SAP S/4HANA

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SAP S/4HANA | 2023 Latest

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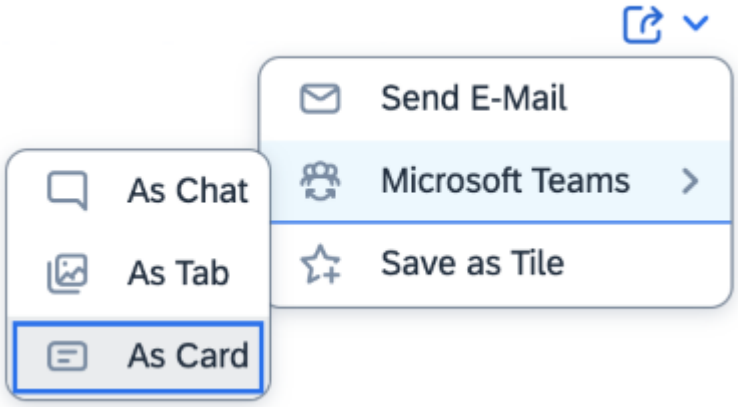
Warning

Integration with Microsoft Teams

System administrators can enable the integration with Microsoft Teams to allow their users to use the **Share: Microsoft Teams** option.



- **As Chat**

  Collaborate and quickly resolve issues, if necessary, simply by using Microsoft Teams As Chat to share a direct link with co-workers. You can provide them with access to a specific state of an SAP Fiori application, for example, so they can easily process any requests you have or tasks that come up.

- **As Tab**

  Work efficiently with a group of co-workers on specific content that you share in the form of a Microsoft Teams tab. Use the Microsoft Teams environment to work on the same context of an SAP Fiori application and use the tab conversation option in parallel to share ideas, discuss, and collaborate.

- **As Card**

  Communicate better with your co-workers using Microsoft Teams by providing a collaborative view that shows application content in a new window and enables you to have a meaningful conversation.

Prerequisites

To enable the integration options with Microsoft Teams, log in to **SAP GUI** (SAP Logon).

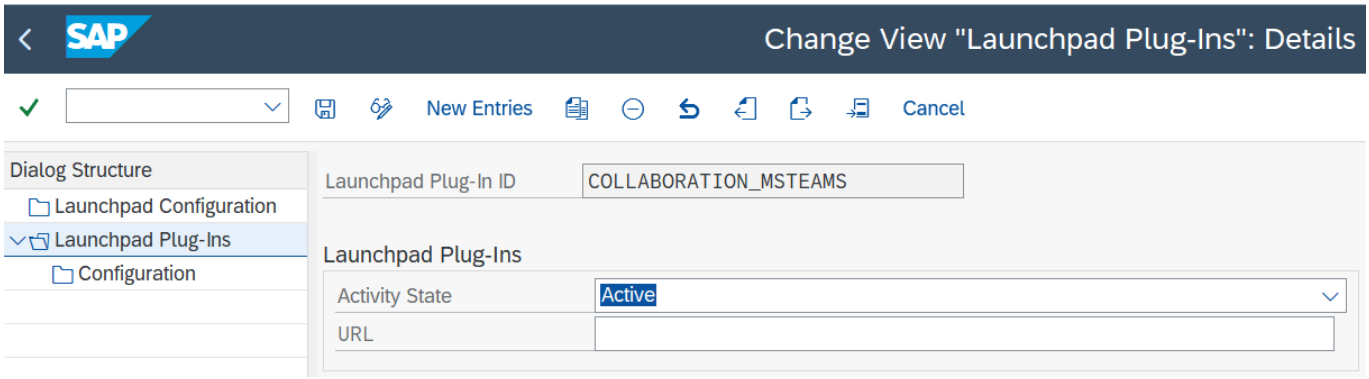
1. Access transaction `/n/UI2/FLP_CUS_CONF` to create a new plug-in entry.

   Under **Dialog Structure**, open **Launchpad Plug-Ins**.

2. Click **New Entries** (or press the F5 key) to create a **Launchpad Plug-In** entry.

3. In the **Launchpad Plug-In ID** field, enter **COLLABORATION_MSTEAMS**.

4. Under **Launchpad Plug-Ins**, set the **Activity State** to **Active**.



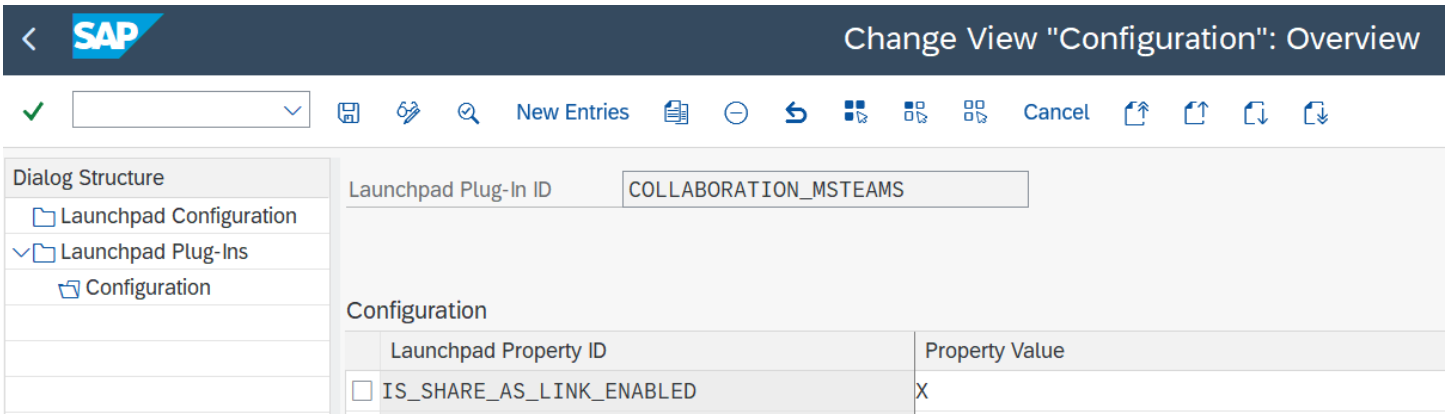
Enabling Share As Chat, Share As Tab, and Share as Card

ℹ Note

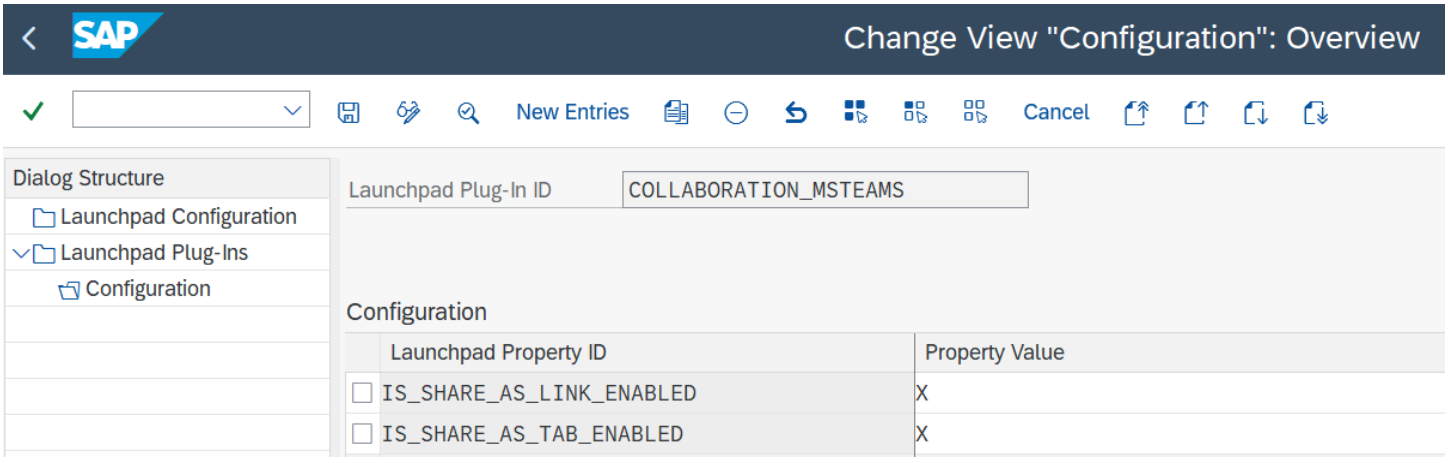
You cannot enable Share as Card separately. By enabling Share as Tab, the Share as Card functionality is automatically enabled in parallel. Equally, by disabling Share as Tab, you automatically disable Share as Card as well.

In the Change View "Configuration": Overview screen, under Dialog Structure > Launchpad Plug-Ins > Configuration, you must now define the Launchpad Plug-Ins properties for the As Chat and As Tab options.

To enable the Share: Microsoft Teams As Chat option, create a new property under Configuration. As the Launchpad Property ID, enter IS_SHARE_AS_LINK_ENABLED, and set the Property Value to X.



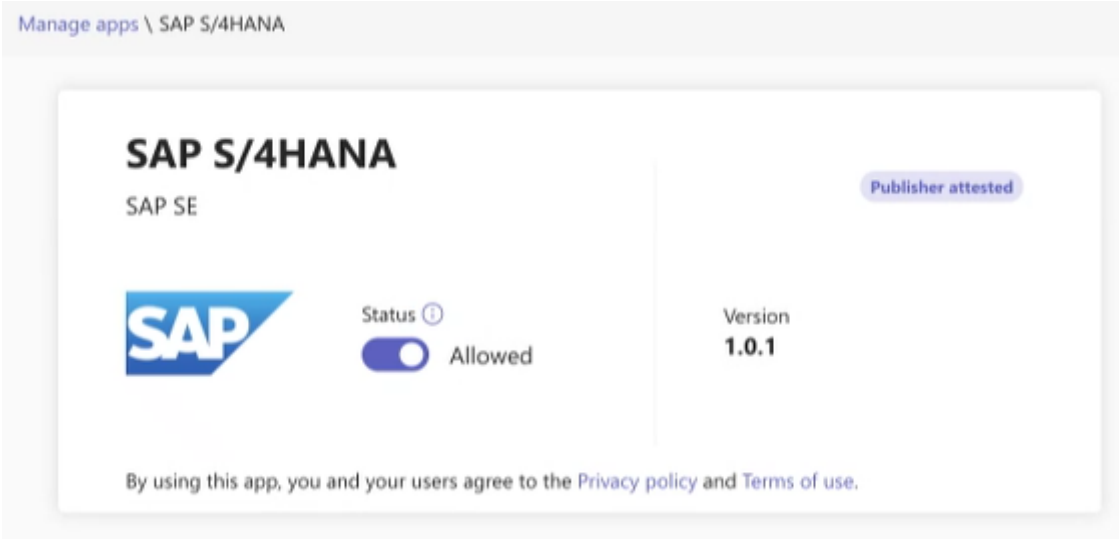
To enable the Share: Microsoft Teams As Tab option, repeat the same setting for IS_SHARE_AS_TAB_ENABLED.



Enable Share As Tab and Share as Card: Additional Settings

To ensure users can access the SAP S/4HANA for Microsoft Teams app, the Microsoft Teams administrator with the `Global Admin` role must make the required settings in the Microsoft Teams admin center portal at Overview of app management. Proceed as follows:

1. Sign in to the Microsoft Teams admin center and open Manage apps.
2. Select **Org-wide app settings** and allow the use of third-party apps.
3. On the **Manage apps** page, locate the **SAP S/4HANA** app and click on it.
4. Ensure the **Status** is set to **Allowed**. The setting is shown in the following screenshot:

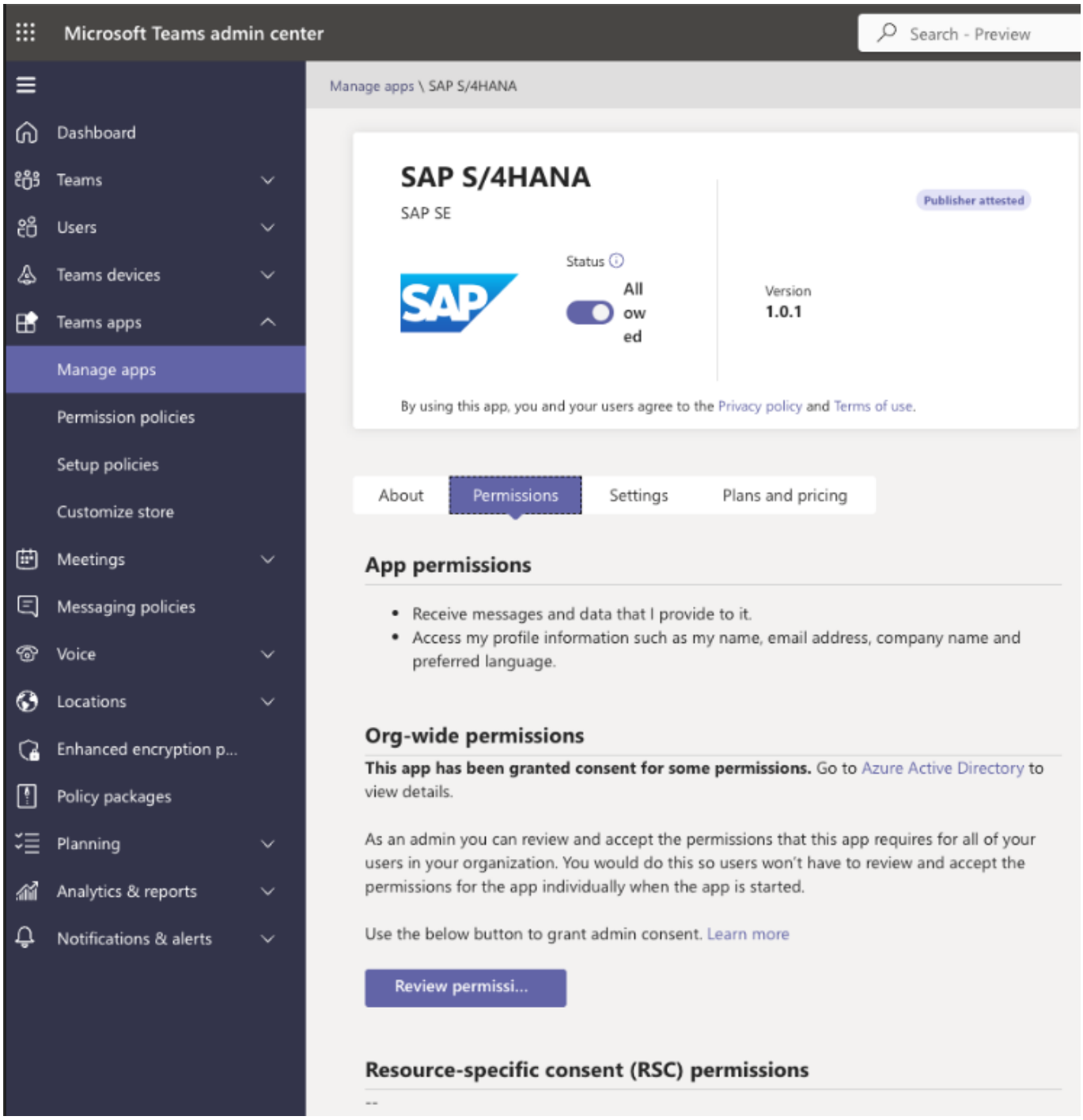


5. Ensure you are using the latest available version of the app by clicking **Get it now** at SAP S/4HANA for Microsoft Teams.

Permissions

Now that the application is available for your users, the administrator with the `Global Admin from Azure - Enterprise Applications portal` role must grant the required permissions. To do so, proceed as follows:

1. Sign in to the Microsoft Teams admin center and open Manage apps.
2. To allow all users to use the app, access the **Permissions** tab of the **SAP S/4HANA** application.
3. Click **Review permissions** and then **Accept**. The setting is shown in the following screenshot:



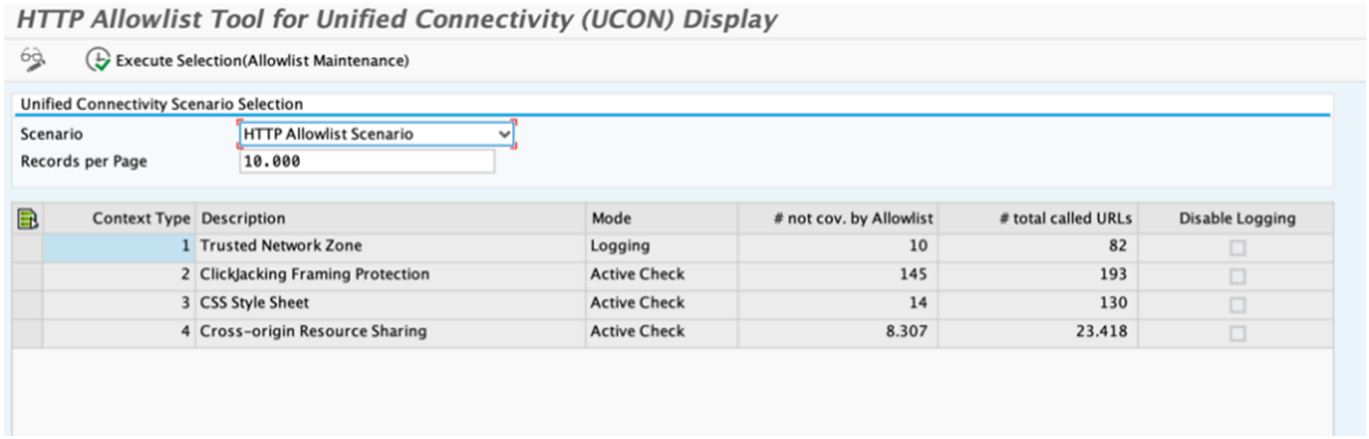
ℹ Note

You must perform this step when you initially install the app, and whenever SAP makes any additions or updates to the requested permission list.

Allowlist

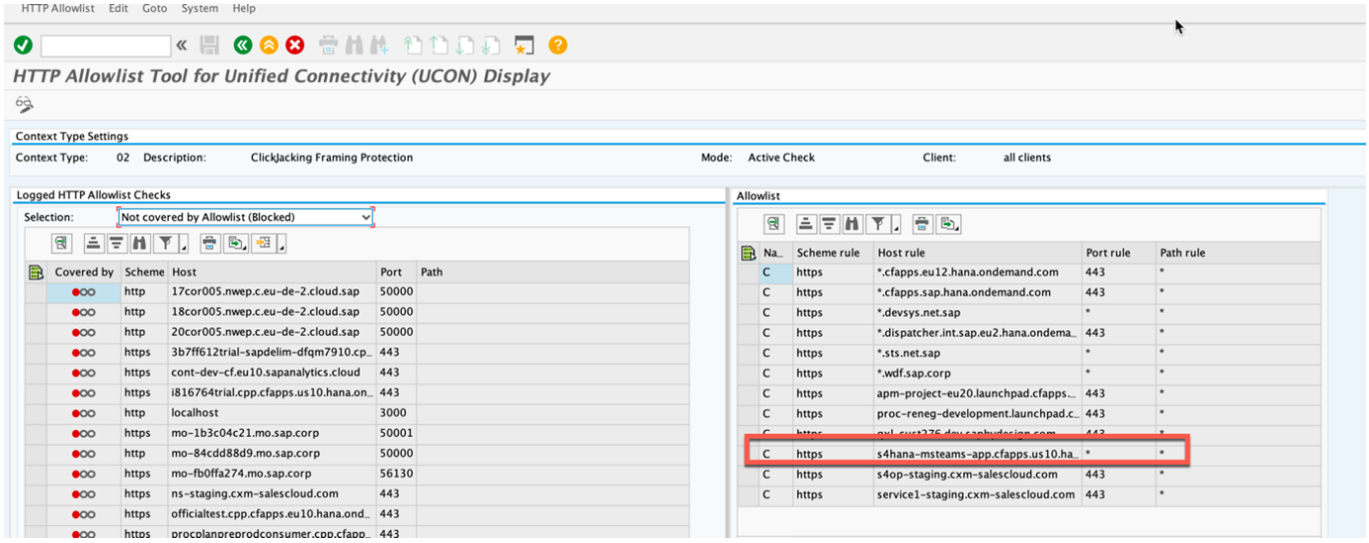
The SAP S/4HANA system administrator must now add the trusted hosts. To do so, proceed as follows:

1. In SAP GUI, access transaction `UCONCOCKPIT`.
2. In the Scenario field, choose HTTP Allowlist Scenario.

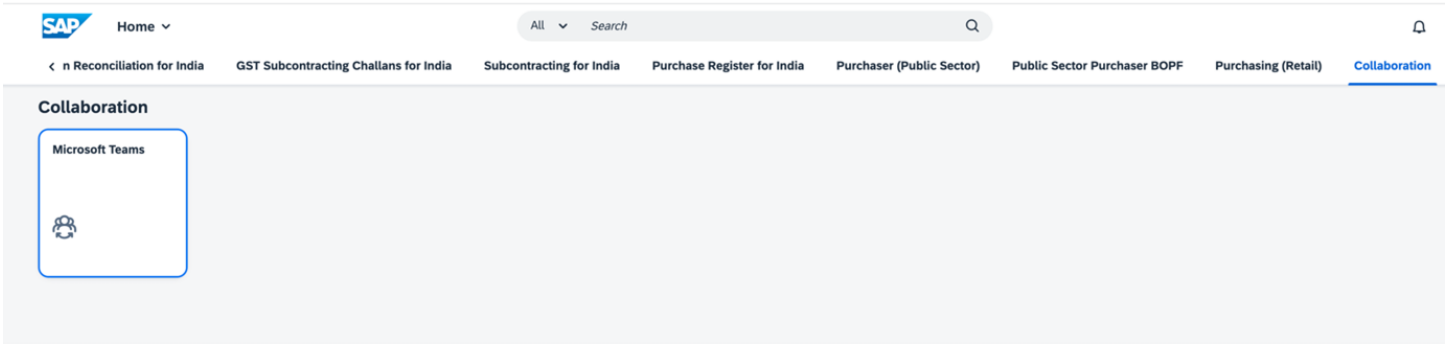


3. Choose ClickJacking Framing Protection.

4. Include `s4hana-msteams-app.cfapps.us10.hana.ondemand.com` as part of the Allowlist in the Host rule.



Users who have been assigned the **Employee** (SAP_BR_EMPLOYEE) business role can now see the Microsoft Teams tile in SAP Fiori launchpad in the Collaboration group and access the https://teams.microsoft.com endpoint.



If this is not the case, proceed with the steps described under Troubleshooting.

Troubleshooting

If users who have been assigned the **Employee** (SAP_BR_EMPLOYEE) business role cannot see the Microsoft Teams tile in SAP Fiori launchpad, proceed with the following configuration:

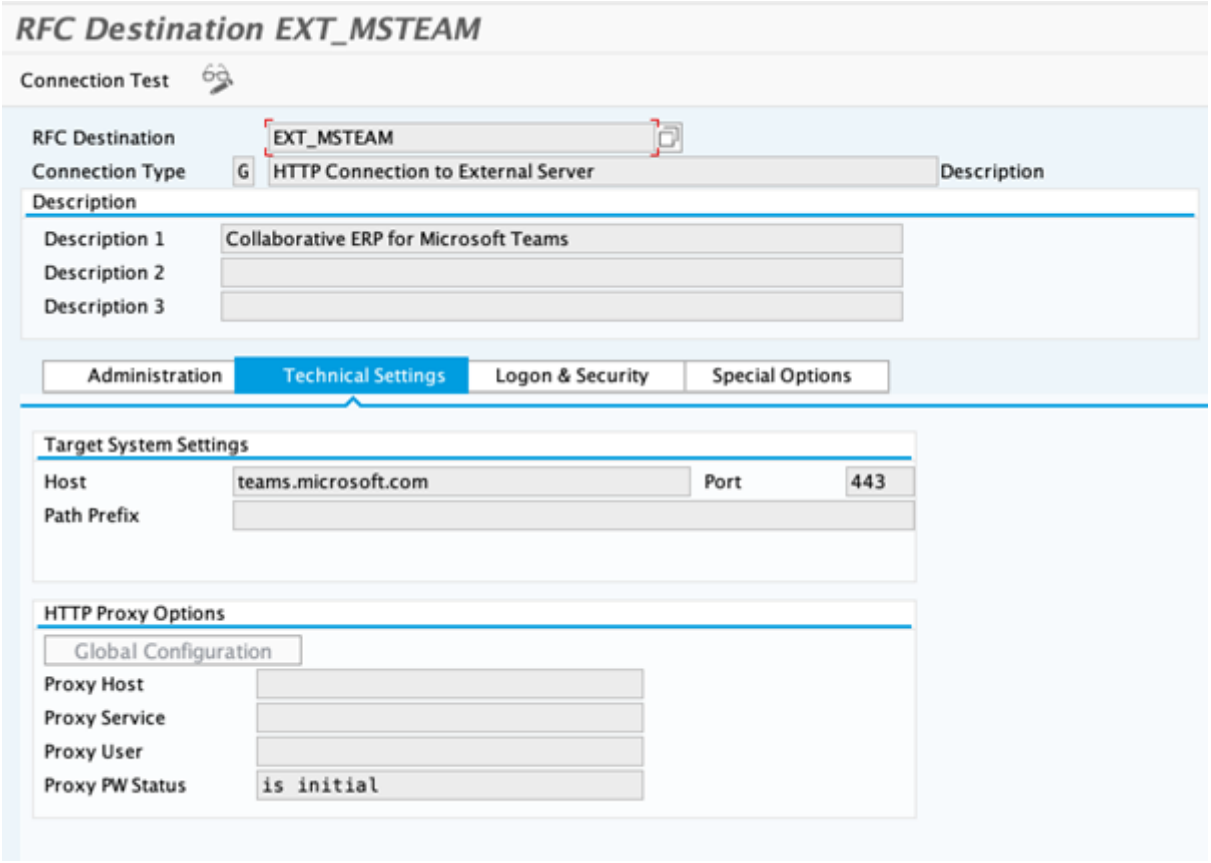
1. In SAP GUI, access transaction SM59.

2. Select the HTTP Connections to External Server node.

3. In the Configuration of RFC Connections screen, select the HTTP Connection to External Server node and click Create.

The **Create Destination** dialog box opens.

4. Enter EXT_MSTEAM as **Destination**, and **HTTP Connection to External Server** as the **Connection Type**.
5. Click the green checkmark to continue.
6. In the **RFC Destination EXT_MSTEAM** screen, under the **Technical Settings** tab, configure the **Target System Settings** with the following:
    - **Host**: **teams.microsoft.com**.
    - **Port**: **443**.
7. Save the configuration.



8. Once the configurations are set, the **Share: Microsoft Teams** option is available for your users.

Launching SAP Fiori Launchpad

Make sure the log on page of the system is frameable. You can use the default URLs to launch SAP Fiori launchpad in your system. For more information, see Launching the Launchpad.

¡ Note

If your users want to use the **Share: Microsoft Teams** feature in incognito mode, they will receive an error of type `Authentication Information HTTP Status 401- Unauthorized`. To resolve this, users must allow third-party cookies for the incognito session.

Please inform and instruct your users accordingly.

! Restriction

1. The following restrictions apply to the **Share: Microsoft Teams** feature:

- It is not supported on mobile devices and tablets.
- It is not supported on all browsers. For more information, see Share to Teams from web apps .

2. The **Share: Microsoft Teams** feature is not available for the following applications:
   - Apps using SAP GUI for HTML.
   - Web Dynpro apps.

Integration with SAP SuccessFactors Employee Central

SAP S/4HANA supports the integration scenario with the SAP SuccessFactors Employee Central using the HANA Cloud Interface (HCI) to enable replication of employee, organizational, and cost center data. You can find more information on http://help.sap.com/s4hana, choose the relevant version of SAP S/4HANA. In the **Additional Information** section, you can find the following documents:

- Replicating Employee Master Data from Employee Central to SAP S/4HANA
- Replicating Organizational Data from Employee Central to SAP S/4HANA
- Replicating Cost Centers from SAP S/4HANA to Employee Central

SAP Note

Also, refer to the attachments in the SAP Note 2340095 .

Integration with SAP Concur

The integration scenario between SAP Concur and SAP S/4HANA is designed to simplify the posting, processing, and reimbursement of your financial documents.

With its secured bi-directional system communication, this integration supports the export of master data like cost objects and the import of Concur documents in near real time. Additionally, reimbursements are possible via Financials, Payroll, or Expense Pay.

There are currently six apps with corresponding backend transactions, if applicable, available for this integration:

App	Transaction	Description
Concur Integration Setup	`CTE_SETUP`	Maintain the connection between your SAP Concur and SAP S/4HANA systems. We have prepared guided activities (wizards) to help you set up the integration.
Display Concur Integration Setup	`CTE_SETUP_DISPLAY`	View the maintained settings for your system connections.
Concur Communication Monitor	`CTE_MONI`	This monitor allows you to oversee the success of your imports and exports.

App	Transaction	Description
Concur Posting Documents Monitor	CTE_DOC_MONI	After identifying the system, you can monitor all documents imported for that system connection. You can see the status of all documents, the payment status when possible, if attachments are available, and any customer modifications that were done.
Concur Travel Expense	Not applicable	With this app, you can log in to your Concur system with single sign-on.
Manage Concur Substitution Rules	Not applicable	This app lets you create rules to edit or maintain non-standard fields during the financial posting process.

Authorization

Apps

To access the apps, use business role **Administrator - Concur Integration** (SAP_BR_ADMIN_CONCUR_INT).

This business role contains the following launchpad catalogs:

- **Concur Integration - Setup** (SAP_CON_BC_CTE_SETUP)
- **Concur Integration - Posting Documents Monitor** (SAP_CON_BC_CTE_POST_MONI)

Transactions

The authorization profiles SAP_CTE_BASE, SAP_CTE_BASE_DISPLAY, SAP_CTE_FINANCE, and SAP_CTE_HCM are feature dependent which can be assigned to specific users.

Authorization Check

With the switchable authorization CTE_DOCUMENTS, you can add an authorization check to authorization object CTE_DOCS, verifying that users can process or display the Concur documents belonging to the specified company code(s). Processing rights include posting and reversing the documents.

This check must be used with the authorization profiles SAP_CTE_BASE and SAP_CTE_FINANCE regardless of if you're using the apps or transactions.

For more information, please see the relevant subchapter in the *SAP Integration with Concur Solutions - Master Guide*.

Additional Information

Integrating SAP S/4HANA Systems with SAP Concur

Integration with SAP Localization Hub, Tax Service

SAP S/4HANA supports the integration scenario with SAP Localization Hub, tax service.

The integration enables you to calculate applicable country-specific indirect taxes for a business transaction, according to the guidelines of local tax authorities.

Configuration

Complete the steps described in Integrating Tax Service with SAP S/4HANA to activate the integration.

Related Information

SAP Localization Hub, Tax Service

Integration with SAP Document Compliance

SAP Document and Reporting Compliance, outbound invoicing option for Brazil

SAP Document and Reporting Compliance, outbound invoicing option for Brazil (Nota Fiscal Eletrônica), enables the communication between your source system and tax authorities servers. The source system is integrated to outbound service landscape, connecting you to the cloud while you are executing your tasks. Since it runs in the background, it means that its interface is the same as the one you are familiar with and your process will not be affected by that.

This is valid only for SAP ERP and SAP S/4HANA. Considering this scenario, if you are working in a different system, it is required to implement completely the integration, in order to get access to NF-e Monitor.

SAP Document and Reporting Compliance, outbound invoicing option for Brazil has the following features:

- Supports all active versions of XML files of NF-e, as specified by Brazilian Government.
- Connects you to Brazilian tax authorities server, to enable you to send your electronic fiscal documents for approval.
- Sends your Cancellation requests or Electronic Correction Letters (CC-e) of your electronic fiscal documents, as needed, for approval.
- Issues your electronic fiscal document under contingency mode (SVC), when the tax authorities server is offline.
- Returns to you a response from SEFAZ, with the status of your electronic fiscal documents, according to each one you have sent.
- Delivers you a service functionality in order to inform you if the tax authorities servers are available or not.
- Returns to you a status of your application availability. Once you complete this checking, you get the information if it is online or not.
- Stores the XML file of the electronic fiscal document that you have issued.
- Enables you to download the XML files of your electronic fiscal documents, even if you have a scenario such as Cancellation, Correction Letter (CC-e) and skipping.
- Downloads multiple XML files for your selected electronic fiscal documents.
- Uses your digital certificate to sign your electronic fiscal document, to ensure security while you issue the document.
- Sends your skipping requests when you need to inform the Brazilian government that such document number is not going to be used in any business transactions.
- Sends an e-mail with XML files attached to the carrier and your customer/receiver.

Note

Some of these features are specific for NF-e.

For more information about this service, see https://help.sap.com/viewer/product/SLH_NFe/.

SAP Document and Reporting Compliance, inbound invoicing option for Brazil

You receive some goods that you have purchased or that have been transferred from one branch to another. This operation requires an electronic fiscal document with it, such as an invoice, containing all necessary details about your products in order to guarantee its legal compliance. To verify and validate this process, you need to match the information already available in your source system with the Electronic Nota Fiscal (NF-e) provided by your supplier. To complete this business transaction, you need to follow several different steps that are done automatically or manually through your own inbound monitor.

SAP Document and Reporting Compliance, inbound invoicing option for Brazil (NF-e inbound on cloud) enables the communication between your source system and tax authorities servers through the cloud. The source system is integrated to inbound service landscape and has the following features:

- Enables you to perform various processes with your electronic fiscal documents, for example, basic process, normal purchase, stock transfer, and cancellation.
- Allows you to request the status of your electronic fiscal document to Brazilian tax authorities.
- Validates the XML format and digital signature of your NF-e.
- Enables you to assign the items of your electronic fiscal documents to one or more purchase orders items.
- Allows you to simulate invoices to check if NF-e values are correct.
- Enables you to have a logistic control, by verifying the correct quantity for your received goods and compare that with the correct quantity in the XML.
- Automatically posts the source documents (goods receipt, invoice receipt, and electronic fiscal document) in the source system.

For more information about this service, see https://help.sap.com/viewer/product/DC_NFe/.

Integration with SAP Conversational AI

SAP Conversational AI is an end-to-end platform for creating chatbots for your business needs. Along with natural language processing and dialog management features, SAP Conversational AI makes it easy to connect your bots to various messaging channels.

You can integrate SAP S/4HANA with SAP Conversational AI. Chatbots that you create with SAP Conversational AI can then be accessed from SAP S/4HANA via the SAP Fiori launchpad, for example.

- The product page for SAP Conversational AI contains information about its key features, configuration guides, and more: https://help.sap.com/viewer/product/SAP_CONVERSATIONAL_AI.
- For details about how to carry out the integration, see the integration documentation here: https://help.sap.com/viewer/product/SAP_CONVERSATIONAL_AI/latest/en-US?task=implement_task.
- You can start a trial of SAP Conversational AI and create a simple chatbot by following the instructions on the following page: https://developers.sap.com/tutorials/cai-bot-getting-started.html.

Integration with Joule

Joule, SAP's generative AI copilot, enables you to access information and perform tasks on a conversational user interface, without having to navigate through multiple pages. It simplifies how you interact with the system and helps you get tasks done faster.

> **Note**
>
> The features described here are only available in SAP S/4HANA Cloud Private Edition.

Related Information

Joule
Joule in SAP S/4HANA Cloud Private Edition

Integration with SAP Advanced Track and Trace for Pharmaceuticals

SAP S/4HANA currently supports integration with SAP Advanced Track and Trace for Pharmaceuticals.

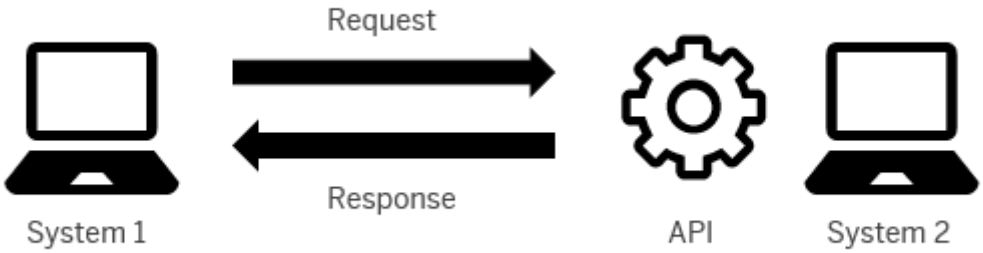
This includes the necessary enhancements to ensure master data integration, transactional data integration and warehouse integration from SAP S/4HANA to SAP Advanced Track and Trace for Pharmaceuticals.

For more information, see the user assistance for SAP Advanced Track and Trace for Pharmaceuticals at https://help.sap.com/attp.

Configuration

For information on how to configure the integration between SAP S/4HANA and SAP Advanced Track and Trace for Pharmaceuticals, see the Configuration Guide General for SAP Advanced Track and Trace for Pharmaceuticals at https://help.sap.com/attp .

APIs on SAP Business Accelerator Hub



An application programming interface (API) is an interface that lets software systems communicate with each other and exchange data. By offering an API for your system, you can define which data should be exposed and thereby maintain control. As a consumer of an API, you don't have to know how the other system works. Instead you can focus on how it's integrated into your system. You can use the APIs available for SAP S/4HANA for these scenarios:

- Connect business processes across your system landscape
- Integrate with external systems

- Develop your own dependent extensions or custom applications

Inbound and Outbound Services

APIs can either be inbound or outbound services.

With respect to SAP S/4HANA as the source system, inbound means that SAP S/4HANA provides a service that another system can consume.

Outbound means that SAP S/4HANA consumes a service that is provided by another system.

Synchronous and Asynchronous Services

APIs can either be synchronous or asynchronous services.

Synchronous means that when a system sends a request it waits for the receiving system to send a response. This approach is useful if an immediate and real-time response is required. However, both systems need to be online the entire time and if there's an error, the request has to be sent again.

Asynchronous means that when a system sends a request it waits for the receiving system to acknowledge receipt of the message. However, it doesn't wait for the receiving system to send a response. This way you can loosely couple systems and there's less dependency on the availability of the other system. Additionally, the sender system isn't blocked after sending a request and can send further requests. With this approach, you get no immediate response and a response message needs to be implemented and routed separately.

Service Categories

APIs created by SAP are categorized according to the main purpose of the messages being communicated. These service categories exist:

Application-to-Application (A2A)

A2A services facilitate the exchange of business information between different systems to connect business processes within company borders.

Application-to-Cross Application (A2X)

A2X services facilitate the exchange of business information between a system and an unspecified client. They're often used to build user interfaces (UIs) based on the back end, without an intervening communication layer. For this reason, A2X messages contain all the necessary information for understanding the message, such as the code names or texts to be displayed on the UI.

Business-to-Business (B2B)

B2B services facilitate the exchange of business documents across companies.

Authentication Methods

To access API services, you need to authenticate yourself. Each API supports different authentication methods. For more information, see User Administration and Authentication.

Authentication Method	Description

Authentication Method	Description
Basic	Authentication with a user name and password.
`x509`	`x509` certificates are used in many Internet protocols, including TLS/SSL. An `x509` certificate consists of a public key and a private key. The public key contains the identity information, such as a host name, an organization, or an individual. The public/private key pair is used to establish secure communication.
`OAuth2`	OAuth 2.0 is a widely adopted security protocol for protection of resources over the Internet. It's used by many social network providers and by corporate networks. OAuth 2.0 allows an application to request authentication on behalf of users with third-party user accounts, without the user having to grant its credentials to the application.
Single Sign On using SAML	SAML is an XML-based framework for exchanging authentication and authorization information. An identity provider issues a security token, which enables the authentication at a service provider.

ETags

ETags enable optimistic concurrency control. Without Etags, concurrent editing of resources could lead to lost update problems. Two users editing same resource at same time could lose the changes for one of the editors. For Example, let's consider that multiple requests are trying to update same document in SAP S/4HANA using an OData Service at the same time. Now the request 1 will update the document and then request 2 will update the document which could overwrite the updates of request 1 in case both request modify the same properties. Later request 3 could overwrite the data updated by request 2. This can happen because there is no locking mechanism. To solve this issue, ETag is used for concurrency control, which makes sure that only one request will update the data and remaining requests will be notified that they are not updating latest document.

The approach of optimistically controlling data relies on the concept that every change on a data set is logged by a specified ETag field on the server. Most often, the ETag field contains a last updated timestamp, a hash value, or any other versioning that precisely identifies the version of the data set. In ETag, we will have a value which will uniquely identify each updating of the record whenever its changed.

When sending a modifying request to the server, the client needs to provide the ETag value which was previously received from the server. The server will then compare the ETag provided by the client with the current ETag on the server. In case they don't match, the server will return an error to the client and not modify the data on the server. Only if the ETag match (or the client provided '*' as ETag value) the modifying operation will be processed by the server. Afterwards the record is identified by a new ETag value. Using this ETag concept we can easily identify the record uniquely with ETag value when the particular record is updated or changed and avoid accidental overwriting of data.

For more information see:

- Operations (OData Version 2.0)
- OData Version 4.01 HeaderETag

API Types

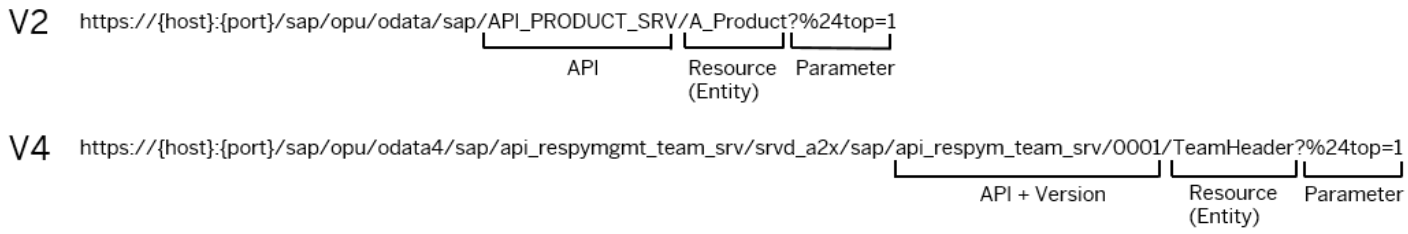
For SAP S/4HANA, two API types are provided: OData APIs and SOAP APIs.

OData

Open this video in a new window

The Open Data Protocol (OData) is a standardized protocol for creating and consuming data APIs. OData services comply with the REST architecture and therefore qualify as RESTful APIs. With OData services, consumers can publish and edit resources of the underlying system using simple HTTP messages. The resources are defined in a data model and identified using Uniform Resource Locators (URLs). The OData versions 2 (V2) and 4 (V4) are currently supported by SAP S/4HANA, where version 4 improves processing time and resource consumption.

Example of the URL of a resource:



Example of the URL for OData V2 and V4

In the OData V2 example, the resource `A_Product` is exposed by the OData service `API_PRODUCT_SRV`. In SAP S/4HANA, resources are called entities. Parameters further specify the entity and make filtering possible. In this example, only the first representation of the entity `A_Product` is returned with the parameter `top`, which is a standard parameter of OData. Parameters can either be standard parameters of OData or SAP specific.

ℹ Note

For an OData V2 service that is on at least the second major version, the URL shows this by the addition of `;v=000{X}` after the API name, for example, `https://{host}:{port}/sap/opu/odata/sap/API_CUSTOMER_RETURNS_DELIVERY_SRV;v=0002`.

To interact with an entity, you can use CRUD operations. CRUD stands for Create, Read, Update, Delete. To execute a CRUD operation, you combine the entity with a specific HTTP method. SAP S/4HANA supports five different HTTP methods, each one of which corresponds to a specific CRUD operation:

HTTP Method	Meaning
POST	Create data

HTTP Method	Meaning
GET	Read data
PUT/PATCH	Update data
DELETE	Delete data

The use case of an OData service defines which of the four HTTP methods can be used.

If you want to see all of the data from the resource `A_Product` from the example, execute the following operation:

GET `https://{host}:{port}/sap/opu/odata/sap/API_PRODUCT_SRV/A_Product`

If you want to create a new entry in the resource `A_PRODUCT`, you change the HTTP method of the operation. Instead of using GET, you execute the operation with POST.

You can also add parameters to the operation to modify the request. Depending on the operation, parameters are part of the URL or added to the body or header of the request. Depending on the HTTP method, only certain parameters of the entity may be available for the operation. Some parameters may also be required for the successful execution of an operation. In some cases, parameters are created automatically (for example, the creation date in a POST request).

After sending a request, you receive a response informing you whether the request was successful. The response also returns data in a supported format, such as JSON or XML.

If supported by the OData service, you can also send batch requests. With batch requests, you combine multiple individual operations in a single request. This can improve efficiency if you need to make bulk changes since you only send one request. Depending on the OData service, the number of operations that you can execute in a batch request may be limited.

Features supported for OData V4 are:

Feature	Description
$select	Used to define which properties should be returned by the server. This can have a positive impact on the overall performance and returns only information the client is actually interested in
$skip/$top	Used for large result sets to requests the data in chunks
$batch	Used to combine several operations in one request
$filter / $search	Used to filter or search for entities
$count	Used to determine the number of entities which correspond to a filter operation
$expand	Used to request for related entities
Prefer: respond-async	Used to request data in an asynchronous way (relevant for large result sets which take some time to calculate)
$metadata?sap-documentation	Used to featch the different options to get more detailed information (texts) about entities and properties for example, data element documentation, KTD documentation and so on
return=minimal	Used to indicate that the client is not interested in the result. This has a significant performance impact on the server

The HTTP server generates standard errors when requests fail. These errors are assigned numbers consistent with protocol standards. These are some typical errors that you may encounter:

Number	Name	Description
400	Bad Request	The syntax of the sent request is invalid.
403	Forbidden	The user who sent the request isn't authorized to access the requested data or to perform the requested action.
404	Not Found	The requested object couldn't be found.
405	Method Not Allowed	The action to be executed isn't supported by the OData Service.
406	Not Acceptable	The requested object can't be returned in the specified format according to the Accept headers.
408	Request Timeout	The server timed out waiting for the request.
412	Precondition Failed	The resource has changed already. The client must read the data again.
428	Precondition Required	Clients need to send an if-match header.
500	Internal Server Error	An internal error occurred. The request couldn't be processed.
501	Not Implemented	The OData Service doesn't support the requested operation.
503	Service Unavailable	The server can't handle the request (because it's overloaded or down for maintenance). Generally, this is a temporary state.

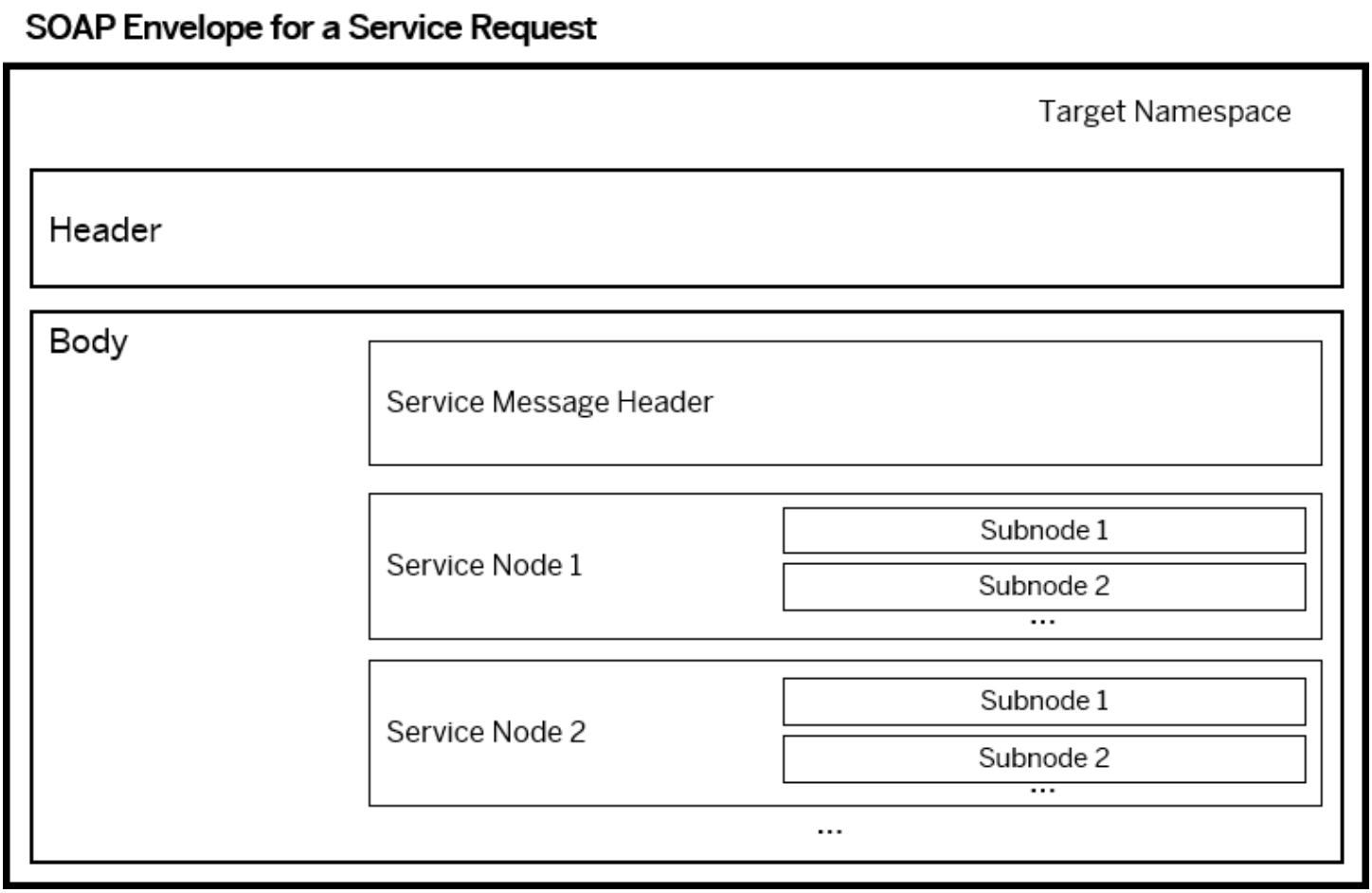
You can also download the whole specification of an OData service on SAP Business Accelerator Hub.

SOAP

Open this video in a new window

SOAP is a message protocol for exchanging information in distributed environments. It's platform and language independent and based on XML. There are two official versions of SOAP: 1.1 and 1.2. Both versions are supported by SAP S/4HANA. For the transport of SOAP messages, SAP S/4HANA uses the transport protocol HTTP. Each SOAP service has a specific URL with which you can access the service. SOAP defines the structure of messages, describes how messages are to be processed, and provides rules for encoding application-defined datatypes.

A SOAP message consists of a header and a body, both of which are contained in a SOAP envelope.



Each service request has a target namespace that depends on the scenario for which the service is used. The target namespace declares the specific elements and attributes available for the service request. In the header, no information is included. The body consists of a service message header and at least one service node. The service message header contains information about the message header data, such as the involved sender and receiver, as well as the date and time. The service nodes contain the service's business data. Depending on the complexity, the service nodes can be further split into sub nodes. Nodes and fields can be optional or must be provided for a request to be successful.

When systems communicate asynchronously with SOAP messages, the SAP message exchange infrastructure can ensure reliable messaging, including guaranteed delivery and exactly once execution of each message. For this, two different protocols are used: WS-RM or SAP-RM. WS-RM is an open standard, whereas SAP-RM is a proprietary SAP solution.

In synchronous communication, there's no guarantee that each request message sent by the consumer arrives exactly once at the provider. For many synchronous services, however, it's crucial that the service is successfully executed exactly once when requested. To ensure that synchronous service calls are executed exactly once, SAP NetWeaver provides a framework. Web services that use this framework are referred to as idempotent.

The HTTP server generates standard errors when requests fail. These errors are assigned numbers consistent with protocol standards. The following are some typical errors that you may encounter:

Number	Name	Description
307	Temporary Redirect	The requested page has been moved, but this change may not be permanent. The server automatically redirects the request to the new location. For more information, see 2912095.
401	Authorization Required	Authorization is required to use the service, but a valid user name and password weren't supplied. For more information, see 2886968.
403	Forbidden	The user who sent the request isn't authorized to access the requested data or to perform the requested action.
404	Not Found	The requested object couldn't be found.
415	Unsupported Media Type	The payload is in a format that isn't supported.
500	Internal Server Error	An internal error occurred. The request couldn't be processed.
503	Service Unavailable	The number of connections exceeds the allowed maximum.

For detailed information about the service structure of a SOAP service, select the operation in the **API References** tab on SAP Business Accelerator Hub or see the business documentation on SAP Help Portal.

You can also download the entire specification of a SOAP service as a WSDL on SAP Business Accelerator Hub. The WSDL describes its functionality and use in detail.

Versioning

When you've opened an API on SAP Business Accelerator Hub, you can see the information about the API for a specific release. To switch between different releases, use the **Select Release** dropdown list.

You can also see the version of an API in the **Overview** tab. The version consists of three numbers: major, minor, and patch version.

Example

In the example `2.1.3`, `2` stands for major, `1` for minor, and `3` for patch.

The following logic applies for versioning:

- Major: incremented when there is an incompatible change in the API.
- Minor: incremented when there are new functionalities in a backwards compatible manner.
- Patch: incremented when there are backwards compatible bug fixes.

Note

The backend system can have multiple major versions of an API but only one minor and patch version.

Deprecated and Decommissioned APIs

APIs released by SAP should provide a stable, long-term basis for customer developments. However, ongoing innovation and business developments sometimes make it unfeasible to keep an API when an alternative is available that is better suited to take over the functions in question.

This is why SAP has devised a deprecation policy for APIs, and their elements (for details, see the SAP Deprecation Policy on the SAP Business Accelerator Hub). This policy provides a high degree of reliability of released APIs, while ensuring a smooth transition between deprecated APIs and their successors.

To know more about different API statuses shown on the SAP Business Accelerator Hub, see here.

In order to adapt your content in due time, it's important that you learn about deprecated APIs as soon as possible.

The following information channels are used to inform you about deprecated APIs:

- What's New documentation

  As soon as an API is deprecated, this is announced in the What's New documentation of the corresponding release. For more information, see https://help.sap.com/docs/SAP_S4HANA_ON-PREMISE under **What's New**.

- Product assistance for individual APIs

  If an API is deprecated, existing documentations of the respective APIs are updated to indicate the deprecation. Choose **Business Documentation** to view the product assistance for the API.

- SAP Business Accelerator Hub

  Many APIs are published on the SAP Business Accelerator Hub, where their current release status is indicated. The release status is currently displayed only for entire APIs, not for its individual elements.

API State

The API state of a development object defines whether a development object can be used for custom development. Objects can be released as APIs for different purposes. Depending on the underlying release contract, released objects need to adhere to different stability criteria. The CDS views and service bindings of APIs are released for the C2 contract. For more information about this API state, see Use as Remote API (C2).

Trying Out APIs

You can try out APIs on SAP Business Accelerator Hub to see if they meet your requirements. For more information. see Trying Out APIs.

SAP Business Accelerator Hub

You can find all the APIs publicly available for SAP S/4HANA on SAP Business Accelerator Hub. SAP Business Accelerator Hub is a web application hosted by SAP to discover, explore, and test APIs.

- https://api.sap.com/package/S4HANAOPAPI?section=Artifacts

Business Events on SAP Business Accelerator Hub

A business event is a message that is sent to notify a consumer that an SAP Object Type has changed.

An event source is the system or application from which the event originates. A receiving application needs to create a connection to the event source to facilitate the flow of events. An event source can have a list of events that can be published or consumed by the service. This list of events is known as an event catalog. The catalog can contain events that are to be published or consumed. Each event in a catalog has a payload schema. An event source can provide an event catalog endpoint that gives the list of events that is published or consumed by the message client.

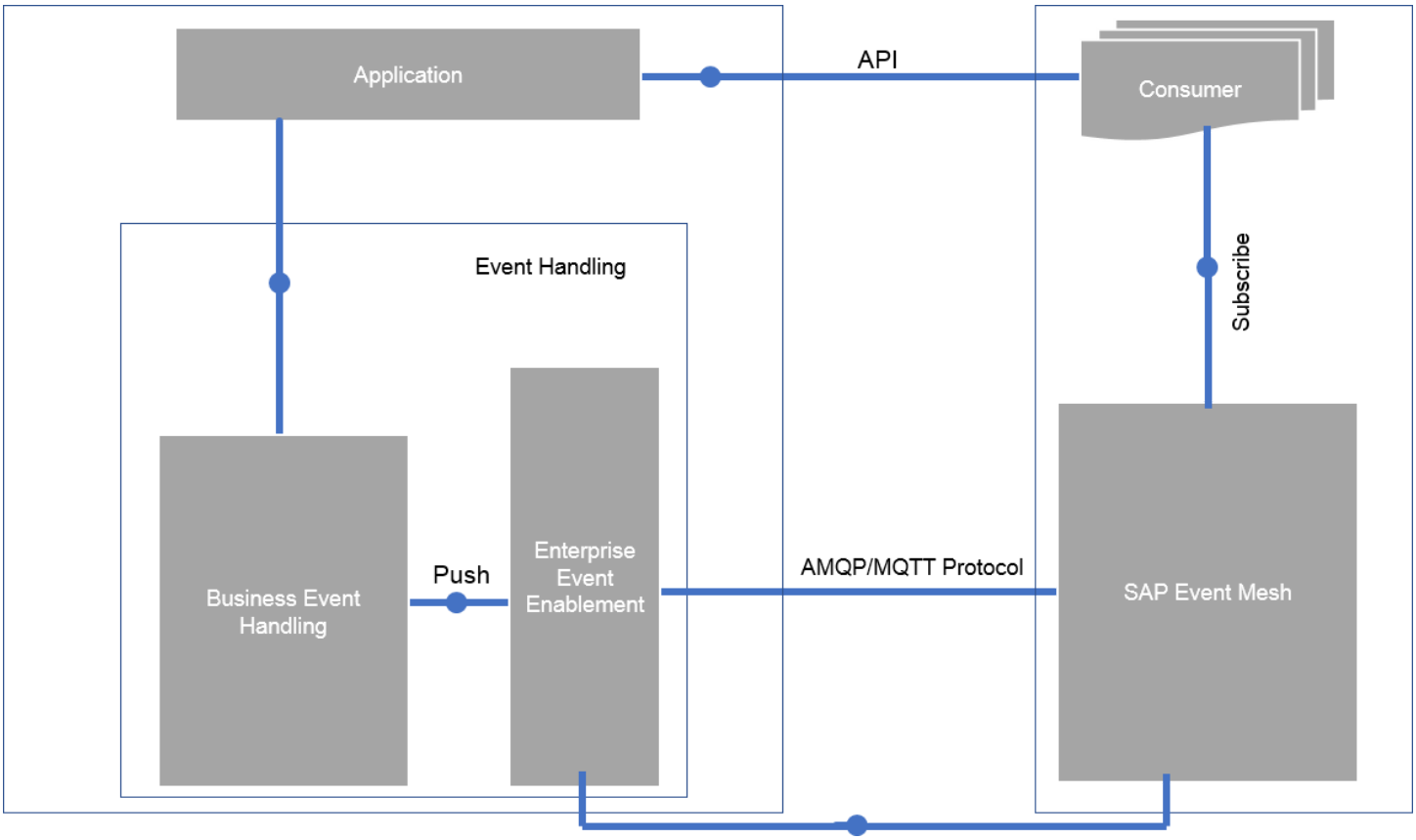
Business events enable:

- Integration and extensibility scenarios
- Decoupled and asynchronous communication
- Broadcast communication

Business event subscriptions enable the notification process about any change that is triggered for the selected business object types. CloudEvents 1.0 is used as a specification for describing event data in a common way.

The events need to have the following specifications:

Attribute	Required	Description
ID	Mandatory	Unique identifier of the event.
Source	Mandatory	Describes the event producer.
specversion	Mandatory	Version of the CloudEvents specification which the event uses. This enables the interpretation of the context.
type	Mandatory	Describes the type of the event related to the source in which the event originated. This property is used for routing, observability, policy enforcement, and so on.
datacontenttype	Optional	This describes the content type of the data attribute.
data	Optional	Payload of the event
time	Optional	Stores the timestamp of when an event happened.



The application implements the SAP Object Type. When there is a change in the SAP Object Type, an internal event is triggered. The event is sent to the event broker. The Business Event Handling framework converts the internal events to business events. Using the push channel the business event is then pushed into the Enterprise Event Enablement. From here it is sent to the SAP Event Mesh using the MQTT protocol. The consumer or customer applications need to subscribe to SAP Event Mesh to get these notifications.

You use Business Event Handling as a system-wide standardized event mechanism for SAP Object Types across SAP S/4HANA applications. It enables applications, partners, and customers to consume events related to all SAP S/4HANA objects. You can enable your SAP Business Technology Platform based or other side-by-side extensions to extend your processes on SAP Business Technology Platform. Based on the publish-subscribe pattern, the central event handling component (for example, SAP Event Mesh) can receive events from multiple senders that can be consumed by receivers, who have subscribed to them. Publish-subscribe enables applications to announce events to multiple interested consumers asynchronously, without coupling the senders to the receivers. For more information see, Business Event Handling.

Enterprise Event Enablement is a technical component on SAP S/4HANA. It enables the exchange of events across different platforms for seamless event-driven communication. Events from SAP S/4HANA can only be sent to SAP Event Mesh, where they can be used by any recipient.

In order to successfully exchange events between SAP Event Mesh and an SAP S/4HANA system, an upright connection is required. This connection is maintained by the Enterprise Event Enablement framework during channel creation.

For more information see, Enterprise Event Enablement.

You can publish events triggered from SAP S/4HANA applications and consume these events in the apps built on SAP Business Technology Platform using SAP Event Mesh. This provides real-time messaging capabilities. For more information, see SAP Event Mesh.

The events are published on the SAP Business Accelerator Hub:https://api.sap.com/.