String	Account Assignment Category
Currency	String	Currency of Line Item

Request body for CPI interface must be in JSON format (example below):

```
{
  "PurchaseRequisitionData": {
    "RequisitionId": "",
    "ItemNumber": "",
    "NetAmount": "",
    "DocumentType": "",
    "MaterialGroup": "",
    "PurchasingGroup": "",
    "Plant": "",
    "PurchasingOrg": "",
    "Currency": "",
    "Quantity": "",
    "StepName": ""
  }
}
```

Output: Approver (Structure)

ATTRIBUTE	TYPE	DESCRIPTION
Approver Name	String	Approver Names, Comma Separated Names
Approver Email	String	Email Ids of Approvers, comma separated.
Approver Group	String	Approver Group
Task Duration	Number	Number of hours planned to complete the task
Duration From	String	Task duration calculated from beginning of a Process Step or immediately before the actual Task. (Task/Step/Workflow)
Auto Approval	Boolean	Approver required or not. (true/false)

Response body for CPI interface must be in JSON format (example below):

```
{
  "Result": [
    {
      "LineItemApprover": {
        "ApproverName": "",
        "ApproverEmail": "",
        "ApproverGroup": "",
        "TaskDuration": 1,
        "DurationFrom": "Step",
        "AutoApproval": false
      }
    }
  ]
}
```

Purchase Requisition Approval – Header level

Interface Signature

<CPI destination Url>/http/DetermineApproval

The approval workflow will be using destination CPI and http/DetermineApproval as relative path.

Input: Purchase Requisition Header (Structure data type)

ATTRIBUTE	TYPE	DESCRIPTION
Requisition Id	String	Purchase Requisition Number
Requisition Date	Date	Purchase Requisition Date
Document Type	String	Purchase Requisition Document Type
Purchase Value	Number	Purchase Requisition Value
Purchasing Organisation	String	Purchasing organization
Step Name	String	Process Step Name

Request body for CPI interface must be in JSON format (example below):

```
{
  "PurchaseRequisitionData": {
    "RequisitionId": "",
    "NetAmount": "",
    "DocumentType": "",
    "PurchasingOrganisation": "",
    "StepName": ""
  }
}
```

Output: Approver (Structure)

ATTRIBUTE	TYPE	DESCRIPTION
Approver Name	String	Approver Names, Comma Separated Names
Approver Email	String	Email Ids of Approvers, comma separated.
Approver Group	String	Approver Group
Task Duration	Number	Number of hours planned to complete the task
Duration From	String	Task duration calculated from beginning of a Process Step or immediately before the actual Task. (Task/Step/Workflow)
Auto Approval	Boolean	Approver required or not. (true/false)

Response body for CPI interface must be in JSON format (example below):

```
{
  "Result": [
    {
      "LineItemApprover": {
        "ApproverName": "",
        "ApproverEmail": "",
        "ApproverGroup": "",
        "TaskDuration": 1,
        "DurationFrom": "Step",
        "AutoApproval": false
      }
    }
  ]
}
```


How to start the Process Variant

Activating a Process Variant creates a new Workflow Definition, which can then be operated like any other workflow. To start the workflow for a given variant, three steps are necessary:

- Determine Workflow Definition Id
- Define Start Payload (Initial Context)
- Start the workflow using custom UI5 application, or call Workflow APIs from remote applications including SAP ERP.

Define Start Payload (Initial Context)

The predefined SAP UI5 ui and Business Rules in this package expect a specific workflow context. This context is given to the workflow instance upon starting. Following is the format defined for the Purchase Requisition Approval and Release Process:

```
{
  "definitionId": "InitializePurchaseRequisitionApprovalProcess",
  "context": {
    "PurchaseRequest": {
      "DocumentId": "",
      "Requestor": {
        "Name": "",
        "Uniqueld": "",
        "Email": ""
      }
    }
  }
}
```

Create Purchase Requisition, Approval and Release from SAP Cloud Platform

Please refer to the documentation for [Creating a Start UI](#) with UI5

See the [API Reference](#) for “Workflow Instances” – “Start a new Instance” by issuing a REST POST call to the `/v1/workflow-instances` endpoint.

Please refer the [Sample SAP UI5 application](#) to create a new purchase Requisition and start approval process.

Table 1. Start Payload fields

FIELD	COMMENT
definitionId	Process variant ID. SAP Cloud Platform Workflow Management, Monitor Workflow -Workflow Definitions will enable you to get the deployed Workflow Definition.
context.PurchaseRequest.DocumentId	Purchase Requisition Document Number
context. PurchaseRequest.Requestor.Uniqueld	User Id of the requester. Requestor might get Rework tasks in their inbox.
context. PurchaseRequest.Requestor.Name	Name of the requester.
context. PurchaseRequest.Requestor.email	Email id of the requester.

Developer Testing

If there is no Purchase Request Creation application available in SAP Cloud Platform, test the approval Process using Monitor Workflow – Workflow Definitions.

1. Create a Purchase Requisition in SAP ERP
2. Copy the Document ID
3. Go to SAP Cloud Platform Workflow Management, Monitor Workflow – Workflow Definitions. Please refer how to test Workflow Definitions in [help documentation](#).
4. Create a new Workflow Instance using the below Payload.

```
{
  "PurchaseRequest": {
    "DocumentId": "",
    "Requestor": {
      "Name": "",
      "Uniqueld": "",
      "Email": ""
    }
  }
}
```

Create Purchase Requisition from ECC and Start Approval, Release in SAP Cloud Platform

For Configuration Scenario 2 (refer details in chapter “Configure SAP ECC”), transaction ME51(N) must be enhanced in ECC:

The classic BAdI **MD_PURREQ_POST** - method **POST_AFTER_SAVE** – can be used to implement

the development to start the approval in SAP Cloud Platform for purchase requisitions with release strategy "EX"!

Important notes for development:

The SAP Cloud Platform Workflow must be started via API. See the [API Reference](#) for "Workflow Instances" – "Start a new Instance" by issuing a REST POST call to the /v1/workflow-instances endpoint.

More help regarding "Access Workflow APIs" can be found here:

<https://help.sap.com/viewer/e157c391253b4ecd93647bf232d18a83/Cloud/en-US/c2bd37c63dda47449e24b8830ba312f1.html>

The necessary data for the API is described in the following json-file and the blue marked texts must be replaced with the current requisition data and user's master data:

```
{
  "definitionId": "InitializePurchaseRequisitionApprovalProcess",
  "context": {
    "PurchaseRequest": {
      "DocumentId": "<Purchase Requisition Document Number>",
      "Requestor": {
        "Name": "<Name of the requester> ",
        "Uniqueld": "<User Id of the requester> ",
        "Email": "<Email id of the requester> "
      }
    }
  }
}
```

To separate the external call from the posting routines within ECC, the ABAP-development should be capsulated in a transactional RFC call:

CALL FUNCTION 'your module for API-call' IN BACKGROUND TASK DESTINATION 'destination'.

The new "destination" of Type 3 (ABAP destination) must allow its technical user to call the API above within you new function module "your module for API-call".