ERP-984 System Interface 3PL Warehouse - Outbound Delivery Interface to Cloud Integration Suite

Revision under Review

Status	Revision under Review
Owner	RUIZ SOMOZA-ext, Carolina
Stakeholders	RIZOS, Antonios VENKAT-ext, Rama
Jira Request ID	ERP-611 - Jira project doesn't exist or you don't have permission to view it.
Jira Development ID	ERP-984 - Jira project doesn't exist or you don't have permission to view it.

High- Level Specification

Implementing System	S4 HANA
Invoked by/Invokes	Invoked by outbound delivery events
Business Process Reference	06.10.01.01. Manage 3PL Warehouse Interfaces

Functional Overview

This Functional Specification describes the outbound delivery interface between SAP S/4HANA and Third-Party Logistics providers (3PLs), using SAP Integration Suite (CPI) and the standard OData service **API_OUTBOUND_DELIVERY_SRV_0002**.

The purpose of this interface is to transmit outbound delivery data from SAP S/4HANA to external 3PL systems to support warehouse execution activities such as picking, packing, and goods issue processing.

Not all outbound deliveries are transmitted; only deliveries that meet specific business criteria are in scope. These criteria are defined through configuration and business rules, such as shipping point, delivery type, and 3PL assignment.

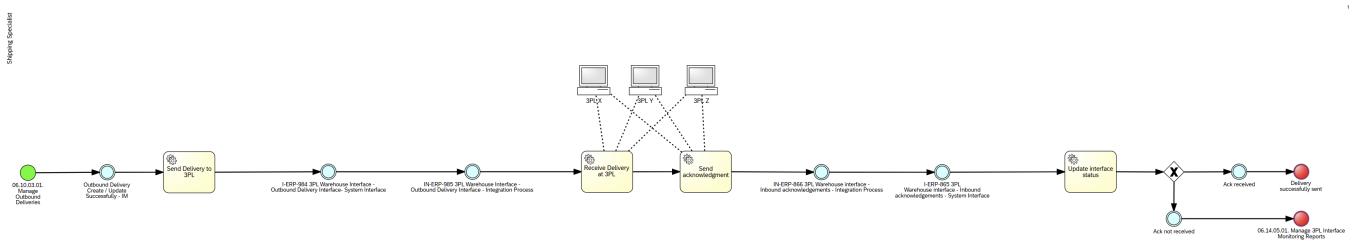
Outbound deliveries may be transmitted to the 3PL even if they are not yet ready for picking. In scenarios where batch determination has not been completed, the outbound delivery is sent with a shipment block indicator. This allows the 3PL to receive early visibility of the delivery while clearly indicating that the delivery is not yet released for picking activities.

Once batch assignment is completed in SAP S/4HANA, the shipment block is removed. A subsequent update of the outbound delivery is then transmitted to the 3PL, informing that the delivery is now released and can be processed for picking. This approach ensures alignment between SAP and the 3PL on delivery readiness while enabling early planning and coordination.

Scope and Objectives

The interface covers all outbound deliveries created or updated in S/4HANA that are relevant for transmission to 3PL systems.

Process Flow Diagram



Step	Description	Comment
1	Delivery created/updated in S/4HANA	
2	S/4 raises an internal event.	
3	The standard business event will be consumed in S/4HANA through business event consumption and the following checks will be performed accordingly	
3.1	System checks the 3PL assignment table	To determine if the interface is active and retrieve the 3PL assigned
3.2	System checks the DELIVERIES_3PL table	To determine if the delivery type, shipping point and event is relevant for transmission
4	Relevant custom event is published to SAP Event Mesh	If previous steps are successful
5	S/4 updates Monitoring Table	Using System date and time
6	CPI consumes the event and retrieves full delivery using API	CPI will also get the 3PL partner from the 3PL assignment table for routing purposes
7	3PL consumes and send an Ack back	
8	S/4 updates Monitoring Table	for the Ack received

Assumptions

N/A

Dependencies

ERP-865 - Jira project doesn't exist or you don't have permission to view it.	For tracing the transmission in the monitoring table

Security, Integrity and Controls

Outbound interface triggered by a standard SAP event. The process that triggers the interface will take care of access control.

Configuration Requirements

The following custom configuration tables are required for this interface. Both tables are maintained exclusively by the technical team via transport requests.

Business users have read-only visibility through SAP Custom Business Configuration.

Table 1 — 3PL Interface Activation and Assignment

This table determines whether the delivery interface is active for a given shipping point and identifies the assigned 3PL. It is evaluated prior to event publication to ensure that the transmission is relevant and authorized.

Field	Data Type	Description	Mandatory	Key
VSTEL	like LIKP-VSTEL	Shipping Point	X	X
VSTEL_DES	CHAR	Description (auto-populated from TVST)		
DOC_TYPE	CHAR 30	Document type. Possible values: DELIVERY, FREIGHT_ORDER	X	X
3PL	CHAR 30	3PL assigned to the shipping point	X	
Activation	CHAR 1	Interface activated. Value: X or blank	X	

Table 2 — DELIVERIES_3PL

This table defines the delivery types, events, and APIs relevant for transmission per shipping point.

Field	Data Type	Description	Mandatory	Key
VSTEL	like LIKP-VSTEL	Shipping point	X	X
LFART	like LIKP-LFART	Delivery type	X	X
EVENT	CHAR 10	Event	X	
API	CHAR 50	API to be used		

Special Requirements

N/A

Design Rationale

Outbound deliveries will be relevant for transmission only for specific shipping points (the ones related to a 3PL), delivery types and at certain events. T his criteria may change between 3PLs so custom configuration tables are needed to store these parameters and should be checked by Event Mesh before publishing the event for consumption.

The table structures are defined in the *Configuration Requirements section*.

The following standard events are triggered whenever there are changes in Outbound Delivery as documented in Event References:

- Outbound delivery created
- Outbound delivery changed
- Outbound delivery deleted
- Outbound delivery block changed
- Outbound delivery picking status changed
- Outbound delivery packing status changed
- Outbound delivery GI status changed
- Outbound delivery Item Created
- Outbound delivery Item Changed
- Outbound delivery Item Deleted

For customer returns (`API_CUSTOMER_RETURNS_DELIVERY_SRV_0002`) the following events are triggered:

- Customer returns delivery created
- Customer returns delivery changed
- Customer returns delivery deleted

Since derived events and metadata extension is either not possible or not useful for the requirement, the following events will be consumed in S /4HANA through Business Event Consumption with the custom filter logic and a custom event will be published to Event Mesh with additional information.

The event triggering the interface should be included in the data sent to the 3PL.

The event triggering the interface should be included in the data sent to the 3PL. The event is included at header level. If the event is triggered by an item-level change, the event is also included at item level for the affected item.

API Use

The API to be consumed for each delivery is determined by the configuration table DELIVERIES_3PL (see Configuration Requirements). The API field in the table specifies which OData service is used to extract the delivery data.

The following information shall be retrieved from S/4HANA for the outbound delivery document using `API_OUTBOUND_DELIVERY_SRV_0002`:

Structure	Description
`A_OutbDeliveryHeader`	Delivery header
`A_OutbDeliveryPartner`	Header partners (sold-to, ship-to, carrier, etc.)
`A_OutbDeliveryAddress`	Partner address detail (street, city, postal code, country)
`A_OutbDeliveryHeaderText`	Header texts
`A_OutbDeliveryItem`	Delivery items
`A_OutbDeliveryItemText`	Item texts
`A_HandlingUnitHeaderDelivery`	Handling unit headers
`A_HandlingUnitItemDelivery`	Handling unit items

The following information shall be retrieved from S/4HANA for the customer returns delivery document using `API_CUSTOMER_RETURNS_DELIVERY_SRV_0002`:

Structure	Description
`A_ReturnsDeliveryHeader`	Delivery header
`A_ReturnsDeliveryPartner`	Header partners
`A_ReturnsDeliveryAddress`	Partner address detail (street, city, postal code, country)
`A_ReturnsDeliveryHeaderText`	Header texts
`A_ReturnsDeliveryItem`	Delivery items
`A_ReturnsDeliveryItemText`	Item texts
`A_HandlingUnitHeaderDelivery`	Handling unit headers
`A_HandlingUnitItemDelivery`	Handling unit items

Data Structure

Fields from the standard API will be used.

The event triggering the interface should be included in the data sent to the 3PL. The event is included at header level. If the event is triggered by an item-level change, the event is also included at item level for the affected item.

Processing Logic

1) Relevance and activation checks

For each outbound delivery considered for transmission, the system evaluates whether the delivery is relevant for a 3PL interface based on configuration and business rules.

The following checks are performed sequentially:

Every time a new event is raised from a Delivery document, the event is consumed via business event consumption and a subsequence event should be published for transmission if the following criteria is met:

- Interface activation and 3PL assignment: The system checks the 3PL Interface Activation and Assignment table (see Configuration Requirements) with VSTEL = LIKP-VSTEL and DOC_TYPE = 'DELIVERY'.

If an entry exists and the field Activation = 'X', the delivery is considered relevant for transmission and the assigned 3PL is determined.
If no active entry is found, the delivery is considered not relevant for transmission and no further processing is performed.

- Delivery type and event validation: The configuration table DELIVERIES_3PL (see Configuration Requirements) is validated using: Shipping point (LIKP-VSTEL), Delivery type (LIKP-LFART), Event type.

If a matching entry exists, the delivery is eligible for transmission and the API specified in the configuration entry is used to extract the outbound delivery data.

If no entry is found, the delivery is not transmitted.

2) Monitoring and traceability

If the delivery is successfully identified as relevant for transmission, an entry is created or updated in the outbound monitoring table to ensure traceability of the transmission to the 3PL. The monitoring table structure is defined in

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DOC_TYPE=DELIVERY

DOC_ID= LIKP-VBELN

DATE_SENT = System date

TIME_SENT = System time

If an entry already exists for the same DOC_TYPE and DOC_ID, the record is updated with the current DATE_SENT and TIME_SENT to reflect the latest transmission.

Interface Alert & Monitoring

Monitoring will be handled by ERP-865 - Jira project doesn't exist or you don't have permission to view it. and

ERP-844 - Jira project doesn't exist or you don't have permission to view it.

Language Requirements

Document texts will be in the language of the source document.

User Interface Requirements

Users should be able to display the configuration tables defined in the Configuration Requirements section through SAP Custom Business Configuration. Modification of table entries is restricted to the technical team via transport requests.

Sequencing

N/A

Volumetrics

Average: 85 documents per day

Performance Consideration

N/A

Error Handling

Error handling is managed through SAP Application Interface Framework (AIF) and SAP Integration Suite (CPI) to ensure reliable transmission of outbound delivery data to the 3PL.

If an error occurs during data extraction or transmission to CPI or the 3PL, the interface execution is marked as failed and the error is visible in AIF and /or CPI monitoring. *The interface must support retriggering.*

Configuration or relevance errors result in the delivery being treated as not relevant for transmission and no message being sent.

Retransmission requirement (dependency):
Where the 3PL rejects a message due to functional reasons on the 3PL side (e.g. missing/invalid master data), a controlled mechanism must exist to retransmit the inbound delivery after correction (either via AIF retriggering and/or CPI reprocessing, depending on the operational design). The chosen approach and responsibilities (SAP vs CPI vs 3PL) must be confirmed with the technical team.

Testing

How to Test

Test Conditions and Expected Results

ID	Condition	Expected Results
1	Create an outbound delivery for a relevant Shipping Point (VSTEL) where interface is active (ERP-845: DOC_TYPE=DELIVERY, INTERFACE_ACT=X) and DELIVERIES_3PL has an entry for (VSTEL, LFART, Event=CREATE)	Event is published for transmission. CPI extracts data using the API specified in DELIVERIES_3PL. Monitoring entry is created /updated with DOC_TYPE=DELIVERY, DOC_ID=VBELN, DATE_SENT/TIME_SENT.
2	Create a delivery for a Shipping Point (VSTEL) with no active interface (ERP-845 missing or INTERFACE_ACT X)	Delivery is not relevant. No transmission event is published.
3	Create a delivery for an active Shipping Point but no matching DELIVERIES_3PL rule (missing LFART and/or Event configuration)	No transmission event is published. Delivery is not sent.
3	Create different delivery types (e.g., Outbound Delivery, Customer Returns) where each type has a different DELIVERIES_3PL configuration/API	For each delivery type, the correct event is published and CPI uses the correct API as per DELIVERIES_3PL. Monitoring entry created/updated accordingly.
4	Change an existing relevant outbound delivery (Event=CHANGE), with matching DELIVERIES_3PL rule	Update event is published. CPI sends updated payload using configured API. Monitoring entry for same DOC_ID is updated with latest DATE_SENT/TIME_SENT.
5	Shipment block scenario – initial send: Create/Change delivery where batches are not assigned yet and shipment block indicator is set	Delivery is transmitted with shipment block indicator. 3PL receives it as not released for picking. Monitoring updated.
6	Shipment block scenario – release: Assign batches in SAP and shipment block is removed; trigger subsequent update	Update event is transmitted reflecting released status. 3PL can proceed with picking. Monitoring updated with new DATE_SENT /TIME_SENT.
7	Deletion of delivery document (or delivery cancelled in SAP as per process)	A deletion/cancellation notification event is published to CPI (as designed). 3PL receives the deletion/cancellation signal. Monitoring updated.
8	Multi-3PL routing: create deliveries for two different relevant shipping points assigned to different 3PLs	Each delivery is routed to the correct assigned 3PL as per ERP-845 configuration. Monitoring shows correct DOC_ID and timestamps.

Test Considerations/Dependencies

The solution must be tested in conjunction with the developments listed in the *Dependencies* section.

End-to-end validation will include the participation of the relevant 3PL partners to ensure the completeness of the outbound delivery transmission flow across ERP, middleware, and target logistics platforms.

Other Information

Development Details

Package

Package Name	Parent Package

Other Development Objects

Object Type	Object Name	Purpose/High Level Logic	Design Rationale Reference

Appendix

See also

File	Modified

No files shared here yet.

Change log

Version	Published	Changed By	Comment
CURRENT (v. 33)	**Apr 29, 2026 09:22**	**RUIZ SOMOZA-ext, Carolina**	
v. 32	Apr 29, 2026 09:20	**RUIZ SOMOZA-ext, Carolina**	
v. 31	Apr 17, 2026 13:55	**RUIZ SOMOZA-ext, Carolina**	
v. 30	Mar 31, 2026 14:55	**RUIZ SOMOZA-ext, Carolina**	
v. 29	Mar 31, 2026 14:53	**RUIZ SOMOZA-ext, Carolina**	
v. 28	Jan 12, 2026 10:40	**WEINERT-ext, Patrick**	
v. 27	Jan 12, 2026 10:38	**WEINERT-ext, Patrick**	
v. 26	Jan 09, 2026 12:45	**RUIZ SOMOZA-ext, Carolina**	
v. 25	Jan 09, 2026 09:47	**RUIZ SOMOZA-ext, Carolina**	
v. 24	Jan 09, 2026 09:43	**RUIZ SOMOZA-ext, Carolina**	

Go to Page History

Workflow history

This view shows the 5 most recent entries. The complete workflow log is available from the 'Document Activity' menu item.

Apr 29, 2026	Actor	Type	Activity	Version
Revision under Review	RUIZ SOMOZA-ext, Carolina	Edit	updated the page at 9:20 am	
Apr 17, 2026				

	RUIZ SOMOZA-ext, Carolina	State	changed state to Revision under Review at 3:15 pm	v31
From Mar 31, 2026 to Apr 17, 2026				
Revision in progress	RUIZ SOMOZA-ext, Carolina	Edit	updated the page at 2:53 pm	
	RUIZ SOMOZA-ext, Carolina	State	changed state to Revision in progress at 12:53 pm	v29
Feb 24, 2026				
Approved	VENKAT-ext, Rama	State	changed state to Approved at 8:49 am	v28