Event Mesh in SAP CPI
Moving to Event Driven Architecture

SAP Event Mesh is a **cloud-based messaging service** used for event-driven communication between SAP and non-SAP systems. It helps systems talk to each other **asynchronously**, without being tightly connected.

Think of it like a WhatsApp group where systems drop messages (events) and others can read/respond whenever they're ready. CPI is like a participant in this group—listening, responding, or posting messages.

Asynchronous communication means:
The sender sends a message and doesn't wait for an immediate response — the receiver can respond **later**, whenever it's ready.

Note: Event Mesh is developed by **Solace**, a company specializing in event-driven architecture. SAP has partnered with Solace to integrate Event Mesh into its platform. To use Event Mesh, a valid subscription is required—it is currently not available on trial accounts.

Building Blocks:

Event

- A **small piece of information** or **notification** about something that has happened.
- Usually lightweight (JSON or XML).

🧠 *Example:*
"**A new sales order is created**" → this is an event.

Topic

- A **named channel** where events are published.
- Organizes events like folders or categories.
- Event Mesh uses **topics** to **route events** to appropriate queues.

🧠 *Example:*
Topic name: /s4/sales/order/created
(This topic tells what kind of event and from which system)

Queue

- A **storage area** where events are kept until they are picked up by a subscriber.
- Ensures **reliable delivery** even if the subscriber is temporarily unavailable.
- Linked to one or more **topics**.

🧠 *Analogy:* Like your **email inbox** — messages stay there until you read them.

Publisher

- A system or application that **sends (publishes)** events to a topic in Event Mesh.
- It doesn't care who listens—it just sends the event.

🧠 *Example:*
S/4HANA publishes an event when a Purchase Order is created.

Subscriber

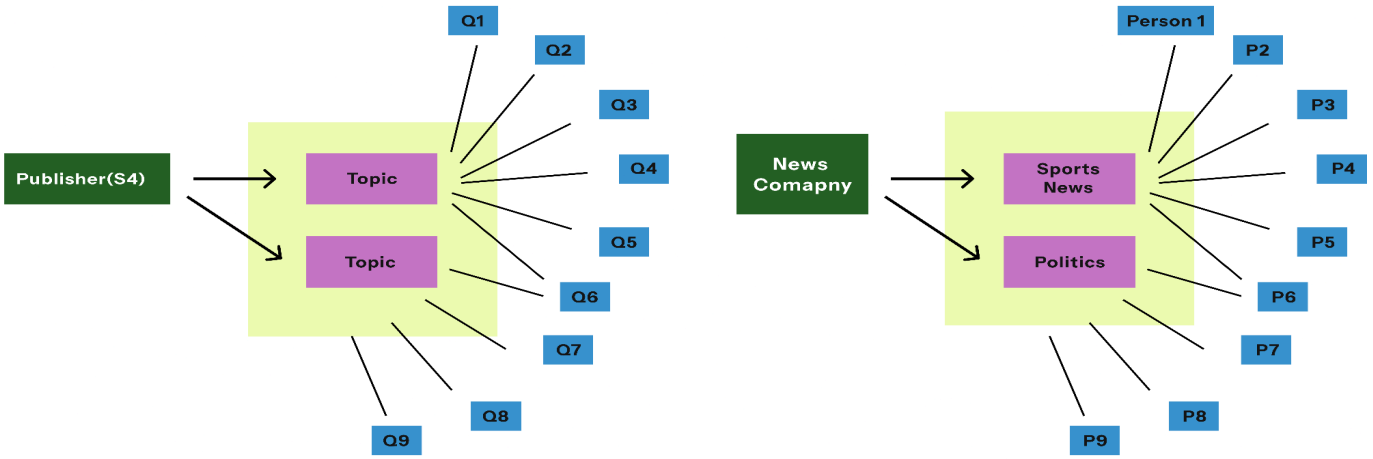
- A system or application that **receives (consumes)** events from a **queue**.
- Subscriber is usually a CPI iFlow or webhook.

🧠 *Example:*
SAP CPI iFlow is triggered when a new event is received in the queue.

🔄 How They Are Connected

Let's put it all together:

1. **Publisher** (e.g., S/4HANA) sends an **event** →
2. Event is sent to a **topic** (e.g., /s4/qm/notification/created) →
3. The **topic** is **bound to a queue** →
4. The event is **stored in the queue** →
5. **Subscriber** (e.g., CPI) reads from the **queue** and processes the event.



Comparison Diagram

- A single queue can subscribe to multiple topics.
- When a message is published to a topic, it is instantly delivered to all the queues that have subscribed to it.
- See in example diagram, a "Sports" topic has 5 subscribers, while a "Politics" topic has 4.
- A 6th person/queue may subscribe to both "Sports" and "Politics" topics.
- This illustrates the Pub-Sub (Publish-Subscribe) model, where only those queues that have subscribed to a specific topic receive its messages.

Scenario: Customer Feedback Notification from E-Commerce App to SAP Systems via Event Mesh and CPI

🔔 Event Trigger

Whenever a customer submits a feedback form or rating on the company's e-commerce website or mobile app, an event is triggered.

🌐 Event Mesh Integration

The event, containing details like Customer ID, Order ID, Feedback Score, Comments, and Timestamp, is published to SAP Event Mesh on a specific topic, e.g., /ecommerce/feedback/submitted.

📨 Queue Binding & Webhook Notification

- This **topic** is bound to a queue, e.g., customer_feedback_queue.
- A **webhook** is configured in Event Mesh to notify **SAP CPI** when a new message is present in the queue.

🔧 CPI Data Processing

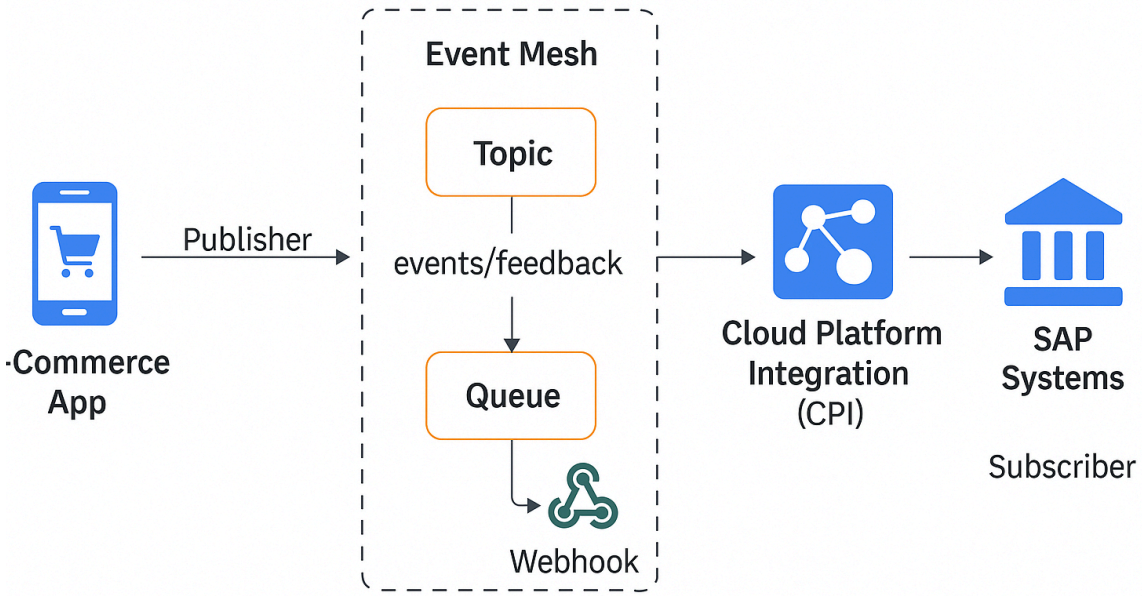
- SAP CPI receives the **feedback payload** through the webhook.
- It performs **data enrichment**, such as retrieving full customer details from S/4HANA or C4C.
- It applies **business rules**: e.g., if rating ≤ 2 stars, mark it for escalation.

🛠️ Integration with SAP Systems

- If the feedback is critical, CPI:
  - Creates a **Service Ticket** in SAP Service Cloud or SAP CRM.
  - Sends an **email alert** to the Customer Experience team.
  - Logs feedback to a **centralized feedback system** or analytics tool (e.g., SAP Analytics Cloud or Datalake)

📩 Acknowledgment (Optional)

- Acknowledgment is sent back to the E-Commerce Platform that the feedback was received and processed successfully.



What is a Webhook?

A **webhook** is like a **reverse API call** — instead of your system asking for data, another system **sends data to you automatically** when something happens.

> ✅ **It's an automated, real-time push notification from one system to another.**

In SAP CPI & Event Mesh ->

🔄 Without Webhook:

- CPI would need to **poll** the queue again and again — like saying: *"Is there any new event? Is there any new event?"*
- This is **inefficient** and causes unnecessary network traffic.

🔔 With Webhook:

- Event Mesh **pushes the message** to CPI only when an event arrives.
- CPI instantly receives and starts processing.

Example in SAP CPI

1. You configure a **webhook in Event Mesh**.
2. The webhook URL points to your **CPI endpoint (HTTPS sender adapter)**.
3. Whenever an event comes into the queue, **Event Mesh sends a POST request** with the payload to CPI.
4. CPI picks it up, transforms the data, and routes it to the target system.

[S/4HANA] --(Event)--> [Event Mesh Topic] --> [Queue] --(Webhook POST)--> [CPI iFlow]

Required **Event Mesh role collections** that need to be assigned to users under **Security → Role Collections** after creating the Event Mesh subscription:

Role Collection	Description
Enterprise Messaging Administrator	Allows administration tasks in the Event Mesh Management UI.
Enterprise Messaging Developer	Enables development tasks in the Management UI (including UI Messaging Test Role).
Enterprise Messaging Display	Provides **read-only** access to the Event Mesh Management UI.
Enterprise Messaging Subscription Administrator	Role for handling **SaaS subscription-level administration** in the Management UI. Should be used carefully and assigned to privileged users only.
Event Mesh Integration Administrator	Provides access to **view, manage, and monitor** subscriptions for applications and to register Event Mesh with **SAP Cloud ALM**.
