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Feature Scope Description for SAP Cloud Integration

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1 About This Document

This document describes the **features** that are available in SAP Cloud Integration. The availability of some of the features may depend on your license agreement with SAP.

To illustrate integration with other SAP offerings, the **product documentation** on SAP Help Portal might include references to features that are not included with SAP Cloud Integration. Features that are not included in this feature scope description might require a separate license.

This document does not include any information about:

Packages and pricing available for SAP Cloud Integration.


2 Introduction

SAP Cloud Integration (Cloud Integration) supports end-to-end process integration across cloud-based and on-premise applications based on the exchange of messages.

It provides capabilities to process messages in integration scenarios spanning different companies, organizations, or departments within an organization.

Read this document for a high-level summary of the features and capabilities available for SAP Cloud Integration.

→ Remember

There are currently certain limitations when working in the Cloud Foundry environment. For more information on the limitations, see SAP Note [2752867](#) .

ⓘ Note

- Certain limitations apply with regard to the purchased edition of the product.
- You need to check or verify your current software version before using the [patch release notes](#).

3 Features

Get a high-level overview about the features of Cloud Integration.

The following features are available for Cloud Integration:

- [Integration Content \[page 5\]](#)
- [Connectivity \[page 6\]](#)
- [Message Processing \[page 15\]](#)
- [Quality of Service \[page 20\]](#)
- [Adapter Development \[page 21\]](#)
- [API-Based Integration Development \[page 21\]](#)
- [Monitoring and Operations \[page 22\]](#)
- [Business-to-Business Integration \[page 25\]](#)
- [Application Programming Interfaces \[page 26\]](#)
- [Data Storage \[page 27\]](#)

3.1 Integration Content

Integration developers can use predefined integration content out of the box, enhance it, or develop their own integration content from scratch.

Integration content refers to all design artifacts that define how a message is to be processed in the course of an integration scenario.

The following features related to integration content are available.

Certain constraints might apply with regard to the usage of some of these features (as described in the product documentation).

Integration Content

Feature	Description
Predefined content provided by SAP	SAP provides reusable integration content which is composed of various predefined integration flows and other elements (for example, value mappings) that cover the integration requirements for a number of standard integration scenarios (for example, setting up integration with the Ariba network or integrating SAP SuccessFactors and SAP ERP).

Feature	Description
Develop and edit integration content	<p>SAP Cloud Integration provides an integration content designer to develop your own integration content.</p> <p>You use an <i>integration flow</i> model to specify the senders and receivers of messages for a scenario, and how messages are to be processed at runtime. An integration flow is deployed on a tenant, where it can be executed. It is composed of adapters (defining how a tenant is connected to remote systems) and integration flow steps (defining the individual processing steps).</p> <p>The supported adapters and integration flow steps are described in sections <i>Connectivity</i> and <i>Message Processing</i> of this document.</p> <p>You can simulate an integration flow without the need to deploy it on the tenant (activating of tracing supported).</p>
Deploy integration content on different integration platforms	<p>You can deploy and run integration content on different integration platforms.</p> <p>Accordingly, different product profiles are available to adapt the user interface of the integration content designer to the specifications and capabilities of the target integration platform.</p> <p>Supported target integration platforms:</p> <ul style="list-style-type: none"> • SAP Cloud Integration runtime environment (runs on an SAP BTP tenant) • SAP Process Orchestration (on-premise) runtime environment (release SAP Process Orchestration 7.5 SP 0 and higher)
Transport integration content	<p>You can transport integration content across tenants using different options:</p> <ul style="list-style-type: none"> • Change and Transport System CTS+ • SAP Cloud Transport Management • Manual export/import

3.2 Connectivity

Cloud Integration can communicate with various kinds of remote systems.

SAP provides a set of adapters that allow you to specify a certain connection type and to define, for example, which technical protocols should be used to connect a sender or a receiver system to the tenant and how this connection is protected.

Customers can also define their own adapters to be used in addition to those predefined by SAP (see section [Adapter Development \[page 21\]](#)).

Note related to terminology:

A receiver adapter connects the tenant to an external system. A sender adapter receives incoming messages (sent from an external system) or connects the tenant to an external system and polls for messages.

The following adapters are available out of the box.

Certain constraints might apply with regard to the usage of some of these features (as described in the product documentation).

Adapter

Feature	Description
AmazonWebServices Sender adapter	Connects SAP Cloud Integration to Amazon Web Services. The adapter supports the following protocols: <ul style="list-style-type: none"> S3: Simple Cloud Storage SQS: Simple Queue Service
AmazonWebServices Receiver adapter	Connects SAP Cloud Integration to Amazon Web Services. The adapter supports the following protocols: <ul style="list-style-type: none"> S3: Simple Cloud Storage SQS: Simple Queue Service SNS: Simple Notification Service SWF: Simple Workflow Service
AMQP Sender adapter	Enables SAP Cloud Integration to consume messages from queues or topic subscriptions in an external messaging system. Supported message protocol: AMQP (Advanced Message Queuing Protocol) 1.0 Supported transport protocols: TCP, WebSocket
AMQP Receiver adapter	Enables SAP Cloud Integration to send messages to queues or topics in an external messaging system. Supported message protocol: AMQP (Advanced Message Queuing Protocol) 1.0 Supported transport protocols: TCP, WebSocket
Ariba Sender adapter	Connects SAP Cloud Integration to the Ariba Network. Using this adapter, SAP and non-SAP cloud applications can receive business-specific documents in commerce eXtensible Markup Language (cXML) format from the Ariba network. The sender adapter allows you to define a schedule for polling data from Ariba.
Ariba Receiver adapter	Connects SAP Cloud Integration to the Ariba network. Using this adapter, SAP and non-SAP cloud applications can send business-specific documents in commerce eXtensible Markup Language (cXML) format to the Ariba network.Receiver adapter

Feature	Description
AS2 Sender adapter	<p>Enables SAP Cloud Integration to exchange business-specific documents with a partner through the Applicability Statement 2 (AS2) protocol.</p> <p>Sender adapter: Can return an electronic receipt to the sender of the AS2 message (in the form of a Message Disposition Notification (MDN))</p>
AS2 Receiver adapter	<p>Enables SAP Cloud Integration to exchange business-specific documents with a partner through the Applicability Statement 2 (AS2) protocol.</p>
AS4 Sender adapter	<p>Enables SAP Cloud Integration to securely process incoming AS4 messages using Web Services. The AS4 sender adapter is based on the ebMS 3.0 specification that supports the ebMS handler conformance profile.</p> <ul style="list-style-type: none"> • Supports one-way/ebMS3 push message exchange pattern (MEP). • Support on-way/ebMS3 pull that allows the message party to pick the corresponding message from the partner. • Supports signature verification and decryption of the message. • Generates receipts after processing the incoming AS4 message. • Allows you to set a size limit for the body and attachment of an incoming message.
AS4 Receiver adapter	<p>Enables SAP Cloud Integration to establish a connection between any two message service handlers (MSHs) for exchanging business documents. The AS4 receiver adapter uses the Light Client conformance policy and supports only message pushing for the sending MSH and selective message pulling for the receiving MSH.</p> <p>Receiver adapter:</p> <ul style="list-style-type: none"> • Supports one-way/push message exchange pattern (MEP) that involves the transfer of business documents from a sending MSH to a receiving MSH. • Supports one-way/selective-pull message exchange pattern (MEP) that involves the receiving MSH initiating a selective pull request to the sending MSH. The sending MSH responds by sending the specific user message. • Supports storing and verification of receipts.
Data Store Sender adapter	<p>Enables SAP Cloud Integration to consume messages from a data store.</p>
ELSTER Receiver adapter	<p>Enables SAP Cloud Integration to send a tax document to the ELSTER server.</p> <p>ELSTER (acronym for the German term <i>Elektronische Steuererklärung</i>) is used in German fiscal management to process tax declarations exchanged over the Internet.</p> <p>The adapter supports the following operations: Getting the version of the ERIC (ELSTER Rich Client) library, validating a tax document, and sending a tax document.</p>
Facebook Receiver adapter	<p>Enables SAP Cloud Integration to access and extract information from Facebook based on certain criteria such as keywords or user data.</p> <p>Using OAuth, the SAP BTP tenant can access resources on Facebook on behalf of a Facebook user.</p>

Feature	Description
<i>FTP</i> Sender adapter	<p>Enables SAP Cloud Integration to connect to a remote system using TCP (Transmission Control Protocol) to receive files from the system.</p> <p>FTP stands for File Transfer Protocol.</p> <p>The sender adapter allows you to define a schedule for polling data from the connected system.</p>
<i>FTP</i> Receiver adapter	<p>Enables SAP Cloud Integration to connect to a remote system using TCP (Transmission Control Protocol) to write files to the system.</p> <p>FTP stands for File Transfer Protocol.</p>
<i>HTTPS</i> Sender adapter	<p>Establishes an HTTPS connection between SAP Cloud Integration and a sender system.</p>
<i>HTTP</i> Receiver adapter	<p>Establishes an HTTP connection between SAP Cloud Integration and a receiver system.</p> <p>Receiver adapter:</p> <ul style="list-style-type: none"> • Supports HTTP 1.1 only (target system must support chunked transfer encoding and may not rely on the existence of the HTTP Content-Length header) • Supports the following methods: DELETE, GET, HEAD, POST, PUT, TRACE Method can also be determined dynamically by reading a value from a message header or property during runtime.
<i>IDoc</i> Sender adapter	<p>Allows SAP Cloud Integration to exchange Intermediate Document (IDoc) messages with a sender system that supports communication via SOAP Web services.</p> <p>A size limit for the inbound message can be configured for the sender adapter.</p>
<i>IDoc</i> Receiver adapter	<p>Allows SAP Cloud Integration to exchange Intermediate Document (IDoc) messages with a receiver system that supports communication via SOAP Web services.</p>
<i>JDBC</i> Receiver adapter	<p>Allows SAP Cloud Integration to connect to a JDBC (Java Database Connectivity) database and to execute SQL commands on the database.</p>
<i>JDBC for DB2 (On-Premise)</i> Receiver adapter	<p>Allows SAP Cloud Integration to connect to DB2 (On-Premise) using JDBC (Java Database Connectivity) and to execute SQL commands on the database.</p>
<i>JDBC for Microsoft SQL Server (Cloud)</i> Receiver adapter	<p>Allows SAP Cloud Integration to connect to Microsoft SQL Server (Cloud) using JDBC (Java Database Connectivity) and to execute SQL commands on the database.</p>
<i>JDBC for Microsoft SQL Server (On-Premise)</i> Receiver adapter	<p>Allows SAP Cloud Integration to connect to Microsoft SQL Server (On-Premise) using JDBC (Java Database Connectivity) and to execute SQL commands on the database.</p>

Feature	Description
<i>JDBC for Oracle (Cloud)</i> Receiver adapter	Allows SAP Cloud Integration to connect to Oracle (Cloud) using JDBC (Java Database Connectivity) and to execute SQL commands on the database.
<i>JDBC for Oracle (On-Premise)</i> Receiver adapter	Allows SAP Cloud Integration to connect to Oracle (On-Premise) using JDBC (Java Database Connectivity) and to execute SQL commands on the database.
<i>JDBC for PostgreSQL (Cloud)</i> Receiver adapter	Allows SAP Cloud Integration to connect to PostgreSQL (Cloud) using JDBC (Java Database Connectivity) and to execute SQL commands on the database.
<i>JDBC for SAP ASE Service (Neo)</i> Receiver adapter	Allows SAP Cloud Integration to connect to SAP ASE Service (Neo) using JDBC (Java Database Connectivity) and to execute SQL commands on the database.
<i>JDBC for SAP HANA Cloud</i> Receiver adapter	Allows SAP Cloud Integration to connect to SAP HANA Cloud using JDBC (Java Database Connectivity) and to execute SQL commands on the database.
<i>JDBC for SAP HANA Platform (On-Premise)</i> Receiver adapter	Allows SAP Cloud Integration to connect to SAP HANA Platform (On-Premise) using JDBC (Java Database Connectivity) and to execute SQL commands on the database.
<i>JDBC for SAP HANA Service (Neo)</i> Receiver adapter	Allows SAP Cloud Integration to connect to SAP HANA Service (Neo) using JDBC (Java Database Connectivity) and to execute SQL commands on the database.
<i>JMS</i> Sender adapter	<p>Enables asynchronous messaging by using message queues.</p> <p>The sender adapter consumes messages from a queue. The messages are processed concurrently.</p> <p>To prevent situations where the JMS adapter tries again and again to process a failed (large) message, you can store messages (where the processing stopped unexpectedly) in a dead-letter queue after two retries.</p> <p>Certain constraints apply with regard to the number and capacity of involved queues, as well as for the headers and exchange properties defined in the integration flow before the message is saved to the queue (as described in the product documentation).</p>
<i>JMS</i> Receiver adapter	<p>Enables asynchronous messaging by using message queues.</p> <p>The receiver adapter stores messages and schedules them for processing in a queue. The messages are processed concurrently.</p>

Feature	Description
<i>Kafka</i> Sender adapter	Allows SAP Cloud Integration to connect to an external Kafka broker via Kafka protocol and to fetch Kafka records (messages).
<i>Kafka</i> Receiver adapter	Allows SAP Cloud Integration to connect to an external Kafka broker via Kafka protocol and to send Kafka records (messages).
<i>Mail Sender for IMAP</i> Sender adapter	<p>Enables SAP Cloud Integration to read e-mails from an e-mail server using the Internet Message Access Protocol (IMAP) protocol.</p> <p>To authenticate against the e-mail server, you can send the user name and password in plain text or encrypted (the latter only if the e-mail server supports this option).</p> <p>You can protect inbound e-mails at the transport layer with IMAPS and STARTTLS.</p> <p>The sender adapter allows you to define a schedule for polling data from the connected system.</p> <p>For more information on possible threats when processing e-mail content with the Mail adapter, see the product documentation.</p>
<i>Mail Sender for POP3</i> Sender adapter	<p>Enables SAP Cloud Integration to read e-mails from an e-mail server using the Post Office Protocol (POP3) protocol.</p> <p>To authenticate against the e-mail server, you can send the user name and password in plain text or encrypted (the latter only if the e-mail server supports this option).</p> <p>You can protect inbound e-mails at the transport layer with POP3S and STARTTLS.</p> <p>The sender adapter allows you to define a schedule for polling data from the connected system.</p> <p>For more information on possible threats when processing e-mail content with the Mail adapter, see the product documentation.</p>
<i>Mail</i> Receiver adapter	<p>Enables SAP Cloud Integration to send e-mails to an e-mail server.</p> <p>To authenticate against the e-mail server, you can send the user name and password in plain text or encrypted (the latter only if the e-mail server supports this option).</p> <ul style="list-style-type: none"> You can protect outbound e-mails at the transport layer with STARTTLS or SMTPS. You can encrypt outbound e-mails using S/MIME (supported content encryption algorithms: AES/CBC/PKCS5Padding, DESede/CBC/PKCS5Padding).
<i>Microsoft Dynamics CRM</i> Receiver adapter	Connects SAP Cloud Integration to Microsoft Dynamics Customer Relationship Management (CRM).

Feature	Description
<i>OData</i> Sender adapter	<p>Connects SAP Cloud Integration to systems using the Open Data (OData) protocol in either ATOM or JSON format (only synchronous communication is supported).</p> <p>Supported versions: OData version 2.0</p> <ul style="list-style-type: none"> The adapter receives incoming requests in either ATOM or JSON format. Supported operations: Create (POST), Delete (DELETE), Query (GET), Read (GET), Update (PUT) Using the GET or POST method, the sender adapter can also invoke operations that are not covered by the standard CRUD (Create, Retrieve, Update, and Delete) methods (function import).
<i>OData</i> Receiver adapter	<p>Connects SAP Cloud Integration to systems using the Open Data (OData) protocol.</p> <p>Supported versions:</p> <ul style="list-style-type: none"> OData version 2.0 Supported operations: Create (POST), Delete (DELETE), Merge (MERGE), Query (GET), Read (GET), Update (PUT), Patch (PATCH) OData version 4.0 Supported operations: Create (POST), Query (GET), Update (PUT) The outgoing request payload must be in XML format.
<i>ODC</i> Receiver adapter	<p>Connects SAP Cloud Integration to SAP Gateway OData Channel (through transport protocol HTTPS).</p> <p>Supported operations: Create (POST), Delete (DELETE), Merge (MERGE), Query (GET), Read (GET), Update (PUT)</p>
<i>OpenConnectors</i> Receiver adapter	<p>Connects SAP Cloud Integration to more than 150 non-SAP Cloud applications that are supported by SAP Open Connectors.</p> <ul style="list-style-type: none"> Uses APIs to fetch data from specific third-party applications. Is designed to handle large volumes of incoming data. Supports messages in both JSON and XML format, for request and response calls. Allows you to define specific values for variables.
<i>ProcessDirect</i> Sender adapter	<p>Connects an integration flow with another integration flow deployed on the same tenant.</p> <p>An integration flow with a ProcessDirect sender adapter (as consumer) consumes data from another integration flow.</p> <p>N:1 cardinality of producer and consumer integration flows is supported.</p>
<i>ProcessDirect</i> Receiver adapter	<p>Connects an integration flow with another integration flow deployed on the same tenant.</p> <p>An integration flow with a ProcessDirect receiver adapter (as producer) sends data to another integration flow.</p> <p>N:1 cardinality of producer and consumer integration flows is supported.</p>

Feature	Description
<i>RFC</i> Receiver adapter	<p>Connects SAP Cloud Integration to a remote receiver system using Remote Function Call (RFC).</p> <p>RFC is the standard interface used for integrating on-premise ABAP systems to the systems hosted on the cloud using SAP Cloud Connector.</p> <p>The adapter supports SAP NetWeaver, version 7.31 or higher.</p>
<i>Salesforce</i> Sender adapter	<p>Connects SAP Cloud Integration to Salesforce.</p>
<i>Salesforce</i> Receiver adapter	<p>Connects SAP Cloud Integration to Salesforce.</p>
<i>SFTP</i> Sender adapter	<p>Connects SAP Cloud Integration to a remote system using the SSH File Transfer protocol to read files from the system. SSH File Transfer protocol is also referred to as Secure File Transfer protocol (or SFTP).</p> <p>Supported versions:</p> <p>SSH version 2 (as specified at The Secure Shell (SSH) Protocol Architecture), SSH File Transfer Protocol (SFTP) version 3 or higher</p> <p>The sender adapter allows you to define a schedule for polling data from the connected system.</p>
<i>SFTP</i> Receiver adapter	<p>Connects SAP Cloud Integration to a remote system using the SSH File Transfer protocol to write files to the system. SSH File Transfer protocol is also referred to as Secure File Transfer protocol (or SFTP).</p> <p>Supported versions:</p> <p>SSH version 2 (as specified at The Secure Shell (SSH) Protocol Architecture), SSH File Transfer Protocol (SFTP) version 3 or higher</p>
<i>SOAP SOAP 1.x</i> Sender adapter	<p>Exchanges messages with a sender system that supports Simple Object Access Protocol (SOAP) 1.1 or SOAP 1.2.</p> <p>The message exchange patterns supported by the sender adapter are one-way messaging or request-reply.</p> <p>The adapter supports Web services Security (WS-Security).</p> <p>A size limit for the inbound message can be configured for the sender adapter.</p>
<i>SOAP SOAP 1.x</i> Receiver adapter	<p>Exchanges messages with a receiver system that supports Simple Object Access Protocol (SOAP) 1.1 or SOAP 1.2.</p> <p>The adapter supports Web services Security (WS-Security).</p>
<i>SOAP SAP RM</i> Sender adapter	<p>Exchanges messages with a sender system based on the SOAP communication protocol and SAP Reliable Messaging (SAP RM) as the message protocol. SAP RM is a simplified communication protocol for asynchronous Web service communication that does not require the use of Web Service Reliable Messaging standards.</p> <p>A size limit for the inbound message can be configured for the sender adapter.</p>

Feature	Description
<p><i>SOAP SAP RM</i></p> <p>Receiver adapter</p>	<p>Exchanges messages with a receiver system based on the SOAP communication protocol and SAP Reliable Messaging (SAP RM) as the message protocol. SAP RM is a simplified communication protocol for asynchronous Web service communication that does not require the use of Web Service Reliable Messaging standards.</p>
<p><i>SuccessFactors REST</i></p> <p>Sender adapter</p>	<p>Connects SAP Cloud Integration to a SuccessFactors sender system using the REST message protocol.</p> <p>The adapter supports the following operations: GET</p>
<p><i>SuccessFactors REST</i></p> <p>Receiver adapter</p>	<p>Connects SAP Cloud Integration to a SuccessFactors receiver system using the REST message protocol.</p> <p>The adapter supports the following operations: GET, POST</p>
<p><i>SuccessFactors SOAP</i></p> <p>Sender adapter</p>	<p>Connects SAP Cloud Integration to SOAP-based Web services of a SuccessFactors sender system (synchronous or asynchronous communication).</p> <p>The adapter supports the following operations: Query</p>
<p><i>SuccessFactors SOAP</i></p> <p>Receiver adapter</p>	<p>Connects SAP Cloud Integration to SOAP-based Web services of a SuccessFactors receiver system (synchronous or asynchronous communication).</p> <p>The adapter supports the following operations: Insert, Query, Update, Upsert</p>
<p><i>SuccessFactors OData V2</i></p> <p>Receiver adapter</p>	<p>Connects SAP Cloud Integration to a SuccessFactors system using OData V2.</p> <p>Features of OData version 2.0 supported by the adapter:</p> <ul style="list-style-type: none"> • Operations: GET (get single entity as an entry document), PUT (update existing entry with an entry document), POST (create new entry from an entry document), DELETE (Delete an entry from an entry document), UPSERT (combination of Update OR Insert) • Query options: \$expand, \$skip, and \$top • Server-side pagination • Client-side pagination • Pagination enhancement: Data retrieved in chunks and sent to Cloud Integration • Deep insert: Creates a structure of related entities in one request • Authentication options: Basic authentication • Reference links: Link two entities using the <link> tag
<p><i>SuccessFactors OData V4</i></p> <p>Receiver adapter</p>	<p>Connects SAP Cloud Integration to a SuccessFactors system using OData V4.</p> <p>Features of OData version 4.0 supported by the adapter:</p> <ul style="list-style-type: none"> • Operations: GET, POST, PUT, DELETE • Navigation • Primitive types supported according to OData V4 specification • Structural types supported for create/update operations: Edm.ComplexType, Edm.EnumType, Collection(Edm.PrimitiveType) and Collection(Edm.ComplexType)

Feature	Description
<i>SugarCRM</i> Receiver adapter	Connects SAP Cloud Integration to SugarCRM.
<i>Twitter</i> Receiver adapter	Enables SAP Cloud Integration to access Twitter and read or post tweets. Using OAuth, SAP Cloud Integration can access resources on Twitter on behalf of a Twitter user.
<i>XI</i> Sender adapter	Connects SAP Cloud Integration to a remote sender system that can process the XI message protocol.
<i>XI</i> Receiver adapter	Connects SAP Cloud Integration to a remote receiver system that can process the XI message protocol.

3.3 Message Processing

Cloud Integration can process messages in different ways.

The following message processing features are available.

Certain constraints might apply with regard to the usage of some of these features (as described in the product documentation).

Message Transformation

Feature	Description
Mapping	<p>Transforms the data structure and format used by the sender into a structure and format that the receiver can process.</p> <p>Supports the following kinds of mappings:</p> <ul style="list-style-type: none"> • Message mappings designed with a graphical editor as part of the Cloud Integration toolset (supports XSD and EDMX structures) • Custom-mapping functions defined in scripts • XSLT mappings (defined in an XSLT resource)
ID Mapping	Maps the source message ID to a target message ID. You can use this feature to implement scenarios with exactly once processing of messages.

Feature	Description
Content Modifier	<p>Modifies the content of an inbound message by changing the header or body of the message.</p> <p>A message is composed of a message body and message headers. Furthermore, when being processed on a Cloud Integration tenant, additional data associated with the message can be passed along in an additional container (referred to as <i>message exchange</i>) to make it available at a later point in time during message processing. The Content Modifier can read data from and write data to the message body, the message header, and the properties area of the message exchange. That way, the content of a message can flexibly be modified and prepared for a receiver or subsequent processing steps.</p> <p>Certain constraints apply with regard to the supported data formats (as described in the product documentation).</p>
XML Modifier	<p>Modifies the content of an inbound message by removing external DTDs and/or removing XML declarations.</p>
Converter	<p>Transforms an input message into another format.</p> <p>The following converters are available:</p> <ul style="list-style-type: none"> • <i>XML to JSON</i>: Transforms messages in XML format to JSON format. You can specify streaming (with either the whole XML document or only specified XML elements presented by JSON arrays). • <i>JSON to XML</i>: Transforms messages in JSON format to XML format. • <i>XML to CSV</i>: Transforms messages in XML format to CSV format. • <i>CSV to XML</i>: Transforms messages in CSV format to XML format. • <i>XML to EDI</i>: Transforms a message in XML format to Electronic Data Interchange (EDI) format. • <i>EDI to XML</i>: Transforms a message in EDI format (EDIFACT or ASC-X12 format) to XML format. <p>Certain constraints apply with regard to the supported data formats (as described in the product documentation).</p>
Decoder	<p>Decodes the incoming message to retrieve the original data (for example, if a base64-encoded message has been received).</p> <ul style="list-style-type: none"> • <i>Base64 Decode</i>: Decodes base64-encoded message content. • <i>GZIP Decompress</i>: Decompresses the message content using GNU zip (GZIP). • <i>ZIP Decompress</i>: Decompresses the message content using zip (only zip archives with a single entry supported). • <i>MIME Multipart Decode</i>: Transforms a MIME multipart message into a message with attachments.

Feature	Description
Encoder	<p>Encodes the message using an encoding scheme to secure any sensitive message content during transfer over the network.</p> <ul style="list-style-type: none"> • <i>Base64 Encode</i> Encodes the message content using base64. • <i>GZIP Compress</i>: Compresses the message content using GNU zip (GZIP). • <i>ZIP Compress</i>: Compresses the message content using zip (only zip archives with a single entry supported). • <i>MIME Multipart Encode</i>: Transforms the message content into a MIME multipart message. <p>If you want to send a message with attachments, but the protocol (for example, HTTP or SFTP) does not support attachments, you can send the message as a MIME multipart instead.</p> <div style="border: 1px solid #ccc; background-color: #f9f9f9; padding: 10px; margin-top: 10px;"> <p>Note</p> <p>Note that SAP Cloud Integration does not support the processing of MIME multipart messages that contain multiple attachments with the same file name.</p> </div>

Filter	Filters information by extracting a specific node from the incoming message by using an XPath expression.
Message Digest	Calculates a digest of the payload or parts of it and stores the result in a message header.
Script	Executes custom Java script or Groovy script for message processing.

Calling External Systems or Subprocesses

Feature	Description
Request-Reply	Calls an external receiver system in a synchronous step and gets back a response.
Send	Calls an external receiver system for use cases where no reply is expected.
Content Enricher	Calls an external system, accesses resources of this system, and merges the returned content with the original message.
Poll Enrich Step	Polls content from an external component, and enriches the original message with it.
Process Call	<p>Calls a local integration process.</p> <p>A local integration process defines a container for a separate subprocess to be called from the main process. Using local integration processes, a complex message processing sequence can be fragmented and decomposed into smaller parts.</p>
Looping Process Call	Calls a local integration process in a loop.

Feature	Description
Idempotent Process Call	Detects if a message ID has already been successfully processed and stores the status of the successful process in the idempotent repository. If there's duplicate execution with the same message ID (for example if there's a retry by the sender system), the called subprocess can either be skipped or the message is marked as a duplicate. You can then decide how to handle the duplicate in the subprocess.

Routing

Feature	Description
Router	<p>Routes a message to one or more receivers.</p> <p>SAP Cloud Integration also supports routing that depends on the content of the message (content-based routing). For example, the tenant detects that a message has a particular field value, and forwards it to the specific receiver participant that handles requests from the sender participant.</p>

Multicast	<p>Sends the same message to more than one receiver.</p> <ul style="list-style-type: none"> Parallel multicast: Initiates message transfer to all the receiver nodes in parallel Sequential multicast: defines the sequence in which the message transfer to the receivers is initiated.
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Splitter	<p>Decomposes a composite message into a series of individual messages and sends them to a receiver.</p> <p>Supported splitters:</p> <ul style="list-style-type: none"> General splitter: Breaks down a composite message containing 'n' messages into 'n' individual messages. Each individual message is enveloped by the same elements that enveloped the composite message. Iterating splitter: Splits a composite message into a series of smaller messages without copying the enveloping elements of the composite message PKCS#7/CMS splitter: Splits a PKCS7 Signed Data message that contains a signature and content (and breaks down the signature and content into separate files) IDoc splitter: Splits a composite IDoc messages into a series of individual IDoc messages with the enveloping elements of the composite IDoc message EDI splitter: Splits a bulk EDI message into a series of individual messages and validates and acknowledges the inbound message. A bulk EDI message can contain one or more EDI formats, such as EDIFACT, EANCOM, or ASC-X12. The EDI splitter can process different EDI formats depending on the business requirements of the trading partners. Zip splitter: Splits an inbound archive file (.zip) into individual files. <p>Certain constraints apply with regard to the supported data formats (as described in the product documentation).</p>
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Feature	Description
Join	<p>Merges messages from different routes and combines them into a single message.</p> <p>This feature is used in combination with the Gather feature. Join simply brings together the messages from different routes; it doesn't affect the content of the messages.</p> <p>Certain constraints apply with regard to the usage of this feature (as described in the product documentation).</p>

Gather	Merges messages from different routes (into a single message) with the option to define certain strategies how to combine the initial messages.
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Storing Data During Processing

Feature	Description
Persist Message	Stores a message payload so that you can access the stored message and analyze it at a later point in time.

Data Store Operations	<p>Stores messages temporarily for later processing.</p> <p>The following operations are supported:</p> <ul style="list-style-type: none"> • SELECT • GET • WRITE • DELETE
-----------------------	--

Write Variables	Specifies values for variables required during message processing.
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Protecting Messages

Feature	Description
Encryptor	<p>Encrypts the content of a message.</p> <p>Supported standards:</p> <ul style="list-style-type: none"> • PGP • PKCS#7/CMS Enveloped Data and Signed Data

Decryptor	<p>Decrypts the content of a message.</p> <p>Supported standards:</p> <ul style="list-style-type: none"> • PGP • PKCS#7/CMS Enveloped Data and Signed Data
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Signer	<p>Signs a message.</p> <p>Supported standards:</p> <ul style="list-style-type: none"> • PKCS#7/CMS Enveloped Data and Signed Data • XML Digital Signature
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Feature	Description
Verifier	<p>Verifies a message.</p> <p>Supported standards:</p> <ul style="list-style-type: none"> • PKCS#7/CMS Enveloped Data and Signed Data • XML Digital Signature

For more information about the security standards and supported algorithms, see the section on *Message-Level Security* in the *Security* chapter of this document.

Additional Features

Feature	Description
Transactional processing	<p>Ensures data consistency by processing the message within one transaction (supported when Java Message Service (JMS) and Java Database Connectivity (JDBC) resources are used in an integration flow).</p> <p>This feature is supported for the following resources:</p> <ul style="list-style-type: none"> • JDBC resources: Data Store Operations (Write, Get, Select, Delete), Write Variables, Aggregator • JMS resources: JMS sender and receiver adapter, AS2 sender adapter <p>Either a JMS transaction or a JDBC transaction can be handled (no support for distributed transactions between JMS and JDBC resources).</p>
Externalization	<p>Supports parameterization of certain integration flow attributes (as listed in the product documentation). This means that you can provide the attribute values in a later configuration step without having to edit the integration flow.</p>
Dynamic attributes	<p>You can define placeholders for certain integration flow attributes (as listed in the product documentation). The values of these attributes are then set dynamically based on the content of the processed message.</p>

3.4 Quality of Service

The Cloud Integration runtime supports quality of service "at least once".

This means that Cloud Integration guarantees to process an inbound message at least once on the tenant.

When you use the one of the following adapters, you can configure additional quality of service settings:

- AS2 sender adapter
- AS4 sender adapter
- XI sender and receiver adapter

3.5 Adapter Development

Integration developers can define custom adapters to extend the connectivity options of Cloud Integration.

The Adapter Development Kit allows integration developers to define new adapter types and to integrate them into the Cloud Integration tool environment. A public application programming interface (API) is available for adapter development.

The Adapter Development Kit requires an Eclipse Oxygen (4.7) installation (not supported for MAC OS).

More information on SAP Release Train for Eclipse (SRTE) at <https://tools.hana.ondemand.com/>.

The tool is available in English.

3.6 API-Based Integration Development

SAP Cloud Integration supports API-based integration development (as an alternative to coding).

The SAP Cloud Integration *Design* application provides graphical editors to design the following kinds of APIs:

- OData API (an OData API-based integration scenario with OData V2 sender adapter)
- REST API (a REST API-based integration scenario with HTTPS sender adapter)
- SOAP API (a SOAP API-based integration scenario with SOAP 1.x sender adapter)

The SAP Cloud Integration *Monitor* application allows you to deploy and manage SOAP, REST, and OData APIs and to monitor message processed through these APIs.

Certain constraints might apply with regard to the usage of some of these features (as described in the product documentation).

OData API

The following features are available for OData API development.

Integration developers can develop OData APIs that expose existing data sources, such as SOAP, as OData endpoints. These OData APIs can be consumed by SAP Fiori apps, SAP Mobile Services, or any other custom app, to address user-centric scenarios.

You can develop OData APIs that expose existing data sources, such as SOAP, as OData endpoints. These OData APIs can be consumed by SAP Fiori apps, SAP BTP Mobile Services, or any other custom app, to implement user-centric scenarios.

OData API Development Features

Feature	Description
Import from SOAP	Create an OData model or add to an existing one by importing the model definition from SOAP Web services.

Feature	Description
Import from OData	Create an OData model or add to an existing one by importing the model definition from an existing OData API.
Import from ODC	Create an OData model or add to an existing one by importing the model definition from an OData API that is created in the IW_BEP component of an on-premise Gateway system (ODC).
Edit an OData model	Create an OData model from scratch or edit an existing model using the OData Model Editor.
View an OData model	View the overall layout of an OData model in the Graphical Model Viewer.
Bind to SOAP	Bind function imports and operations of entity sets in your OData model to the corresponding SOAP Web service operations.
Bind to OData	Bind function imports and operations of entity sets in your OData model to the corresponding OData APIs.
Bind to REST	Bind function imports and operations of entity sets in your OData model to the corresponding REST services.
Bind to ODC	Bind function imports and operations of entity sets in your OData model to the corresponding OData APIs that are created in the IW_BEP component of an on-premise Gateway system (ODC).
Edit predefined integration flows	Edit and update predefined integration flows that have an OData sender adapter to suit your business scenario. The SAP Cloud Integration Web application sets up predefined integration flows when OData objects are bound to a data source.
Deploy OData API	Deploy an OData API once it's ready. SAP Cloud Integration also helps you monitor the service after deployment.

3.7 Monitoring and Operations

Enable integration developers to monitor the processing of messages and the components of Cloud Integration at runtime, to manage artifacts required to set up a secure connection of the tenant and remote systems, and to manage tenant-specific data stores.

Certain constraints might apply with regard to the usage of some of these features (as described in the product documentation).

Feature	Description
Monitor message processing	<p>Provides an overview of the messages processed on a tenant and displays the detailed sequence of processing steps for individual messages (message processing log).</p> <p>Different log levels are available (no logging information, all messages logged and displayed, only error messages logged and displayed).</p>
Manage integration content	<p>Provides an overview of integration content artifacts, such as integration flows or security artifacts, that have been deployed on the tenant.</p> <p>Allows you to deploy or undeploy artifacts.</p>
Manage security artifacts and deploy them on the tenant	<p>Allows you to deploy security-relevant artifacts (for example: user credentials, PGP public keyring, PGP secret keyring, SSH known hosts artifact, secure parameter artifact, and OAuth2 credentials).</p>
Manage keystore entries	<p>Allows you to manage the tenant keystore and its entries (X.509 certificates and key pairs).</p> <p>Supported functions:</p> <ul style="list-style-type: none"> • Creating a key pair • Creating an SSH key • Showing details of a keystore entry • Uploading a keystore entry You can upload or add individual entries to an existing keystore. In the latter case, you can overwrite existing entries or keep them (SAP-owned keystore entries can't be changed or deleted). • Downloading the public content of a keystore or a single keystore entry • Deleting a keystore entry (not supported for SAP-owned keystore entries) • Backing up keystore entries owned by the tenant administrator • Restoring backed-up keystore entries <p>Certain constraints apply with regard to the size of the keystore (as described in the product documentation).</p>
Manage the lifecycle of keys	<p>Eases the tenant administrator's task of renewing keys provided by SAP on the tenant.</p> <p>Supported functions:</p> <ul style="list-style-type: none"> • Activating a new key pair provided by SAP to replace an old key pair that expires soon • Restoring an old key pair
Manage certificate-to-user mappings (only available in the Neo environment)	<p>Allows you to display and add certificate-to-user mappings (for the tenant).</p> <p>A certificate-to-user mapping maps a certificate to a user, which enables the user to be authenticated based on a certificate.</p>
Manage access policies	<p>Allows you to guard access to message processing log attachments and trace data on the level of individual integration flows.</p>

Feature	Description
Manage JDBC data sources	Allows you to manage access to database systems a tenant can connect to (using the JDBC receiver adapter).
Test connectivity	Allows you to test outbound TLS, SSH, FTP, SMTP, IMAP, POP3, AMQP, and Kafka connections. You can also check whether a certain Cloud Connector instance can be reached.
Manage user roles (only available in the Cloud Foundry environment)	Allows you to manage user roles to grant permissions to execute an integration flow.
Manage stores	<p>Provides an overview of the stores on the tenant that are temporarily used to persist different types of data during message processing.</p> <p>Supported kinds of stores:</p> <ul style="list-style-type: none"> • Data stores • Variables • Message queues (only available if a message broker has been provisioned) Queues that are active for a tenant (including retry of selected messages in the queue, deleting messages, or downloading messages as file archive). • Number ranges
Access audit logs and system log files (only available in the Neo environment)	Allows you to display security-relevant events and system changes (for example, undeployment of an integration flow).
Manage locks	Allows you to display and manage lock entries, which are created to avoid the same message being processed several times in parallel (for example, by different runtime nodes).
Archive data (only available in the Cloud Foundry environment)	<p>You can connect Cloud Integration to a remote content management system and use this system to archive data.</p> <p>You can archive the following kind of data:</p> <ul style="list-style-type: none"> • Messages received from a sender and responses returned to a sender • Messages sent to a receiver and responses returned from a receiver • Messages stored by the Persist integration flow step • Message processing log attachments <p>Note that the content management system isn't part of the Cloud Integration feature scope.</p>

3.8 Inspection of Resource Consumption

Inspect the usage of integration resources.

Feature	Description
Inspect resource consumption (only available in the Cloud Foundry environment)	Inspect the usage of integration resources (for example, database connections or transactions) by integration scenarios. Perform steps to resolve critical situations.

3.9 Business-to-Business Integration

The following features support you in setting up business-to-business (B2B) integration scenarios.

Certain constraints might apply with regard to the usage of some of these features (as described in the product documentation).

Feature	Description
SAP Integration Advisor	Allows you to specify integration content for B2B scenarios.
Partner Directory	Allows you to store information about communication partners and to parameterize integration flows using this information (accomplished by using script steps in the integration flow). The Partner Directory helps you to set up a communication network between many communication partners efficiently.
AS2 adapter	Allows a tenant to exchange business-specific documents with a partner through the Applicability Statement 2 (AS2) protocol. For more information, see the section <i>Connectivity</i> .
Support of the EDI standard	The following integration flow steps allow you to configure scenarios where Electronic Data Interchange (EDI) messages are involved: EDI Splitter, XML to EDI converter, and EDI to XML converter. For more information, see the section <i>Message Processing</i> .

SAP Integration Advisor allows you to specify integration content for B2B scenarios.

Feature	Description
Simplify the design of message implementation guidelines	Facilitates the design of message implementation guidelines (interfaces) based on industry standards and the definition of mapping guidelines to specify mappings between these interfaces.
Support of type systems	Includes a library of type systems, that is: a collection of message templates that are provided by agencies that maintain the B2B standards. Available type systems: <ul style="list-style-type: none"> External B2B Standards: ASC X12, UN/EDIFACT SAP S/4HANA: SOA, IDoc, OData SAP Ariba: cXML
Integration with SAP Cloud Integration integration design environment	Based on the designed message implementation guidelines and mapping guidelines, automatically generates the required runtime artifacts (for validation, conversion, transformation, pre- and post-processing) that can be used in integration flows.

3.10 Application Programming Interfaces

Cloud Integration provides various application programming interfaces (APIs) that you can use to access data.

The following types of API access are supported.

Certain constraints might apply with regard to the usage of some of these features (as described in the product documentation).

Feature	Description
Java API	Allows you to execute a Java script to define message processing and to build custom adapters. The Java standard libraries of Java 8 can be used. Cloud Integration supports the XML Document Object Model (DOM) to process XML documents.
OData API	Allows you to access data (for example, monitoring data). The API is implemented as a REST API and the technical protocol is Open Data Protocol (OData). OData specification version 2.0 is supported. The API is protected by basic authentication and OAuth.

3.11 Data Storage

Certain components store data on the tenant.

Feature	Description
Store data in the Cloud Integration system	The following components store data in the Cloud Integration system: <ul style="list-style-type: none">• Integration flow steps: Data Store operations, Write variables, Message Store• Partner Directory• Message processing log (including attachments)
Store data using Java Messaging Service (JMS) queues	The following components can store data in JMS queues: <ul style="list-style-type: none">• JMS receiver adapter• AS2 sender adapter• AS4 sender adapter• XI sender and receiver adapter

For more information on the system limits related to the data storage options, see [What Is SAP Cloud Integration?](#)

4 Compliance and Security

Cloud Integration ensures cloud security at multiple levels.

The technical infrastructure of SAP Cloud Integration provides various security features to ensure that customer data that is processed and stored in the Cloud Integration system has a maximum level of protection.

Customer data that is processed and stored in the Cloud Integration system is handled according to the Data Processing Agreement, which you can find at <http://www.sap.com/legal>.

Certain constraints might apply with regard to the usage of some of these features (as described in the product documentation).

Security Features

Feature	Description
Tenant isolation	<p>Strictly separates data from different customers that is processed and stored in the system.</p> <p>Although different customers share resources of the same physical infrastructure, these resources are strictly separated for each customer into separate tenants.</p>
Data flow security (transport level)	<p>Supports secure communication protocols for communication with remote systems using Cloud Integration.</p> <p>Supported protocols:</p> <ul style="list-style-type: none">• Hyper Text Transfer Protocol (HTTP) over Transport Layer Security (TLS), which is referred to as HTTPS• SSH File Transfer Protocol (SFTP)• Simple Mail Transfer Protocol (SMTP), Post Office Protocol (POP)3, and Internet Message Access Protocol (IMAP) <p>For more details, check out the product documentation.</p>
Data flow security (message level)	<p>Makes sure that messages exchanged with remote components through Cloud Integration can be protected by digital encryption and digital signatures.</p> <p>For the supported standards and algorithms, check out the product documentation.</p>

Feature	Description
Data storage security	<p>Makes sure that customer data stored in the Cloud Integration system during a message processing sequence (when using Cloud Integration) is protected.</p> <p>Message content can be stored encrypted (using AES and a key length of 256 bits). If this security measure is configured, the encryption key that is generated automatically is unique for each tenant and is renewed periodically. Furthermore, it is not stored in the same database as the encrypted data.</p> <p>During message processing using Cloud Integration, the involved Cloud Integration runtime component writes monitoring data to the database. Only administrators with dedicated permissions can access this data.</p> <p>Data such as message processing logs or audit logs is stored for a defined period (retention time) in the system. See the product documentation to find out the different retention times for the different types of data stored in the system.</p>
Physical data storage	<p>Customer data is stored in various regions worldwide. Here, the highest security standards are met. For example, redundant power supplies are used and physical access is restricted by means such as biometric access control mechanisms. All of these measures are regularly checked and audited.</p>
User management and authorization	<p>Makes sure that access to dedicated functions of Cloud Integration is controlled and protected by authorization checks. To manage the authorizations of dialog users, an authorization concept is in place that allows administrators to assign dedicated permissions (roles) to users.</p> <p>In the Neo environment, predefined authorization groups (which contain a set of dedicated roles) are designed to fit the persona and tasks that come into play during the lifecycle of an integration project.</p> <p>In the Cloud Foundry environment, predefined role collections (which contain a set of dedicated roles) are designed to fit the persona and tasks that come into play during the lifecycle of an integration project.</p>
Access management	<p>Makes sure that inbound requests in scenarios using Cloud Integration are authenticated by a load balancer (if client certificate authentication is configured). In this case, the load balancer checks the client certificate of the calling component against a list of trusted certification authorities.</p> <p>This certificate is mapped to a user.</p> <p>This certificate is mapped to a service key.</p> <p>If basic authentication is configured, the calling entity is checked by the connected identity provider.</p> <p>Dialog users accessing the platform are authenticated against an identity provider. By default, SAP Identity Service (ID Service) is used. SAP ID Service is the central service for the process of managing identities and their lifecycles.</p>

Feature	Description
Audit logging and tracing	In the Neo environment, audit logs allow administrators at SAP to monitor events such as data read accesses or system configuration changes. This enables them to proactively take the necessary measures to prevent malicious usage of the system.
Malware scanning	Scans documents that are uploaded to the Cloud Integration tenant, such as integration flows and its resources, to avoid malware attacks. For the supported document types, refer to the product documentation.

Certificates and Reports

Cloud Integration regularly undergoes audits and reviews of its policies and controls.

Note

Note that these assets were created before our branding changes related to SAP technology were announced on January 2021.

- For the complete list of compliance and security standards that the <service-short-name> is compliant with, see [SAP Cloud Platform ISO Certificates](#).
- For the complete list of Service Organizational Control (SOC) audit reports available for the <service-short-name> is, see [SAP Cloud Platform SOC Reports](#).

Data Protection

Cloud Integration follows SAP's global data protection and privacy guidelines. For more information on the guidelines, see [Data Privacy](#).

To access the Personal Data Processing policy for your region, see [Personal Data Processing for SAP Cloud Services](#).

5 Service Availability

This section describes the service availability aspects

Availability Aspect	Description
Regions	Cloud Integration is hosted in different regions. See SAP Discovery Center .
Infrastructures	Cloud Integration runs on several underlying <i>Infrastructure-as-a-Service</i> technologies and regions. Some are owned by SAP and some are owned by our partner infrastructure providers, including Amazon Web Services, Microsoft Azure, and Alibaba Cloud.
Environments	Cloud Integration runs in the following environments: <ul style="list-style-type: none">• SAP BTP, Neo environment• SAP BTP, Cloud Foundry environment• SAP BTP, Kyma environment
Languages	The web-based administration user interface of Cloud Integration is available in English. The Cloud Integration documentation on SAP Help Portal is available in the following languages: <ul style="list-style-type: none">• Chinese• English
Free trial use	In the SAP BTP, Cloud Foundry environment, you can additionally get a free trial account for Cloud Integration with certain limitations as described in the Cloud Integration product documentation on SAP Help Portal.

6 Service Level Agreement

The Service Level Agreement (SLA) is a contract between SAP and its customers that forms the basis of your contractual relationship with SAP when referenced in specific order forms.

- The **order form** is the ordering document to subscribe to cloud services from SAP. It defines the commercial terms and lays out the agreement structure. The order form also incorporates several other documents that relate to the SLA.
- The **Service Level Agreement for SAP Cloud Services** applies to any cloud service on the SAP price list, defining downtime, credits, update windows, and others.

Additionally, the **General Terms and Conditions for SAP Cloud Services** warrants the SLA and provides the available remedy if SAP fails to meet its SLA.

For more information, see [SAP Trust Center > Agreements > Cloud Services Agreements](#).

Maintenance Windows and Major Upgrade Windows

The maintenance and major upgrade windows are defined in the Service Level Agreement for Cloud Services. SAP may update these windows from time to time in accordance with the Agreement.

The following windows apply for the <service-short-name> service:

Maintenance Windows				Major Upgrade Windows				
MENA	APJ	Europe	Americas	Frequency	MENA	APJ	Europe	Americas
FRI	SAT	SAT	SUN	Up to 4	FRI	SAT	SAT	SUN
7 pm	3 pm	10 pm	4 am	times per	5 pm	1 pm	8 pm	6 am
(2 hrs)	(2 hrs)	(2 hrs)	(2 hrs)	year	(12 hrs)	(12 hrs)	(12 hrs)	(12 hrs)

For the latest information, see [Maintenance Windows and Major Upgrade Windows for SAP Cloud Services](#) and search for your service.

7 Browser Support

Overview of the browser support

For the UIs of the service, the following browsers are supported on Microsoft Windows PCs and, where mentioned below, on macOS:

- Google Chrome (latest version)
- Microsoft Edge (latest version)
- Mozilla Firefox (latest version)
- Windows Internet Explorer (as of version 10)

Note



The application can also be used with Safari browser and Internet Explorer 9. However, be aware that some features might not work as expected.

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