



PUBLIC

Case Study

SAP Integration Solution Advisory

Methodology

Based on the learning journey “Becoming an SAP Solution Architect” on www.learning.sap.com

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Case Study - Sales process

Description of the Case Study

This case study describes the implementation of a comprehensive end-to-end sales process for an e-commerce company that integrates its web store application with SAP S/4HANA, the SAP Integration Suite, and other SAP components. The goal of this solution is to create an end-to-end and scalable infrastructure that enables consistent product availability, smooth payment processing, efficient order, and inventory management and real-time notifications to customers.

To this end, the basic use cases are to be implemented first. In further steps, this process is to be expanded to include discount campaigns, customer feedback options, extensive analysis options and much more. The basic sales process should therefore be implemented in a scalable, expandable, and high-performance manner.

The case study shows in detail how the **SAP Integration Solution Advisory Methodology** was used to evaluate the requirements, develop the design of the integration platform and implement the individual process steps along the defined integration styles and patterns.

The following use cases can be examined using both the template-based approach and the **Integration Suite - Integration Assessment**.

Tasks and goals of the case study

A blueprint architecture is to be projected with the help of ISA-M. We will mainly deal with the following phases of ISA-M.

- Phase 1: Strategy analysis and requirements assessment
- Phase 2: Design of the hybrid integration platform
- Phase 3: Implementation and verification
- Phase 4: Empowerment and establishing best practice is not considered in this case study.

Instructions for working on the case study

You work on numerous technical use cases in the case study. These are part of a sales process.

Phase 1: Strategy Analysis and Requirements Assessment

Tasks to be Processed

- **Process and requirements analysis:** Detailed recording of business requirements and identification of the systems and processes involved (web store, SAP S/4HANA, payment gateway, warehouse management, and others).
- **Definition of the integration goals:** Definition of goals such as real-time data availability, automation of processes, and end-to-end user experience.
- **Identification of integration patterns:** Selection of suitable integration styles and patterns (process integration, event-based integration, API management).

Procedure

1. Workshops to record business requirements and define objectives.
2. Evaluation of existing processes and identification of integration gaps.
3. Selection and recommendation of integration styles according to requirements.

Outcomes

- Detailed documentation of business requirements.
- Decision matrix for integration patterns and styles.
- Definition of the overall integration strategy and goals.

SAP Integration Solution Advisory Methodology Phase1: Task1:

Process and requirements analysis

Goal: Detailed recording of business requirements and identification of the systems and processes involved (web store, SAP S/4HANA, payment gateway, warehouse management and others).

Starting point: The project team has identified the following use cases within the entire sales process after numerous interviews with the responsible specialists.

Technical use cases found

The technical analysis initially revealed the following basic use cases within the sales process:

1. Product search in the web shop
2. Ordering a product with creation of a sales order
3. Payment processing
4. Stock management
5. Shipping notification in the web shop

Systems to be used

Due to existing contractual obligations and the application of best practices, the following technical systems are planned:

- Web shop - SAP Commerce Cloud
- Business System - SAP S/4HANA
- Payment Provider - Adyn
- Warehouse management - SAP EWM

Exercise 01: Find out about the business application to be used

Find out about the following products to be used within the sales process.

Exercise task:

- Familiarize yourself with the key features of the planned business applications.
- Navigate to the links within the product descriptions as described in the following text.

SAP S/4HANA - Product description

SAP S/4HANA is a comprehensive ERP solution from SAP that is implemented locally in a company's IT infrastructure. It offers advanced functionalities for handling and optimizing business processes in real time and is ideal for companies that want to retain complete control over their data and IT landscape.

Key features:

- **Real-time data processing:** Support for fast and data-driven decisions through the SAP HANA in-memory database.
- **Comprehensive integration:** Seamless connection between finance, logistics, sales, production and other modules.
- **Flexibility and control:** Local installation allows complete control over data and systems.
- **Extensibility:** Support for customer-specific customizations and extensions.
- **Regulatory compliance:** Compliance with local and international legal requirements

Advantages:

- **High performance:** Efficiently process large amounts of data and support modern business requirements.
- **Real-time insights:** Better decision making through real-time analytics and reporting.
- **Security control:** Data stays within your own IT infrastructure, minimizing security and privacy concerns.
- **Long-term investment:** Suitable for companies looking for a stable ERP platform with long-term control.

Sources:

- [Official SAP website for SAP S/4HANA](#)
- [SAP S/4HANA On-Premise SAP Help Portal](#)

SAP Extended Warehouse Management - Product description

SAP Extended Warehouse Management (SAP EWM) is a comprehensive software solution for controlling and optimizing warehouse processes. It enables companies to efficiently manage their warehouse stocks, automate processes, and integrate modern technologies in logistics. SAP EWM supports both manual and highly automated warehouses and can be flexibly adapted to individual business requirements.

Key Features:

- **Stock management:** Precise control over quantities, batches, and serial numbers.
- **Optimized processes:** Support for goods receipt, picking, packing, and shipping.
- **Material flow control:** Integration of automated warehouse technologies, and machines.
- **Labor management:** Efficient planning and control of resources.
- **Seamless integration:** Connection with SAP S/4HANA and other SAP modules.

Advantages:

- **Increased transparency:** Real-time data for better decisions and traceability.
- **Increased efficiency:** Automated processes reduce time and costs.
- **Scalability:** Suitable from small warehouses to large distribution centers.
- **Flexibility:** Adaptable to industry-specific requirements.

Sources:

- [SAP Extended Warehouse Management | SAP](#)
- [SAP Help Portal: SAP EWM](#)
- [SAP EWM - Functions and advantages](#)

SAP Commerce Cloud - Product description

SAP Commerce Cloud** is a comprehensive e-commerce solution that helps companies deliver personalized and scalable online shopping experiences. The platform is designed to meet complex B2B, B2C, and B2B2C requirements. It enables the integration of front-end shopping processes with back-end systems such as SAP S/4HANA to create a holistic customer experience.

Key Features:

- **Omnichannel support:** Consistent customer experience across multiple channels (web, mobile, and social media).
- **Personalization:** Use of AI and machine learning for individual product recommendations.
- **Flexible expandability:** Modular design for customization to specific business requirements.
- **Integration:** Seamless connection with other SAP systems such as ERP, CRM, and EWM.
- **Cloud-Native architecture:** Scalability, security, and regular updates through the cloud.

Advantages:

- **Scalability:** Suitable for companies of all sizes, from small and medium enterprises to global corporations.
- **Customer centricity:** Better customer loyalty through personalized shopping experiences.
- **Efficient processes:** Automation and integration of sales and inventory processes.
- **Global reach:** Support for multiple languages, currencies, and tax regimes.

Application areas:

- **B2C commerce:** Development of intuitive online stores for consumers.
- **B2B commerce:** Support for complex business processes such as customer-specific pricing and bulk orders.
- **B2B2C commerce:** Enables brands to establish direct contact with customers.

Sources:

- [Official product page of SAP Commerce Cloud](#)
- [SAP Commerce Cloud, SAP Help Portal](#)
- [Blog: Introduction to the SAP Commerce Cloud](#)

Exercise 02: Find redundancies for the planned technical applications

All planned functional SAP applications have a wide range of functionalities. This task is about finding overlaps in the functionalities. To do this, you again use the short description and the links to the individual functional applications.

Exercise tasks:

- Examine the technical applications to be used for similar functionalities. Use the information and links from the previous exercise again.
- Create a matrix-like overview with the following column and row labels.

System	Own monitoring	Integration Capabilities	Own data storage	Workflow Capabilities
SAP Commerce Cloud				
SAP EWM				
SAP S/4HANA				

Solution for Exercise 02: Find redundancies for the planned technical applications

The following is a possible answer to the task.

System	Own monitoring	Integration Capabilities	Own data storage	Workflow Capabilities
SAP Commerce Cloud	X	X	X	X
SAP EWM	X	X	X	X
SAP S/4HANA	X (AIF)	X	X	X

Summary

All the specialist systems involved have their own point2point integration capabilities. All can communicate through OData.

All have their own workflow capabilities such as, automation, event-based control, resource management, notifications, and alarms.

Nevertheless, it makes sense to use specialized systems for the web store, warehouse management and sales order processing and to connect them through an integration platform. This offers us a high degree of flexibility, security, and observability of the entire process.

SAP Integration Solution Advisory Methodology Phase1: Task 2: Definition of the integration goals

The following integration requirements were defined across the board.

Summary

The requirements include synchronization of up-to-date product and inventory data between SAP S/4HANA and SAP Commerce Cloud, secure payment processing via Adyen, and automation of order creation and inventory management with SAP EWM. Real-time updates are enabled by SAP Event Mesh, while shipping status and tracking information is communicated directly in the web store. The SAP Integration Suite ensures seamless orchestration between cloud and on-premise systems.

Details

1. Central product and inventory data provision

Ensure that the web store (SAP Commerce Cloud) always receives up-to-date product information and inventory data from SAP S/4HANA.

2. Efficient payment processing

Integration with a payment gateway (Adyen) to securely transfer payment information and confirm payment status in real time.

3. Automated order creation

Automation of sales order creation in SAP S/4HANA after successful transactions in the webshop.

4. Inventory management and reservation

Coordination of inventory reservations and shipping preparations via SAP EWM to support just-in-time deliveries.

5. Event-based inventory updating

Use SAP Event Mesh to synchronize inventory changes with the web store in real time.

6. Shipping notifications

Transparent communication of shipping status and tracking information to the customer through the web store.

7. Orchestration between on-premise and cloud systems

SAP Integration Suite as central middleware to ensure smooth communication between all on-premise and cloud systems.

SAP Integration Solution Advisory Methodology Phase1: Task 2: Security requirements for the integration architecture

The following security requirements were defined across the board.

Summary

The security requirements include:

- Data encryption and secure protocols (for example, TLS, mTLS, and HTTPS).
- Authentication and authorization mechanisms (OAuth 2.0, RBAC).
- Security monitoring and auditing (SIEM systems, logging).

The implementation of these requirements ensures confidentiality, integrity, and availability of the systems as well as compliance with standards such as **GDPR**, **PCI DSS**, and **ISO 27001**.

Details

1. Data transmission security

Protection of transmitted data against interception, manipulation, and loss.

- **Encryption:** Use of TLS 1.2/1.3 for all data transmissions.

- **Secure protocols:**

- HTTPS for web communication.
- Advanced Message Queuing Protocol (AMQP) with mTLS (mutual TLS) for events.
- RESTful APIs and OData for API communication.

- **Data integrity:**

- Ensuring that data remains unchanged during transmission.
- Use of HMACs (Hash-based Message Authentication Codes).

2. Access and identity management

Ensuring that only authorized users and systems have access.

- **Authentication:**

- OAuth 2.0 for API interfaces.
- Multi-factor authentication (MFA) for user access.

- **Authorization:**

- Role-based access control (RBAC) in all systems.

- **Token management:**

- Time-limited access tokens for API calls. Use of OAuthV2 policy to generate time-limited access tokens.

- **System-to-system authentication:**

- Use of mTLS for connections between system.

3. Data and system security

Protecting data at rest and in motion and ensuring system integrity.

- **Encryption at rest:**

- Encryption of databases with AES-256.

- **Minimization of sensitive data transmission:**

- Only through PCI DSS-compliant interfaces (for example, Adyen).
- No storage of sensitive payment data in unsecured formats.

- **Logging and Monitoring:**

- Logging of all API calls and transactions.
- Protection of log data against manipulation.

4. Integrity and availability

Ensuring operational capability and protection against unauthorized changes.

- System integrity:

- Code signing for all software updates.
- **DoS protection:** Protection against denial-of-service attacks through rate limiting and web application firewalls (WAFs).
- **Backups and recovery:** Regular data backup and disaster recovery plans.

5. Event-based communication (Event Mesh)

Securing event-driven communication.

- **AMQP security:** Use of mutual TLS (mTLS) for SAP Event Mesh.
- **Message authentication:** Verification of the signature of messages to ensure authenticity.
- **Rights and access control:** Definition of streams with restricted access.

6. Security monitoring and auditing

Early detection and logging of security incidents.

- **Real-time monitoring:** Use of a SIEM system (Security Information and Event Management such as Splunk, IBM QRadar, or Microsoft Sentinel) for monitoring.
- **Auditing:** Regular checking of logs and transactions.
- **Automatic notifications:** Warnings in the event of security-related incidents (for example, failed logins).

SAP Integration Solution Advisory Methodology Phase1: Task 3: Identification of integration patterns:

Exercise Description: Determine the integration patterns depending on the individual requests.

In this exercise, the individual use cases and their requests are to be understood and the following criteria determined for each step. Use the ISA-M template or use the Integration Assessment Tool as described in the documentation if you have a training system available. Create a compilation of the following data for each step in a functional use case.

As an example, you will find the technical use case **1: Customer Search Products** as a detailed example.

These data are:

- General Data
- Define Integration, Patterns, Styles, and Use Case Patterns
- Answer questions

1. General data

- Type:
- Source:
- Target:
- API:

Possible answers

Type: Synchron | Asynchron | Event

Source: SAP Commerce Cloud | SAP S/4HANA | SAP EWM | Adyn

Target: SAP Commerce Cloud | SAP S/4HANA | SAP EWM | Adyn

API: OData | REST | Event

2. Define Integration, Patterns, Styles, and Use Case Patterns

Integration Domains

Assessment and Scoping of your Hybrid Integration Landscape

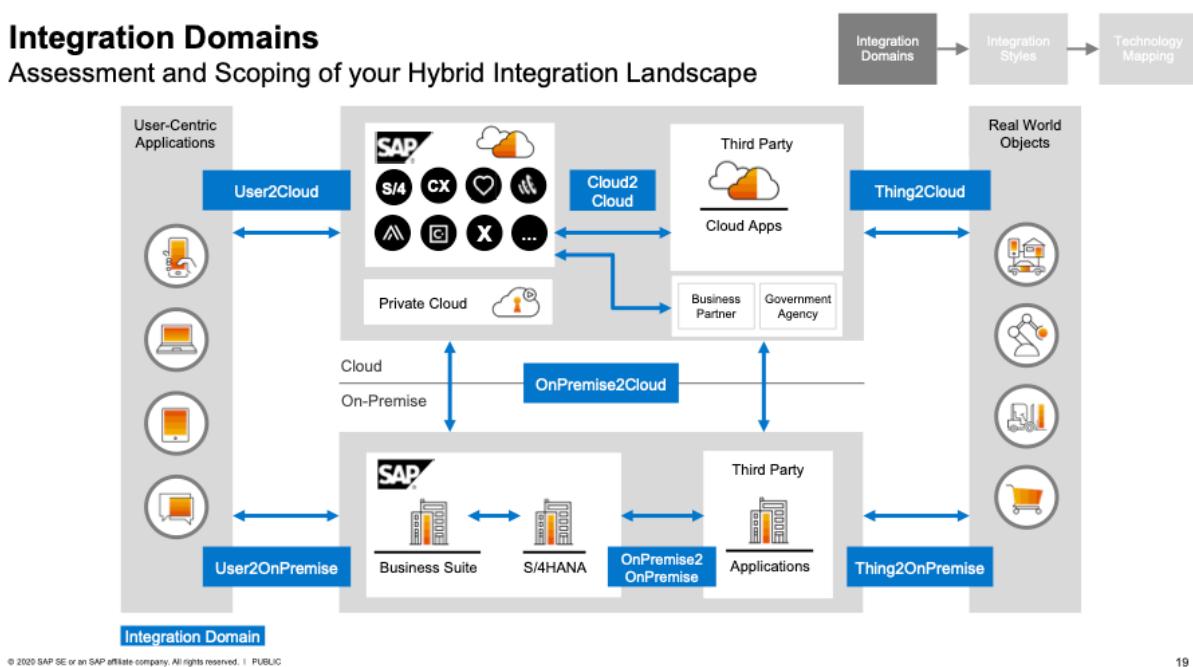
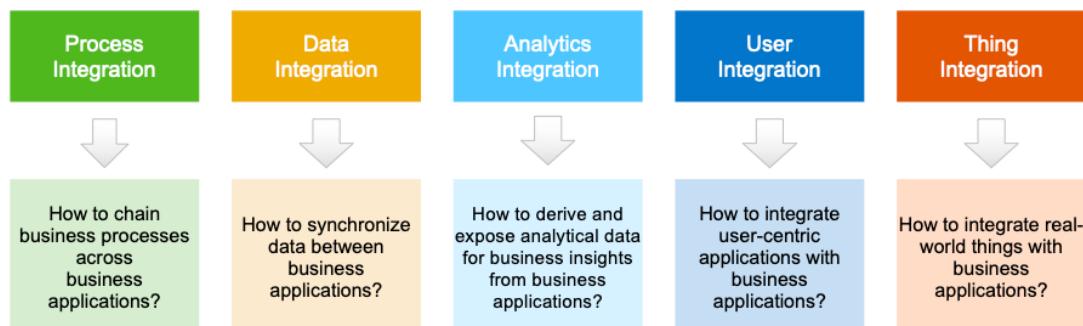


Figure 1 – Integration Domains

Integration Styles

Four Fundamental Archetypes of Integration

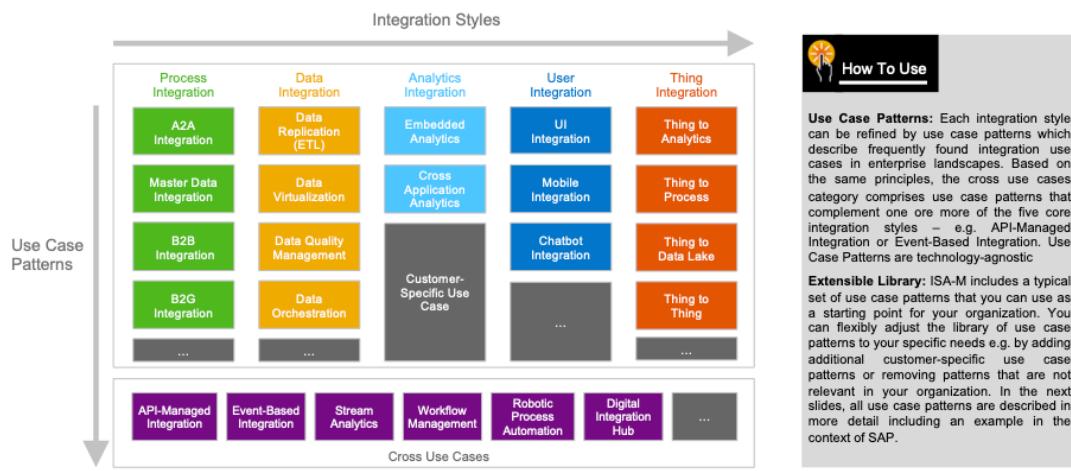


Integration styles describe basic categories or types of integration: process-, data-, analytics-, user-, and thing-centric integration. Each integration style has specific characteristics and can be refined by use-case patterns (see following slides). Integration styles build the key pillar of ISA-M.

Figure 2 – Integration Styles

Integration Styles and Use Case Patterns

Technology-Agnostic Library of Integration Use Cases



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Figure 3 – Use Case Pattern

3. Answer questions

- Which technical data is used?
- Is content mapping required?
- Which interfaces must be used for communication?
- Is monitoring required?

Overview of the overall process

The following are the individual requests identified in the five business use cases.

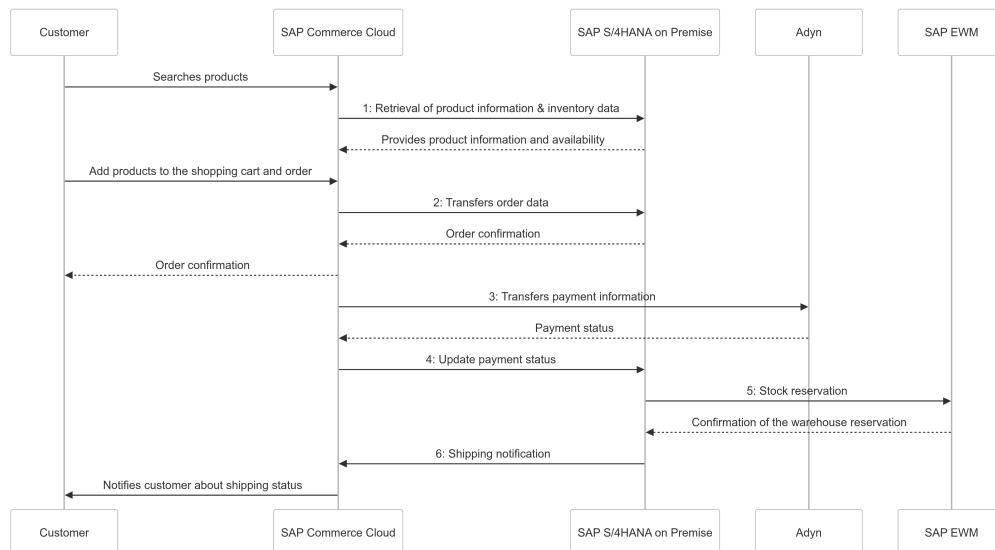


Figure 4 – Sequence Diagram

Use Case 1: Customer Search Products

The following is the sequence diagram for the first use case: Customer Search Products.

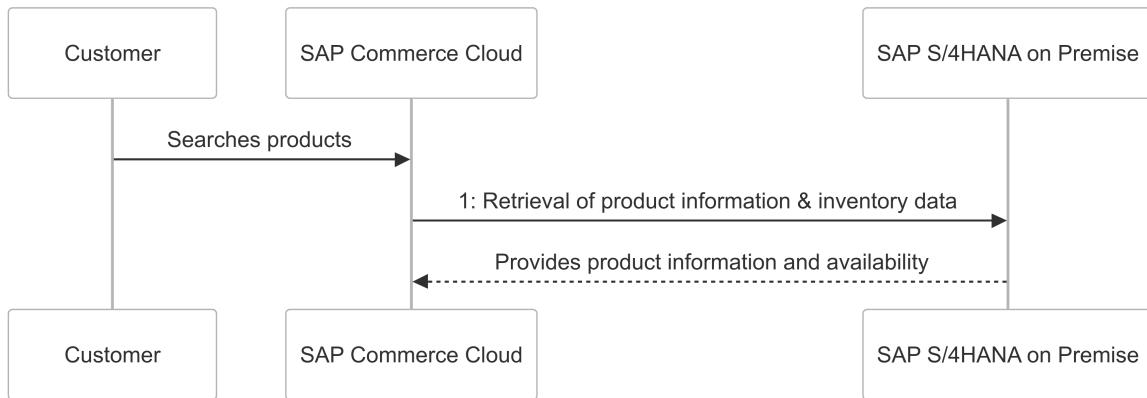


Figure 5 – Sequence Diagram

Step 1: Retrieval of product information and inventory data.

The webshop sends a request to SAP S/4HANA to retrieve the current product data and display it on the webshop.

Use Case 2: Customer Place Orders

The following is the sequence diagram for the second use case: Customer Place Orders.

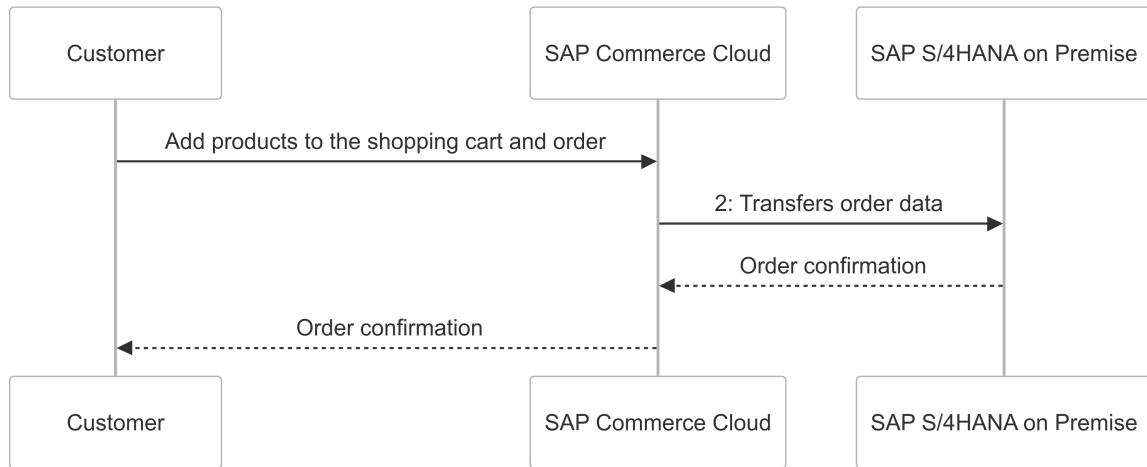


Figure 6 – Sequence Diagram

Step 2: Transfers order data

The web store sends a request to SAP S/4HANA to send the order data to the SAP S/4HANA system. Based on this, a sales order can be created in SAP S/4HANA.

Use Case 3: Payment Processing

The following is the sequence diagram for the third use case: Payment Processing.

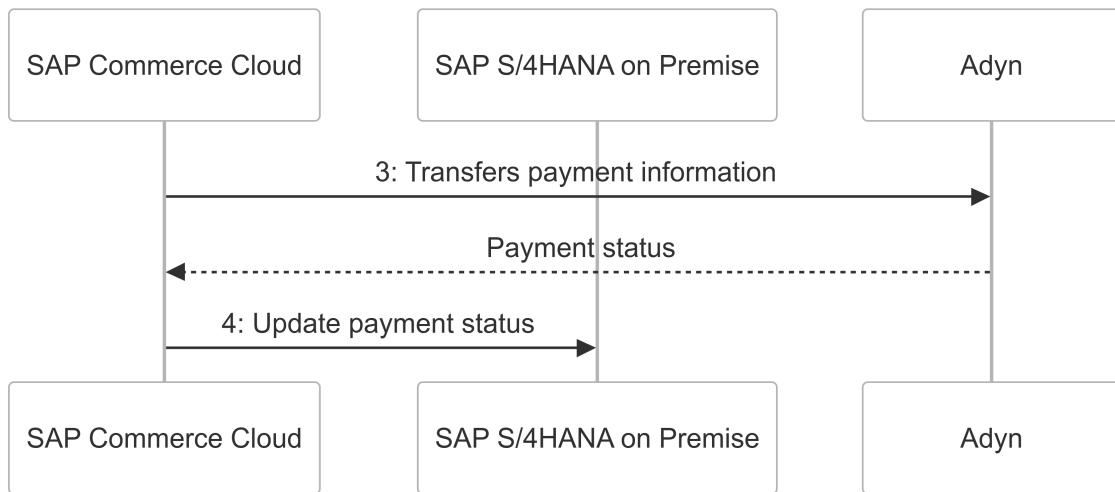


Figure 7 – Sequence Diagram

Step 3: Transfer payment information

The e-commerce customer selects a preferred payment method in the web store and initiates the payment process with the payment provider, Adyn. The result is reported back to the web store. There, the customer confirms the payment (not shown).

Use Case 4: Stock Reservation

The following is the sequence diagram for the 4th use case: Stock reservation.

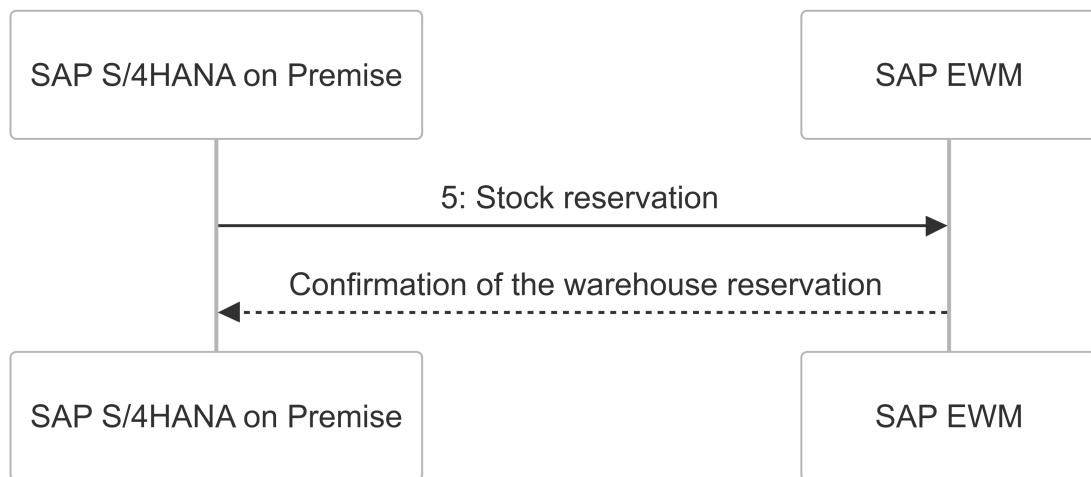


Figure 8 – Sequence Diagram

Step 5: Stock reservation

The SAP S/4HANA system sends a request to the warehouse management system to reserve the ordered products and start the delivery process.

Use Case 5: Shipping Notification

The following is the sequence diagram for the fifth use case: Shipping notification.

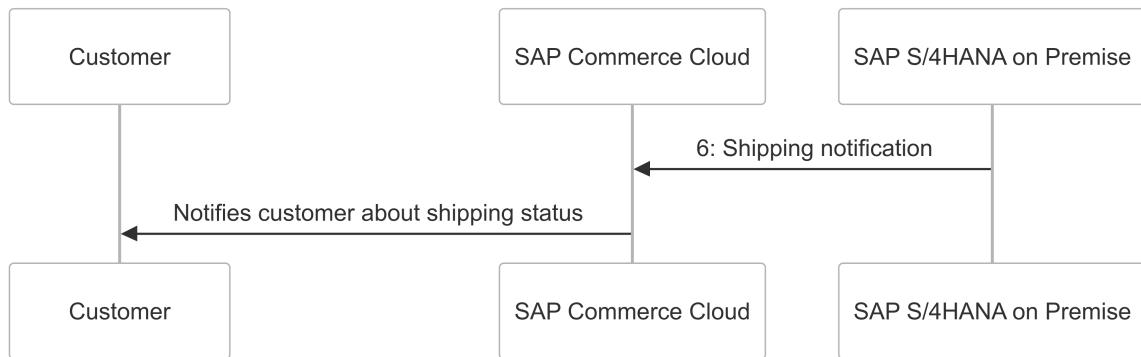


Figure 9 – Sequence Diagram

Step 6: Shipping notification

SAP S/4HANA informs the SAP Commerce Cloud that the ordered goods have been dispatched.

- This information is decoupled from the actual ordering process.
- The SAP Commerce Cloud informs the customer about the shipment of their goods through e-mail, for example.
- Only Step 7 is considered.

Sample: 1: Customer Search Products

The following is a detailed example.

Sequence diagram

The following is the sequence diagram for the first use case: Customer Search Products.

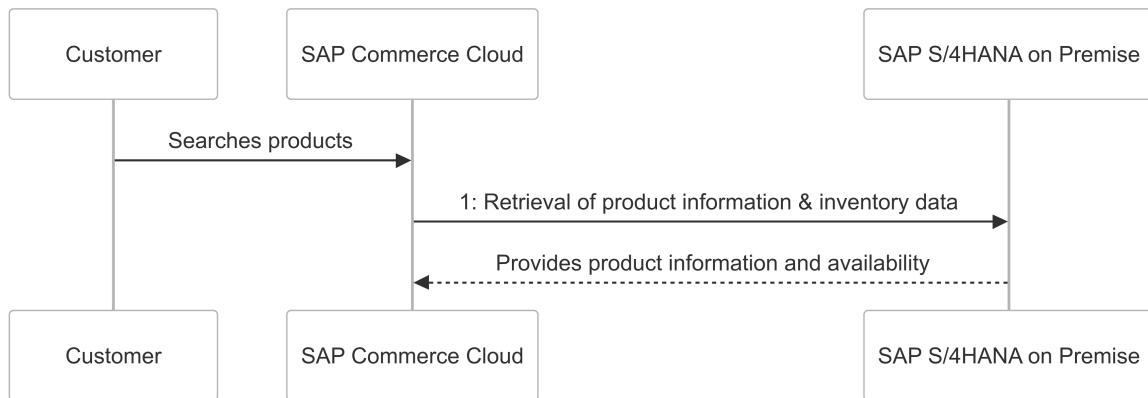


Figure 10 – Sequence Diagram

Map use case patterns to integration technologies

Step 1: Retrieval of product information and inventory data

The web store sends a request to SAP S/4HANA to retrieve the current product data and display it on the web store.

Identification of integration patterns of the request step:

- Type: Synchron
- Source: Webshop
- Target: SAP S/4HANA
- API: OData
- Integration Domain: Cloud2Cloud
- Integration Style: Process Integration
- Use Case Pattern: A2A Integration

Further specifications

1. Which technical data is used?

Standard product data.

2. Is content mapping required?

No, as both SAP Commerce Cloud and SAP S/4HANA have the appropriate OData interfaces. However, it should be possible in the future.

3. Which interfaces should be used for communication?

Both sides communicate through the standard OData interfaces.

4. Is monitoring required?

Yes, the call metrics must be logged.

Discussion

Alternatively, an integration style of the Cross Over and API-managed integration type could be considered as a use case pattern.

- Integration Domain: Cloud2Cloud
- Integration Style: Cross Use Case
- Use Case Pattern: API-Managed Integration

It would also make sense to implement a product cache to improve the performance of the product display on the webshop.

- Implementation of a cache in the SAP Integration Suite with Groovy Script Cache.
- Use of SAP HANA as a cache database.
- SAP Commerce Cloud also offers a cache function.

Exercise 03- 2: Customer Place Orders

Replace xxxxxxx with your own data.

Sequence diagram

The following is the sequence diagram for the second use case: Customer Place Orders.

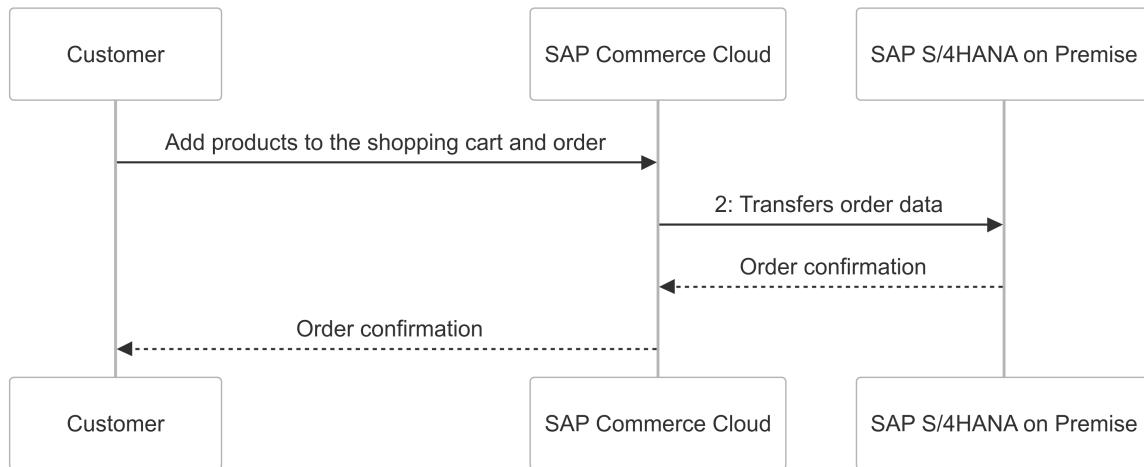


Figure 11 – Sequence Diagram

Map use case patterns to integration technologies

Step 2: Transfers order data

The web store sends a request to SAP S/4HANA to send the order data to the SAP S/4HANA system. Based on this, a sales order can be created.

Identification of integration patterns of the request step:

- Type: xxxxxxxx
- Source: xxxxxxxx
- Target: xxxxxxxx
- API: xxxxxxxx
- Integration Domain: xxxxxxxx
- Integration Style: xxxxxxxx
- Use Case Pattern: xxxxxxxx

Further specifications

1.Which technical data is used?

xxxxxxxx

2.Is content mapping required?

xxxxxxxx

3.Which interfaces must be used for communication?

xxxxxxxx

4.Is monitoring required?

xxxxxxxx

Discussion

XXXXXXX

Solution for Exercise 03- 2: Customer Place Orders

Here is a possible approach.

Sequence diagram

The following sequence diagram for the second use case: Customer Place Orders.

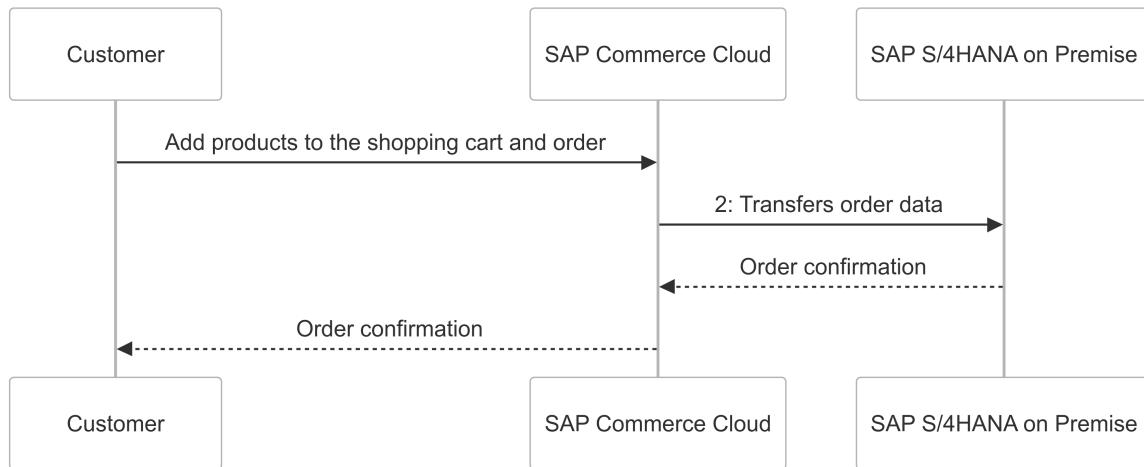


Figure 12 – Sequence Diagram

Map use case patterns to integration technologies

Step 2: Transfers order data

The webshop sends a request to SAP S/4HANA to send the order data to the SAP S/4HANA system. Based on this, a sales order can be created.

Identification of integration patterns of the request step:

- Type: Synchron
- Source: Webshop
- Target: SAP S/4HANA
- API: OData
- Integration Domain: Cloud2Cloud
- Integration Style: Process Integration
- Use Case Pattern: A2A Integration

Further specifications

1. Which technical data is used?

Standard order data

2. Is content mapping required?

No, as both SAP Commerce Cloud and S/4HANA have the appropriate OData interfaces. However, it should be possible in the future.

3. Which interfaces must be used for communication?

Both sides communicate via the standard OData interfaces.

4. Is monitoring required?

Yes, the call metrics must be logged.

Discussion

Alternatively, an integration style of the Cross Over and API-managed integration type could be considered as a use case pattern.

- Integration Domain: Cloud2Cloud
- Integration Style: Cross Use Case
- Use Case Pattern: API-Managed Integration

Exercise 04- 3: Payment processing

Replace xxxxxxx with your own data.

Sequence diagram

The following is the sequence diagram for the third use case: Payment Processing

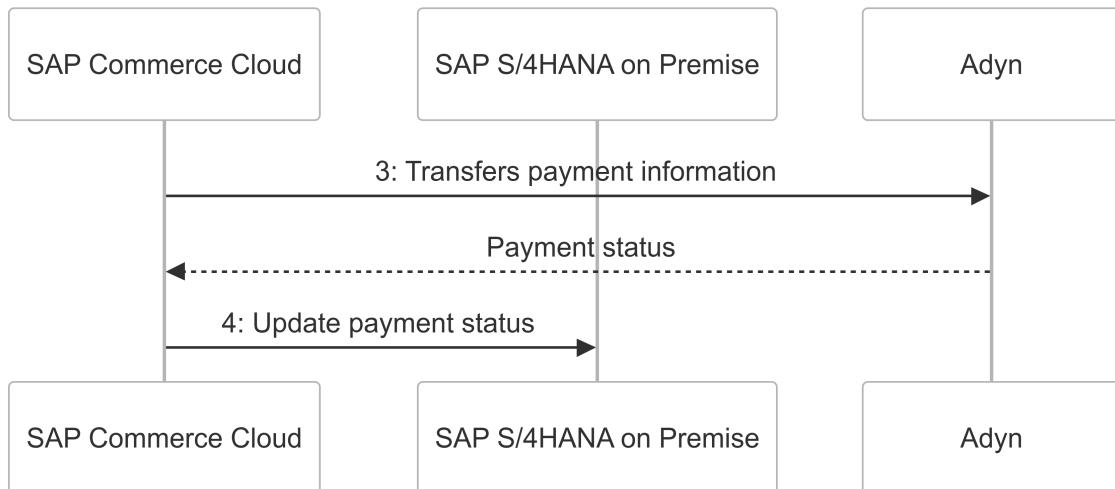


Figure 13 – Sequence Diagram

Map use case patterns to integration technologies

Step 3: Transfer payment information

The e-commerce customer selects a preferred payment method in the web store and initiates the payment process with the payment provider, Adyn. The result is reported back to the web store. There the customer confirms the payment (not shown).

Identification of integration patterns of the request step:

- Type: xxxxxxxx
- Source: xxxxxxxx
- Target: xxxxxxxx
- API: xxxxxxxx
- Integration Domain: xxxxxxxx
- Integration Style: xxxxxxxx
- Use Case Pattern: xxxxxxxx

Further specifications

1. Which technical data is used?

xxxxxx

2. Is content mapping required?

xxxxxx

3. Which interfaces must be used for communication?

xxxxxx

4. Is monitoring required?

xxxxxxx

Discussion

xxxxxxx

Step 4: Update payment Status

The webshop informs the SAP S/4HANA about the payment status.

Identification of integration patterns of the request step:

- Type: xxxxxxxx
- Source: xxxxxxxx
- Target: xxxxxxxx
- API: xxxxxxxx
- Integration Domain: xxxxxxxx
- Integration Style: xxxxxxxx
- Use Case Pattern: xxxxxxxx

Further specifications

1. Which technical data is used?

xxxxxxx

2. Is content mapping required?

xxxxxxx

3. Which interfaces must be used for communication?

xxxxxxx

4. Is monitoring required?

xxxxxxx

Discussion

xxxxxxx

Solution for Exercise 04- 3: Payment processing

Here is a possible approach.

Sequence diagram

The following is the sequence diagram for the third use case: Payment Processing.

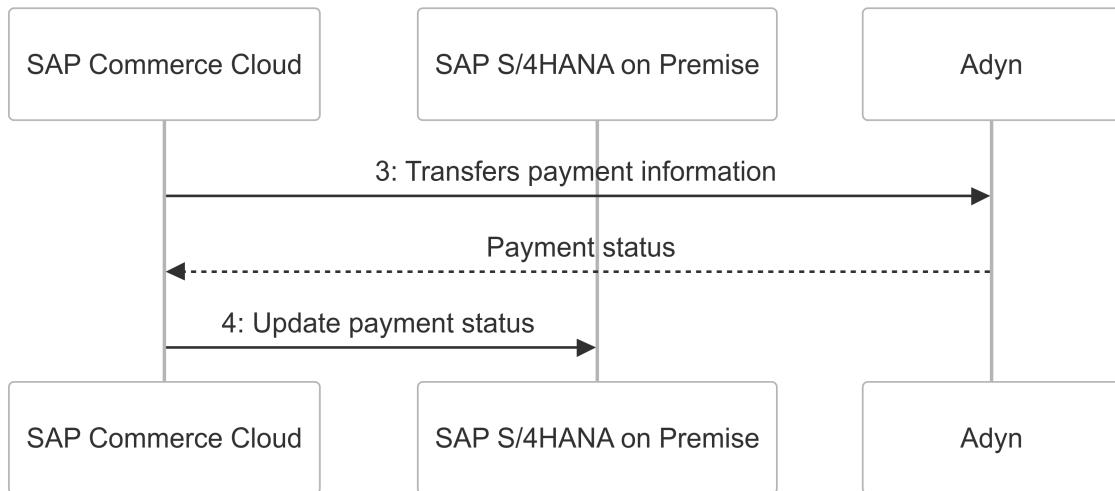


Figure 14 – Sequence Diagram

Map use case patterns to integration technologies

Step 3: Transfer payment information

The e-commerce customer selects a preferred payment method in the web store and initiates the payment process with the payment provider, Adyn. The result is reported back to the web store. There the customer confirms the payment (not shown).

Identification of integration patterns of the step:

- Type: Synchron
- Source: Webshop
- Target: Adyn
- API: REST
- Integration Domain: Cloud2Cloud
- Integration Style: Process Integration
- Use Case Pattern: A2A Integration

Further specifications

1. Which technical data is used?

Standard payment data

2. Is content mapping required?

Yes, simple mapping is possible.

3. Which interfaces must be used for communication?

Both sides communicate through the standard REST interfaces.

4. Is monitoring required?

Yes, the call metrics must be logged.

Discussion

It may also be possible to use an API-based communication profile here. This also depends on the scope of the required mapping.

- Integration Domain: Cloud2Cloud
- Integration Style: Cross Use Case
- Use Case Pattern: API-Managed Integration

Step 4: Update payment status

The webshop informs the SAP S/4HANA about the payment status.

Identification of integration patterns of the step:

- Type: asynchronous
- Source: Webshop
- Target: SAP S/4HANA
- API: OData
- Integration Domain: Cloud2Cloud
- Integration Style: Process Integration
- Use Case Pattern: A2A Integration

Further specifications

1. Which technical data is used?

Notification/Event

2. Is content mapping required?

No

3. Which interfaces must be used for communication?

Both sides communicate through the standard OData interfaces.

4. Is monitoring required?

No

Discussion

In this case, the SAP Commerce Cloud sends a notification or even fire an event independently. This depends on the capabilities of the SAP Commerce Cloud. Alternatively, this event could also be used to inform the Commerce Cloud and SAP S/4HANA about the status in parallel through the cloud integration. Here, however, you must assess how urgent the

Exercise 05- 4: Stock reservation

Replace xxxxxxx with your own data.

Sequence diagram

The following is the sequence diagram for the fourth use case: Stock reservation

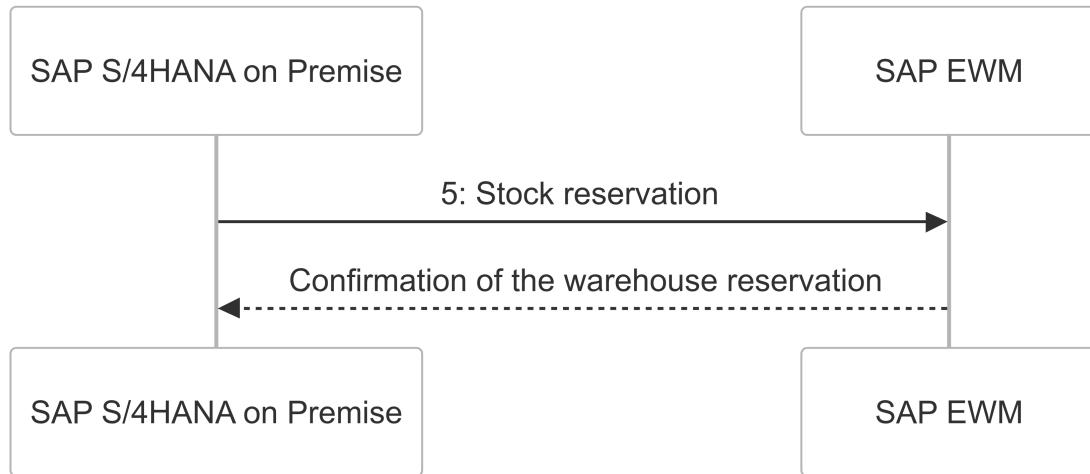


Figure 15 – Sequence Diagram

Map use case patterns to integration technologies

Step 5: Stock reservation

The SAP S/4HANA system sends a request to the warehouse management system to reserve the ordered products and start the delivery process.

Identification of integration patterns of the request step:

- Type: xxxxxxxx
- Source: xxxxxxxx
- Target: xxxxxxxx
- API: xxxxxxxx
- Integration Domain: xxxxxxxx
- Integration Style: xxxxxxxx
- Use Case Pattern: xxxxxxxx

Further specifications

1. Which technical data is used?

xxxxxx

2. Is content mapping required?

xxxxxx

3. Which interfaces must be used for communication?

xxxxxx

4. Is monitoring required?

xxxxxx

Discussion

XXXXXXX

Solution for Exercise 05 - 4: Stock reservation

Here is a possible approach.

Sequence diagram

The following is the sequence diagram for the fourth use case: Stock reservation.

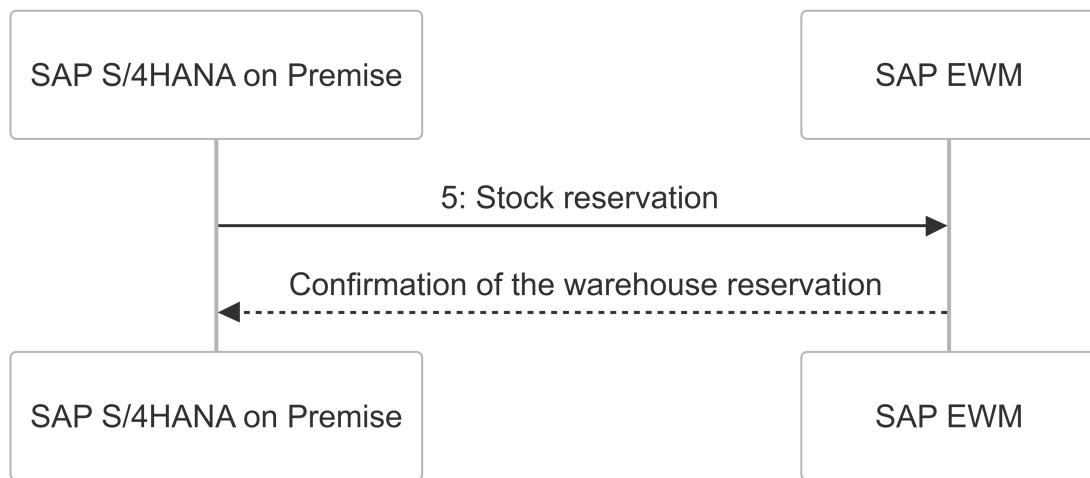


Figure 16 – Sequence Diagram

Map use case patterns to integration technologies

Step 5: Stock reservation

- The SAP S/4HANA system sends a request to the warehouse management system to reserve the ordered products and start the delivery process. ##### Identification of integration patterns of the request step.
- Type: Synchron
- Source: SAP S/4HANA
- Target: SAP EWM
- API: OData
- Integration Domain: Cloud2Cloud
- Integration Style: Process Integration
- Use Case Pattern: A2A Integration

Further specifications

1.Which technical data is used?

Standard warehouse data.

2.Is content mapping required?

Yes, simple mapping is possible.

3.Which interfaces must be used for communication?

Both sides communicate through the standard OData interfaces.

4.Is monitoring required?

Yes, the call metrics must be logged.

Discussion

Exercise 06- 5: Shipping Notification

Replace xxxxxxx with your own data.

Sequence diagram

The following is the sequence diagram for the fifth use case: Shipping notification.

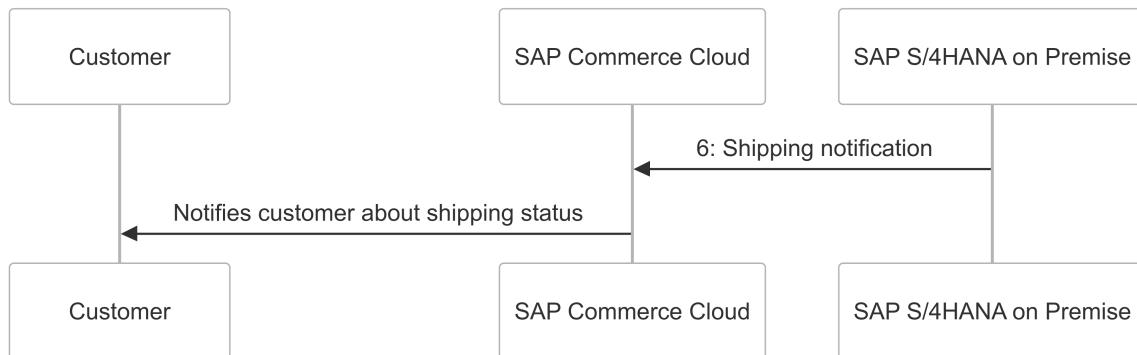


Figure 17 – Sequence Diagram

Map use case patterns to integration technologies

Step 6: Shipping notification

- SAP S/4HANA informs the SAP Commerce Cloud that the ordered goods have been dispatched.
- This information is decoupled from the actual ordering process.
- The SAP Commerce Cloud informs the customer about the shipment of their goods through e-mail, for example.
- Only Step7 is considered.

Identification of integration patterns of the request step:

- Type: xxxxxxxx
- Source: xxxxxxxx
- Target: xxxxxxxx
- API: xxxxxxxx
- Integration Domain: xxxxxxxx
- Integration Style: xxxxxxxx
- Use Case Pattern: xxxxxxxx

Further specifications

5.Which technical data is used?

xxxxxxx

6.Is content mapping required?

xxxxxxx

7.Which interfaces must be used for communication?

xxxxxxx

8.Is monitoring required?

xxxxxxx

Discussion

XXXXXXX

Solution for Exercise 06- 5: Shipping Notification

Here is a possible approach.

Sequence diagram

The following is the sequence diagram for the fifth use case: Shipping notification.

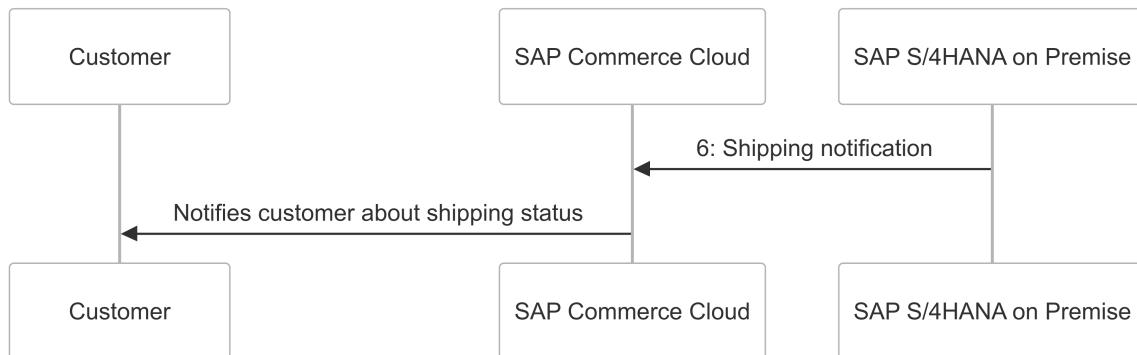


Figure 18 – Sequence Diagram

Map use case patterns to integration technologies

Step 6: Shipping notification

- SAP S/4HANA informs the SAP Commerce Cloud that the ordered goods have been dispatched.
- This information is decoupled from the actual ordering process.
- The SAP Commerce Cloud informs the customer about the shipment of their goods through e-mail, for example.
- Only Step 7 is considered.

Identification of integration patterns of the request step:

- Type: Asynchron
- Source: SAP S/4HANA
- Target: SAP Commerce Cloud
- API: MQTT (Event)
- Integration Domain: OnPremise2Cloud
- Integration Style: Cross Use Case
- Use Case Pattern: Event-based integration

Further specifications

1.Which technical data is used?

Event notification

2.Is content mapping required?

No

3.Which interfaces must be used for communication?

MQTT

4.Is monitoring required?

No

Discussion

You could also imagine asynchronous Point2Point communication here.

Phase 2: Design of the hybrid integration platform

Tasks

- **Creation of the architecture design:** Design of a hybrid architecture based on SAP Integration Suite and SAP Event Mesh.
- **Component selection and mapping:** Selection of SAP components and mapping to integration requirements.
- **Definition of integration protocols and security standards:** Definition of secure communication protocols (for example, HTTPS or AMQP) and API management guidelines.

Procedure

1. Design of the integration architecture with a focus on flexibility and scalability.
2. Selection of specific SAP components (for example, Integration Suite or Event Mesh) and definition of the respective role.
3. Definition of technical standards and protocols to ensure uniform communication between the systems.

Results

- Architecture diagrams and documentation.
- Overview of the integration components used and their specific tasks.
- Defined security standards and protocols for integration.

SAP Integration Solution Advisory Methodology Phase2: Task 2: Component selection and mapping

Exercise Description: Determine the integration patterns depending on the individual requests.

In the following exercises, we use the knowledge gained from Phase 1 to design a resilient solution architecture. We combine the different tasks and start directly with the design of the solution architecture.

The decisions made in Phase 2 are cast directly into sequence diagrams. These sequence diagrams are predefined.

Your task is now to check the sequence diagrams against the requirements made in Phase 1 and to create a solution diagram based on them.

1: Customer Search Products

Sequence diagram with Integration Suite Capabilities

The following is the sequence diagram for the first use case: Customer Search Products with the planned integration solution.

The request **1: Retrieval of product information and inventory data** is managed through the cloud integration.

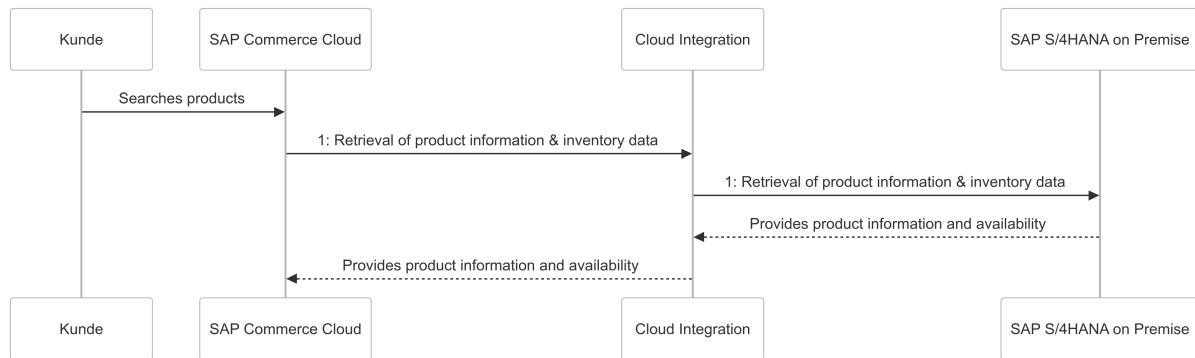


Figure 19 – Sequence Diagram

Evaluation of the decisions made in Phase 2

According to the decisions made in Phase 2, the following integration solutions are planned for this use case.

- Integration Suite - Cloud Integration.
- Application Interface Framework decided on the SAP S/4HANA side.

Caching

In accordance with the requirement from Phase 2, a Groovy script cache is set up in the Integration Suite - Cloud Integration to store the product data temporarily to increase performance. This cache can also be used for other data.

Monitoring

Valuable data can already be obtained via the internal Integration Suite - Cloud Integration Monitoring. Additional monitoring is also possible through the AIF in SAP S/4HANA.

Security

By using SAP standard products, the security requirements stipulated in Phase 1 are met.

Flexibility

If required, additional systems such as the SAP Analytical Cloud can be connected through the Integration Suite - Cloud Integration to run further evaluations of customer behavior.

2: Customer Place Orders

Sequence diagram with Integration Suite Capabilities

The following is the sequence diagram for the second use case: Customer Place Orders with the planned integration solution.

The Request **2: Transfers order data (OData API)** is managed with Cloud Integration.

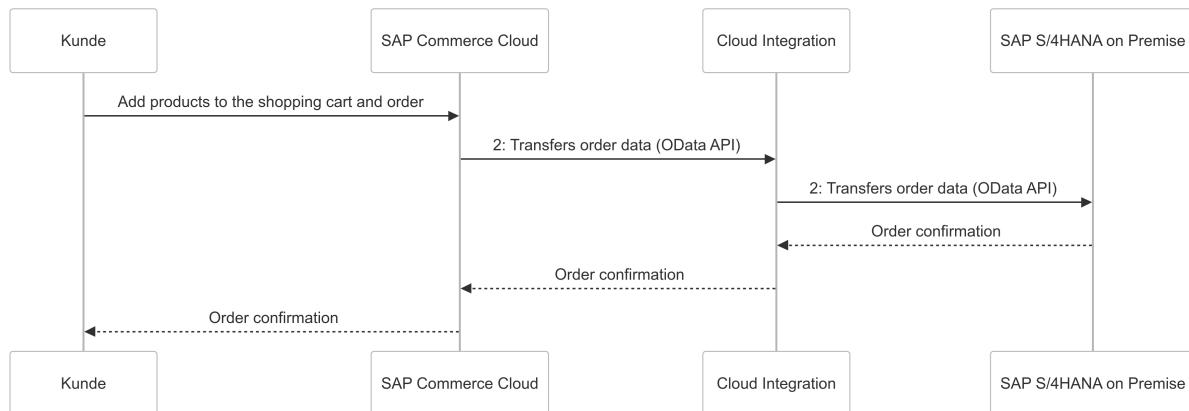


Figure 20 – Sequence Diagram

Evaluation of the decisions made in Phase 2

According to the decisions made in Phase 2, the following integration solutions are planned for this use case.

- Integration Suite - Cloud Integration
- Application Interface Framework decided on the SAP S/4HANA side.

The use of cloud integration as a central integration platform also offers the following advantages.

Monitoring

Valuable data can already be obtained via the internal Integration Suite - Cloud Integration Monitoring. Additional monitoring is also possible through the AIF in SAP S/4HANA.

Security

Security By using SAP standard products, the security requirements stipulated in Phase 1 are met.

Flexibility

If required, additional systems such as the SAP Analytical Cloud can be connected through the Integration Suite - Cloud Integration to run further evaluations of customer behavior.

3: Payment Processing

Sequence diagram with Integration Suite Capabilities

The following is the sequence diagram for the third use case: Payment Processing with the planned integration solution.

The synchronous request **3: Transfers payment information** is managed through the cloud integration.

The cloud integration informs both SAP S/4HANA (4: Update payment status) and the web store (5: Update payment status) in parallel about the payment status, which is returned as a response from the payment service provider.

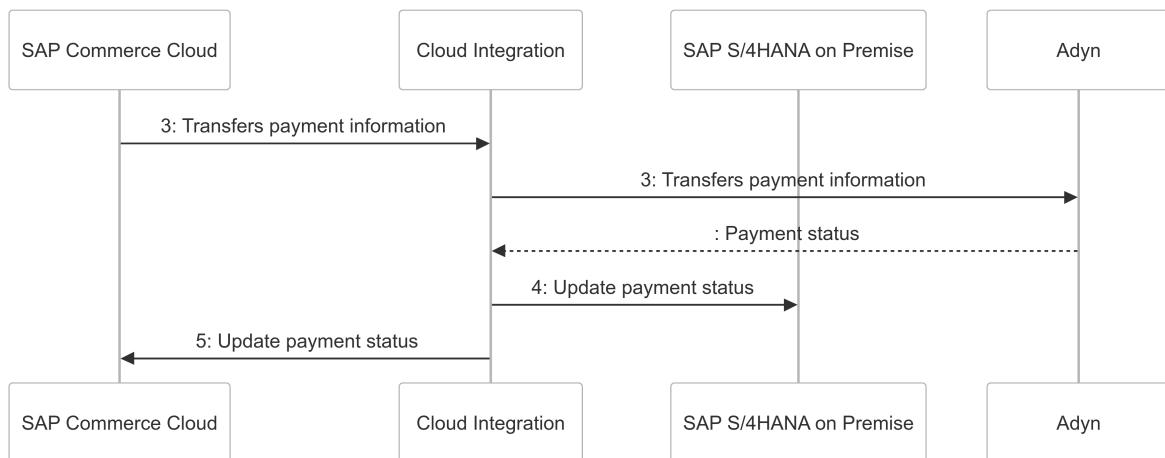


Figure 21 – Sequence Diagram

Evaluation of the decisions made in Phase 2

According to the decisions made in Phase 2, the following integration solutions are planned for this use case.

- Integration Suite - Cloud Integration.
- Application Interface Framework decided on the SAP S/4HANA side.

The use of cloud integration as a central integration platform also offers the following advantages.

Monitoring

Valuable data can already be obtained via the internal Integration Suite - Cloud Integration Monitoring. Additional monitoring is also possible via the AIF in SAP S/4HANA.

Security

By using SAP standard products, the security requirements stipulated in Phase 1 are met.

Flexibility

If required, additional systems such as the SAP Analytical Cloud can be connected through the Integration Suite - Cloud Integration to run further evaluations of customer behavior.

4: Warehouse reservation

Sequence diagram with Integration Suite Capabilities

The following is the sequence diagram for the fourth use case: Stock reservation with the planned integration solution.

The synchronous request **6: Stock reservation** is managed through the cloud integration. The cloud integration is informed by SAP S/4HANA and forwards the information to SAP EWM. The response is routed to SAP S/4HANA.

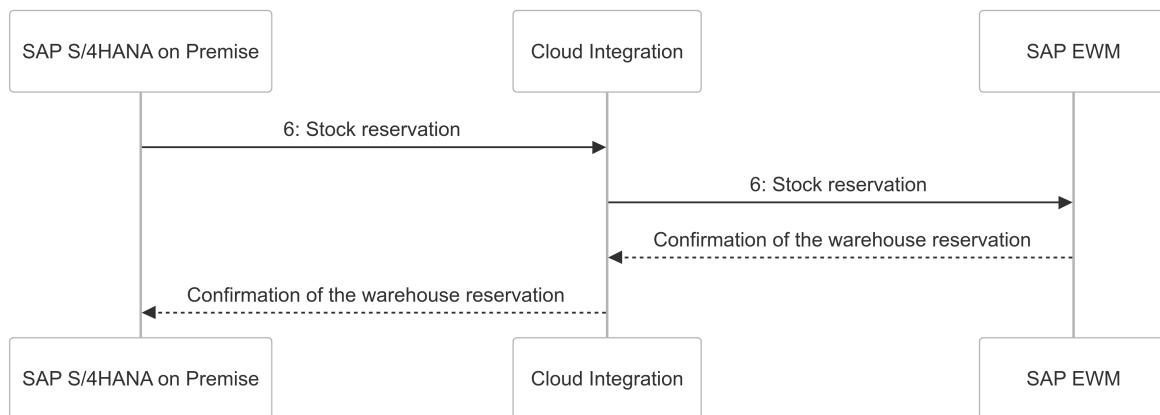


Figure 22 – Sequence Diagram

Evaluation of the decisions made in Phase 2

According to the decisions made in Phase 2, the following integration solutions are planned for this use case.

- Integration Suite - Cloud Integration.
- Application Interface Framework decided on the SAP S/4HANA side.

The use of cloud integration as a central integration platform also offers the following advantages.

Monitoring

Valuable data can already be obtained through the internal Integration Suite - Cloud Integration Monitoring. Additional monitoring is also possible through the AIF in SAP S/4HANA.

Security

By using SAP standard products, the security requirements stipulated in Phase 1 are met.

Flexibility

If required, additional systems such as the SAP Analytical Cloud can be connected through the Integration Suite - Cloud Integration to run further evaluations of customer behavior.

5: Shipping Notification

Sequence diagram with Integration Suite Capabilities

The following is the sequence diagram for the fifth use case: Shipping notification with the planned integration solution.

In **Step 7: Shipping notification**, SAP S/4HANA publishes a shipping notification to the Event Mesh. In **Step 8: Shipping notification**, SAP Commerce Cloud is informed about the shipping status through Subscription. In **Step 9: Notifies customer about shipping status**, SAP Commerce Cloud informs the customer about the delivery, for example, e-mail. This step is not considered.

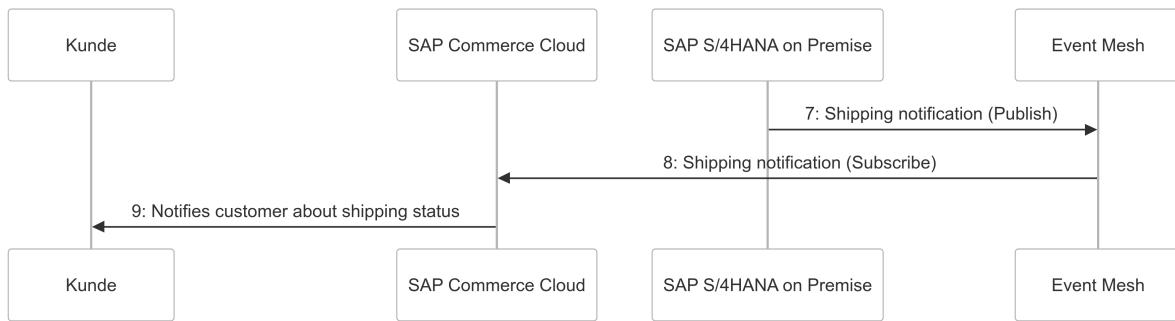


Figure 23 – Sequence Diagram

Evaluation of the decisions made in Phase 2

According to the decisions made in Phase 2, the following integration solutions are planned for this use case.

- Integration Suite - Event Mesh
- Application Interface Framework decided on the SAP S/4HANA side.

Exercise 07: Create a Solution Diagram

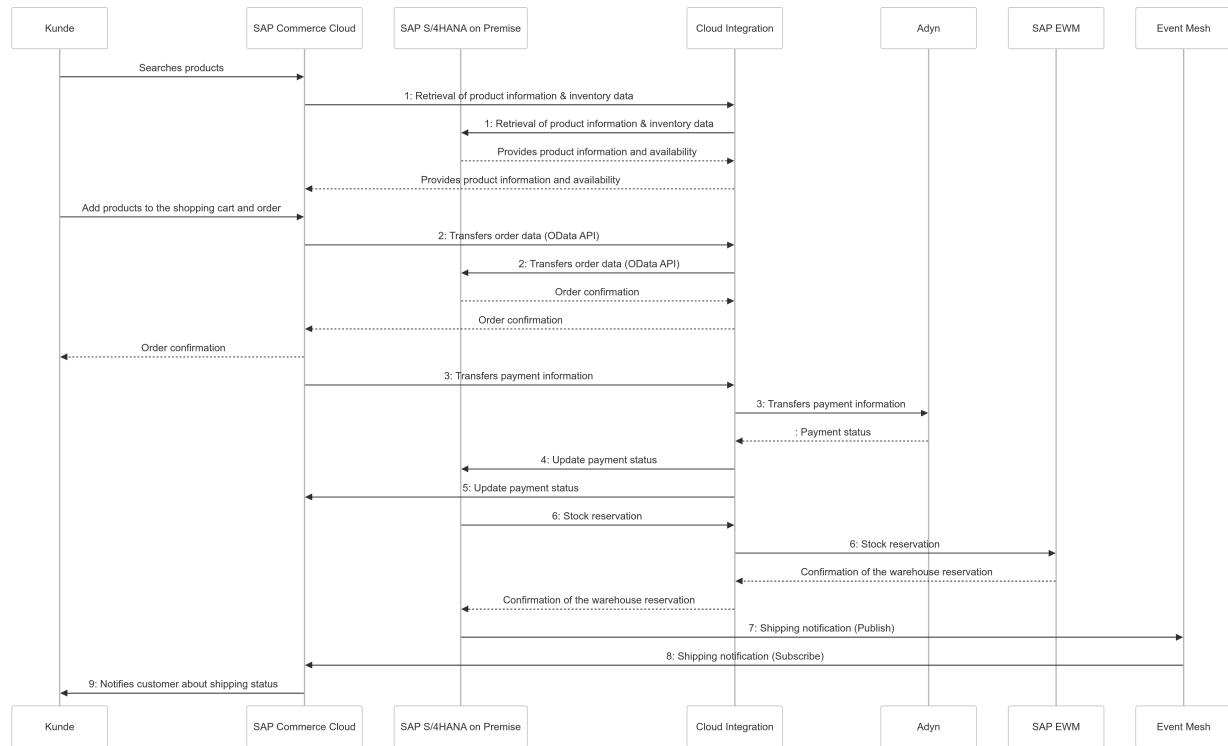


Figure 24 – Sequence Diagram

Given the Sequence diagram with Integration Capabilities

Summary of the sales process - steps and description

1. Product search

- Customer → Webshop: Customer searches products in the webshop.
- Webshop → Integration Suite → SAP S/4HANA: Webshop retrieves product.
- SAP S/4HANA → Integration Suite → Webshop: SAP S/4HANA returns product information and availability.

2. Customer places order

- Customer → Webshop: Customer adds products to the shopping cart and places the order.
- Webshop → Integration Suite → SAP S/4HANA: Order data is transferred through OData API.
- SAP S/4HANA → Integration Suite → Webshop → Customer: Order is confirmed.

3. Payment processing

- Webshop → Integration Suite → Payment Gateway: Payment information is transferred to the payment gateway (for example, Adyen).
- Payment Gateway → Integration Suite: Feedback on the payment status.
- Integration Suite → SAP S/4HANA and Webshop: Payment status is updated.

4. Warehouse reservation

- SAP S/4HANA → Integration Suite → Warehouse Management (SAP EWM): Stock is reserved for the order.
- Warehouse Management → Integration Suite → SAP S/4HANA: Confirmation of the warehouse reservation.

5. Shipping notification

- SAP S/4HANA → Event Mesh: Dispatch notification is published.
- Event Mesh → Webshop: Webshop subscribed and receives the notification.
- Webshop → Customer: Customer is informed about the shipping status.

Solution Diagram 1

Use the information to create a first draft of a solution diagram. Use the draw.io environment for this. * First enter all the systems involved and their connections. * Use the SAP libraries for the solution diagrams.



Figure 25 – Your draw.io environment

Solution Diagram 2

The e-customers must first log in to a custom IAS. In addition, communication with the external service provider, Ayden, is to be realized through API Management and Open Connectors. Expand the solution diagram to include these components.



Figure 26 – Your draw.io environment

Solution for Exercise 07: Create a Solution Diagram

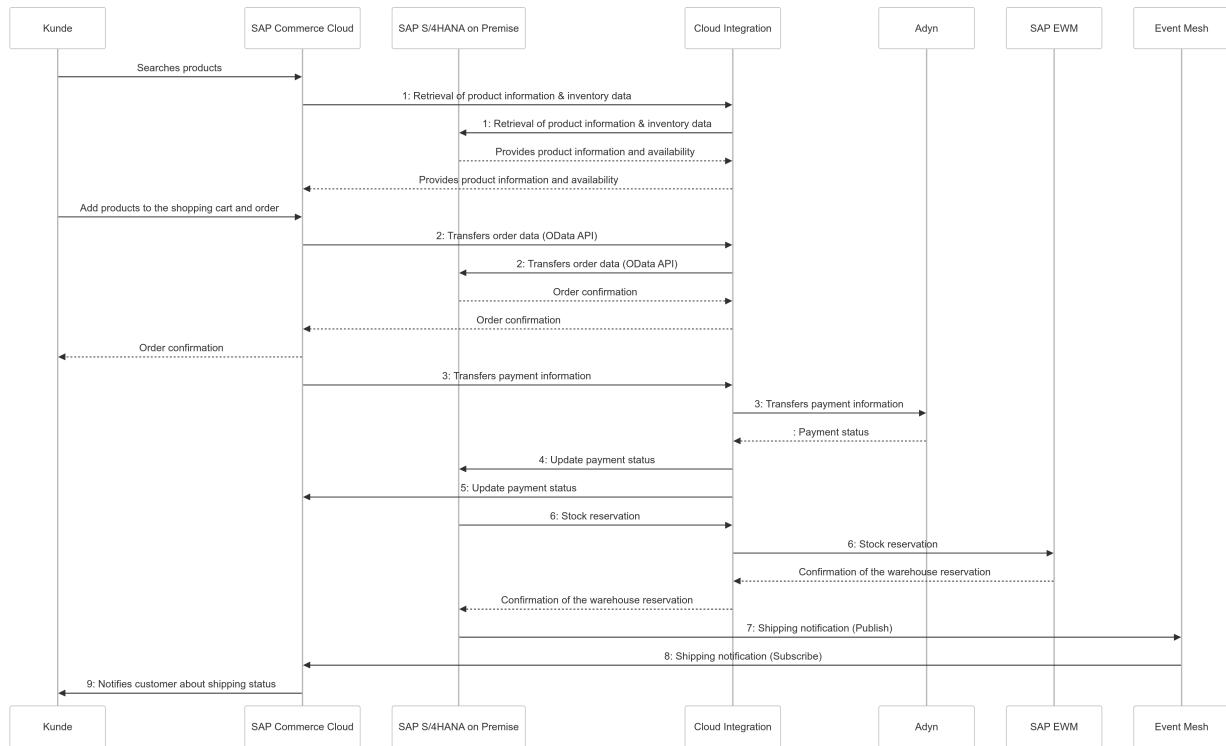


Figure 27 – Sequence diagram

Summary of the sales process - steps and description

1. Product search

- Customer → Webshop: Customer searches products in the webshop.
- Webshop → Integration Suite → SAP S/4HANA: Webshop retrieves product information and inventory data via the Integration Suite.
- SAP S/4HANA → Integration Suite → Webshop: SAP S/4HANA returns product information and availability.

2. Customer places order

- Customer → Webshop: Customer adds products to the shopping cart and places the order.
- Webshop → Integration Suite → SAP S/4HANA: Order data is transferred through OData API.
- SAP S/4HANA → Integration Suite → Webshop → Customer: Order is confirmed.

3. Payment processing

- Webshop → Integration Suite → Payment Gateway: Payment information is transferred to the payment gateway (for example, Adyen).
- Payment Gateway → Integration Suite: Feedback on the payment status.
- Integration Suite → SAP S/4HANA and Webshop: Payment status is updated.

4. Warehouse reservation

- SAP S/4HANA → Integration Suite → Warehouse Management (SAP EWM): Stock is reserved for the order.

- Warehouse Management → Integration Suite → SAP S/4HANA: Confirmation of the warehouse reservation.

5. Shipping notification

- SAP S/4HANA → Event Mesh: Dispatch notification is published.
- Event Mesh → Webshop: Webshop subscribed and receives the notification.
- Webshop → Customer: Customer is informed about the shipping status.

Solution Diagram 1

Use the information to create a first draft of a solution diagram. Use the draw.io environment for this.

- First enter all the systems involved and their connections.
- Use the SAP libraries for the solution diagrams.

The following is an example of a solution diagram according to the defined basic requirements.

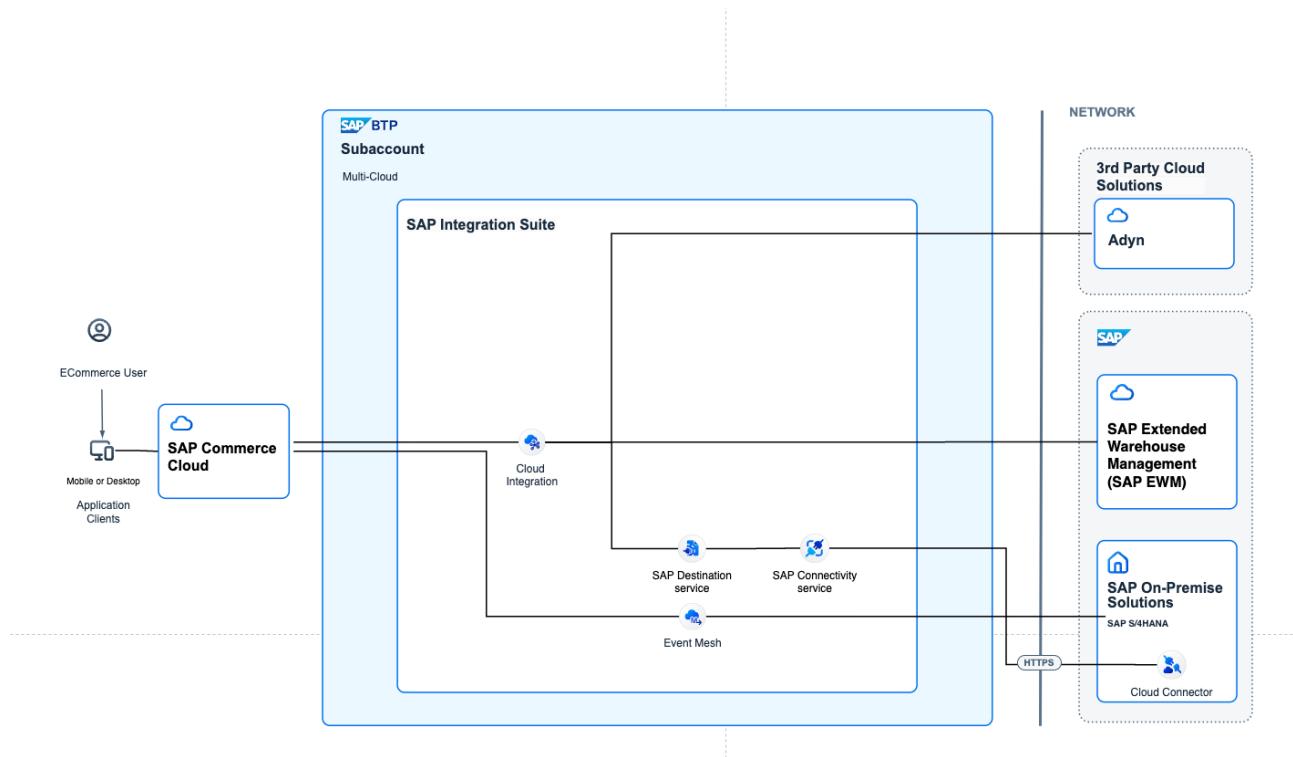


Figure 28 –Simple Solution diagram

Solution Diagram 2

The e-customers must first log in to a custom IAS. In addition, communication with the external service provider, Ayden, is to be realized through API Management and Open Connectors.

The following is an example of a solution diagram according to the defined basic requirements.

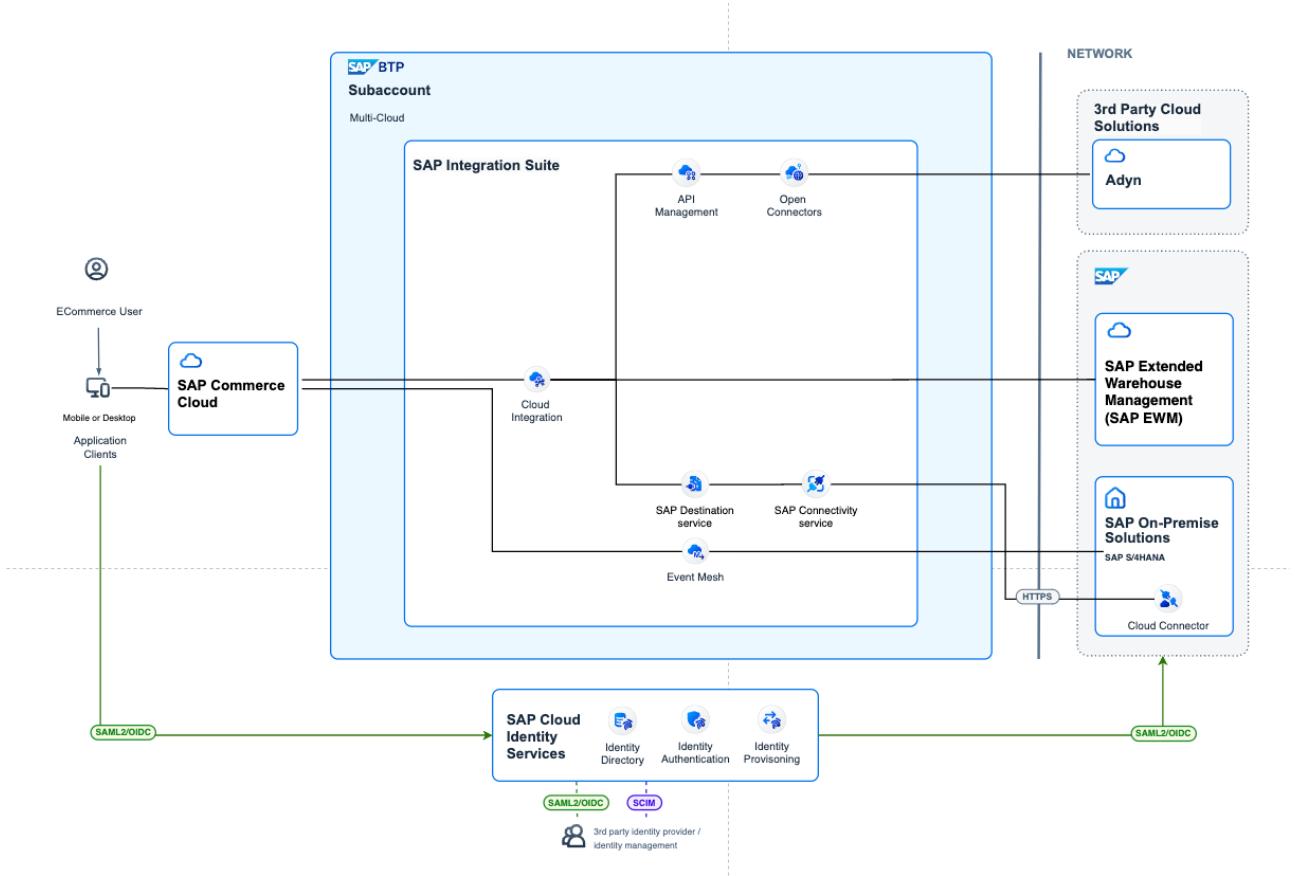


Figure 29 –Simple Solution diagram