eNABLING EVENT DRIVEN ARCHITECTURE FROM S4HANA

Using Event Enablement Add-On

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# Objective

Objective of this document is to help understand how we can enable event driven architecture from S4 HANA/ECC.

Event driven architecture is provided in S4 HANA/ECC via two major methods.

1. “Enterprise Event enablement”, it is the out-of-the-box framework provided by SAP. It uses MQTT/WebSocket protocol for communication from S4 HANA/ECC. However, the limitation of it is, we have only predefined events provided by SAP and can provide only limited data to the Consumer i.e., Business Object Type (like Sales Order, Business partner) and Action (Created, Changed).
2. “SAP Netweaver AddOn for Event Enablement”, this is an Add-on provided by SAP for free of charge in S4 HANA as well as in ECC. This Add-on is developed by Partner Company ASAPIO for Ariba Integration and later provided by SAP for all customers as it utilizes standard framework. Advantage of this framework over the other is, it can provide Data as well in the Consumer along with Business Object Type and Action.

This document is created by referring to a real time scenario “Sending Sales Order Billing Block status to OPS (Operations/Legacy system)”, where we trigger events from S4 HANA/ECC only when Sales Order Billing Block status is changed and send the information of the Sales Order and some relevant information to OPS system via CPI.

# Pre-requisites

1. Add-On Installation (see References for Add-On documentation links)
2. Role’s activation provided by Add-On
3. Master Data definition for the Add-On
4. Standard Workflow setup is done in S4 HANA/ECC system level
5. Event Mesh service activation in SAP Business Technology Platform

# Process Flow

Here is the high-level process flow:

Diagram

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Step 1 – S4 HANA will trigger an Event upon Sales Order Billing block Status change and pushes it to Event mesh

Step 2 – CPI reads the message from Event Mesh

Step 3 – CPI does the transformation of message read and sends it to OPS.

However, in this document, we will not cover the entire details of Step 3.

# S4 HANA Setup

## Creating Custom Event for Sales Order Business Object

### Create a Sub Type

Navigate to SWO1, Select Business Object BUS2032 and then Create Sub Type

Graphical user interface, application

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Enter the package and necessary transport information.

Navigate into the change mode. By, default you will see the status of the Business object is in modeled state as shown below.

Graphical user interface, text, application

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### Change Business Object release status

First save the Business Object, perform Generate.

Next, Change Business Object release status to Implemented, followed by released

Graphical user interface, application, Word

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Graphical user interface, text, application, email

Description automatically generated

You will see a Tick mark upon successful status change to Released.

### Add Custom Event to Business Object

Create a Custom Event ZSD\_BILLINGBLOCK\_CHANGE

Graphical user interface

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By default, the event will be in Modeled status as shown below

Graphical user interface, text

Description automatically generated

### Change Event Status from Modeled to Released

Change Event Status from Modeled to Implemented, followed by Released

Graphical user interface

Description automatically generated

Text

Description automatically generated with medium confidence

## Enable events for Change Documents

VERKBELEG is the change document that is enabled for Sales Order Business Object. We must provide the linkage between Change Document, Business Object, and the Custom event we have created.

Navigate to SWEC, and maintain an entry as shown below

Graphical user interface, text, application, email

Description automatically generated

Graphical user interface, application

Description automatically generated

## Create a new View

To send additional details about the sales order when the event triggers, we must create a new View.

ZV\_SOBLK\_STATUS is the new created with the following fields.

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Graphical user interface, text, application, email

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## Setup RFC Destinations

Using transaction code SM59, set up communication with Event Mesh by creating the following RFC connections BTP\_EVENTMESH\_TOKEN, BTP\_EVENTMESH\_INSTANCE

### BTP\_EVENTMESH\_INSTANCE

Create an RFC destination to connect to the EVENT MESH REST endpoint

Graphical user interface, application

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Graphical user interface, application

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***Please Note:***

* Do not maintain any User information in Logon & Security tab
* Certificates are installed into STRUST
* Ensure the Security options Active is selected and pointed to the path where Certificates are installed

### BTP\_EVENTMESH\_TOKEN

Create an RFC connection to the OAuth Token endpoint for authorization purposes.

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Graphical user interface, application

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***Please Note:***

* Endpoint information is available from the Service Key of BTP Account Instances and Subscriptions section
* Enter ‘/oauth /token’ in second line (Path Prefix)
* Do not maintain any User information in Logon & Security tab
* Make sure certificates were exchanged earlier. Certificates are installed into STRUST
* Ensure the Security options Active is selected and pointed to the path where Certificates are installed

## NetWeaver Event Enablement Add-On Setup

### Post Installation Steps

### Activate BC Sets

This is a onetime setup as part of Post Installation steps. Business Configuration sets (BC-Sets) contain customizing and configuration-related table entries that are not imported with the add-on.

Use transaction SCPR20 to activate the table content.

The following BC-Sets are delivered with the add-on:

| BC-Sets for SAP NetWeaver Add-On for Event Enablement | | | |
| --- | --- | --- | --- |
| **BC-Set** | **Description** | **Where to Activate?** | **What's in the BC-Set** |
| /ASADEV/ACI\_BCSET\_FRAMEWORK\_SEM | For add-on framework (SAP Enterprise Messaging) | You must activate this in the development client as it contains table contents of both client-dependent and client-independent tables. | Configuration for Cloud Adapter table  Definition of IDOC Segments |
| /ASADEV/ACI\_BCSET\_FX\_CLIENT\_SEM | For add-on framework (client-specific SAP EM) | You must activate this in customizing clients as it contains table entries of client-dependent tables. | Configuration for Cloud Adapter table |

### Activating roles provided by Add-On

With the Add-On installation, we get 3 roles into the system, i.e.,

* /ASADEV/ACI\_ADMIN\_ROLE Role for using ASI (ASAPIO Cloud Integrator)
* /ASADEV/ACI\_JOB\_ROLE Role for Job-User for running ACI via Job
* /ASADEV/ACI\_POCLOSURE\_ROLE Role for inbound PO Closure Web Service Call

### Business Object Configuration Steps

Add-On setup is available in SPRO. Follow the path “Integration with other SAP Components” -> “SAP Netweaver Add-On Enablement”. Highlighted are the steps we must maintain for the requirement. Snapshots of every step is also captured below.

Graphical user interface, text

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### Create Message Type

First, we must create a new logical Message Type. Please make sure NOT to use any existing message type, so better create a new Message Type “ZSO\_BILLBLOCK\_EVT”

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### Definition of Change Relevant fields

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Description automatically generated

### Activating Change Pointers for the message type

Graphical user interface, text, application

Description automatically generated

### Additional Data for Message Type

Graphical user interface, text, application

Description automatically generated

Application

Description automatically generated

### Determine Change Pointer Target for Message Type

Graphical user interface, text, application

Description automatically generated

### Connection and Replication Customizing

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Graphical user interface, text, application

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***Please Note:***

Make sure that the topic specified under SAP\_EM\_TOPIC matches the namespace of your Event Mesh Instance

## Event Mesh Setup

### Create an Event Mesh instance in SAP BTP environment.

First, we must subscribe to Event Mesh Service in BTP environment. Then, create an instance.

Graphical user interface, application

Description automatically generated

While creating an instance, we must supply a JSON input which will hold the information about the messaging client that gets created and features like Queues, topic enabled. Here is the sample JSON utilized in our scenario.

{

"emname": "<yourmessageclientname>",

"namespace": "<yourorgname>/<yourmessageclientname>/<uniqueID>",

"version": "1.1.0",

"options": {

"management": true,

"messagingrest": true,

"messaging": true

},

"rules": {

"queueRules": {

"publishFilter": [

"${namespace}/\*"

],

"subscribeFilter": [

"${namespace}/\*"

]

},

"topicRules": {

"publishFilter": [

"${namespace}/\*"

],

"subscribeFilter": [

"${namespace}/\*"

]

}

}

}

### Create a Service Key for Event Mesh instance

**Graphical user interface, application, Teams

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**Graphical user interface, text, application, email

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***Please Note:***

Please take help from Basis if you do not have permissions in BTP for Event Mesh subscription, Instance creation and Service key.

### Create queues in Messaging Client

Navigate to Event Mesh Application from BTP Subscription

Graphical user interface, application

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You will see the Message clients based on the Instances created (input supplied in the JSON while creating the instance)

Graphical user interface, application

Description automatically generated

Navigate to Message Clients -> Queues

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Graphical user interface, application

Description automatically generated

### Create a Webhook for the queue

Gather the endpoint of the CPI Integration flow from CPI team and navigate to Webhooks tab, click Create Webhook.

Table

Description automatically generated

Graphical user interface, text, application, email

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Supply the webhook URL as CPI Integration flow url and use OAuth2ClientCredentials.

Gather information for CPI Process Integration Runtime -> integration-flow instance service key and supply Client ID, Client secret, token url here.

Graphical user interface, text, application

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Completing the Create action will enable the webhook for this queue, which will process the messages immediately upon receiving it into queue.

# Monitoring / Troubleshooting

* /ASADEV/ACI\_MONITOR is the transaction provided by SAP for monitoring the events triggering from S4 HANA. It has the ability for reprocessing mechanism in case it was not sent.
* If the message did not receive /ASADEV/ACI\_MONITOR, please check SM58 whether there are any messages stuck in by WORKFLOW destination or your user id
* /ASADEV/ACI is the program provided by SAP for batch processing all the errors in case if there is any
* If you just have the need of triggering a plain event without any data, you could utilize send notifications functionality. Refer to this link for changing the configuration of Outbound object [Align Notification Events to S/4 - SAP Help Portal](https://help.sap.com/viewer/e966e6c0e61443ebaa0270a4bae4b363/1.0/en-US/7bacb9845db34e25b21597b07fbc0ef5.html)

# Cutover activities for Transports to NonProds/Prods

Here are some important cutover activities that we must take care upon promotion of this feature to non-production and production systems.

* Configuration transports provided by Add-on are little quirky. So, please follow this document reference to ensure the main configuration entries are locked in the transport. [Configuration Transports - SAP Help Portal](https://help.sap.com/viewer/e966e6c0e61443ebaa0270a4bae4b363/1.0/en-US/827c1ab3ca674dd49ae350c637305c2f.html)
* Create the RFC destinations mentioned above i.e., BTP\_EVENTMESH\_TOKEN and BTP\_EVENTMESH\_INSTANCE
* Set the Cloud connection password using the BTP Event mesh service key and update the Client ID in “Connection and Replication Object Customizing”Graphical user interface, text, application, email

  Description automatically generated
* If you are doing this for the first time in the environment, ensure the roles and authorizations provided by the Add-on are activated and assigned successfully.
* Ensure the steps under Event Mesh setup are activated successfully in promoting environment

# References

* [SAP Event Mesh - SAP Help Portal](https://help.sap.com/viewer/product/SAP_EM/Cloud/en-US)
* [SAP NetWeaver Add-On for Event Enablement - SAP Help Portal](https://help.sap.com/viewer/e966e6c0e61443ebaa0270a4bae4b363/1.0/en-US/3eba827c531344eb879d8e35022d90ba.html)
* [Create Instance of SAP Event Mesh | Tutorials for SAP Developers](https://developers.sap.com/tutorials/cp-enterprisemessaging-instance-create.html)